MODELLING THE INFLUENCE OF NON CONFORMING STIRRUP DETAILING ON SHEAR CAPACITY OF EXISTING REINFORCED CONCRETE BEAMS

A master thesis submitted to the Delft University of Technology in partial fulfillment of the requirements for the degree of **Master of Science** in Civil Engineering

by

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Abstract

In the Netherlands, numerous bridges face reassessment. During this assessment, it is observed that in some cases, the applied shear reinforcement (stirrups) does not meet the detailing requirement given in the national annex of the NEN-EN 1992-2 [1]. This requirement, which states that the stirrups must enclose the longitudinal reinforcement to ensure adequate anchorage, is a fundamental criterion present not only in the Eurocode but in all modern guidelines, including the national guideline RBK [2]. This guideline calculates the shear capacity by combining the concrete and the stirrup contribution. However, the contribution of the stirrups can only be included when they satisfy the detailing requirement. In this research, a case study is used that includes an existing prestressed continuous bridge. The cross section of this bridge has stirrups that do not meet this requirement. These stirrups are expected to still contribute to the total shear capacity. Therefore, the main aim of this research is to develop a model that can predict the shear capacity by including the anchorage influence of these non conforming stirrups.

To determine this shear capacity, this research develops an approach in which ultimately the influence of the non conforming stirrup can be implemented. In this research, a layered approach is modeled to determine the shear capacity. This approach divides the cross section into several layers, and each of these layers is individually analyzed with the Modified Compression Field Theory (MCFT) [3]. The next step in the development of the model is to implement the anchorage behavior. There are two rebar anchorages included in this research; the straight and hooked rebar anchorage. Separate approaches are used to determine the anchorage capacities, which are based on existing experimental research. In both approaches, the axial stress in the applied shear reinforcement could be limited to these anchorage capacities.

With the completed model, including the anchorage behavior, it is necessary to validate this model. However, due to the limited availability of experimental research on reinforced concrete beams with non conforming stirrups, this research includes a constrained validation of the model. In this context, constrained validation refers to a partial validation, as experimental data specifically addressing non conforming stirrups is scarce. Subsequently, the shear capacity of the two cross sections within the case study is predicted. The first cross section is in the span region, where the hooked rebar anchorage is governing. As a result of the high anchorage capacity, little influence is observed in the shear capacity of this cross section. The straight rebar anchorage of the stirrup is governing in the support region. This type of anchorage has a greater influence due to the lower anchorage capacity compared to the anchorage capacity of the hooked rebar. However, in both cases, the predicted shear capacity of the model exceeds the concrete shear capacity based on the RBK [2]. Therefore, based on these results, it can be concluded that there is still a contribution of the non conforming stirrups to the total shear capacity. During the development of the model, several simplifications are made which translate to limitations of the model, and besides these simplifications, the model has some other limitations.

The proposed model within this research could be used to predict the shear capacity of reinforced concrete beams with non-conforming stirrups. However, for more accurate results, it is recommended to further develop this model to overcome its current limitations. Additionally, it is recommended to conduct more experimental research on these types of beams, due to the limited amount found in literature. Finally, it should be taken into account that the model in this research uses a conservative assumption that the crack is perfectly aligned with the non-conforming stirrup.

Keywords: Shear capacity, Non conforming stirrups, Reinforced concrete beams, Prestress, Layered approach, Modified Compression Field Theory, Anchorage

Preface

Dear reader,

With this thesis report, I conclude my Master's degree in Civil Engineering with the track Structural Engineering, specializing in Concrete Structures at the Technical University of Delft. It also ends a long journey of studying that started a while ago at the Hogeschool van Arnhem en Nijmegen. After my time at this University of Applied Sciences, I wanted to learn more about structural engineering, so I pursued a Master's degree in Delft. The final year of this study I spent at the office of Witteveen+Bos, to do the master thesis project resulting in this thesis report. There is genuine hope and belief that this project will contribute to obtaining more insight into the behavior of reinforced concrete beams with non conforming stirrups.

This project would not have been possible without the academic guidance and feedback from the graduation committee of the TU Delft, that is why I want to thank dr. ir. Max Hendriks, dr. ir. Yuguang Yang, prof. dr. ir. Jan Rots, and especially Mohammed Sirage Ibrahim for motivating me and leading me in the right direction. I am also grateful to the people at Witteveen+Bos especially ir. Bert Jongstra and other colleagues from the *Vervanging en Renovatie van Kunstwerken* group. They gave me the opportunity and trust to conduct this research, provided a place to work, and answered many of my questions. Both the people at TU Delft and Witteveen+Bos played a pivotal role in shaping and directing the course of this study.

Finally, I want to express my sincere gratitude to my family and friends for their support and motivation throughout the duration of this project.

Bob van Dijk
Utrecht, March 2024

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CHAPTER 1

Introduction

The opening chapter of this thesis introduces the entire research project, beginning with an overview of the background of the problem. The primary goal is to establish a solid understanding of the research's context. After laying this foundation, the primary research question is introduced, serving as a guide within this study. To address this main question in a structured way, sub-questions are defined. Following these questions, a description is given of the outcomes and deliverables in this research. To derive these outcomes and deliverables, the methodology of the research is described in the fourth section. Finally, the thesis structure is outlined, providing brief descriptions of each chapter contained within this thesis.

1.1 BACKGROUND

Currently, numerous bridges in the Netherlands require reassessment due to reaching the end of their intended service life, coupled with a significant increase in traffic load compared to approximately 50 years ago. At the engineering firm Witteveen+Bos, a notable observation was made during the examination of these existing bridges [15]. In the assessment of shear capacity, it was observed that, in certain cases, the applied shear reinforcement (stirrups) does not meet the detailing requirement outlined in the national annex of the NEN-EN 1992-2 [16]. In paragraph 9.2.2 of this Eurocode annex, it is stated that when stirrups are applied, they need to enclose the longitudinal tension reinforcement and the compression zone, unless anchorage in the compression zone is possible. Figure 1.1 is included in the NEN-EN 1992-1-1 [4] and illustrates examples of how shear reinforcement must be detailed.

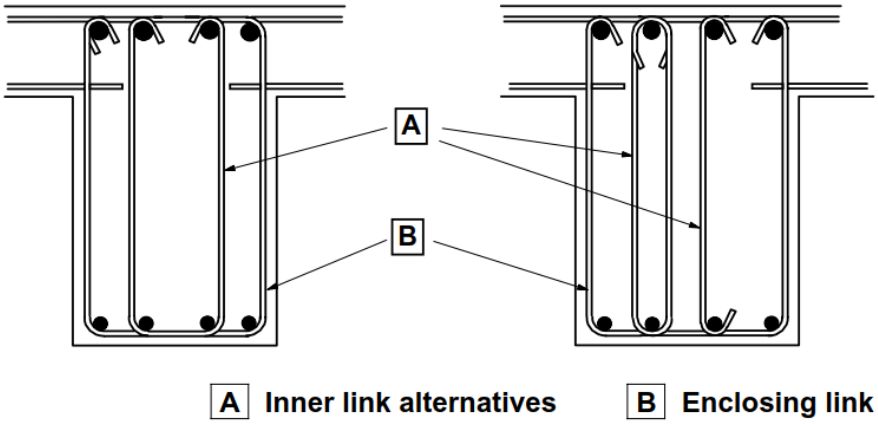


Figure 1.1: Examples of shear reinforcement [4]

To examine existing civil structures in high ways in the Netherlands, Rijkwaterstaat, a part of the Dutch Ministry of Infrastructure and Water Management, has introduced a specific guideline known as the RBK (Richtlijnen Beoordeling Kunstwerken) [2]. This guideline mainly provides additions to the other standards and guidelines used. In this document, in contrast to Eurocode 2 [4], the shear capacity of an existing bridge is calculated by combining both the shear capacity of concrete and the stirrups. However, the shear capacity of the stirrups can only be included when they are detailed according to the previously mentioned detailing requirement. Therefore, in existing bridges, there is a possibility that the shear capacity would theoretically depend solely on that of the concrete, which may be insufficient in certain scenarios. To prevent immediate rejection or the need for strengthening these bridges, it is important to investigate whether there is any shear capacity that can be considered for the non conforming stirrups.

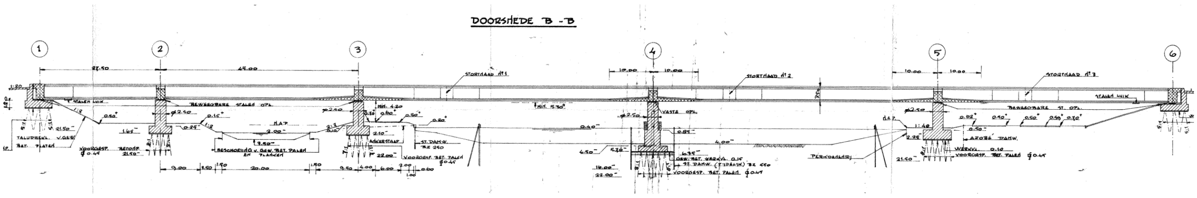


Figure 1.2: Side view of the bridge from the case

This research project focuses on a case study involving a bridge provided by Witteveen+Bos, which will serve as a consistent reference throughout this research. In Figure 1.2 a side view is presented that shows a continuous bridge on six supports. The total length of this bridge is approximately 265 meters, with prestressing along the entire length of the bridge. Because this is a continuous bridge, both the span and support region are expected to undergo significant bending moments. In addition, the support region also has to withstand the largest shear forces. This is the reason why the cross section closer to the support is often the governing one in prestressed continuous bridges.

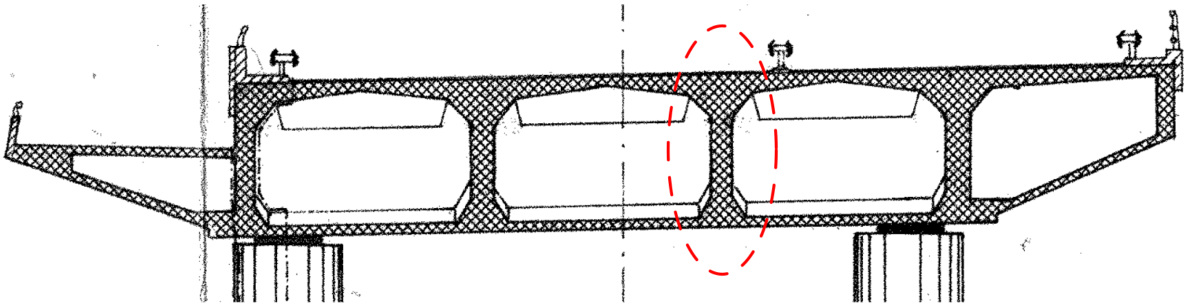


Figure 1.3: Cross section of the bridge from the case

The cross section of the bridge is presented in Figure 1.3, which shows a box girder consisting of four main beams, one of which is shown in Figure 1.4. This beam cross section clearly shows the applied reinforcement within the cross section. The six white circles in the middle of the cross section represent the prestressing ducts, and the black dots represent the longitudinal reinforcement. The applied stirrups in this cross section are marked red in this figure. Upon closer examination of the top and bottom parts of these stirrups, it becomes apparent that they do not fully enclose the longitudinal reinforcement, as indicated by the red dotted circles in the figure. These specific parts of the stirrups are the main problem within the scope of this research. In the same plane as the applied stirrups, two triangular-shaped reinforcement bars can also be seen, but these are not included in the shear capacity prediction.

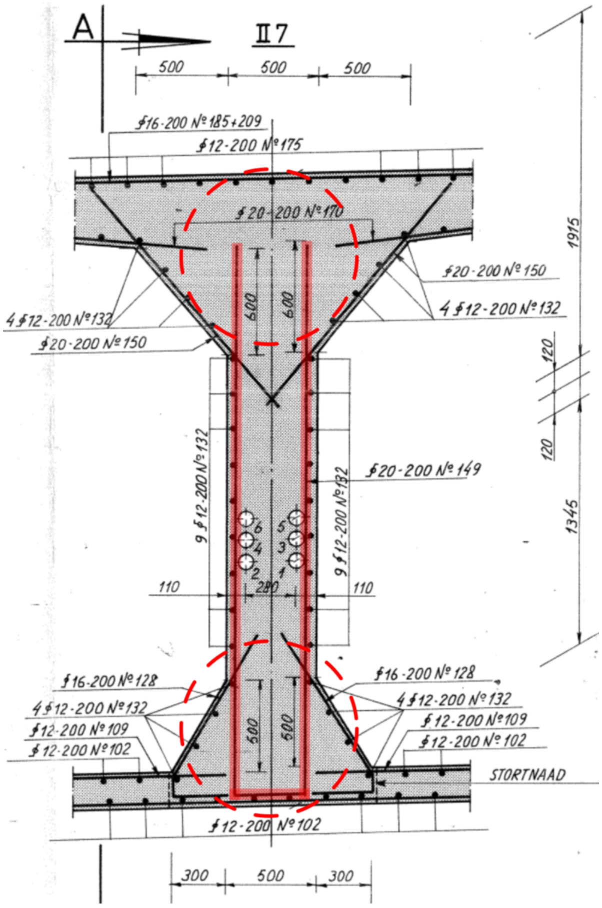


Figure 1.4: Cross section of one beam within the box girder

The bending moment in the span region is expected to cause a tension zone in the lower part of the cross section, and a compression zone in the upper part. In contrast, for a bending moment in the support region, the tension zone is expected in the upper part, and the compression zone in the lower part. Stirrups can be anchored in the compression zone by means of a certain length of anchorage, as specified in the RBK [2], providing a method for such an anchorage without enclosing the longitudinal reinforcement. However, the research problem in this thesis is not related to the anchorage in the compression zone; instead, it focuses on the anchorage in the tension zone. In these regions, where it is assumed that the concrete is cracked and is expected to result in a reduced anchorage capacity, the stirrups must enclose the longitudinal reinforcement to ensure proper anchorage. Therefore, both the straight rebar anchorage at the top of the stirrup and the hooked rebar anchorage at the bottom of the stirrup are problems within the case.

1.2 RESEARCH QUESTIONS

In this thesis, the focus lies on understanding the shear behavior of reinforced concrete beams with non conforming stirrups. Specifically, the research investigates the influence of different types of anchorage of the applied stirrups within the cross section of the bridge. Therefore, the main research question that guides this study is as follows.

How can the shear capacity of existing reinforced concrete beams be accurately modeled considering the influence of non conforming stirrup detailing?

To provide a comprehensive and structured conclusion to the main research question, four sub-questions are defined. These subquestions collectively contribute to logically addressing the main research question. Each sub-question serves as a component that, when answered, contributes to the overall understanding and formulation of a single, comprehensive answer to the main research question. This approach ensures a structured research on the topic that leads to a clear and well-supported conclusion. The subquestions are given below, each of them having a brief description.

1. ***How do current design codes verify the shear resistance of prestressed reinforced concrete beams, and which theories form the basis for these codes?***

   The main problem of this research project is found when examining an existing bridge and using the given guidelines used in the Netherlands. These guidelines will be studied further to see how the shear resistance is calculated and on which theory this calculation is based. In addition to the codes used in the Netherlands, other codes must be studied to gain more insight into how shear resistance can be determined.

2. ***How can the shear capacity prediction be structured to later integrate a specific type of influence within a particular region of the cross-section?***

   At the end of this research, the shear capacity of the cross section needs to be predicted taking into account a certain type of influence from the non conforming stirrup detailing. This involves developing a model that allows for the later integration of this influence in particular regions within the cross-section.

3. ***What is the pull-out behaviour of the straight and hooked rebar anchorages used in the stirrups of the bridge?***

   Before a model is further developed, the pull-out behaviour of each type of anchorage needs to be determined. Several studies, found in literature, have been conducted on the pull-out strengths of different types of anchorage, but only a few take into account the crack width within a cross section.

4. ***How can the pull-out behaviour of these anchorages be implemented in a model layered approach?***

   The final sub-question, is about the implementation of the pull-out behaviour found in literature into the model which is developed in this research. So, it is about combining the answers obtained in subquestion two and three.

1.3 OUTCOMES AND DELIVERABLES

The primary objective of this research project is to develop a model capable of predicting the shear capacity of reinforced concrete beams, including the influence of non conforming stirrup detailing. This model will make it possible to determine the influence of such stirrups, and the results obtained by this model can be compared with the Dutch codes or other guidelines to see the differences in shear capacity. These differences could have a significant impact on the shear capacity, and also on the examination of existing bridges. It could potentially prevent the rejection of existing bridges based on the shear capacity.

To address these objectives, the subquestions will be answered in a structured way. This involves an extensive review of the literature, a structured prediction of the shear capacity, a further study of the pull-out behavior of the anchorages, and the proposal of a model in which these behaviors are integrated. The following section of this introduction will explain how the research will be done and will describe the approach to obtaining the answers for each question in this research.

1.4 METHODOLOGY

In this section, the research methodology will be further described using the overview of this research project included in Figure 1.5. This methodology serves as a guide to obtain answers within this study. Through using this described method, it is ensured that the research is well-structured, reliable, and yields meaningful answers.

The research overview starts with the "CASE", which represents the case study of the research. Within this case study, a problem is found and to obtain more knowledge about this problem, an extensive literature review is conducted. This review starts by examining the shear failures of a reinforced concrete beam and how these failures are resisted by various mechanisms within the beam. Following this, different guidelines and codes are studied to see how the design shear capacity is calculated and on which theories these calculations are based. The last part of the literature study focuses on the anchorage of the stirrups. Adequate anchorage is necessary to take into account the shear capacity of the stirrups, but this is not applied in our case. Therefore, the literature is studied to see if there are relevant studies on different anchorages that also include certain tension stresses.

Following this literature review, the next phase involves accurately modelling the shear capacity of a reinforced concrete cross section. However, it is important to account for the eventual integration of the anchorage influence into the prediction of the shear capacity. Therefore, it is necessary for this prediction that the cross section is divided into multiple parts, as the expectation is that the anchorage influence is not experienced across the entire cross section. Based on the literature review, the sectional analysis is done by dividing the cross section into layers, allowing for the individual analysis of each layer. This layered approach is represented in the research overview with the "LAYERED APPROACH", where a beam is divided into several layers.

Next, the model requires the integration of the anchorage influence. This leads to the "ANCHORAGE PART" of the research overview; the pull-out behaviors of straight and hooked anchorages will be investigated based on existing experimental research. Each type of anchorage will be incorporated into the model in a certain way to ultimately develop a comprehensive model capable of predicting the shear capacity of a reinforced concrete beam, while considering the influence of the anchorage.

The final segment of the overview is the "RESULT", in which the results are obtained once the model works properly. Before using the model for the case study, a crucial step involves validating its results by comparing them with existing experimental data. After validation, the shear capacity of the cross section of the case can be predicted. Based on these results, several comparisons can be made to see what the influence is of the non conforming stirrup detailing, which is followed by a detailed discussion. Based on these results, the conclusion of this research will be given to answer the main research question. In addition, recommendations will be offered for future research.

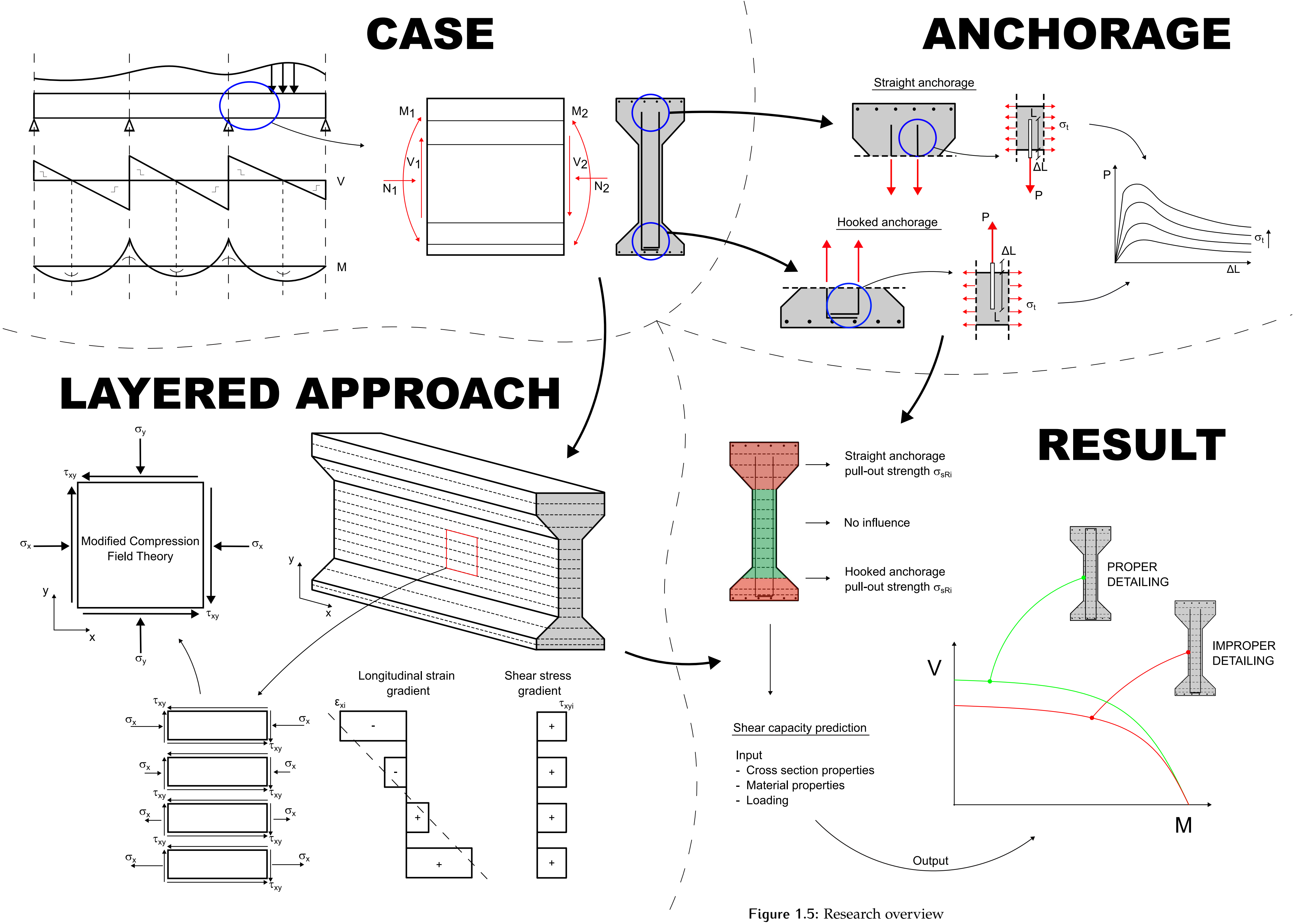


Figure 1.5: Research overview

1.5 THESIS OUTLINE

This thesis is structured into six main chapters, each playing a pivotal role in achieving the research goal. The first chapter is just read and is finalized by describing the thesis outline. Here is a preview of what to expect in the following chapters:

CHAPTER 2 LITERATURE REVIEW The literature review will be given in Chapter 2. The shear behavior of reinforced concrete beams will be addressed in the first two sections, focusing on the shear failure mechanisms and the transfer of shear forces. The third section is about the design shear capacity and the theories that are used to derive this capacity. The anchorage of the stirrup is addressed in the final section of the literature review.

CHAPTER 3 DEVELOPMENT OF A LAYERED APPROACH FOR SHEAR RESISTANCE PREDICTION In Chapter 3, the focus lies on the development of the model that predicts the shear capacity based on a layered approach. It starts by describing the approach in which the cross section is divided into several layers and how this approach is used to eventually obtain the shear capacity. In the following two sections additional insight is provided into the analysis of the individual layers and how the response of a single layer is derived.

CHAPTER 4 IMPLEMENTATION OF THE ANCHORAGE INFLUENCE IN THE LAYERED APPROACH Chapter 4 is dedicated to the integration of the anchorage influence in the shear capacity prediction model. The first two sections focus on studying the pull-out behavior of the anchorage. The first section addresses the straight rebar anchorage and the second section focuses on the hooked rebar anchorage. Once the behaviors are understood, their implementation into the model is detailed in the last section of this chapter.

CHAPTER 5 RESULTS AND DISCUSSION In Chapter 5, existing experimental data will be used in an attempt to further validate the proposed model. Subsequently, the prediction of the shear capacity for the case study will be made and compared with the results using the guideline used in the Netherlands. At the end of this chapter, the development and usage of this model will be discussed, which focuses on outlining its limitations.

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS In the final chapter, a comprehensive summary of the study findings will be presented. First focusing on the subquestions before arriving at the conclusion of this research and the answer to the main research question. Following these insights, the chapter will end with recommendations for future research.

CHAPTER 2

Literature Review

The aim of this research project is to develop a certain model which can predict the shear capacity of an existing reinforced concrete girder, with stirrups that have non conforming detailing. To that extent, this chapter critically reviews the most relevant published research projects, code provisions, and basic concepts. The first three topics are about shear failure mechanisms, shear transfer, and how the design shear capacity is determined according to code provisions. The last subject contains relevant literature on the anchorage of a stirrup in a reinforced concrete beam.

2.1 SHEAR FAILURE MECHANISMS

There are several failure mechanisms that can occur in a reinforced concrete beam, and one of them is shear failure. There are three modes of shear failure that can occur in a reinforced concrete beam [17], these are: shear flexure failure, shear tension failure, and shear compression failure. There are two primary cracks that cause these failures; the web-shear cracks due to high shear stresses and flexural cracks due to high tensile stresses. Each failure is a combination of these primary cracks, but other cracks can also develop. The three shear failure mechanisms are described below.

Shear flexure failure

The shear flexure failure, shown in Figure 2.1, is initiated by flexural cracks caused by flexural tensile stresses at the bottom of the beam. These cracks occur mainly where there are bending moments and shear forces present. After this initiation, inclined cracks develop and when stabilization occurs, one of these inclined cracks enlarges to form the shear flexure crack. When this crack becomes unstable, it will lead to a shear flexure failure of the beam when the load increases further [17]. The inclination of this crack is directed towards the point of loading.

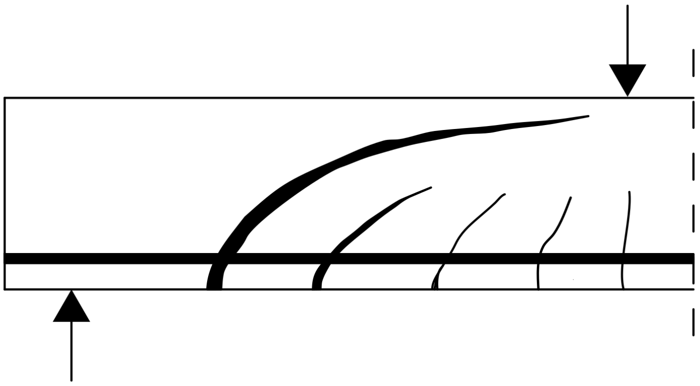


Figure 2.1: Shear flexure failure

Shear tension failure

The second shear failure is the shear tension failure; this failure is shown in Figure 2.2. This failure is characterized by a diagonal crack in the web that extends from the bottom to the top of the web, and this crack forms independently of the flexural cracks. These cracks occur in zones where there are hardly any bending moments, mainly high shear forces. In addition to the primary diagonal crack, cracks form along the longitudinal reinforcement, resulting in loss of bond and anchorage failure [17]. In the absence of adequate shear reinforcement, diagonal cracks can develop rapidly and eventually lead to brittle failure. When adequate shear reinforcement is applied, the development of the diagonal crack is prevented by redistribution of the shear forces.

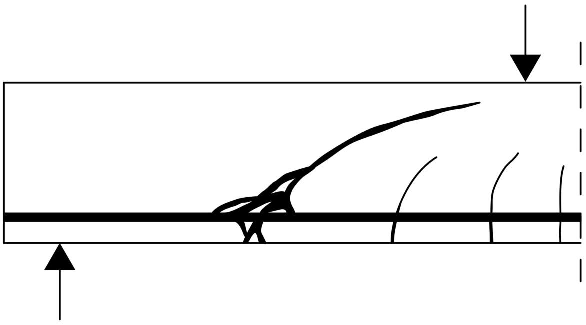


Figure 2.2: Shear tension failure

Shear compression failure

The final shear failure mechanism is shear compression failure. This failure is shown in Figure 2.3, and here it is shown that the top of the web crushes. This failure mode is an extension of the shear flexure failure and can occur when an arch within the beam takes over the load-bearing mechanism within the beam. When this arch can achieve stability, the load can increase further until the concrete at the top of the beam crushes [17]. This failure mechanism often occurs in beams with a large depth but a short shear span. The location of this concrete crushing is in the surrounding concrete around the loading point.

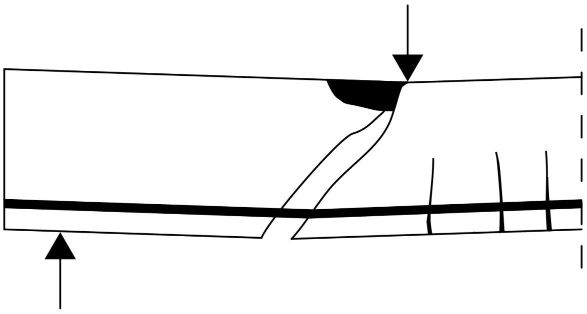


Figure 2.3: Shear compression failure

2.2 TRANSFER OF SHEAR FORCES

In a reinforced concrete beam with shear reinforcement (stirrups), the transfer of shear forces is done through several mechanisms within the beam. These mechanisms are shown in the free body diagram in Figure 2.4. There are five mechanisms that transfer the applied shear force; these are the shear forces in the concrete compression zone V_{cc}, the residual tensile strength σ_{res}, the aggregate interlock τ_{ai}, the dowel action V_{da}, and, when applied, the shear forces from the stirrups V_s. Each of the contributions to the transfer of shear is further elaborated in the following sections.

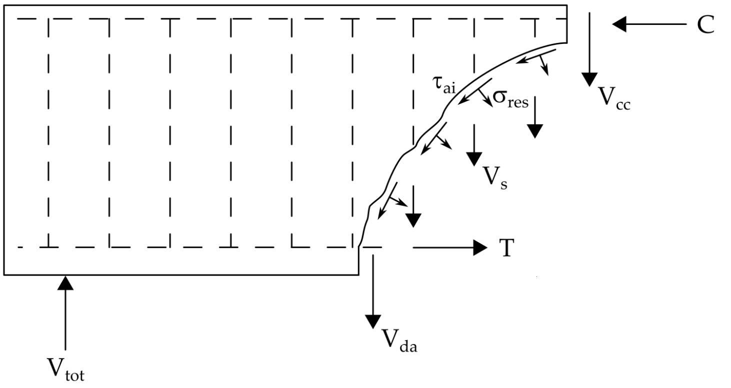


Figure 2.4: Free body diagram with shear transfer mechanisms

2.2.1 Concrete compression zone

In uncracked reinforced concrete, the shear stress distribution will follow the elastic theory. Once the boundary conditions for the uncracked concrete are identified, it is possible to calculate the shear stress transmitted within the compression zone of the uncracked concrete. According to Y. Yang [18], the description of the boundary conditions is almost impossible and for this reason approximations need to be made. These assumptions will be made differently depending on whether the height of the compression zone varies along the beam axis or not. In a beam with a varying depth of the compression zone, the shear stress is transmitted mainly by the inclination of the principal stress. Furthermore, when the height of the compression zone is assumed to be constant, simplifications can be made to account for the boundary conditions between the flexural cracks.

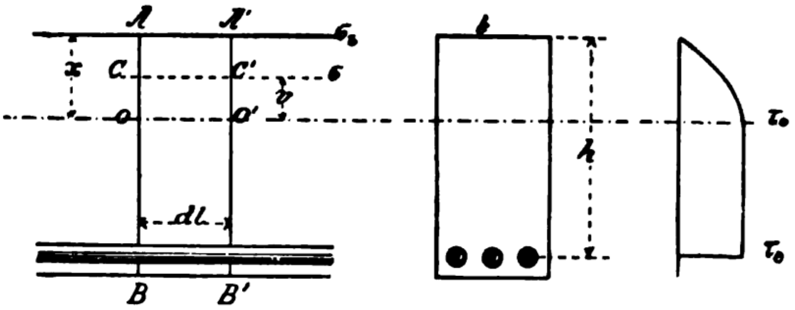


Figure 2.5: Shear stress distribution in cross-section according to Mörsch [5]

In 1909, Mörsch [5] derived a formula to predict the distribution of shear stress in reinforced concrete beams with flexural cracks. This formula suggests that the maximum shear stress occurs at the neutral axis and remains constant below this axis and a parabolic distribution above this axis. This shear stress distribution is shown in Figure 2.5. In the literature, other more complex models can be found, but according to Trindade et al. [19], the one of Mörsch [5] is adopted in beam analyzes due to its simple application and satisfactory predictions.

2.2.2 Residual tensile strength

When concrete is cracked, there is still residual tensile strength of concrete, which translates into the ability to transfer tensile stresses across cracks. This contribution is more significant if the crack width is smaller and is limited to a crack width of 0.1 mm, according to Y. Yang [18]. At the top of a cross section, where the crack width is smaller, this contribution will be higher than lower in the cross section. This behavior is expressed by tension softening models; a widely accepted model is the one developed by Hordijk [20].

After the limit of 0.1 mm of crack width, the aggregate interlock within the concrete dominates the residual tensile strength. According to Yang [18], the residual tensile strength contribution is 10 times less than the aggregate interlock contribution. This makes the residual tensile strength effect after the crack width limitation negligible.

2.2.3 Aggregate interlock

The next transfer mechanism is the aggregate interlock; in this mechanism, shear stresses are transferred due to the roughness of the crack surface. The two surfaces of a crack slide past each other, and when this happens, the aggregate particles can have an interlocking effect. As the crack width increases, the aggregate interlock decreases due to the fact that there is less contact area between the two surfaces of the crack. With larger particles, the surface of the crack is larger, making it harder for the two surfaces to slide past each other, resulting in greater aggregate interlock. This aggregate interlock mechanism is shown in Figure 2.6.

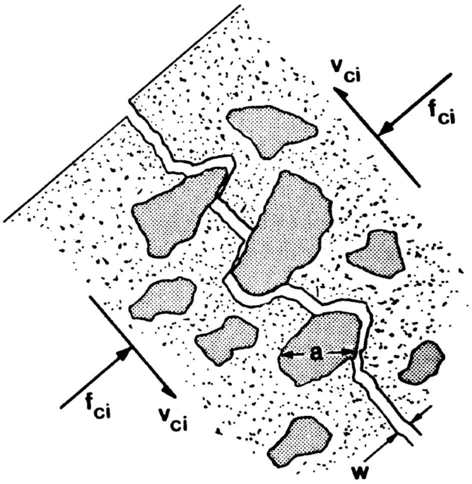


Figure 2.6: Transmitting shear stresses across the crack by aggregate interlock [3]

2.2.4 Dowel action

One of the crucial shear transfer mechanisms is the dowel action. This phenomenon refers to the capacity of the longitudinal reinforcement to transfer shear stresses across the crack, and the ability to prevent the crack from opening and sliding. When the longitudinal reinforcement experiences lateral movement, the dowel action is activated. This lateral displacement of the reinforcement is caused by the deflection of the beam and because of this displacement the surrounding concrete is pushed away from the reinforcement. According to Paulay et al. [21], there are three mechanisms that cause dowel action: bending, shearing, and kinking. Dowel failure is mainly determined by concrete splitting, where the effective tension area of the concrete is crucial. The splitting of the concrete is more of a concern in beams with a small amount of concrete cover.

2.2.5 Shear reinforcement

The final shear transfer mechanism is only applicable in beams where shear reinforcement is applied. When stirrups are applied, the opening of a diagonal crack in the beam web leads to their activation and restricts the growth of this diagonal crack, which helps the aggregate interlock mechanism. However, with increasing load, the crack propagates, triggering axial strains in the intersecting stirrups. This, in turn, results in higher axial stresses, and it may ultimately lead to yielding of the stirrups. The yielding of the stirrups can only be reached when there is sufficient anchorage in the concrete, to prevent the pull-out failure of the stirrup.

2.3 DESIGN SHEAR CAPACITY

Worldwide different codes and guidelines are used to predict the design shear capacity of concrete members with or without shear reinforcement. In this section, the design shear procedures for reinforced concrete members are studied. The first two will be the Eurocode 2 [4] and the RBK [2], the ones used in the Netherlands. In addition to these two, the fib Model Code 2010 [6] will also be studied because this code is frequently used or cited in various guidelines. At the end of this section, some other codes will also be studied to gain more perspective on how the design shear capacity is determined outside the Netherlands.

2.3.1 Eurocode 2

In the Netherlands, Eurocode 2 [4] is used for the design of new concrete structures. The code distinguishes two cases; members with and without shear reinforcement. Using one of these cases, a robust design is obtained in a simple way.

Members without shear reinforcement

In members without shear reinforcement (stirrups), the shear force is transferred only by the concrete. To determine the shear capacity of these types of members, Equation 2.1 is used. This equation is based on experimental data and is a lower bound value.

$$V_{Rd,c} = [C_{Rd,c} k (100 \rho_l f_{ck})^{1/3} + k_1 \sigma_{cp}] b_w d \tag{2.1}$$

with a minimum of:

$$V_{Rd,c} = [v_{min} + k_1 \sigma_{cp}] b_w d \tag{2.2}$$

where:

$C_{Rd,c}$	is the factor that takes into account the different safety levels for the loading combinations;
k	is the factor that takes into account the size of a concrete member; $= 1 + \sqrt{200/d} \leq 2.0$
ρ_l	is the longitudinal reinforcement ratio;
f_{ck}	is the characteristic concrete compressive strength;
k_1	is the factor that takes into account the influence of an axial force;
σ_{cp}	is the compression stress due to a normal force or prestress;
b_w	is the smallest width of the cross section;
d	is the effective height of the cross section.
v_{min}	is minimum shear stress resistance of the concrete. $= 0.035 k^{2/3} f_{ck}^{1/2}$

Equation 2.1 was developed by adjusting the shear capacity equation given by the ENV 1992-1-1 [22]. According to the Eurocode 2 Commentary [23], this equation had two shortcomings; the role of the concrete strength was not correctly implemented, and the equation was not suitable for members that failed due to shear tension, such as a prestressed hollow core slab. A basic equation was adopted, which better predicted the shear capacity, and based on several experiments a lower bound coefficient was determined for this equation. As a result of that analysis, a lower bound coefficient of 0.12 was found, there was only one problem; this coefficient did not take into account the different safety levels for the loading combination. Therefore, the coefficient $C_{Rd,c}$ was introduced, which is equal to $0.18/\gamma_c$. When using 1.5 in this equation, the result is 0.12. The second term in Equation 2.1, takes into account the contribution of the prestressing force. In the equation given by the ENV 1992-1-1 [22] this was included in the same way, and according to the Eurocode 2 Commentary [23] 0.15 is a safe lower bound value for k_1, which is also given in the national annex [16].

For members that are vulnerable to shear tension failure, a second equation is introduced. In regions that are uncracked in bending, the shear capacity should be calculated with Equation 2.3. This equation limits the shear capacity to the tension strength of the concrete.

$$V_{Rd,c} = \frac{Ib_w}{S}\sqrt{f_{ctd}^2 + \alpha_l \sigma_{cp} f_{ctd}} \tag{2.3}$$

where:

I	is the second moment of area;
S	is the first moment of area above and about the centroidal axis;
f_{ctd}	is the design value of the concrete tensile strength;
α_l	is the factor that takes into account the bond characteristics of the prestressing.

Members with shear reinforcement

For members with stirrups, the shear capacity is only dependent on the capacity of the stirrups and is limited by the crushing of the concrete. The procedure to determine this capacity is based on the plasticity theory, and on the shear model which is known as the 'variable strut inclination method' or the 'variable angle truss model'. This model is based on a simple equilibrium method with the internal forces, which are shown in Figure 2.7. In this figure, a free body diagram is shown, which is cut along a compressive strut. This method allows for a variation in the inclination of the compressive strut θ, within the range of $21.8° \leq \theta \leq 45°$. With this inclination, the shear capacity of the stirrups $V_{Rd,s}$ can be determined, this is done using the equation below.

$$V_{Rd,s} = \frac{A_{sw}}{s} z f_{ywd} \cot\theta \tag{2.4}$$

where:

A_{sw}	is the cross-sectional area of the shear reinforcement;
s	is the spacing between the stirrups;
z	is the internal lever arm of internal forces;
f_{ywd}	is the design yield strength of the shear reinforcement.

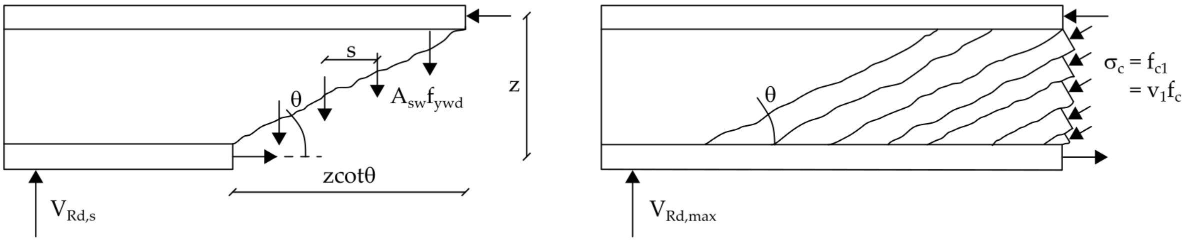


Figure 2.7: Shear transfer mechanisms of the variable strut inclination method

To elaborate, the internal lever arm z is the distance between the center of the tensile force resultant and the compressive force resultant, which is shown in Figure 2.7. In the Eurocode 2 [4] this lever arm can be taken as equal to $0.9d$, with d being the effective depth. The code mentions that this can be assumed for both reinforced and prestressed concrete members.

The shear force within the stirrups is limited by the crushing of the compressive strut. These struts are shown in the right part of Figure 2.7. Based on the equilibrium of the free-body diagram in that figure, Equation 2.5 is derived to determine the ultimate shear capacity associated with the crushing of concrete.

$$V_{Rd,max} = \frac{\alpha_{cw} b_w v_1 z f_{cd}}{\cot\theta + \tan\theta} \tag{2.5}$$

where:

α_{cw}	is the factor that takes into account the state of stress in the compression chord;
v_1	is the effectiveness factor;
f_{cd}	is the design value of the concrete compressive strength.

The factor α_{cw} depends on the ratio between compression stress due to a normal force or prestress and the concrete compressive strength. In Table 2.1 the values and equations are given for the different ratios.

Value α_{cw}	Condition
1.0	for non-prestressed structures
$1 + \sigma_{cp}/f_{cd}$	for $0 < \sigma_{cp} \leq 0.25 f_{cd}$
1.25	for $0.25 f_{cd} < \sigma_{cp} \leq 0.5 f_{cd}$
$2.5(1 - \sigma_{cp}/f_{cd})$	for $0.5 f_{cd} < \sigma_{cp} < 1.0 f_{cd}$

Table 2.1: Value for factor α_{cw}

The effectiveness factor v_1 is introduced due to the lower concrete compressive strength in the web compared to the concrete cylinder strength. This is because micro-cracks occur when reinforcement stresses are transferred to the concrete in between macro-cracks, and these micro-cracks are the main cause of the reduction in strength. This reduction is affected by the concrete strength, rebar diameter, reinforcement ratio, smooth or ribbed rebars, and the stresses within the reinforcement. On the basis of experimental results, the Eurocode 2 [4] gives the following two values for this factor.

$$v_1 = \begin{cases} 0.6 & \text{for } f_{ck} \leq 60 \text{ MPa} \\ 0.9 - f_{ck}/200 > 0.5 & \text{for } f_{ck} \geq 60 \text{ MPa} \end{cases} \tag{2.6}$$

2.3.2 RBK (Richtlijnen Bestaande Kunstwerken)

The case in this research project is about an existing prestressed reinforced concrete bridge. For reassessing existing civil engineering works, Rijkswaterstaat has made the guideline RBK [2]. Within this document, shear verification is divided into two failure modes; the shear flexure and tension failure.

Shear flexure failure

Before the equation is given to calculate the shear flexure capacity, some additional information is given on the shear verification. First, a plane is given in which shear verification needs to be done; this is called the verification plane. There are two cases described; the compression zone at the top of the beam or at the bottom of the beam. In Figure 2.8 these cases are given, and it can be seen that the verification planes are placed $z_1 \cot(\theta)$ from the support. This is the distance over which the stirrups can be included in the shear capacity. In this multiplication, z_1 is the lever arm between the resultant of the concrete compression force and the first reinforcement layer in the tension zone. It can be assumed that this lever arm is equal to $d_1 - 0.1 d_e$. The angle *theta* is equal to 45° for beams without any prestressing $\sigma_{cp} = 0\, N/mm^2$, and for beams with prestressing of $\sigma_{cp} \geq 5\, N/mm^2$ the angle *theta* is equal to 30°. For the prestressing values that are between the two given values, linear interpolation must be applied to determine *theta*.

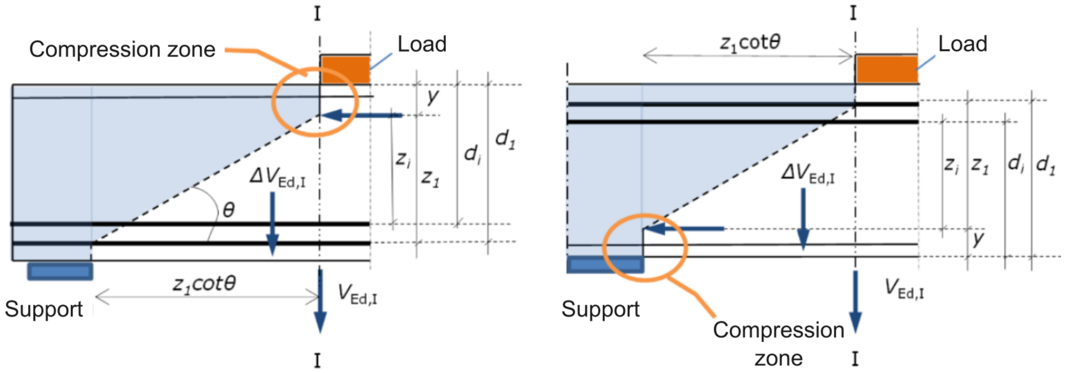


Figure 2.8: Verification planes of the shear flexure failure [2]

The design shear capacity is the summation of three components; the capacity of the concrete itself ($V_{Rd,cb}$), the shear reinforcement ($V_{Rd,s}$) and, when applied, the contribution of vertical prestress (V_p). This summation is limited by the failure of the compressive struts, which results in the maximum design shear capacity ($V_{Rd,max}$). The equation below gives the sum of the design shear capacity.

$$V_{Rd} = V_{Rd,cb} + V_{Rd,s} + V_p \leq V_{Rd,max} \tag{2.7}$$

Because the method used in the Eurocode 2 [4] leads to a robust design, it may be too conservative according to the RBK background document [24] when examining existing structures. Equation 2.7 combines both the shear capacity of the concrete and the stirrups. As mentioned before, the Eurocode 2 [4] gives two situations; members with and without shear reinforcement. The shear capacity of the members without reinforcement depends only on the capacity of the concrete, and the members with reinforcement are only dependent on the capacity of the applied stirrups. $V_{rd,s}$ and $V_{Rd,max}$ are calculated using the equations given in Eurocode 2 [4]. The design shear capacity of the concrete $V_{Rd,cb}$, is determined using an empirical equation, given in Equation 2.8.

$$V_{Rd,cb} = [0.12 k_{cap} k (100 \rho_l f_{ck})^{1/3} + 0.15 \sigma_{cp}] b_{w,gem} d_e \tag{2.8}$$

With a minimum of:

$$V_{Rd,cb} = [v_{min} + 0.15 \sigma_{cp}] b_{w,gem} d_e \tag{2.9}$$

Where:

k_{cap}	is the factor that takes into account the type of structure;
k	is the factor that takes into account the size of a concrete member;
ρ_l	is the longitudinal reinforcement ratio;
f_{ck}	is the characteristic concrete compressive strength;
σ_{cp}	is the compression stress due to a normal force or prestress;
$b_{w,gem}$	is the mean width;
d_e	is the effective height in the projection of the verification plane.

$$v_{min} = 0.035 k_b k_h k_{cap}^{2/3} f_{ck}^{1/2} \tag{2.10}$$

Where:

k_b	is the correction factor for the reinforcement area and its type;
k_h	is the size effect factor.

Differences can be observed in Equations 2.8 and 2.10 when compared to the Eurocode 2 [4]. In the first equation, k_{cap} is added, and now the mean width of the web is used. In Equation 2.10 the same factor k_{cap} is added and two other factors are added k_b and k_h. The factor k_{cap} is added because the equation used in the Eurocode [4] (Equation 2.1) is based on beam tests and not other types of structures. Plate-like concrete structures would have a beneficial effect on shear capacity, and this is now taken into account by this factor. According to the same background document, the mean width $b_{w,gem}$ can also be used instead of web width b_w, but there is a limit of $1.25b_{min}$ advised. The usage of this width is also validated in this document. The factor k_b is used to take into account that the shear capacity of structures with ribbed rebars is 13% higher than similar structures with smooth rebars. Finally, the factor k_h is used to implement the size effect of the structure in the minimum concrete shear capacity.

Shear tension failure

The second shear failure is the shear tension failure and is located in the uncracked region of a concrete member, and this failure is due to the exceeding of tension strength of the concrete due to the principal tension stress. This type of failure is more common in prestressed members, requiring the division of such members into distinct regions: cracked and uncracked. The verification of this failure is performed by comparing the maximum principal tension stress $\sigma_{1,max}$ with the design value of the concrete tension strength f_{ctd}, similar to the approach given in the Eurocode 2 [1]

2.3.3 fib Model Code 2010

In this section, the method used in the fib Model Code 2010 [6] is described. This code is meant to serve as the basis for future codes, and it takes into account new developments in concrete structures. It should be used as a source of information, compared to the RBK or Eurocode, which mainly gives application rules. The procedure to determine the design shear capacity is divided into several parts in this code, and this is comparable to how the Eurocode also divides the shear capacity. The first two parts are members with and without shear reinforcement, and the last part is about prestressed hollow core slabs or similar prestressed members. The first two parts focus on the shear flexure failure of a concrete member, and the latter on the shear tension failure.

Levels of approximation

The procedure in this code to determine the shear capacity, uses levels of approximation, which can be used in different design phases. These levels of approximation differ in the complexity of the applied methods and in the accuracy of the results. The first level of approximation may be used in the conceptual design phase, the second to perform a brief assessment of an existing member, and the third to do a more elaborate analysis of a member. There is also a fourth level, and this level uses numerical procedures to get the best estimates of the results. In Figure 2.9 a diagram is shown showing the relationship of the time devoted to the analysis and the accuracy for each level of approximation. This figure shows that the higher the level of approximation, the more accurate the results, but the time devoted to the analysis is also higher.

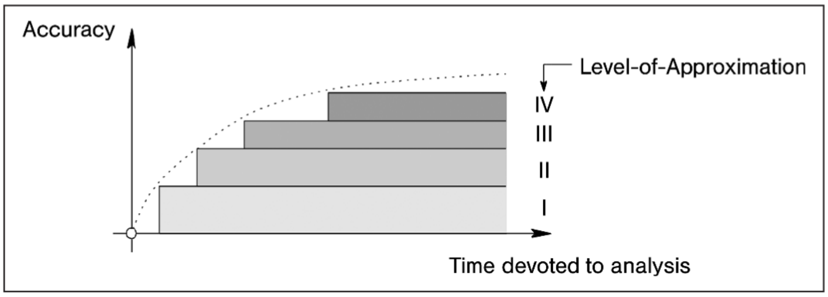


Figure 2.9: Levels of approximation [6]

Members without shear reinforcement

The design shear capacity of a concrete member without shear reinforcement is given by the equation below.

$$V_{Rd,c} = k_v \frac{\sqrt{f_{ck}}}{\gamma_c} z b_w \tag{2.11}$$

In this equation, $\sqrt{f_{ck}}$ is limited by 8 MPa, this limitation is for higher-strength concrete. In these types of concrete, there is greater variability in shear capacity due to the fact that cracks are smoother in these types of concrete because they pass through the aggregate rather than around it. The one unknown parameter in Equation 2.11 is the factor k_v, and this is based on the Simplified Modified Compression Field Theory (SMCFT) [25]. For the first and second level of approximation, an equation is defined for the factor k_v. The equation of the first level of approximation is based on the second level, but some preliminary assumptions are made. The equation of the second level of approximation is given below.

$$k_v = \frac{0.4}{1 + 1500\varepsilon_x} \cdot \frac{1300}{1000 + k_{dg} z} \tag{2.12}$$

In this equation, longitudinal strain ε_x is included, but also the factor k_{dg}. This factor takes into account the maximum aggregate size in the concrete, which influences the shear capacity of the members without reinforcement. For higher-strength and lightweight concrete, this factor is equal to 2, taking into account the loss of aggregate interlock due to cracking of the aggregate.

Members with shear reinforcement

When shear reinforcement is applied, some requirements must be met before it can be taken into account in the total design shear resistance, these are similar to those of the RBK. In addition to these similar requirements, which are about the minimum amount of shear reinforcement and its detailing, the fib code also gives the same equation for the design shear capacity of the shear reinforcement, based on vertical equilibrium. The difference lies in the design shear capacity of the concrete and its maximum shear capacity.

For the design shear capacity of members with shear reinforcement, three levels of approximation are described. In the first two levels of approximation, the capacity is only dependent on that from the shear reinforcement, only in the third level of approximation the concrete part can be included. This level again gives an equation to determine the factor k_v, the equation is given by Equation 2.13. For the third level of approximation, it now takes into account the maximum concrete shear capacity.

$$k_v = \frac{0.4}{1 + 1500\varepsilon_x} \left(1 - \frac{V_{Ed}}{V_{Rd,max}(\theta_{min})}\right) \geq 0 \tag{2.13}$$

To determine the maximum shear capacity of the concrete, the following equation needs to be used.

$$V_{Rd,max} = k_c \frac{f_{ck}}{\gamma_c} b_w z \sin\theta \cos\theta \tag{2.14}$$

In the equation for the maximum shear capacity, the factor k_c is included, which is based on the general stress field approach. The calculation of this factor is based on a part that takes into account the strain effect and a part that takes into account the brittleness of the concrete. The brittleness factor uses an equation which is the same for every level of approximation, for the strain effect, this is not the case. For the first level of approximation, the code gives a constant value, which is also recommended in the general stress field approach for simplification. The second level uses the equation given in the research.

2.3.4 Other codes

To obtain more perspective on how the design shear capacity of prestressed RC beams is determined, other codes will also be examined. The codes used in Canada and the United States will be presented in this section.

CSA - Design of concrete structures

The first code is the code of the Canadian Standards Association for the design of concrete structures [26]. Similarly to other codes, shear verification starts with a general part and some design requirements. In this part, types of shear reinforcement are also mentioned, including stirrups that are anchored at both ends by means of bends and hooks. The shear flexure capacity is determined in a similar way as in the fib Model Code 2010 [6]. The design shear capacity (V_r), or the factored shear resistance (this pronunciation is specified in the CSA code), is a summation of the concrete shear capacity (V_c), the shear capacity of the shear reinforcement (V_s) and the component due to the prestress (V_p). This summation is limited by the maximum concrete shear capacity ($V_{r,max}$). In the equation below, the summation with its limit is given.

$$V_r = V_c + V_s + V_p \leq V_{r,max} \tag{2.15}$$

where:

$$V_c = \phi_c \lambda \beta \sqrt{f_c'} b_w d_v \tag{2.16}$$

$$V_s = \frac{\phi_s A_v f_y d_v \cot\theta}{s} \tag{2.17}$$

$$V_{r,max} = 0.25 \phi_c \lambda \beta f_c' b_w d_v + V_p \tag{2.18}$$

In the above equations the ϕ-factors are similar to the partial factors used in the Eurocode. Equations 2.16 and 2.18 use factors λ and β, these are calculated using the simplified and general method given in this code. The simplified method is comparable to the first level of approximation of the fib code and the general method to the second level. The equations used in these methods are not completely the same because some values in the equations are different compared to the fib. This is because the CSA is published earlier than the newest version of the fib model code. The equation for the shear capacity of the shear reinforcement is similar to the other codes.

ACI - Building code requirements for structural concrete

The final code is the code for concrete structures by the American Concrete Institute [7]. The shear verification within this code is divided into two segments; one-way and two-way shear strength. For beams, the one-way shear strength is used, this strength is defined with the same summation as seen before, the shear strength of concrete plus that of the shear reinforcement. The limit of this summation is again based on the failure of the compressive struts due to the crushing of the concrete. In the equation below, the summation with its limit is given.

$$V_n = V_c + V_s \leq V_c + 0.66 \sqrt{f_c'} b_w d \tag{2.19}$$

This equation is not exactly given in the code, but it is derived from two other equations. After the equations are given, some general requirements are prescribed, like; geometric assumptions, limiting material strengths, etc. For the first term in Equation 2.19, the shear strength provided by the concrete, five cases are defined;

1. Nonprestressed members without axial force;
2. Nonprestressed members with axial compression;
3. Nonprestressed members with significant axial tension;
4. Prestressed members;
5. Pretensioned members in regions of reduced prestress force.

In each case, different equations are given, which are not comparable to the previous mentioned codes. The equation used in the first case is the basis for the two other cases with non-prestressed members, but in these three cases the option is also given to do a detailed calculation. For the prestressed members, the equations are given in the fourth case, and the fifth case refers to those equations. In the fourth case two methods can be used, the one where shear tension failure is taken into account and the other where it is not. In this code, the shear flexure cracks are called web-shear cracks, in Figure 2.10 these cracks are shown and also the flexural cracks.

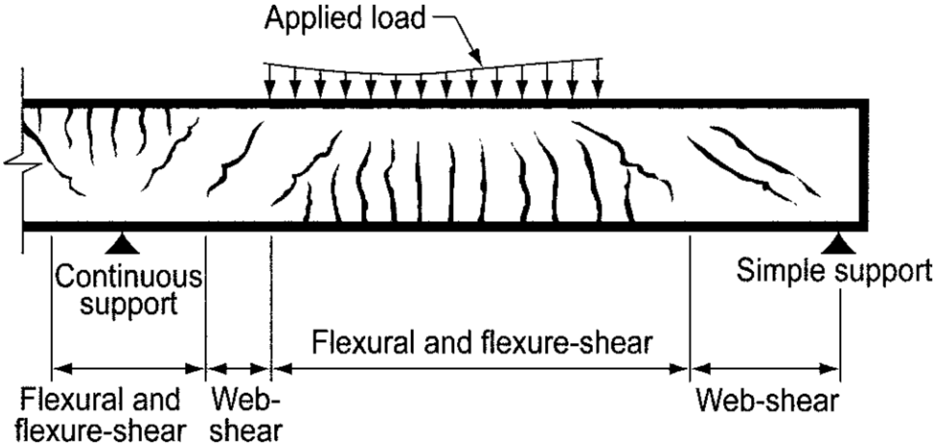


Figure 2.10: Different types of cracks in prestressed RC beam [7]

After the cases are given to determine the concrete shear strength, the shear strength of the shear reinforcement is determined. Two cases are defined on how the shear strength can be provided; by transverse (shear) reinforcement or by longitudinal bent-up bars. The shear strength provided by the transverse reinforcement is calculated using a similar equation to the equations used in the previously mentioned codes, only now the angle of the compressive strut is assumed to be 45 degrees.

2.4 ANCHORAGE BEHAVIOR OF SHEAR REINFORCEMENT

In this section of the literature review, the anchorage of the reinforcement will be further studied. In all the codes that have been looked at, a proper anchorage is needed to take into account the design shear capacity of the shear reinforcement. When stirrups are applied, both ends need to be properly anchored to be fully effective. First, the anchorage in the compression zone will be studied and then the anchorage in the tension zone will be studied. The first two sections study the local behavior of the anchorages, and in the last section, the different anchorages of the stirrup are studied at the member level.

2.4.1 Anchorage in the compression zone

The RBK [2] refers to the detailing requirement of the national annex of NEN-EN 1992-2 [16]. This requirement states that when stirrups are applied as shear reinforcement, these stirrups must enclose the longitudinal tension reinforcement and the compression zone, unless anchorage in the compression zone is possible. The RBK gives an approach to include the influence of stirrups that are anchored in the compression zone. This approach is based on the anchorage of longitudinal reinforcement, which is described in NEN-EN 1992-1-1 [4]. In section 8.4 of this Eurocode, the design anchorage length of the longitudinal reinforcement is determined. The first step to this is to determine the ultimate bond stress. For ribbed bars, the design value of the ultimate bond stress is equal to:

$$f_{bd} = 2.25\eta_1\eta_2 f_{ctd} \tag{2.20}$$

where:

η_1	is the coefficient related to the quality of the bond condition and the position of the bar during concreting;
η_2	is the coefficient related to the bar diameter;
f_{ctd}	is the design value of concrete tensile strength.

The next step is to determine the basic required anchorage length, which is a simple calculation. This length is based on the equilibrium between the axial force in the reinforcement bar and the force due to the bond stress in the area around the bar. From this equilibrium, the following equation is derived to determine the basic anchorage length:

$$l_{b,rqd} = (\phi/4)(\sigma_{sd}/f_{bd}) \tag{2.21}$$

In this equation, σ_{sd} is the design stress of the reinforcement bar due to the axial force in the bar. With the basic required anchorage length, the design anchorage length can be determined. This length is determined by multiplying the basic length with five coefficients, which all take into account different effects, below the equation is given to determine the design anchorage length.

$$l_{bd} = \alpha_1\alpha_2\alpha_3\alpha_4\alpha_5 l_{b,rqd} \geq l_{b,min} \tag{2.22}$$

where:

α_1	is the coefficient related to the shape of the bar;
α_2	is the coefficient related to the minimum concrete cover;
α_3	is the coefficient related to the confinement by transverse reinforcement;
α_4	is the coefficient related to the influence of one or more welded transverse bars;
α_5	is the coefficient related to the pressure transverse to the plane of splitting;
$l_{b,min}$	is the minimum anchorage length.

The design value of the anchorage length is needed in the approach used in the RBK to determine the shear capacity of the stirrups that are anchored in the compression zone. The first requirement for this approach is that the stirrups need to enclose the tension zone. When that is the case, the height of the compression zone needs to be determined in the governing case. The governing case is with the maximum bending moment that occurs belonging to the maximum occurring shear force. With the height of the compression zone, the available anchorage length can be determined. Both the height of the compression zone x and the available anchorage length $l_{bd,aanw}$ are shown in Figure 2.11.

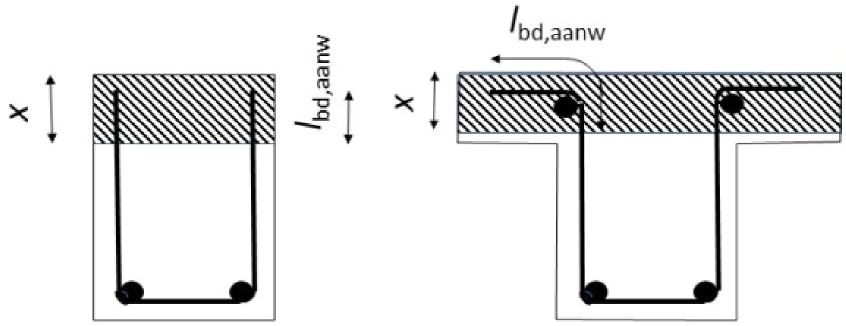


Figure 2.11: Anchorage of stirrups in the compression zone [2]

When the requirements are fulfilled, the verification can be done, this is done in a simple way. The procedure is exactly the same as the verification for properly detailed stirrups, the only thing that changes is that the yielding strength is replaced by the term in Equation 2.23. In this equation, the design value of the anchorage length is determined using Equation 2.22 from the Eurocode.

$$\sigma_{swd} = \frac{l_{bd,aanw}}{l_{bd}} f_{ywd} \leq f_{ywd} \tag{2.23}$$

The existing bridge in this research project, the applied stirrups in the bridge do not enclose the tension zone, or to be more precise, they do not enclose the longitudinal tension reinforcement, in both the sagging and hogging parts of the bridge. In Figure 2.11 it is clearly shown that the stirrups enclose the tension reinforcement, which is the requirement for the application of this approach.

2.4.2 Anchorage in the tension zone

For the anchorage in the tension zone, there is only one way to do this according to the codes, and that is to enclose the longitudinal tension reinforcement. None of the codes provide information on how the non conforming anchoring of stirrups in the tension zone influences the design shear capacity. If this is the case, the capacity of these stirrups cannot be used in the total shear capacity of a reinforced concrete beam. Therefore, in this section, the literature will be further studied to see if there is any relevant research on the influence of non conforming anchorage of stirrups in the tension zone.

Study on the hooked rebar anchorage

Recent research by Monney et al. [8] investigates the mechanical response and the performance of bends and hooks. This research focuses on the spalling and bond resistance of these anchorage ends. These resistances are based on the three failure modes; concrete failure due to spalling of the concrete cover perpendicular to or parallel to the bent (shown in the left and right sketches in Figure 2.12, and bond failure due to pull-out of the bar (shown in the middle sketch in Figure 2.12. An additional failure mode is the failure of the reinforcement, but this is not included in the research.

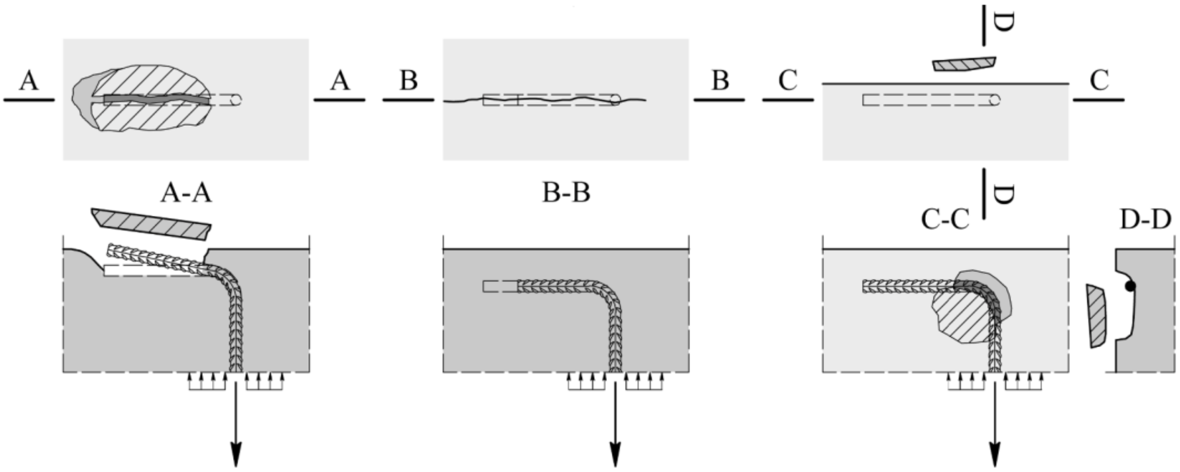


Figure 2.12: Type of anchorage failures in concrete [8]

To investigate the mechanical response and performance of the anchorage ends, 24 pull-out tests were carried out. The parameters that differentiated in these tests were; concrete cover, tail length, in-plane crack opening, and presence of longitudinal bar. Furthermore, one specimen out of the 24 had a 180 degree hook, the rest of the specimens had a 90 degree bent.

Based on the experimental results, several assumptions are made in order to establish a mechanical model which predicts the anchorage capacity of the anchorage ends. This new approach overcomes the limitations of current design codes. One of the assumptions made to establish this model is that the resistance is divided into three regions; the tail, curved and inner region, shown in Figure 2.13. In the same figure, the location of the longitudinal bar is given, when present, and the definition of the mandrel diameter. Per region, a bond strength is given.

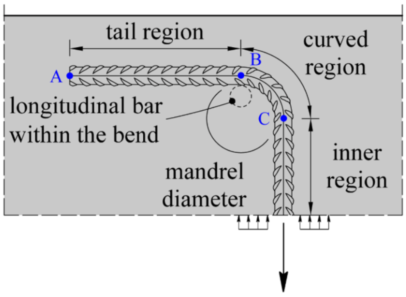


Figure 2.13: Three regions in the anchorage [8]

INNER REGION The bond in the inner region was disabled in the tests because this was already extensively investigated in other experiments. The bond strength of the inner region is equal to:

$$\tau_{inner} = \tau_b = \eta_{cp} \cdot k_b \cdot 0.6 \cdot f_c^{2/3} \tag{2.24}$$

The bond strength equation for this region is based on the Tension Chord Model [27], which states that a reasonable bond stress prior to yielding is equal to $2f_{ct} = 2 \cdot 0.3(f_c')^{2/3} = 0.6(f_c')^{2/3}$ (in this equation f_c' is the cylinder compressive strength). Additionally, the casting effects were included in the bond strength of the inner region, this is done through the coefficient n_{cp}, which is equal to 1.0 or 1.2 for poor and good conditions, respectively. Another included coefficient is k_b, which takes into account the influence of cracking parallel to the reinforcement. This cracking influence is investigated by Brantschen et al. [12], which is further described in the following section.

TAIL REGION The bond strength of the tail region is the sum of the bond and the uplift forces, which are shown in Figure 2.14, this summation is given below.

$$\tau_{tail} = \min(\tau_b; \tau_{tail,spall}) + \tau_{tail,friction} \tag{2.25}$$

The first term, the bond stress, is based on the bond strength (as defined in Equation 2.24). However, these stresses are limited to the spalling failure of the concrete. This limitation requires that the first term of the summation be a minimum of two terms. Calculating the bond spalling strength involves various parameters, including effective tensile strength, concrete cover, bar diameter, maximum aggregate size, etc. The uplift stress, the second term, is a result of the rotation of the curved region, which is restrained through the concrete cover acting on the tail region, this uplift stress is generated through the friction between the reinforcement bar and the concrete.

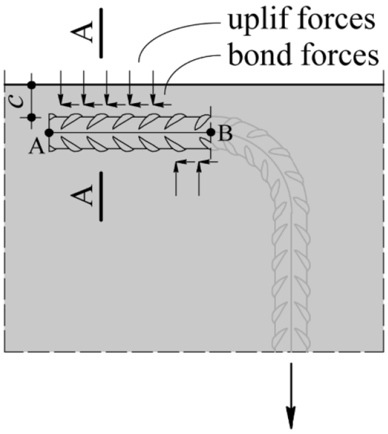


Figure 2.14: Bond and uplift forces in the tail region [8]

CURVED REGION The bond strength of the curved region is the sum of the bond and deviation forces, which are shown in Figure 2.15, this summation is given below.

$$\tau_{curved} = \tau_b + \tau_{curved,friction} \tag{2.26}$$

The first term of this equation is determined using Equation 2.24, these are the bond and frictional stresses that result from the engagement of the ribs. The second term represents the deviation forces acting on the curvature of the bar. These forces result in a compressive stress in the concrete that must be verified; this stress cannot be higher than the compressive strength within the curve (this strength can reach higher levels than the standard cube compressive strength of concrete). For this reason, the design codes prescribe mandrel diameters to apply at the anchorage ends of the reinforcement, to prevent compressive failure within this curvature.

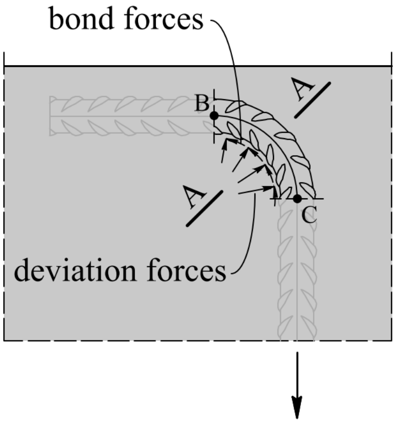


Figure 2.15: Bond and deviation forces in the curved region [8]

CAPACITY OF THE THREE REGIONS As a result of the research by Monney et al. [8] a equation is given to determine the design anchorage capacity of the tail and curved region, which is based on equilibrium conditions. The proposed equation is compared with the experimental evidence, and this comparison shows consistent agreement with the experiments. Based on several considerations, the research states that it is reasonable to assume that the yield strength of the stirrup can develop at the end of the bend, that is, at point C (shown in Figures 2.13 and 2.15). It also states that a refined analysis can be performed to better understand the phenomenon in which stresses in shear reinforcement are not constant along the length of the shear span.

Study on the straight rebar anchorage

In the case of this research project, both the top and bottom anchorage of the stirrup can be in the tension zone. The bottom is anchored with a hook, but the top has no hook or anything else, just a straight rebar anchorage. The inner region of the previously mentioned research is based on the research done by Brantschen et al. [12]. In this research, several pull-out tests have been carried out in which a crack opening was included. With the results, an analytical model is developed for the bond strength which takes into account the influence of the cracking.

The analytical model given in this research is based on a simplified approach. The contact area between the ribs of a reinforcement bar and the surrounding area is reduced due to cracking of the concrete, this phenomenon is shown in Figure 2.16. The result of this research is the reduction factor k_b for the bond strength.

$$k_b = \frac{1}{1 + \frac{0.75 \cdot \eta_l}{f_R} \frac{w}{\varnothing}} \qquad (2.27)$$

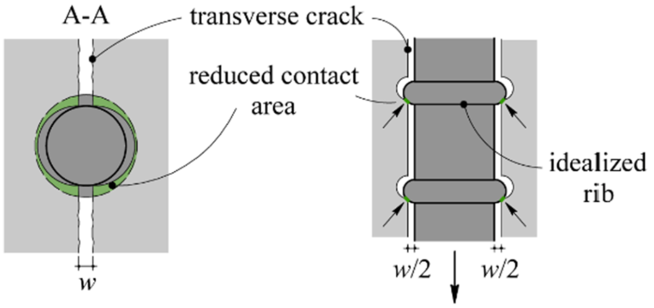


Figure 2.16: Influence of cracking parallel to the reinforcement [8]

2.4.3 Experimental research different stirrup shapes

In this section the behavior of reinforced concrete beams with different stirrup shapes is studied to see what the influence is of the different type of anchorages on the overall shear behavior.

The first relevant research is the research done by Rupf et al. [9], which is about post-tensioned girders with a low amount of shear reinforcement. The shear strength of these types of girders and the influence of flanges of a cross section are investigated. To investigate this topic, 12 post-tensioned reinforced concrete girders were tested, and the main differentiating parameters were; the shear reinforcement ratio, amount of post-tensioning, shape of the cross section, and the detailing of the applied shear reinforcement (in the form of stirrups). Ten of these girders have an I-shaped profile, as in Figure 2.17, and the other two have a rectangular cross section. In this way, the influence of the flanges is investigated. In the same figure, the different applied shapes of stirrups are also shown, the third one from the left is relevant for this research because these U-shaped stirrups also do not enclose the longitudinal reinforcement at the top.

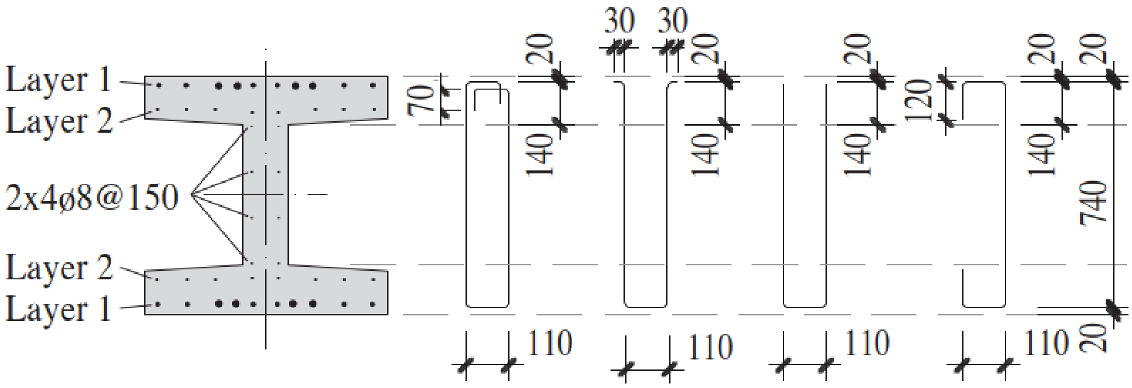


Figure 2.17: Cross section of I-shaped beams and shape of applied stirrups [9]

The results of the experiments on the 12 beams showed that the amount of reinforcement and the prestress ratio have a great influence on the failure mode and the ultimate shear strength. In addition to these two parameters, the cross sections with the flanges also showed a beneficial influence on the ultimate shear strength and allowed for larger deformations. The only parameter that did not show any influence on strength, failure mode, or general shear behavior was the shape of the stirrup, but further research is needed for a general conclusion.

Research by N. Schramm [10] also investigates the shear behavior of prestressed RC members with a low amount of shear reinforcement, with a focus on the influence of different stirrup shapes that are no longer allowed. In this investigation, two types of cross sections were included; the larger part were rectangular and the others were T-shaped beams, the shape of the stirrups applied in these beams also varied. Three of these shapes are no longer allowed, as shown in Figure 2.18, and the fourth was an enclosed shape.

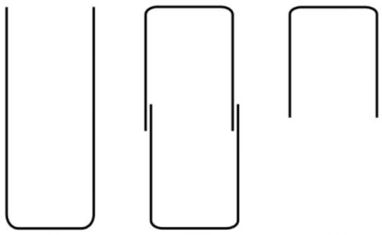


Figure 2.18: Stirrup shapes investigated by N. Schramm [10]

For U-shaped stirrups applied in T-sections, no reduction was found in the shear force carrying capacity compared to the test in which enclosed stirrups were applied. The same result was also found by Rupf et al. [12] for U-shaped stirrups in I-sections. According to N. Schramm, the upper flange in the T-section is the reason why there is no reduction in the shear capacity. This is due to the fact that the critical shear flexure crack, when the maximum shear force was reached, did not propagate into the flange, it propagated along the edge between the flange and the web of the T-section. However, this is only the expected behavior when the ends of the U-shaped stirrup are fully anchored in the flange, if not, the effectiveness of the anchorage of these ends needs to be taken into account. As a result of the research done by N. Schramm [10], an engineering model is given to take into account the shape of the applied stirrups. For the U-shaped stirrups three different cases are distinguished, and for each one an equation is given to determine the shear capacity of the stirrup with. In the segment below, the shear capacities are given for each case.

- The stirrup ends fully anchored in the chord;

$$V_{Rd,sy,ad} = \alpha_{sw} \cdot z \cdot f_{ywd} \cdot \cot \beta_r \tag{2.28}$$

- The stirrup ends partially anchored in the chord;

$$V_{Rd,sy,ad} = \alpha_{sw} \cdot (z - (l_{b,Bü,net} - l_f)) \cdot f_{ywd} \cdot \cot \beta_r \tag{2.29}$$

- The stirrup ends anchored outside the chord.

$$V_{Rd,sy,ad} = \alpha_{sw} \cdot (z - l_{b,Bü,net}) \cdot f_{ywd} \cdot \cot \beta_r \tag{2.30}$$

The influence of the anchorage of the stirrups is taken into account by reducing the lever arm z. When the ends are fully anchored, it is logical that there is no reduction in the lever arm. The second case is when the ends are partially anchored, and then the lever arm is reduced by the difference by a certain amount. In this case, only the effective area is taken into account where the stirrup has full anchorage. The third case is when the ends are anchored outside the chord, for example, in members without a pronounced chord, rectangular cross sections, or when the straight ends are fully anchored in the web. These three cases are shown in Figure 2.19, in which the parameters $l_{b,Bü,net}$ and l_f are also shown. In the three equations, the angle of shear crack is also included through the parameter βr, an equation is given in the research to determine this parameter.

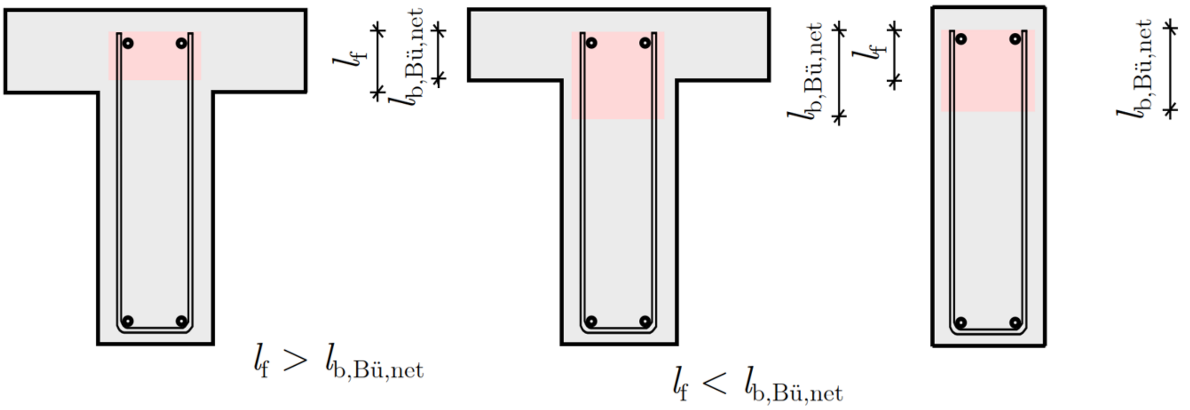


Figure 2.19: Stirrup shapes investigated by N. Schramm [10]

2.5 SUMMARY

In this last section, a summary is given of all the essential information gathered in this chapter. It starts by giving the shear failure modes which can occur in reinforced concrete beams, these are the shear flexure failure, shear tension failure, and shear compression failure. When these failures occur, several cracks can occur in the concrete, the primary ones being the web-shear and flexural cracks. Each failure mode is a combination of these primary cracks, and some other cracks may also develop.

The shear failure modes are resisted by several force transfer mechanisms within a reinforced concrete beam. In the second section of this chapter, these are given with the help of a free-body diagram. In this diagram, five mechanisms are shown that transfer shear forces and resist beam failures. There are five parts that contribute to the total shear resistance of a reinforced concrete beam; the shear forces from the concrete compression zone, residual tensile strength, aggregate interlock, dowel action, and, when applied, the shear forces from the stirrups.

Guidelines are used to determine the shear capacity of a reinforced concrete beam, and different parts around the world apply distinct sets of guidelines to do this. In the Netherlands, Eurocode 2 [4] is used to design new concrete structures, and the RBK [2] is used to examine existing civil engineering structures. Only the second guideline gives the opportunity to sum the shear capacity of both the concrete and the stirrups if code conforming detailing is applied. The equations used in these two guidelines are based on empirical and equilibrium equations. The third code that is being examined is the fib Model Code 2010 [6]. In this guideline, levels of approximation are used, which are used in different design stages. In each level of approximation, the same equation is used, but the parameters used are adjusted within the equation per level. The shear verification is based on a simplification of the Modified Compression Field Theory [3]. Finally, some other codes are also studied to get more perspective on how the shear capacity can be determined.

In several design guidelines, it is mentioned that proper detailing of the stirrups is required, to ensure adequate anchorage of the stirrups. Moreover, both the top and bottom of the stirrup must be properly anchored. Anchorage within the compression zone can be performed using the method given in the RBK [2], in which the stirrup capacity is reduced by determining the design anchorage length, and this is based on the approach to anchor longitudinal reinforcement. In the tension zone, there is not really another way to anchor stirrups, it needs to be done by enclosing the longitudinal tension reinforcement. Therefore, the literature is further reviewed to see if there are relevant studies on the anchorage behavior of non conforming stirrups. Two studies were identified that proposed analytical models for determining the pull-out resistance. Additionally, this review included an examination of experimental research, particularly beam tests including non conforming stirrup shapes. However, the available research on this topic is limited, with only two experimental studies identified in this literature review specifically addressing these types of stirrups in reinforced concrete beams.

CHAPTER 3

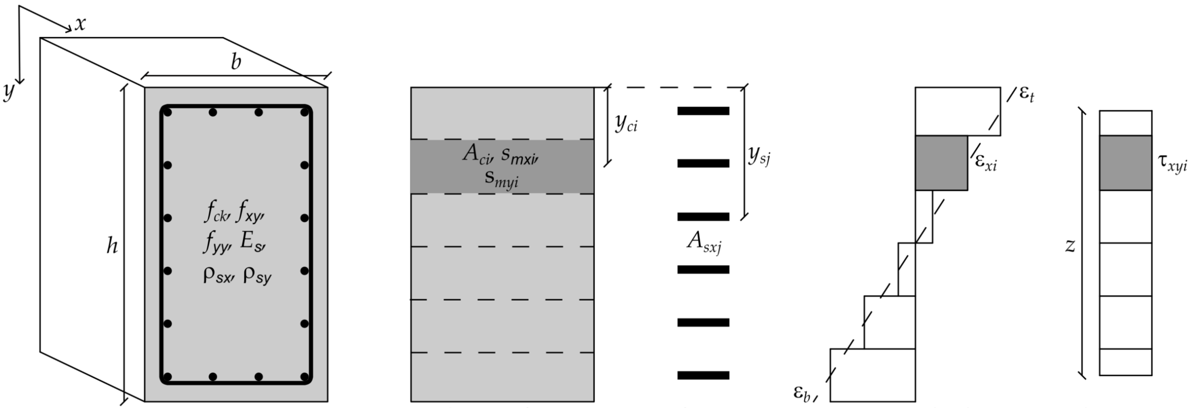
Development of a Layered Approach for Shear Capacity Prediction

The first step in accurately modeling the shear capacity of existing reinforced concrete beams with non conforming stirrup detailing, is to establish a model that can accurately predict the shear capacity without any influence of the stirrups. However, when developing an approach to make this prediction, it must be taken into account that, ultimately, a certain anchorage influence of the stirrup must be implemented in this approach. An approach in which a certain kind of stirrup influence can be implemented is a sectional analysis based on a layered approach. In this approach, the cross section is divided into several layers, and each layer is analyzed individually. In literature, it is found that the Modified Compression Field Theory [3] can be used to analyze individual layers, which are particularly subjected to shear stresses. This theory predicts the response of a single concrete layer by calculating multiple parameters within a reinforced concrete layer, including the axial stresses in the reinforcement. So, when applying this theory to analyze individual layers, the stresses in the reinforcement could be adjusted according to the influence of the non conforming stirrups. In this way, a region in the cross section could be adjusted to take into account the influence of the stirrup anchorage. For this reason, a model is developed based on a layered approach to predict the shear capacity, which uses the MCFT [3] to analyze individual layers.

In this chapter, the development of a model using a layered approach to predict the shear capacity is described further. The first section describes the model which uses the layered approach and how the final shear capacity is calculated using a flowchart of the model. This layered model uses a single layer model that predicts the response based on the MCFT [3]. In the second section of this chapter, a further description of this theory is given with the given equations and unknowns. Following the theoretical framework, the same section goes into the development of the single layer model and how it is implemented in the layered approach.

3.1 MODELING THE LAYERED APPROACH

The development of this layered approach is inspired by the iterative procedure developed by Vecchio and Collins [11]. In Figure 3.1 a cross section is given of a reinforced concrete beam with its coordinate system. Within this thesis, longitudinal and shear reinforcement is used, the longitudinal reinforcement coincides with the x-axis, and the shear reinforcement coincides with the y-axis. The first step in using this model is to divide the cross section into a series of concrete layers and longitudinal reinforcement layers. Each concrete layer has its own cross sectional area A_{ci}, the crack spacing in both directions s_{mx} and s_{my}, and the distance from the center of the layer to the top of the cross section y_{ci}. The longitudinal reinforcement layers also have their own parameters, these are the cross sectional area of the rebars within the layer A_{sxj} and the distance from each layer to the top of the cross section y_{sj}. In addition to these individual layer properties, there are also parameters that are common to the entire cross section, including the characteristic compressive cylinder strength f_{ck}, the reinforcement yield strength in both directions f_{xy} and f_{yy}, the elastic modulus of the reinforcement E_s and the reinforcement ratios in both directions ρ_{sx} and ρ_{sy}. In Figure 3.1 it is outlined how a cross section is divided into concrete and reinforcement layers, the first part of this figure also shows the properties that are common for the entire cross section, and the second and third parts show the layer properties.



Member cross-section | Concrete layers | Reinforcement layers | Longitudinal strain distribution | Shear stress distribution

Figure 3.1: Analyse procedure of a reinforced concrete cross section

Several adjustments are made compared to the procedure found in literature [11], which served as a reference for the development of this model. The first is that, instead of using the height and width of the layer, the cross sectional area of each concrete layer is used. This is done to reduce the input of the model, however there will be slightly more work upfront because the area of each individual layer needs to be determined. Next, due to the applied yield strengths in the cross section of the case, the assumption is made that there is only one yield strength for the longitudinal reinforcement and one for the shear reinforcement. The last assumption that is made is about the longitudinal reinforcement ratio. In the cross section of the case, the longitudinal reinforcement is almost evenly distributed over the cross section, this is why a smeared reinforcement ratio is applied. Therefore, the reinforcement ratio is the same in each concrete layer of the cross section.

With these adjustments / assumptions, the model uses the decoupled concrete and reinforcement layers, to predict the shear capacity, and analyzes each layer individually. After all the layers within the cross section are analyzed, the compatibility requirement and the sectional equilibrium need to be satisfied. The only sectional compatibility that needs to be satisfied is that plane sections remain plane, this principle is shown in the second to last figure *'Longitudinal strain distribution'* in Figure 3.1, and means that there is a linear longitudinal strain distribution. With this requirement, the longitudinal strain of each layer ε_{xi} in the cross section can be determined based on the longitudinal top ε_t and bottom strain ε_b of the cross section, this is done using the following equation:

$$\varepsilon_{xi} = \varepsilon_t - \frac{\varepsilon_b + \varepsilon_t}{h} y_{ci} \tag{3.1}$$

To analyze each layer individually, the model first requires two estimations, which are the longitudinal strain and the shear stress distribution within the cross section. The longitudinal strain distribution is determined by choosing a bottom strain and estimating a top strain. Furthermore, the shear distribution in this model is simplified by using a constant shear stress distribution through the effective shear depth z of the cross section, shown in the right figure *'Shear stress distribution'* in Figure 3.1. With both the longitudinal strain and the shear stress distribution known, the longitudinal strain ε_{xi} and the shear stress τ_{xyi} of each layer can be determined. These two parameters are used in the individual analysis of each layer, and, as a result of this analysis, the longitudinal stresses are obtained in both the concrete and the reinforcement layers. Now, the second requirement in the sectional analysis must be satisfied, which is the sectional equilibrium. This is checked by calculating the resulting forces from the longitudinal stresses, these forces need to balance the applied sectional forces. To be more specific, when a beam is divided into concrete layers m and reinforcement layers n, the internal longitudinal stresses must satisfy the following three conditions:

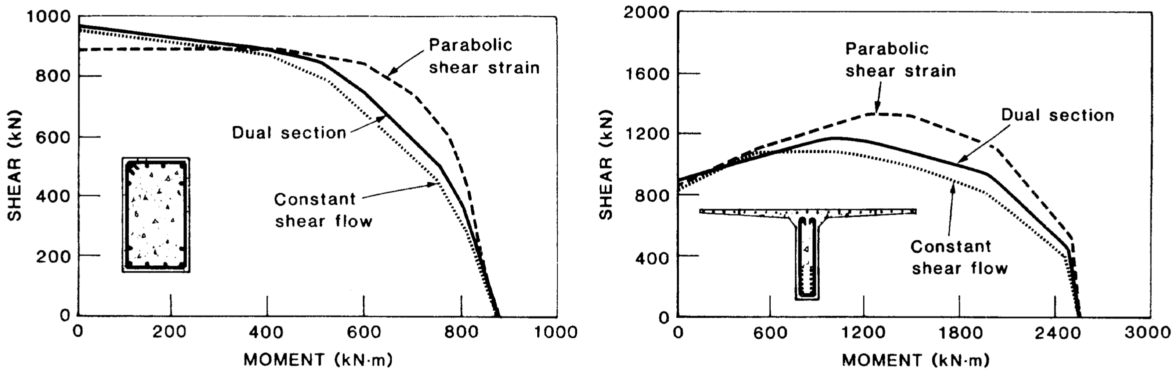
$$V = \sum_{i=1}^{m} \tau_{xyi} A_{ci} \tag{3.2}$$

$$N = \sum_{i=1}^{m} f_{cxi} A_{ci} + \sum_{j=1}^{n} f_{sxj} A_{sj} \tag{3.3}$$

$$M = \sum_{i=1}^{m} f_{cxi} A_{ci} (y_{ci} - \bar{y}) + \sum_{j=1}^{n} f_{sxj} A_{sj} (y_{sj} - \bar{y}) \tag{3.4}$$

in which V, M, and N are the applied shear force, normal force, and bending moment, and $\bar{y}$ is the distance from the top of the cross section to the neutral axis. To solve this equilibrium, it is assumed that the clamping stresses are zero ($f_y = 0$) and that there is no dowel action. When the conditions are not satisfied, the initial estimations are adjusted until these conditions are satisfied.

As mentioned above, a constant shear stress distribution is used in the layered approach of this research. This distribution has been selected to reduce the computational time of the calculation procedure. In the layered approach developed by Vecchio and Collins [11], two additional distributions are used, in addition to the constant shear stress distribution. The main shear stress distribution used in that research is a rigorous method in which two sections close to each other are analyzed. In this method, the shear stress is assumed in each layer, and both sections use the same shear stress distribution. The initial assumptions are adjusted until the sectional and the layer equilibrium is satisfied. Due to the iterative procedure to adjust this shear stress distribution, this rigorous method takes up a lot of computational time. For this reason, the research by Vecchio and Collins [11] also uses the constant shear stress distribution and the parabolic shear strain distribution, which are the approximate procedures. Because the rigorous method showed a fairly uniform shear stress distribution in typical members, a constant shear stress distribution was introduced to eliminate the iterations of the shear stress assumptions. The parabolic shear strain was introduced in the research because, based on experience, it was shown that the shear strain distribution had a somewhat parabolic distribution. However, this distribution is highly dependent on the loading conditions and section details.



(a) Rectangular beam

(b) T-shaped beam

Figure 3.2: Comparison between shear stress distributions [11]

In Figure 3.2 the two approximation methods are compared to the more rigorous method (dual section analysis), considering a rectangular and T-shaped beam. It can be seen that the results of these two approximation methods are close to those obtained with the more rigorous method. As the bending moment increases, the predictions tend to diverge somewhat with the constant shear distribution generally yielding conservative results and the parabolic shear strain distribution resulting in unconservative predictions. For this reason, this research applies the constant shear stress distribution. Additionally, this distribution is selected to reduce the computational time of the layered approach, according to Vecchio and Collins [11] this can be reduced as much as an order of magnitude, compared to the rigorous method.

3.1.1 Iterative procedure in a Python script

Because the initial estimations need to be adjusted until the sectional equilibrium is satisfied, an iterative model needs to be developed, this is done by programming a script with Python. The final version of the developed Python script, incorporating the anchorage influence, which will be discussed in Chapter 4, is provided in the Appendices A and B. In Figure 3.3 this iterative procedure is shown, which must be modeled to predict the shear capacity of a cross section. The first step is to specify the applied sectional forces, these are the normal force and bending moment. The normal force is a constant value, and the bending moment is defined as a list which starts at zero and ends at a certain applied bending moment in user defined increments. These sectional forces can be the output of a finite element modeling program in which all the loads are modeled including the prestressing loads, and a linear elastic analysis is performed. In this way, the model does not explicitly use prestressing properties to account for the prestressing, but it needs to be included in the applied sectional forces.

After the applied sectional forces are given, the cross section and material properties must be defined. These properties are divided into two parts; the properties common for the whole cross section and those for each individual layer. Before these properties are given, the number of layers needs to be defined. The number of longitudinal reinforcement layers is not used in the model because it is assumed that the lists of both the concrete and the reinforcement layers have the same length $m = n$. This assumption is made because there is a significant amount of longitudinal reinforcement applied in the cross section of the case. Furthermore, the common input properties are: the characteristic compressive strength f_{ck}, the aggregate size a_g, the longitudinal f_{yx} and the shear reinforcement yield strength f_{yy}, the longitudinal ρ_{sx} and the shear reinforcement ratio ρ_{sy}, and the elastic modulus of the reinforcement E_s. Following these properties, the properties of each individual concrete layer must be defined, which are; the cross sectional area A_{ci}, the crack spacing in both the x- and y-direction s_{mx} and s_{my}, and the distance from the center of the layer to the top of the cross section y_{ci}. To finalize the input parameters, the individual reinforcement layer properties must be given, there are two; the cross sectional area of the rebars within the layer A_{sj}, and the distance from the center of the layer to the top of the cross section y_{sj}.

With all the input given, the iterative procedure can start, and it starts by choosing the strain in the bottom fiber of the cross section ε_b. This bottom strain starts around the cracking strain of the concrete, because this research is about existing reinforced concrete bridges that are expected to be cracked in certain regions. The only two parameters now needed are; the top strain ε_t and the value for the constant shear stress τ_{xy} throughout the cross section to obtain the longitudinal strain and the shear stress distribution. These two parameters are the initial estimations within the iterative model. For each increment in the applied bending moment, a top strain and shear stress must be estimated. The value of the top strain is estimated to be close to zero, and the estimation of shear stress depends on the applied sectional forces. With the known strain distribution, the strain in each layer ε_{xi} is calculated using Equation 3.1, and with this strain, the stress in the longitudinal reinforcement σ_{sxi} is calculated. After all these parameters are obtained, the 'SUBROUTINE' (left part in Figure 3.3) can start to calculate the response of each individual layer. This routine is based on the single layer response model, and the development of this model is further described in the next section. The results of the "SUBROUTINE" are used to check the equilibrium conditions, if these are not satisfied, the initial estimations are adjusted until they are satisfied. When equilibrium is found, the bottom strain increases, and the procedure starts over again. This whole procedure is performed for each defined increment in the bending moment.

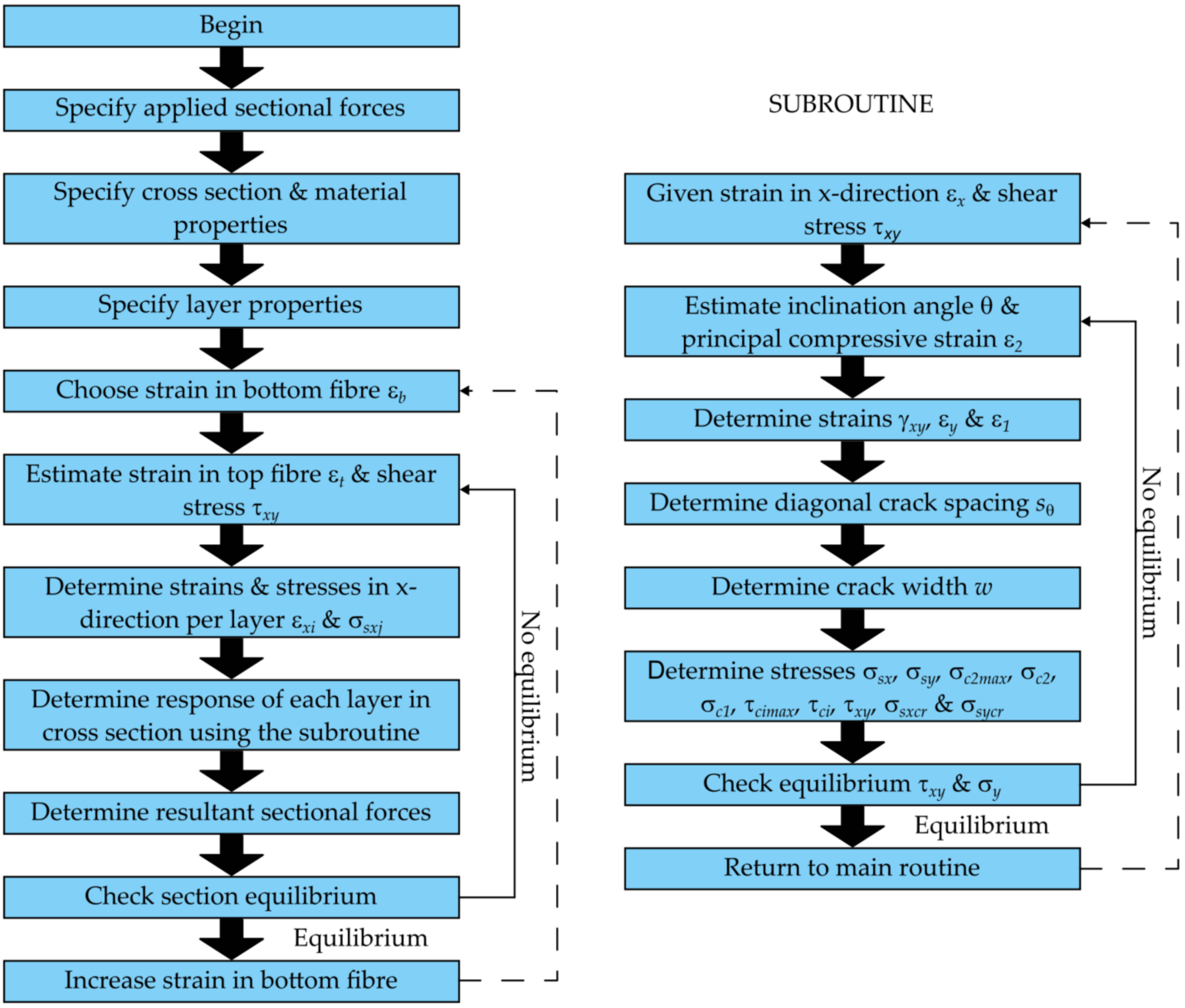


Figure 3.3: Iterative procedure in Python script

The script is built up in a way that the input is defined as first, and after this multiple functions are given, and each one calculates a different part to ultimately predict the shear capacity. To derive this shear capacity, these functions are used in the third part of the script, which is the calculation part. Each function of the script is described in more detail below.

1. Modified Compression Field Theory

   This function calculates all the given equations within the theory and returns the unknowns, these equations and unknowns are further elaborated in the next section of this chapter.

2. Layer equilibrium

   With the output of the first function, the single layer equilibrium is calculated in this function.

3. Layer optimization

   The last step for each layer is to see if the equilibrium is satisfied, this is the optimization step, which adjusts the initial estimations of the 'SUBROUTINE' until equilibrium is achieved. These first three functions are based on the single layer model, which is further described in the next section.

4. Longitudinal reinforcement stresses

   This function calculates the stresses in the longitudinal reinforcement based on the longitudinal strain distribution and the constitutive relations of the reinforcement.

5. Normal force equilibrium

   The longitudinal stresses in both the concrete and the reinforcement layers are used to calculate the normal force equilibrium.

6. Bending moment equilibrium

   The longitudinal stresses in both the concrete and the reinforcement layers are used to calculate the bending moment equilibrium.

7. Cross section equilibrium

   The final function combines both the normal force and bending moment equilibrium, and adjusts the estimations from the main routine until equilibrium is achieved.

In the final script given in the Appendices A and B a function is added that takes into account the anchorage influence, which is explained further in Chapter 4. The final part of the Python script is the part in which the calculation is performed. This is a loop in which the applied bending moment is increased. Within this loop there is another loop that calculates the shear capacity of the cross section. This is done by adjusting the initial estimations until equilibrium is achieved, after which the bottom strain increases. The output of the script is an Excel sheet for each bending moment increment, in which multiple calculated parameters are given per concrete layer of the cross section.

In the script for the layered approach, two equilibriums need to be satisfied, which are the layer and the sectional equilibrium. The layer equilibrium is achieved by adjusting the two estimations for each layer until this equilibrium is satisfied, this will be explained in more detail in Section 3.2. In the loop at the end of the script, the cross section equilibrium function is used to satisfy equilibrium. As mentioned, this function calculates the normal force and bending moment equilibrium, and in this loop a method is used which minimizes both equilibriums. This minimization is done for each increment of the bottom strain in the cross section, which starts around the cracking strain of the concrete. The increment size used for this bottom strain in this research is equal to $0.05e^{-3}$, which is selected due to the computational time of this layered approach. When this increment size is reduced, the computational time increases significantly. And, as mentioned, the top strain and the constant shear stress are the estimated parameters in this procedure.

The sectional equilibrium or the convergence of the model is achieved if both the normal force and the bending moment equilibrium are less than a certain tolerance defined by the user. In addition to the calculated parameters for each individual layer, the Excel sheet also gives the value for both of these equilibriums. If one of these values is not within the defined tolerance, the shear force becomes zero, and convergence is not achieved. At the end of the verification of the layered model, a closer look will be taken at the results obtained for a bending moment increment, to further explain the convergence of the model.

3.1.2 Verification with Response-2000

While developing this layered model, intermediate results were checked with the Response-2000 program, and this same program is used for the verification of this model. This program was developed by E. Bentz [14] and is a nonlinear sectional analysis program for reinforced concrete beams and is based on the MCFT [3]. In this program, any form of cross section can be modeled, and different types of reinforcement configuration can be modeled.

A crucial part within the script verification is the effective shear depth z used in the calculation. This effective shear depth determines the amount of cross sectional area which is multiplied by the constant shear stress in the cross section to determine the shear capacity. The Response-2000 program [14] uses a complex calculation for the shear stress in the cross section, in this procedure, no effective shear depth is included. In this study, multiple effective shear depths are used to determine the shear capacity and these results are compared to the results of the program. The first effective shear depth used, is that developed by M. Roosen [28], who developed a model that predicts the shear capacity of prestressed I-girders without flexural cracks, and gives a simple equation for the effective shear depth, which is:

$$z' = h - \frac{h_{tf,str} + h_{bf,str}}{2} - \frac{h_{tf,skw} + h_{bf,skw}}{4} \tag{3.5}$$

in which $h_{tf,str}$ is the height of the straight part in the top flange, $h_{tf,skw}$ is the height of the skewed part in the top flange, and these two also apply for the bottom flange, a straight part $h_{bf,str}$ and a skewed part $h_{bf,skw}$. With this model, not only the height of the web is used as effective shear depth, but also a part of the height of both the top and bottom flanges. This equation was used to derive the shear capacity of the 26 cross sections from different series of experiments, and these results were compared with the more advanced analysis of Response-2000 [14]. The result was a mean ratio of 0.9 with an associated coefficient of variation of 2%. In addition to Equation 3.5, the Eurocode 2 equation [4] is used, which equals the effective shear depth to $0.9d$. Another approach used is the one of the layered approach from literature [11], and here the effective depth is equal to the distance between the top and bottom longitudinal reinforcement. In addition to three effective shear depths, two other values are included because the difference between the one based on the Eurocode and literature is significant. This is why two intermediate steps have been included between these values. Below, the values of the five shear depths have been included, and these will be used in the verification of the model, to see which yields similar results to those obtained with the program.

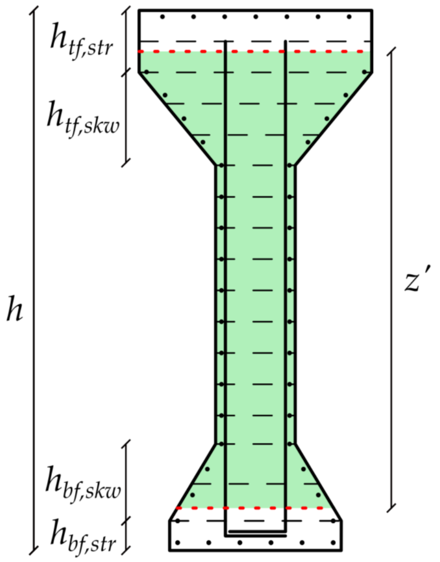


Figure 3.4: Effective shear depth z'

$$\begin{aligned}
z_1 &= z' = 2925\,mm \\
z_2 &= 0.9d = 0.9 * (3500 - 36) = 3117.6\,mm \\
z_3 &= z_2 + 103.4 = 3221\,mm \\
z_4 &= z_3 + 103.4 = 3324.5\,mm \\
z_5 &= 3500 - 2 * 36 = 3428\,mm
\end{aligned}$$

To verify this layered model, the cross section of the case is used. However, to use this cross section within the model, the applied sectional loads must be determined. As previously mentioned, the sectional loads are determined using a finite element program, and this analysis is performed in the next part of this section. After this, the verification of the layered model is done using the sectional loads and other cross sectional properties in both the model and the Response-2000 program [14].

Linear elastic analysis

In the introduction chapter, the bridge is described as a continuous prestressed box girder on six supports and, for one of the beams within the girder, a linear elastic analysis is performed. This analysis is carried out in SCIA Engineer [29] and, as a first step, the beam is modeled with its I-shaped cross section. The loads on this beam consist of self-weight, prestressing, and traffic loads. The self-weight is simply determined by using the volumetric weight of the concrete, and additionally a certain amount of asphalt is taken into account. Determining the prestressing loads is a bit more complicated due to the shape of the prestressing cables in the beam, and this is why an Excel sheet [30] is used for this calculation. The last part of the loading, the traffic loads, is determined using the Eurocode 1 [31], which prescribes the traffic loads for bridges. These three types of loads are used in loading combinations that use the partial loading factors given in the RBK [2]. In this guideline four safety levels are given, for this bridge the serviceability level is applied. Now that the model is complete, linear elastic analysis can start.

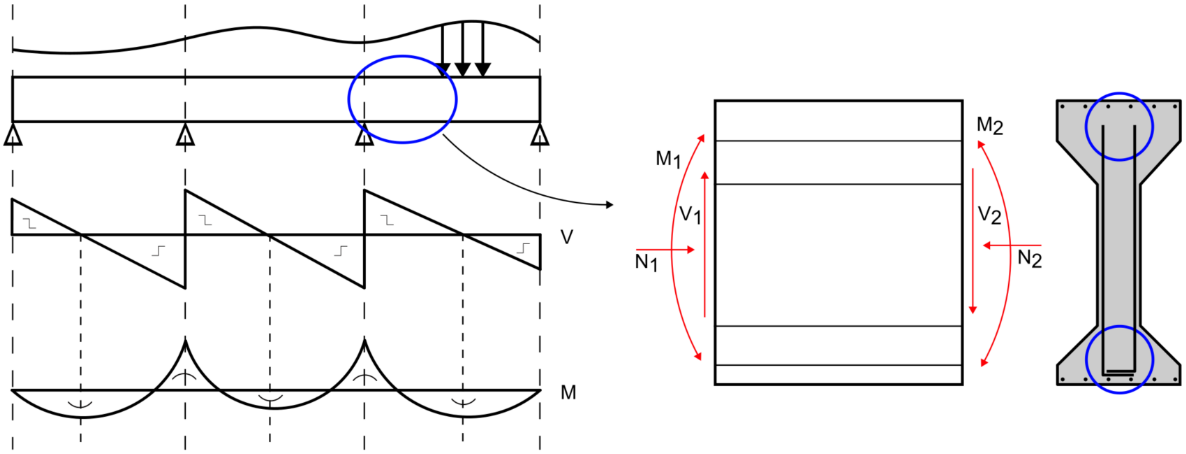


Figure 3.5: Continuous bridge with sectional forces due to loading

In Figure 3.5 a continuous bridge is shown with the shear force and moment diagram due to its loading. It is not the exact result of the linear elastic analysis, but this figure gives a general impression of the result obtained with this analysis. Only the normal force diagram is not included in this figure, because this is expected to be relatively constant. As can be seen, the shear force is highest in the support regions and decreases in the span regions of the bridge. Furthermore, both the support and the span regions experience a high bending moment. In the left part of the figure, a cut out of the bridge is given with the sectional forces due to the loading, additionally the cross section of the beam is given. The bending moment in the span of the bridge is expected to result in a tension zone in the lower part of the cross section, and around the support in the upper part of the cross section. Due to this change in the location of the tension zone, the verification of the layered model will be divided into the cross section in the span and the support region. This is also why the applied bending moment in the script is an input list with an increasing bending moment to see what the shear capacity is at different locations along the bridge.

Cross section in span region of the bridge

First, the cross section within the span region of the bridge is verified. In this region, the tension zone of the cross section is expected to be in the lower part due to the loading. The verification is done through increments of this bending moment in the cross section, and in addition to this sectional force, a constant normal force of 12500 kN (compression) is applied in the cross section which serves as the prestress in the cross section. In Table 3.1 the results of the layered model are compared to those obtained with Response-2000. The results obtained with the model uses different effective shear depths, the ones mentioned before, to determine the shear capacity of the cross section.

Bending moment [kNm]	$V_{u,R2K}/V_{u,z1}$ [-]	$V_{u,R2K}/V_{u,z2}$ [-]	$V_{u,R2K}/V_{u,z3}$ [-]	$V_{u,R2K}/V_{u,z4}$ [-]	$V_{u,R2K}/V_{u,z5}$ [-]
0	1.050	0.947	0.883	0.828	0.779
523	1.047	0.944	0.881	0.825	0.777
2564	1.098	0.990	0.923	0.865	0.814
5000	1.042	0.939	0.876	0.821	0.772
5742	1.062	0.958	0.894	0.837	0.788
7539	1.131	1.020	0.952	0.892	0.839
10000	0.988	0.890	0.831	0.778	0.732
13438	1.457	1.314	1.226	1.149	1.081
15000	1.559	1.405	1.311	1.229	1.156
16638	2.017	1.818	1.696	1.590	1.496
17500	2.613	2.356	2.198	2.060	1.938
18500	2.442	2.201	2.054	1.925	1.811

Table 3.1: Verification of layered model - span cross section

The different shear capacities obtained for each effective shear depth do not differ in the constant shear stress in the cross section, only the effective depth is changed. The first effective shear depth has the least amount of effective shear area in the cross section, this increases with each effective shear depth. To clarify the results of Table 3.1, Figure 3.6 is made. In this figure, the results of the table are shown, including the 1.00 line. It is clearly shown that when the bending moment is further increased, there is a larger scatter of results. This is because the model finds less convergence for higher bending moments. Therefore, as the bending moment increases in the script, the convergence of the model decreases. In this figure, it can be seen that the results after around 50% of the ultimate bending moment capacity show this behavior, which is why this area is highlighted with red in the figure. At the end of this section, a closer look will be taken at the results obtained with low and high bending moments in the model.

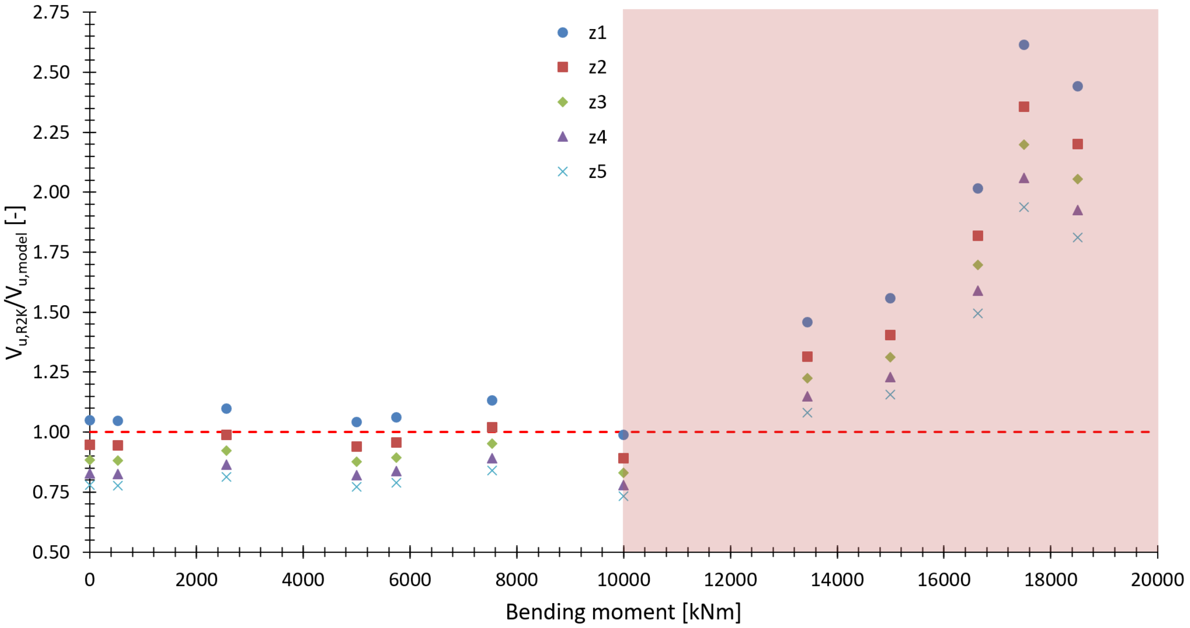


Figure 3.6: Verification of layered model - span cross section

Cross section in support region of the bridge

In the same way as the cross section within the span, the cross section in the support region is verified. Now, the tension zone is expected to be in the upper part of the cross section. To predict the shear capacity of this cross section, the cross section is turned upside down in the layered model, in this way the tension zone of the cross section stays in the bottom part of the cross section within the model. This is done because of how the influence of the anchorage is going to be implemented, this is explained in the next chapter. In Table 3.1 the results of the comparison with Response-2000 are shown, including different effective shear depths. And, in the same way as for the previous cross section, the results of the table are plotted in a graph, shown in Figure 3.7. In this figure, the same convergence issue can be seen as previously mentioned, by increasing the applied bending moment, the scatter of results will increase due to less convergence. Similarly to the previous figure, the part after 50% is marked red.

Bending moment [kNm]	$V_{u,R2K}/V_{u,z1}$ [-]	$V_{u,R2K}/V_{u,z2}$ [-]	$V_{u,R2K}/V_{u,z3}$ [-]	$V_{u,R2K}/V_{u,z4}$ [-]	$V_{u,R2K}/V_{u,z5}$ [-]
0	1.052	0.892	0.854	0.815	0.780
1391	1.137	0.964	0.923	0.882	0.843
2665	1.182	1.002	0.959	0.916	0.877
4059	1.178	0.998	0.956	0.913	0.874
5000	1.181	1.001	0.959	0.916	0.876
7936	1.130	0.958	0.917	0.876	0.838
10000	1.161	0.984	0.942	0.900	0.861
12920	1.380	1.170	1.120	1.070	1.023
15000	1.480	1.255	1.201	1.147	1.098
15666	1.650	1.399	1.339	1.279	1.224
17500	1.776	1.505	1.441	1.377	1.317
18500	2.105	1.709	1.709	1.632	1.562
19000	2.157	1.829	1.751	1.672	1.600
20000	3.312	2.808	2.688	2.568	2.457

Table 3.2: Verification of layered model - support cross section

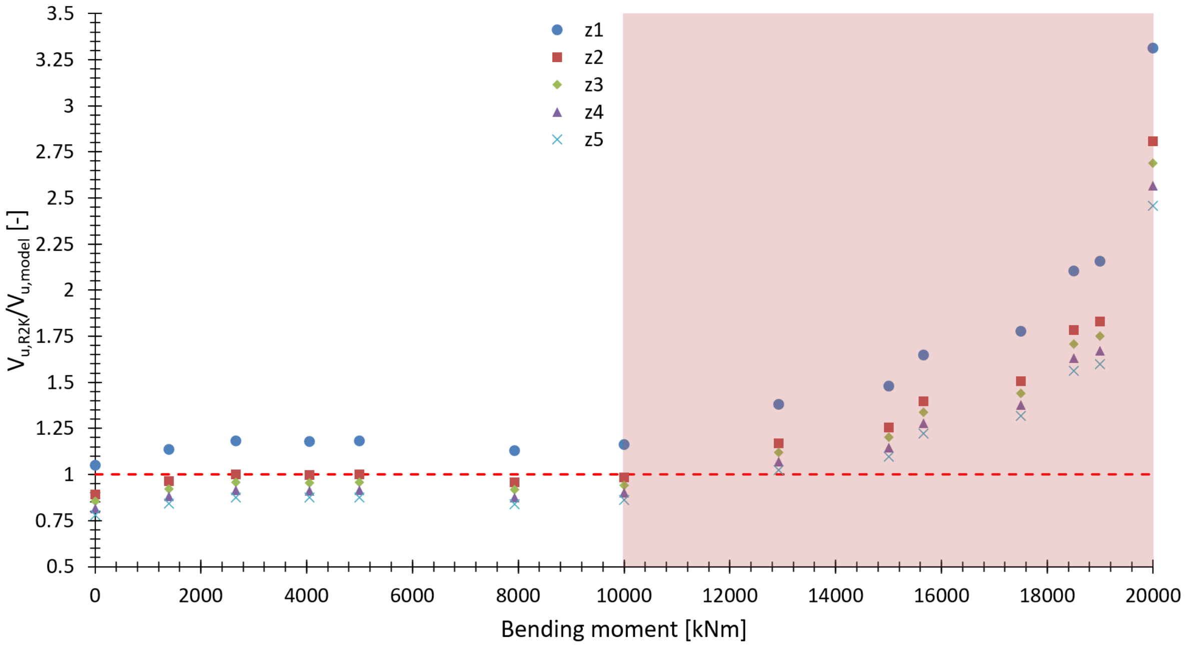


Figure 3.7: Verification of layered model - support cross section

EFFECTIVE SHEAR DEPTH Based on the previously mentioned results, an effective shear depth is chosen to apply in the rest of this research. In Figures 3.6 and 3.7 it can be seen that the red squares are closest to the 1.00 line, mainly in the region before 10000 kNm. However, in some cases, the shear capacity is overestimated with this effective shear depth. For this reason, the effective shear depth z_1 will be used in the rest of this research, because this model produces conservative results in the first region. This effective shear depth is equal to the model developed by M. Roosen [28]. From the graphs, it could be concluded that after around 10000 kNm another effective depth could be used, but to remain constant throughout this research, one depth is chosen to use.

CONVERGENCE OF MODEL In both graphs of the two cross sections, the results become more and more conservative after around 50% of the ultimate bending moment capacity, this area is marked red in the graphs. This final part of the verification takes a closer look at the results of the model with a low and high bending moment applied on the cross section in the span region. In Figure 3.8 the shear force is plotted against the mean value of the shear strain in the cross section, for an applied bending moment of 2564 kNm. The results of the layered model are plotted with the red squares $V_{u,LM}$, and the blue line represents the results of the Response-2000 program. As mentioned, the result of the model is an Excel sheet in which several calculated parameters are given, two of them are the value of the normal force and bending moment equilibrium. The detailed results of the layered model are given in Appendix C. When both equilibrium values are not below the defined tolerance, the shear force becomes zero. The tolerance for these results is that both values need to be lower than 1% of the applied forces. Therefore, the normal force equilibrium should be less than $0.01 * 12500 = 125$ kN, and the bending moment equilibrium should be less than $0.01 * 2564 = 25.64$ kNm. As can be seen in the figure, no convergence is found at the beginning of the graph, only after a few bottom strain increments.

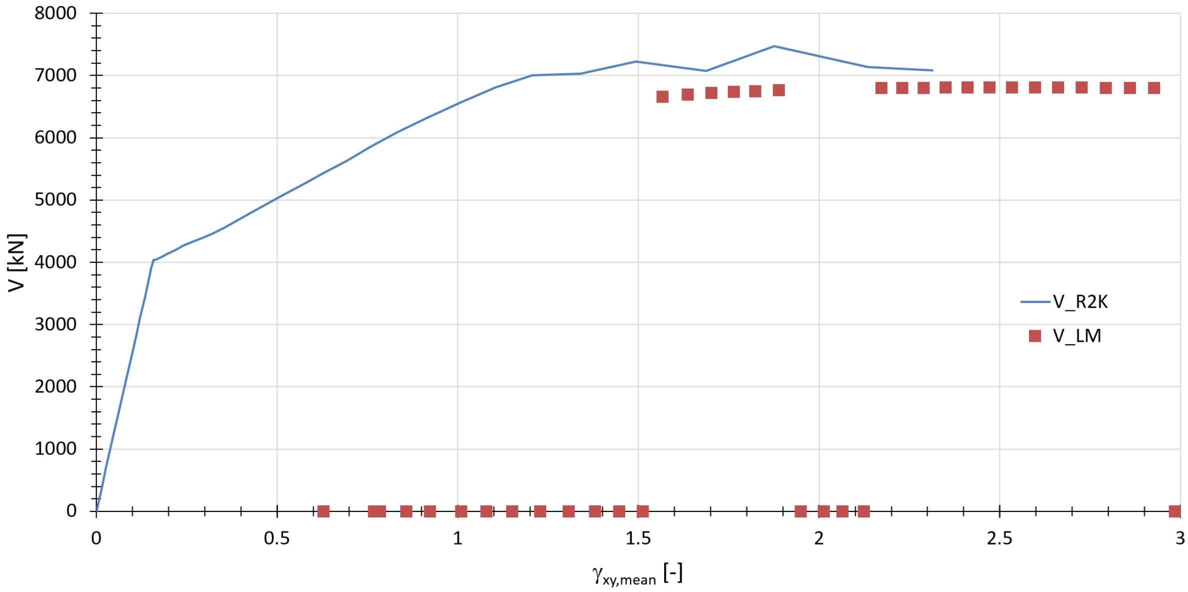


Figure 3.8: Shear force versus mean value of shear strain M = 2564 kNm

The same is done for an applied bending moment of 15000 kNm, these results are shown in Figure 3.9. The detailed results of the layered model for this bending moment are given in Appendix D. Now the convergence is found to have the same normal force limit, but for the value of the bending moment equilibrium must be lower than $0.01 * 15000 = 150$ kNm. At a certain point, the model stops finding convergence, after which the shear force of the model remains zero. As can be seen, the maximum shear force obtained with the model is much lower than that obtained with the Response-2000 program, which is why the results after around 50% are not as reliable as those obtained with lower bending moments. For even higher bending moments, the convergence of the model decreases.

It is expected that with higher bending moments, the flexural failure will likely be governing, and the model might not accurately capture this failure mode.

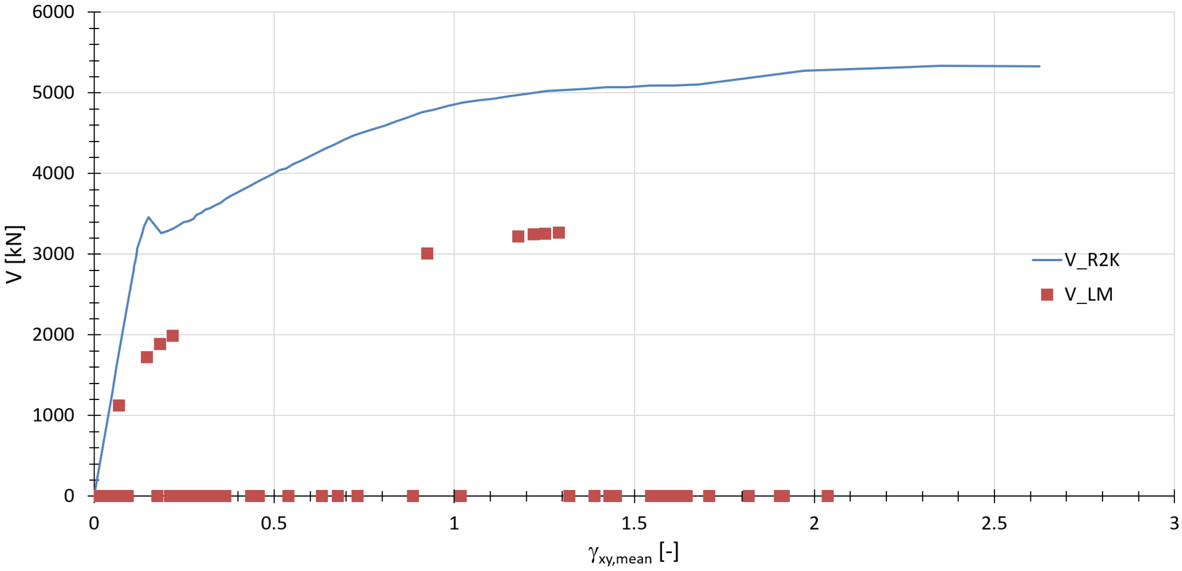


Figure 3.9: Shear force versus mean value of shear strain M = 15000 kNm

3.2 MODELING THE INDIVIDUAL LAYER RESPONSE

The "SUBROUTINE" in the layered model is based on the model that predicts the response of an individual layer, which uses the Modified Compression Field Theory (MCFT) [3]. In this section of this chapter, a further description will be given of this theory, how it is translated into a model, and in what way it is used in the layered model described in the previous section.

3.2.1 Theoretical framework: applying the Modified Compression Field Theory

The MCFT can be used as a theoretical model to predict the response of a single layer subjected to in-plane shear and normal stresses, this principle is shown in Figure 3.10. In this theory, cracked concrete is considered as a new material with its own constitutive relations and using a smeared rotating crack approach. This rotating crack approach means that the orientation of the crack is gradually adjusted compared to the fixed crack approach, in which the crack remains fixed in the direction of the first crack. Furthermore, the theory uses several assumptions and consists of three sets of relationships: compatibility, equilibrium, and constitutive relationships. Both assumptions and relationships are described in the following parts of this framework. Additionally, there is a part on local stress variations in the crack. For cracked concrete, the constitutive relationships were empirically derived by testing 30 reinforced concrete panels subjected to uniform in-plane and shear stresses.

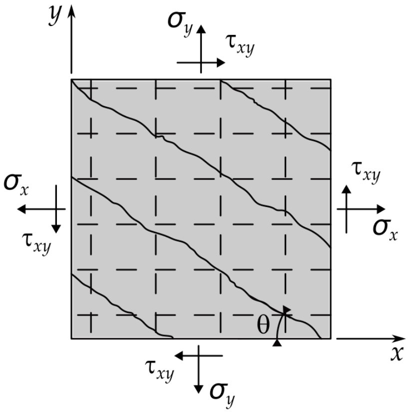


Figure 3.10: Reinforced concrete element

Assumptions

The problem solved in the MCFT [3], is how uniform in-plane and shear stresses are related to the three in-plane strains. To solve this problem, the theory makes several assumptions. The key assumptions made in this theory are the following:

1. The loads are uniformly distributed over the layer.
2. The cracks are smeared across the layer and are able to rotate.
3. The direction of the principal stress coincides with the direction of the principal strain.
4. The total stress state is a function of the total strain state and is not influenced by the load history.
5. The stresses and strains are considered in terms of average values.
6. The concrete is perfectly bonded to the reinforcement bars.
7. The reinforcement bars in both directions are evenly distributed within the layer.
8. The average shear stress on the reinforcement is equal to zero.
9. The constitutive relationships of both reinforcement and concrete are independent.
10. The average tensile stress in concrete is a function of the reserve strength of the reinforcement in the cracks.

In the MCFT [3], a membrane layer is used to solve this problem. This layer has a uniform thickness and contains an orthogonal reinforcement grid. As stated in the list of assumptions, the loads acting on the layer's edge planes are assumed to consist of uniform axial stresses σ_x and σ_y and uniform shear stress τ_{xy}. These loads are shown in Figure 3.10. The deformation of the layer is defined by two normal strains ε_x and ε_y and the shear strain γ_{xy}, and these deformations are shown in Figure 3.11.

Compatibility conditions

To better understand the compatibility conditions, Figure 3.11 gives an example of a single deformed concrete layer due to the application of external loads. The sixth assumption states that the concrete is perfectly bonded to the concrete, which is why compatibility requires that any deformation experienced by the concrete must be matched by an identical deformation of the reinforcement. This means that any change in concrete change will be accompanied by an equal change in steel strain, therefore the following is applicable:

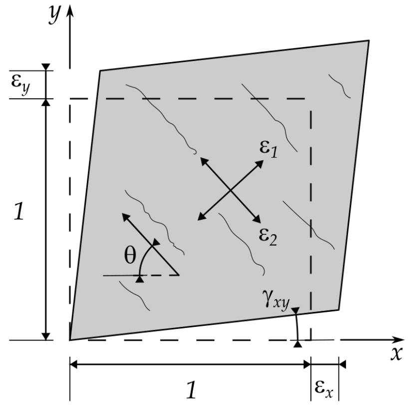


Figure 3.11: Deformation of reinforced concrete layer

$$\varepsilon_x = \varepsilon_{cx} = \varepsilon_{sx} \tag{3.6}$$

$$\varepsilon_y = \varepsilon_{cy} = \varepsilon_{sy} \tag{3.7}$$

in which ε_x and ε_y are the total strains of the layer, ε_{cx} and ε_{cy} are the concrete strains, and ε_{sx} and ε_{sy} are the reinforcement strains. When the three total strains of the layer (ε_x, ε_y and τ_{xy}) are known, the strain in the principal directions ε_1 and ε_2, and the inclination of the principal strains θ can be determined with the help of the Mohr's circle of strain, which is shown in Figure 3.12. Some of the useful equations derived from this circle are as follows:

$$\gamma_{xy} = \frac{2(\varepsilon_x - \varepsilon_2)}{\tan\theta} \tag{3.8}$$

$$\varepsilon_x + \varepsilon_y = \varepsilon_1 + \varepsilon_2 \tag{3.9}$$

$$\tan^2\theta = \frac{\varepsilon_x - \varepsilon_2}{\varepsilon_y - \varepsilon_2} \tag{3.10}$$

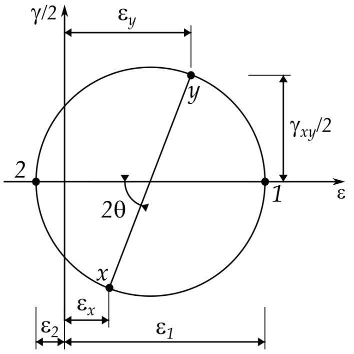


Figure 3.12: Mohr's circle for average strains

Equilibrium conditions

The externally applied forces on the layer are resisted by internal stresses within the concrete and reinforcement. In Figure 3.13 this equilibrium of forces is schematized. The equilibrium conditions based on this figure can be summarized by the expressions on the next page.

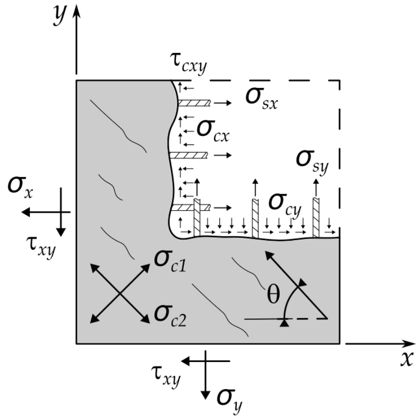


Figure 3.13: Loading of reinforced concrete layer

$$\sigma_x = \sigma_{cx} + \rho_{sx}\sigma_{sx} \tag{3.11}$$

$$\sigma_y = \sigma_{cy} + \rho_{sy}\sigma_{sy} \tag{3.12}$$

$$\tau_{xy} = \tau_{cxy} \tag{3.13}$$

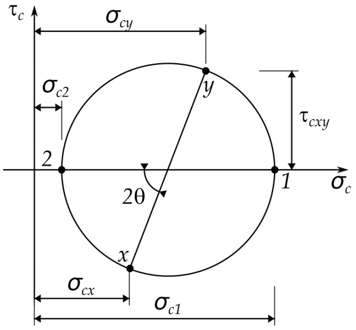


Figure 3.14: Mohr's circle for average concrete stresses

in which σ_{cx} and σ_{cy} are the average concrete stresses in both the x- and y-direction, and σ_{cxy} is the average shear stress in the concrete. The reinforcement stresses are calculated with σ_{sx} and σ_{sy}, which are the average reinforcement stresses, and with the reinforcement ratios ρ_{sx} and ρ_{sy} in the x- and y-direction. Using the Mohr's circle of stress, shown in Figure 3.14, the average concrete stresses are calculated, which are given below.

$$\sigma_{cx} = \sigma_{c1} - \tau_{cxy} / \tan\theta \tag{3.14}$$

$$\sigma_{cx} = \sigma_{c1} - \tau_{cxy} \tan\theta \tag{3.15}$$

$$\tau_{xy} = (\sigma_{c1} - \sigma_{c2}) / ((\tan\theta + \cot\theta) \tag{3.16}$$

Constitutive relations

To link the average stresses with the average strains in both the concrete and the reinforcement, constitutive relations are required for both materials. These relations were derived from a series of single layer experiments performed for the MCFT [3].

CONCRETE From experiments [3] it was observed that the compressive stress in concrete σ_{c2} was not only a function of the principal compressive strain ε_2, but also of the principal tensile strain ε_1. When cracked concrete is subjected to high tensile stresses perpendicular to the compression stresses, the concrete shows a softer and weaker response compared to concrete in a standard cylinder test. This behavior is called compression softening of the concrete, which is shown in Figure 3.15.

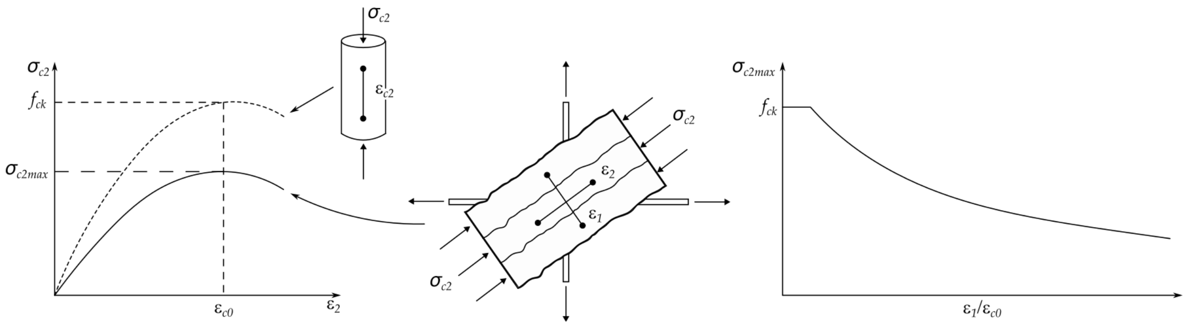


Figure 3.15: Constitutive relationship for cracked concrete in compression

The constitutive relationship for the compressive stress in the concrete is given by the following equations:

$$\sigma_{c2max} = \frac{f_{ck}}{0.8 + 0.34\frac{\varepsilon_1}{\varepsilon_{c0}}} \leq f_{ck} \tag{3.17}$$

$$\sigma_{c2} = \sigma_{c2max}\left[2\frac{\varepsilon_2}{\varepsilon_{c0}} - \left(\frac{\varepsilon_2}{\varepsilon_{c0}}\right)^2\right] \tag{3.18}$$

in which f_{ck} and ε_{c0} are the characteristic compressive cylinder strength and the corresponding compressive strain, respectively.

The constitutive relationship for concrete under tension is divided into two parts: a pre- and post-cracking response, this is shown in Figure 3.16. The pre-cracking is assumed to be linear, this relation is given in Equation 3.19. In experiments [3] it was observed that concrete between cracks still carried tensile stresses, even at high tensile strain values. This behavior is called the tension stiffening of the concrete and the relation is given in Equation 3.20.

$$\sigma_{c1} = E_c\varepsilon_1 \quad - \quad \text{for } 0 \leq \varepsilon_1 \leq \varepsilon_{cr} \tag{3.19}$$

$$\sigma_{c1} = \frac{f_{cr}}{1 + \sqrt{500\varepsilon_1}} \quad - \quad \text{for } \varepsilon_1 > \varepsilon_{cr} \tag{3.20}$$

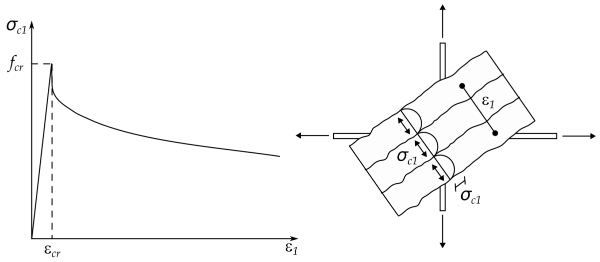


Figure 3.16: Constitutive relationship for cracked concrete in tension [3]

where E_c is the elastic modulus of the concrete and f_{cr} and ε_{cr} are the cracking stress and strain of the concrete, respectively. In Equation 3.20 the value of 500 is used for larger layers instead of 200, which was originally proposed in the MCFT [3].

In the original theory [3], the compressive strain ε_{c0} is given as -0.002. For this research, Equation 3.21 with Equation 3.22 is used to calculate this strain. This equation is used in the sectional analysis performed by E. Bentz [14], and in addition to compressive strain, equations for other parameters are also given. In that analysis, the equations used in the MCFT [3] are extended and changed, these adjustments are based on other experimental research. The elastic modulus is given by Equation 3.23, the cracking strength by Equation 3.24, and the cracking strain by Equation 3.25.

$$\varepsilon_{c0} = \frac{f_{ck}}{E_c}\frac{n}{n-1} \tag{3.21}$$

$$n = 0.8 + \frac{f_{ck}}{17} \tag{3.22}$$

$$E_c = 3320\sqrt{f_{ck}} + 6900 \tag{3.23}$$

$$f_{cr} = 0.45(f_{ck})^{0.4} \tag{3.24}$$

$$\varepsilon_{cr} = \frac{f_{cr}}{E_c} \tag{3.25}$$

REINFORCEMENT The constitutive relationship of the reinforcement within the concrete depends only on the axial strain in the reinforcement and, as stated in the assumptions, the shear stress on the reinforcement is assumed to be zero. For reinforcement, the bilinear stress-strain diagram is used, which is the elastoplastic behavior, this is given by the following equations:

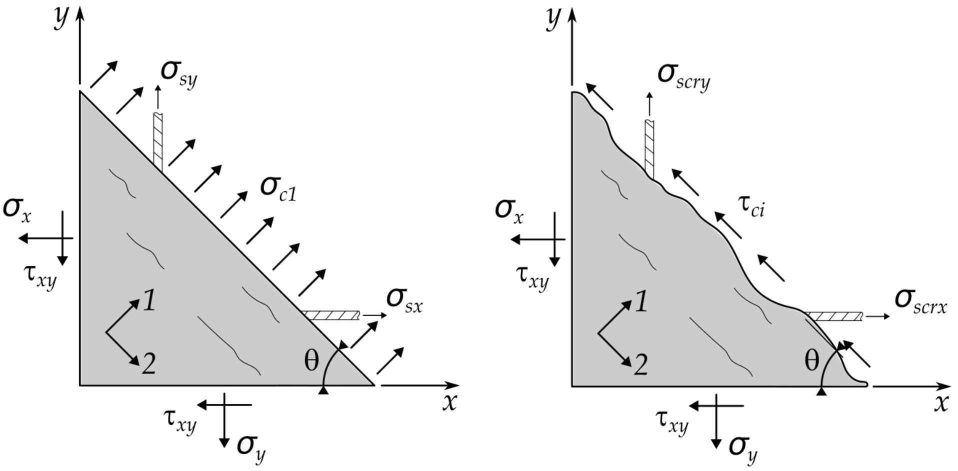
$$\sigma_{sx} = E_s \varepsilon_x \leq f_{yx} \tag{3.26}$$

$$\sigma_{sy} = E_s \varepsilon_y \leq f_{yy} \tag{3.27}$$

in which f_{yx} and f_{yy} are the yield strength of the reinforcement in the x- and y-direction, respectively, and E_s is the elastic modulus of the reinforcement.

Local crack conditions

The constitutive relationships use average values for both the concrete and the reinforcement, and do not account for local stress variations. These local stress variations occur in the reinforcement; at the crack, the tensile stress will be higher than average, and in between cracks, the stress will be lower than average. For the concrete tensile stresses this is the other way around; zero tensile stress at the crack and a higher stress in between cracks. To account for these variations, the average stresses within the concrete must be compatible with the local stresses in the cracked concrete. In Figure 3.17a the average stresses between cracks are shown, and Figure 3.17b shows the local stresses at the crack surface.



(a) Average stresses parallel to crack **(b)** Local stresses along crack surface

Figure 3.17: Stresses within a reinforced concrete layer

When the concrete is cracked, the tension stiffening mechanism allows the concrete to carry average tensile stresses due to the bond with the reinforcement. Because concrete does not carry tensile stress at the crack, the average tensile stress must be carried across the cracks by local increases in reinforcement stresses. These local increases in stress are determined by creating equilibrium in both x- and y-direction between the average stresses in Figure 3.17a and 3.17b, which gives the following equations:

$$\sigma_{sxcr} = \sigma_{sx} + (\sigma_{c1} + \tau_{ci} \cot\theta) \leq f_{yx} \tag{3.28}$$

$$\sigma_{sycr} = \sigma_{sy} + (\sigma_{c1} - \tau_{ci} \tan\theta) \leq f_{yy} \tag{3.29}$$

where τ_{ci} is the shear stress on the crack surface. This shear stress is due to the transfer mechanism called the aggregate interlock. The aggregate interlock is caused by the crack that forms along the interface between the cement paste and the aggregate particles. Several studies have been carried out on this transfer mechanism, and one of the researchers was Walraven [32], who derived Equation 3.30, which limits the shear stress across the crack.

$$\tau_{ci} = \frac{0.18\sqrt{f_{ck}}}{0.31 + \frac{24w}{a+16}} \tag{3.30}$$

where a_g is the maximum aggregate size in the concrete and w is the crack width. As the crack width increases, the aggregate interlock becomes less due to the increased separation between the two sides of the crack. But when the maximum aggregate size becomes larger, the maximum interlock increases due to the larger surface area that is now available, which also provides more roughness to the crack. The maximum aggregate size is input, but the crack width depends on the crack spacing s_θ and the principal tensile strain ε_1. The equation for the crack width is given below.

$$w = \varepsilon_1 s_\theta \tag{3.31}$$

where

$$s_\theta = \frac{1}{\frac{\sin\theta}{s_{mx}} + \frac{\cos\theta}{s_m}} \tag{3.32}$$

and where s_{mx} and s_{my} are the crack spacing in the x- and y-direction, respectively.

3.2.2 Development of the single layer model

In the layered model two loops are applied, which means that there are two iterative calculations. The second iterative procedure is for the single layer response because, when all the equations of the MCFT [3] are taken into account, the total amount is 15 with 18 unknowns. To account for the three unknowns, one parameter needs to be chosen, and the other two parameters are estimated, which are checked at the end. In the appendix of the MCFT research paper [3], an example is given to use as an iterative procedure to calculate the response of a layer, and this procedure is used as a reference to develop the model within this research. Compared to the reference, the model within this research is somewhat different, but in the end the same equations are solved. For this iterative calculation, a Python script is written. The iterative calculation within this script will be discussed in more detail in this section. Before the calculation can start, the script needs some general input. This input is about the single layer properties, and these are listed below.

- Characteristic compressive cylinder strength f_{ck};
- Aggregate size a_g;
- Young's modulus of reinforcement E_s;
- Yield strength of reinforcement in x- and y direction f_{yx} & f_{yy};
- Reinforcement ratio's in x- and y-direction ρ_{sx} & ρ_{sx};
- Crack spacing in x- and y-direction s_{mx} & s_{my}.

In addition to the layer properties, the axial loading stresses of the single layer must also be given. This can be done by simply defining a constant value for the axial stresses f_{xl} and f_{yl}, or by defining the ratios k_x and k_y. In the original experiments [3], most of the tests were performed with pure shear loading, but some also with some biaxial stresses, these were applied in a fixed ratio to the shear stress. Therefore, when these factors are applied, the biaxial stresses increase with each increment of the shear stresses. At the end of the calculations, these loading stresses are used to derive equilibrium for the single layer.

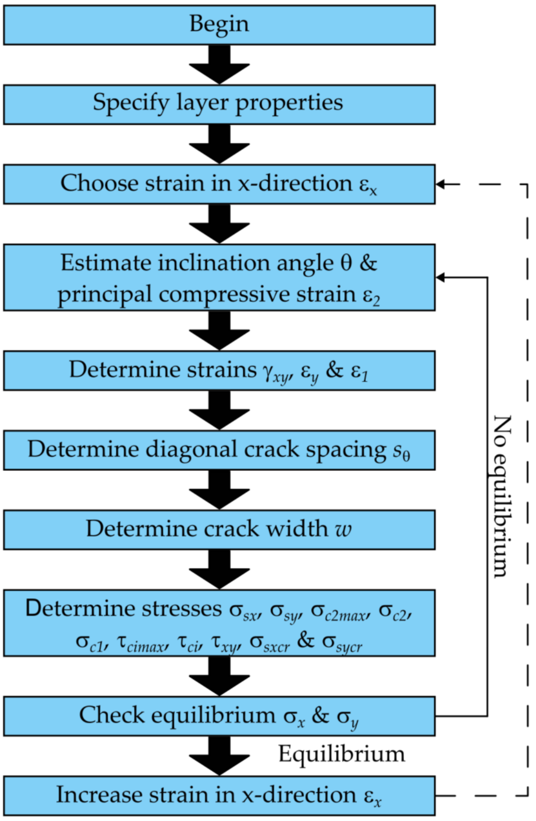


Figure 3.18: Solution procedure for determining response of reinforced concrete layer

The approach given in the MCFT [3] starts by choosing a value for the principal compressive strain ε_2, this parameter is gradually increased in the procedure. The two estimated parameters are the deformation in the x-direction ε_X and the angle of inclination θ. These estimations are checked until equilibrium of the layer is satisfied. Because this current research paper is about the shear capacity of a reinforced concrete beam, the procedure to calculate the response of the layer begins by choosing the strain in the x-direction ε_X. This is done because in the layered model this strain will increase with certain increments. The estimated parameters are the principal compressive strain ε_2 and the inclination angle θ. Therefore, in comparison to the reference procedure, the strain in the x-direction and the principal compressive strain are switched. With these chosen and estimated parameters, the script calculates the response of a reinforced concrete layer with the equations of the MCFT [3]. The procedure is schematized in Figure 3.18.

The iterative procedure starts with the calculation of the shear strain γ_{xy}, the transverse strain ε_y, and the main principal tensile strain ε_1. The next step is to calculate the crack width w based on the diagonal crack spacing s_θ. With the strains and the crack width, the different internal stresses can be calculated. First, reinforcement stresses $\sigma_s x$ and σ_{sy} are calculated based on the strains and the constitutive relations. Furthermore, the maximum compressive strength of the concrete σ_{c2max} is calculated and based on this parameter and the concrete strains, the main principal compressive stress σ_{c2} in the concrete is calculated. The script starts around the cracking strain, so in the script a part is used before the concrete is cracked and after the crack initiation. One of the parameters calculated based on whether the concrete is cracked or not is the main principal tensile stress in the concrete f_{c1}. After the concrete stresses are calculated, the shear stress on the crack surface τ_{ci} is calculated based on the maximum crack surface stress τ_{cimax}. Finally, the stresses in the reinforcement at the crack locations are calculated σ_{sxcr} and σ_{sycr}. With these calculated internal stresses, the equilibrium is checked and when this is satisfied the strain in the x-direction can be increased, if not satisfied, the estimated parameters need to be adjusted.

As mentioned previously, the script currently starts at a value around the cracking strain, and this could be adjusted. The pre-cracking behavior of a reinforced concrete layer is not the main behavior on which this research is focused. In the script, the maximum strain and strain increments in the x-direction can also be adjusted. The maximum is there to end the calculation if the script does not find convergence. To minimize the calculation time, the increments can also be increased, in this way the number of steps is decreased, which decreases the total computational time. The end result of the script is as an Excel sheet, which includes the 18 calculated parameters per strain increment.

Verification with Membrane-2000

To see if the Python script actually works, the results must be verified. Verification is done using the Membrane-2000 program made by E. Bentz [14]. This program can be used to analyze a single reinforced concrete layer in the same way as the script. From literature various panel experiments are selected, the panel properties are the input for both the program and script.

The first panels are those tested by F. Vecchio and M. P. Collins to develop the MCFT [3], 30 single reinforced concrete layers subjected to shear stresses were tested. Most of these tests included pure shear loading, but some also included the combination of biaxial tension and shear, and the combination of biaxial compression and shear. The main variables, in addition to the loading, within these panels were the percentage of reinforcement and the concrete strength. For the verification, some of these test panels are selected, see Table 3.3. As shown in the table, the script effectively predicts the maximum shear stress of a single layer. To further verify the script, single prestressed layers are also included. P. Marti and J. Meyboom [33] tested three panels, two of which included prestressing. In addition to the difference in prestressing, the test also differed in the amount of reinforcement and the concrete strength. In the table below, it can be seen again that the script calculates a similar maximum shear stress as the one obtained by the program.

Panel	Loading $\sigma_x : \sigma_y : \tau_{xy}$	Prestress [MPa]	ρ_x [%]	ρ_y [%]	ρ_{px} [%]	f'_c [MPa]	$v_{u,M2K} / v_{u,script}$ [-]
PV12	0:0:1	0	1.79	0.45	0	16.0	1.002
PV16	0:0:1	0	0.74	0.74	0	21.7	1.006
PV18	0:0:1	0	1.79	0.32	0	19.5	1.001
PV19	0:0:1	0	1.79	0.71	0	19.0	1.002
PV20	0:0:1	0	1.79	0.45	0	19.6	1.003
PV21	0:0:1	0	1.79	1.30	0	19.5	1.002
PV23	-0.39:-0.39:1	0	1.79	1.79	0	20.5	1.002
PV27	0:0:1	0	1.79	1.79	0	20.5	1.000
PV28	0.32:0.32:1	0	1.79	1.79	0	19.0	1.022
PP1	0:0:1	0	1.94	0.65	0	27.0	1.002
PP2	0:0:1	-2.07	1.30	0.65	0.29	28.1	1.004
PP3	0:0:1	-4.40	0.95	1.79	0.59	27.7	1.009
						Mean	1.005
						COV [%]	0.58

Table 3.3: Verification of single layer model

Adjustments for the "SUBROUTINE"

To implement this single layer model in the layered approach, described in the previous section, the script needs to be adjusted due to the changed input parameters. When developing this model, it was already taken into account that the longitudinal strain would be input for the individual layer analysis, this is why the input strain and the two estimations are not adjusted. However, because the longitudinal strain distribution is calculated in the layered approach, the stresses in the longitudinal reinforcement can already be calculated, this is also based on the assumption that the concrete and the reinforcement are perfectly bonded. Therefore, the longitudinal reinforcement stress calculation is not included in the individual layer analysis. In addition to this adjustment, the equilibrium equations are also changed. As mentioned before, it is assumed that the clamping stresses are equal to zero, this means that concrete stresses in the y-direction need to be balanced by the stresses in the stirrups, or the reinforcement in the y-direction. Finally, the main routine assumes a certain constant shear stress in the cross section, so each layer in the cross section is subjected to the constant shear stress. These stresses need to be balanced by the single layer stresses. With these adjustments, the layered model uses the single layer model to calculate the response of each layer in the cross section.

CHAPTER 4

Implementation of the Anchorage Influence in the Layered Approach

The model developed in the previous chapter does not yet account for any influence of the anchorage of the non conforming stirrups, but it is based on a layered approach in which properties of certain layers can be adjusted. In this chapter, the model will be adjusted to take into account the influence of anchorage. However, before this influence can be implemented, the anchorage capacity of both types of anchorages must be determined. The upper part of the stirrup is only anchored by a straight rebar, and the lower part is only anchored by a hooked rebar. On the basis of two different researches, the anchorage behavior will be further studied. An important aspect of both studies is that they take into account a certain crack width, so this is applicable to the anchorage in the tension zone of a cross section, which is assumed to be cracked. In the first two sections of this chapter, both anchorage behaviors are studied, and in the last section, how these behaviors are implemented in the model is described.

4.1 DERIVATION OF STRAIGHT REBAR ANCHORAGE BEHAVIOR

The top of the stirrup in the cross section of the case does not enclose the longitudinal reinforcement, these stirrups end with a straight part at the top of the cross section. In Figure 4.1 the upper part of the cross section is shown with the two straight rebar anchorages of the non conforming stirrup. Two inclined reinforcement bars are also within the same plane as the shear reinforcement, but these will not be taken into account in the shear capacity calculation. The longitudinal reinforcement in the top of the cross section is missing in this figure, according to other figures, there is a layer of reinforcement in the top. The straight anchorage of the stirrups is expected to have influence on the support regions of the continuous supported bridge, and will probably be the governing anchorage compared to the bottom anchorage in these areas.

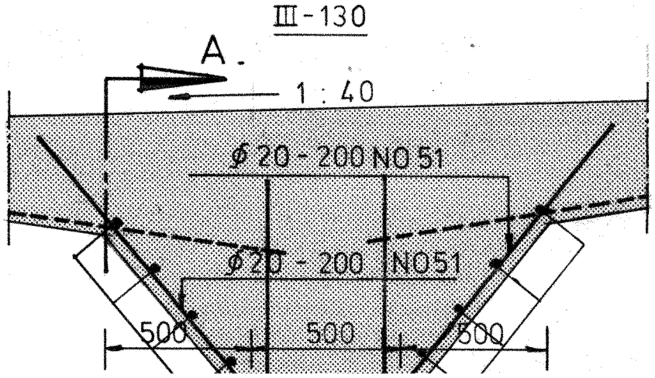


Figure 4.1: Anchorage of top part of the non conforming stirrup

Because this research is about the anchorage of non conforming stirrups in cracked concrete or the tension of the cross section, it is important that some kind of tension or crack width is included in the anchorage behavior. In the literature review, it was already mentioned that F. Brantschen did research on the bond behaviour of hooked, U-shaped and headed bars in cracked concrete [12]. That study investigated the bond behavior of rebars in cracked concrete by performing a total of 89 pull-out tests. The test specimens were loaded in tension and during the pull-out tests, the crack width was controlled. Within the plane of these cracks, transverse reinforcement was applied with different types of anchorages. The anchorages applied in the research consisted of straight, hooked, U-shaped, and headed bars. Based on the experimental results, a simple model for bond strength and stiffness is introduced, taking into account the effect of cracked concrete.

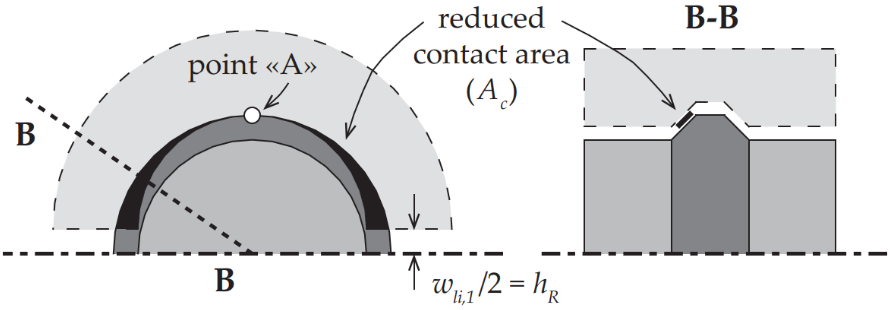


Figure 4.2: Contact area between reinforcement rib and surrounding concrete [12]

The proposed model for the bond strength is based on the fact that the contact area between a reinforcement rib and the surrounding concrete is reduced when the concrete is cracked. The contact area in uncracked concrete is calculated using the entire height of the rib, but when it is cracked, this contact reduces and ultimately the crack will be so large that there is no contact between the rib and the concrete. This principle is shown in Figure 4.2. To derive a practical analytical model, a few assumptions are made to obtain a simplified equation. With these assumptions, the following equation is given for the bond strength:

$$\tau_{b,brantschen} = \frac{1}{1 + \frac{0.75\eta_l w}{f_R d_s}} \tau_{b0} \tag{4.1}$$

in which η_l is the number of lugs per rib, w is the crack width, f_R is the bond index, d_s is the diameter of the bar and τ_{b0} is bond strength in uncracked conditions. For the bond strength under uncracked conditions, the Tension Chord Model [27] is used. In this model, it is suggested to assume that τ_{b0} is equal to 2 times the mean tensile strength of concrete f_{ctm}. The mean tensile strength is equal to $0.3 f_{ck}^{2/3}$, and this results in $\tau_{b0} = 0.6 f_{ck}^{2/3}$. The adaptation of the Tension Chord Model [27] and the addition of casting effects to the bond strength is carried out in the research done by F. Monney [8], who studied hooked-shaped anchorages, and is used in the next section of this chapter. When applying these two adjustments to Equation 4.1, the following equation is derived.

$$\tau_b = \eta_{cp} k_b 0.6 f_{ck}^{2/3} \tag{4.2}$$

with

$$k_b = \frac{1}{1 + \frac{0.75\eta_l w}{f_R d_s}} \tag{4.3}$$

In equation 4.2, η_{cp} takes into account the casting effects, this factor is equal to 1.2 for good conditions and 1.0 for poor conditions. The analytical model of F. Brantschen is now translated into the coefficient k_b given by Equation 4.3.

Based on simple equilibrium, the pull-out strength of the straight rebar anchorage can be determined. The bond stress along the outer surface of the reinforcement must balance the axial stress in the rebar. First, the bond stress is multiplied by the outside surface area $\tau_b l_e d_s \pi$ (l_e is the embedment length of the reinforcement bar), which results in the bond force. To translate this bond force into a stress, this force is divided by the cross sectional area of the rebar, which results in Equation 4.4 for the pull-out strength of a straight rebar anchorage. The parameters used in this equation are shown in Figure 4.3, in which a detailed sketch of a straight rebar anchorage is given.

$$\sigma_{sR,straight} = \frac{4\tau_b l_e}{d_s} \tag{4.4}$$

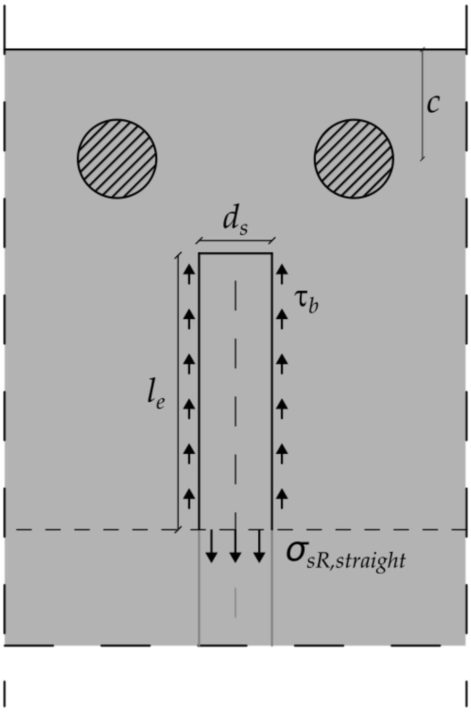


Figure 4.3: Pull-out strength of the straight rebar anchorage

4.2 DERIVATION OF HOOKED REBAR ANCHORAGE BEHAVIOR

Compared to the upper part of the stirrup within the cross section of the case, the lower part is anchored with an L-shaped hook. The lower part of the cross section is shown in Figure 4.4. In this figure, it can be clearly seen that the applied shear reinforcement is made up of two reinforcement bars with an L-shaped hook, that do not enclose the longitudinal reinforcement. According to this drawing, the hook is applied above the longitudinal reinforcement. In addition to the L-shaped stirrups, there is also a triangular-shaped reinforcement in the same plane as the stirrups, but this will not be taken into account in the shear capacity prediction. The lower part of the cross section governs the span regions of the bridge, in which the bending moment causes a tension region in the lower part of the cross section and a compression zone in the upper part.

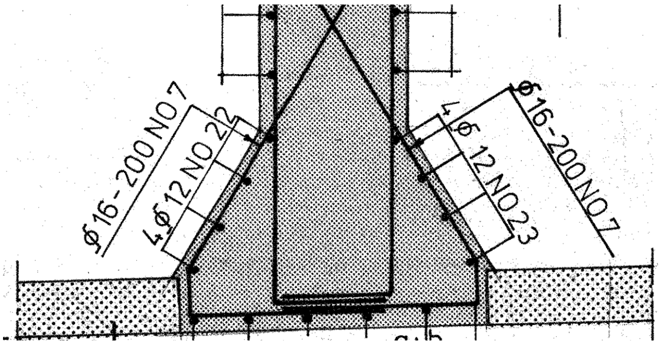


Figure 4.4: Anchorage of bottom part of the non conforming stirrup

In the literature review, it was already mentioned that F. Monney has done 24 pull-out tests on reinforcement bars that had an L-shaped anchorage [8], in these tests, a certain crack width was also included. On the basis of these tests, an analytical model is proposed to determine the pull-out strength of L-shaped anchorages. The test specimens of the experiments varied in four parameters; crack width w, tail length l_{tail}, concrete cover c, and the presence of a longitudinal bar within the bend. Most of the specimens failed due to concrete spalling or pull-out of the rebar, and some other tests were stopped due to extensive yielding of the reinforcement. Based on the experimental results, a few assumptions were made to establish the analytical model. One of them is that the hook is divided into three regions; the tail, the curved, and the inner region, these regions are shown in Figure 4.5. In the tests, the bond between the inner region and the concrete was disabled using PVC tubes, and therefore this region is not included in the anchorage capacity.

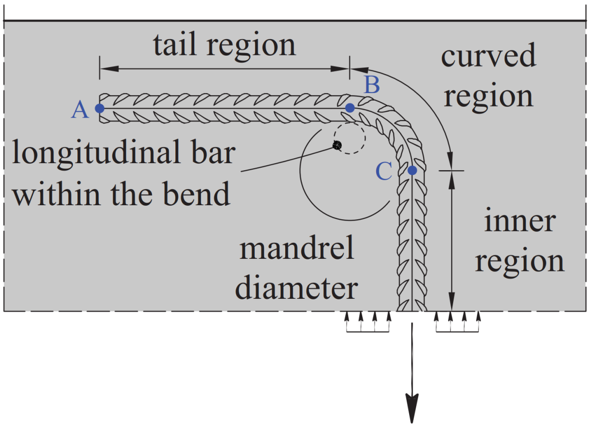


Figure 4.5: Regions of the hook anchorage [8]

In the next two sections, the bond strength of the tail and the curved region will be derived. The exact equations of the analytical model given by F. Monney [8] will not be used in this research project, some adjustments are made to apply it in this research. The two main ones are that the hook has a 90 degree bend and that the spalling failure of the tail region does not occur within this case. Due to the applied longitudinal reinforcement outside the hook, the assumption is made that this spalling failure cannot occur. After the equations are given to determine the bond strength of each region, the third and final section will give the model to determine the pull-out strength of the hooked-shaped anchorage.

4.2.1 Bond strength tail region

In the model, the bond stress along the outside surface area of the tail region is limited by the spalling failure of the concrete, this limitation is not included in this research. With this adjustment, Equation 4.5 is used to determine the bond strength of the tail region. This equation gives the strength as a summation of two parts; the bond stresses due to the bond forces and the friction bond stresses due to the uplift forces, these forces are shown in Figure 4.6.

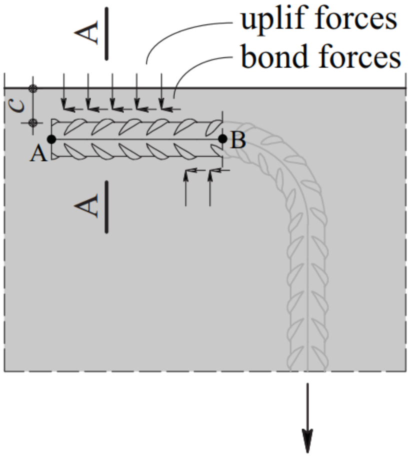


Figure 4.6: bond and uplift forces [8]

$$\begin{aligned}\tau_{tail} &= \tau_b + \tau_{tail,friction} \\ &= \tau_b + \mu \frac{V_{max} + R_M}{\pi d_S l_{tail}}\end{aligned} \tag{4.5}$$

in which μ is the friction coefficient, V_{max} is the maximum shear force in the tail region, R_M is the reaction force due to the uplift forces, and l_{tail} is the length of the tail region. According to F. Monney [8], the uplift forces of the tail region and the deviation forces of the curved region can increase the bond stresses due to enhanced friction, and due to this, a friction coefficient of $\mu = 0.4$ is assumed, which is also applied in this research. The maximum shear force is determined using the assumption that the reinforcement bar yields at the clamped end of the tail region (point B in Figure 4.5), and this assumption is based on the experimental results. With this assumption, the plastic bending moment resistance M_{R0} can be estimated at point B. In the experimental results, it was also observed that the tail region behaves like a cantilever beam with a point force, with this in mind, the maximum shear force is calculated by dividing the plastic bending moment resistance by the distance of the point force to point B l_v. The equation of this force is given below:

$$\begin{aligned}V_{max} &= \frac{c_p M_{R0}}{l_v} \\ &= \frac{0.95 f_y d_s^3}{6 l_v}\end{aligned} \tag{4.6}$$

The distance l_v is taken as three times the diameter of the reinforcement bar and is limited by the tail length, so $l_v = 3d_s \leq l_{tail}$. The plastic bending moment resistance is calculated for the case without any axial force, but due to the pull-out forces, there is an axial force present in the reinforcement bar. This is taken into account by the factor c_p, which reduces the resistance. In a simplified manner, a value of 0.95 is adopted for this factor. To determine the reaction due to the uplift forces R_M in Equation 4.5, the force that takes into account the lever effect $F_{s,M}$ must first be determined. This force is determined with the moment equilibrium around point B, and the reaction R_M is then determined based on the vertical equilibrium in the detail. The equation for the reaction is given below including the equation for the lever effect force.

$$\begin{aligned}R_M &= V_{max} + F_{s,M} \\ &= V_{max} \left(1 + \frac{\frac{l_v}{d_s}}{\frac{1}{2}(\frac{d_{mand}}{d_s} + 1)} \right)\end{aligned} \tag{4.7}$$

in which d_{mand} is the mandrel diameter.

4.2.2 Bond strength curved region

Similarly to the bond strength of the tail region, the curved region is the sum of the bond stresses along the surface of the curved region and the additional bond stresses due to the friction, which is related to the deviation forces. In Figure 4.7 the forces in the curved region are shown. In the research [8] it is assumed that the curved region has sufficient lateral cover and therefore spalling failure will not occur. Due to this assumption, no further adjustments need to be made for the spalling failure in this region, the only thing which needs to be considered is that the hook has a 90 degree bend. The bond strength of the curved region is as follows:

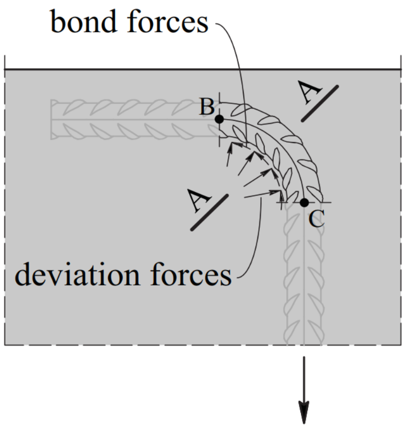


Figure 4.7: Bond and deviation forces [8]

$$\begin{aligned}\tau_{curved} &= \tau_b + \tau_{tail,curved}\\ &= \tau_b + \mu\frac{p_{avg}}{\pi d_s}\end{aligned} \tag{4.8}$$

in which p_{avg} is the average deviation force. This force is calculated using Equation 4.9. The compressive stress due to this deviation force cannot exceed the confined compressive strength f_{c3}, otherwise the crushing of the concrete within the bend will govern. Within the bend of a reinforcement hook, this confined compressive strength can reach values up to 3 to 6 times the characteristic compressive strength according to Monney et al. [34]. In that same research, Equation 4.10 is given to calculate this compressive strength.

$$p_{avg} = \min\left(\pi d_s \frac{2\tau_{tail}\frac{l_{tail}}{d_{mand}} + \tau_b\frac{\pi}{4}}{1-\mu\frac{\pi}{4}}, f_{c3}d_s\right) \tag{4.9}$$

$$f_{c3} = \eta_{fc}f_{ck} + 4f_{ct,eff}\left(\frac{c}{d_s}+\frac{1}{2}\right)\left(\frac{k_B}{k_A}+\frac{4k_C d_s}{\pi k_A d_{mand}}\right) \tag{4.10}$$

in which η_{fc} is the factor that takes into account the brittleness of the concrete, this is equal to $(30/f_{ck})^{1/3} \leq 1.0$. The effective tensile strength $f_{ct,eff}$ is equal to the mean tensile strength multiplied by two factors; one which takes into account the effect due to the bond conditions η_{is} (1.0 for good bond conditions and 0.6 for poor conditions), and the other which takes into account the brittleness of concrete in tension η_{ct}, this is equal to 0.8. The effective tensile strength is equal to $\eta_{is}\eta_{ct}f_{ctm}$. In Equation 4.10 three constants are used, the k factors, which are the confinement factors. The following values are used for these factors $k_A = 1.0$, $k_B = 0.75$, and $k_C = 13.2$, and the validity of these constants is verified by comparison with the experimental results [34].

4.2.3 Final pull-out strength of hooked rebar anchorage

With the bond strength of the tail and the curved region, the total pull-out strength of the hook can be determined. Based on equilibrium conditions, the force at the end of the curve (point C in Figure 4.5) is determined. This force consists of a part due to the anchorage force in the tail region, the curved region, and a part due to the lever effect of the uplift force. Each of these contributions can be translated into a stress at point C, which is the final pull-out strength of the hook anchorage and is calculated by the following equation:

$$\begin{aligned}\sigma_{sR,hook} &= \sigma_{tail} + \sigma_{curved} + \sigma_{lever,effect}\\ &= \frac{4l_{tail}}{d_s}\tau_{tail} + \frac{4d_{mand}}{d_s}\tau_{curved} + \frac{4V_{max}}{\pi d_s^2}\frac{\frac{l_v}{d_s}}{\frac{1}{2}(\frac{d_{mand}}{d_s}+1)}\end{aligned} \tag{4.11}$$

The contribution of the tail region is determined by integrating the bond stress along the length of the tail and also integrating the associated deviation forces in the curved region. The same is done for the curved region, and the last part of the equation takes into account the effect of the lever by using the force $F_{s,M}$. This is also used in Equation 4.7.

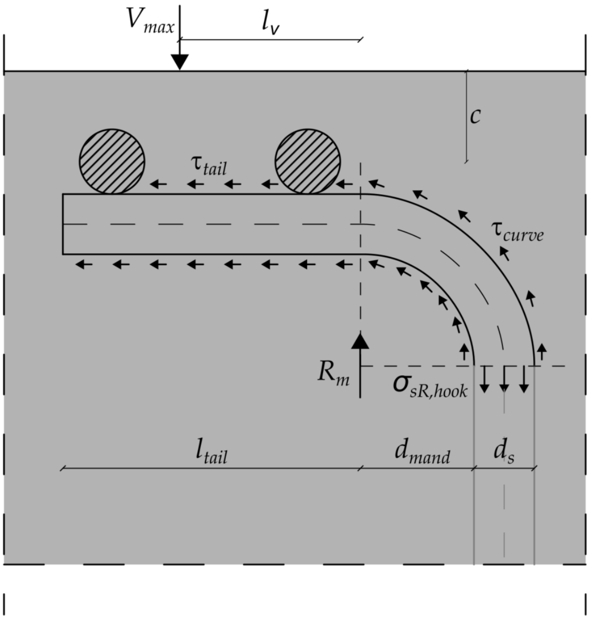


Figure 4.8: Pull-out strength of the hooked rebar anchorage

4.3 IMPLEMENTATION OF ANCHORAGE BEHAVIOR IN THE MODEL

The final step is to implement the anchorage behavior of the straight and hooked rebar in the layered approach, which is developed in Chapter 3. One of the parameters that is calculated for each layer is the axial stress in the shear reinforcement, and this needs to be reduced according to the available pull-out strength (anchorage capacity). The axial stress in the shear reinforcement is calculated using the elastoplastic stress-strain relationship, which begins with a linear part $E_s \varepsilon_y$ and ends with a constant part which is the yield strength of the shear reinforcement f_{yy}. Therefore, the stress in the reinforcement is calculated with the following function; $\min(E_s \varepsilon_y, f_{yy})$. In Figure 4.9, this stress-strain relationship is shown. The anchorage capacity σ_{sR} could limit the axial stress in the shear reinforcement σ_{sy}, which is shown with the red line in the figure. With the implementation of this capacity, the minimum function changes to; $\sigma_{sy} = \min(E_s \varepsilon_y, f_{yy}, \sigma_{sR})$, in which the anchorage capacity is added.

To explain how the layered model is changed, an adjusted version of the flow chart is shown in Figure 4.10, which includes the implementation of the anchorage behavior. The iterative procedure starts in the same way as before, only a few extra input parameters need to be given to determine the anchorage capacity. In the "SUBROUTINE", which calculates the response of each layer, the anchorage capacity is implemented, and this step is highlighted with orange in the flowchart. First, the crack width needs to be determined in order to determine the anchorage capacity, and with this capacity the stress in the shear reinforcement is calculated. After this, the procedure can proceed in the same way as before. The straight rebar anchorage is differently implemented in the script compared to the hooked rebar anchorage. In Appendix A the Python script is included with the straight rebar anchorage, and in Appendix B the script with the hooked rebar anchorage. The next two sections will further elaborate on how the anchorage capacities are used in the scripts.

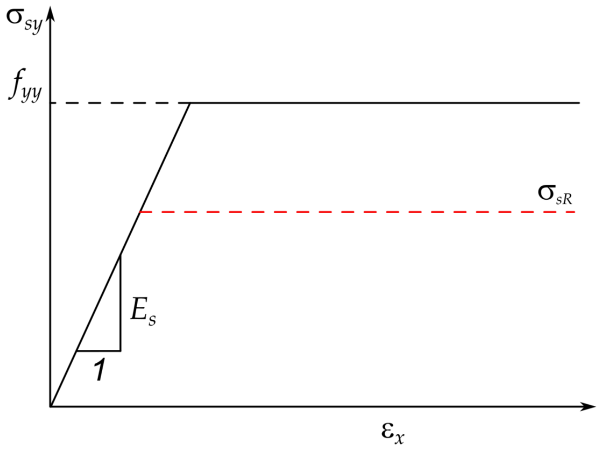


Figure 4.9: Model for the straight rebar anchorage

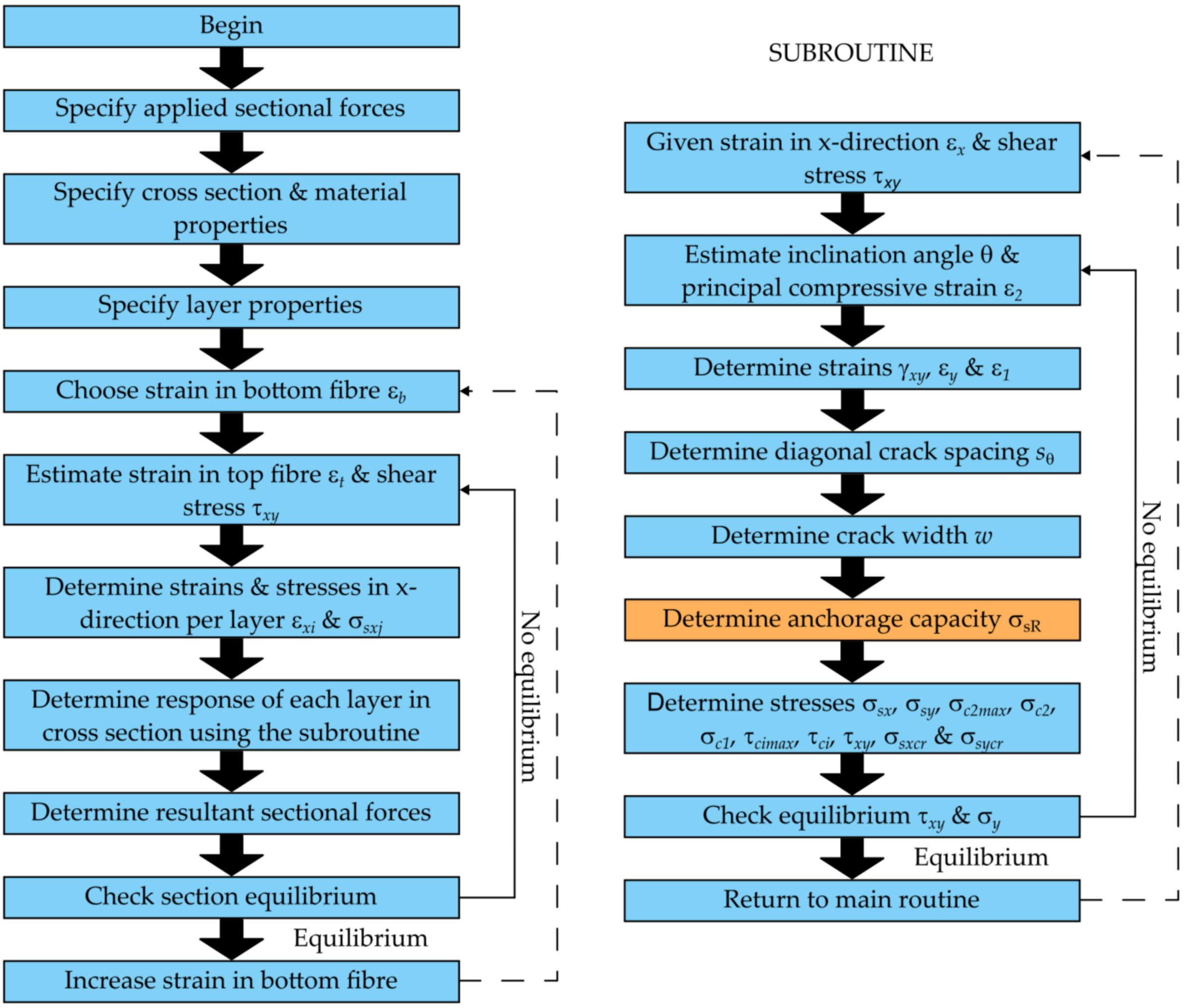


Figure 4.10: Adjusted analyse procedure of a reinforced concrete cross section

4.3.1 Model for the straight rebar anchorage

In Figure 4.11 the upper part of the cross section is drawn with a cut out that gives a closer look at the anchorage of the stirrups in the first few layers. The stirrups do not reach the first top layer of the cross section, so in this layer there is no calculated axial stress in the shear reinforcement. The first influence of the anchorage is used in the second layer from the top of the cross section. In each layer within the cross section, the two reinforcement bars have a certain embedment length l_{ei}, which in this case is the same as the height of each layer. This embedment length is an additional input for the script and is implemented as a list, for each layer a certain length, and for this case the first length is zero, which results in zero axial stress in the shear reinforcement. With Equation 4.2 the bond strength is calculated, which requires some input parameters, the additional input parameters are; casting effect factor η_{cp}, the number of lugs η_l, the bond index f_R and the diameter of the reinforcement bar d_s. In the model, the crack width is calculated, after which the anchorage capacity is calculated on the basis of this width, the input parameters, and the capacity of the previous calculated layer. So, for the second layer, the anchorage capacity depends only on the capacity of the layer itself, because there is no anchorage capacity in the first layer. The anchorage capacity of the third layer is based on the capacity of itself and that of the second one, this principal is performed for each layer in the cross section. The anchorage capacity of the stirrup increases linearly with the increasing embedment length, and to derive a comprehensive equation, the mean value of the anchorage capacity for each layer is used. In Figure 4.11 it is shown on the left with a dotted line the linear increase of the anchorage capacity, and with the blue pattern the implementation of the mean value is shown.

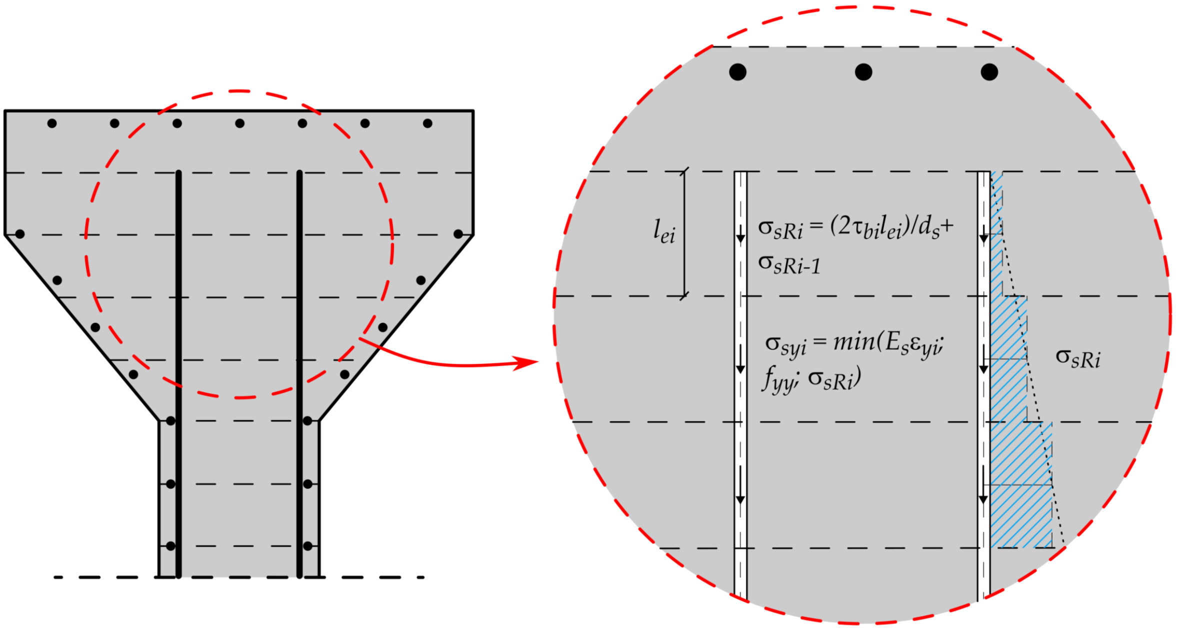


Figure 4.11: Model for the straight rebar anchorage

The anchorage capacity of each individual layer σ_{sRi} is calculated using Equation 4.12. Because the mean value is used for the capacity, it is divided by two. Therefore, the anchorage capacity of the layer itself is calculated with Equation 4.4. This capacity plus the capacity of the previous layer σ_{sRi-1} is the total anchorage capacity, which increases with each layer. This anchorage capacity could reduce the stress in the shear reinforcement in each layer f_{syi}, it is expected to do so in the first few layers, but after a few layers this capacity is expected to exceed the yield strength and therefore it will no longer influence the axial stress in the shear reinforcement. In Appendix A the Python script is included in which the straight rebar anchorage is implemented.

$$\sigma_{sRi} = \frac{\sigma_{sR,straight}}{2} + \sigma_{sRi-1} = \frac{2\tau_b l_e}{d_s} + \sigma_{sRi-1} \tag{4.12}$$

4.3.2 Model for the hooked rebar anchorage

The model for the hooked rebar anchorage is not that different from the one for the straight rebar anchorage. In Figure 4.12 the same sketch and cut out is given, but now for the lower part of the cross section. The L-shaped hook is applied in the first bottom layer of the cross section and the anchorage capacity of this hook is calculated with Equation 4.14, which is the same as Equation 4.11. With the capacity of the first layer determined, the following layers are calculated using the same principle as the model for the straight rebar anchorage. The second layer capacity is calculated using the hook anchorage capacity of the first layer and the straight rebar anchorage capacity. Therefore, the same as in the previous model, Equation 4.12 is used for each layer, only the capacity of the first layer is determined using Equation 4.14. In Appendix B the Python script is included in which the hooked rebar anchorage is implemented.

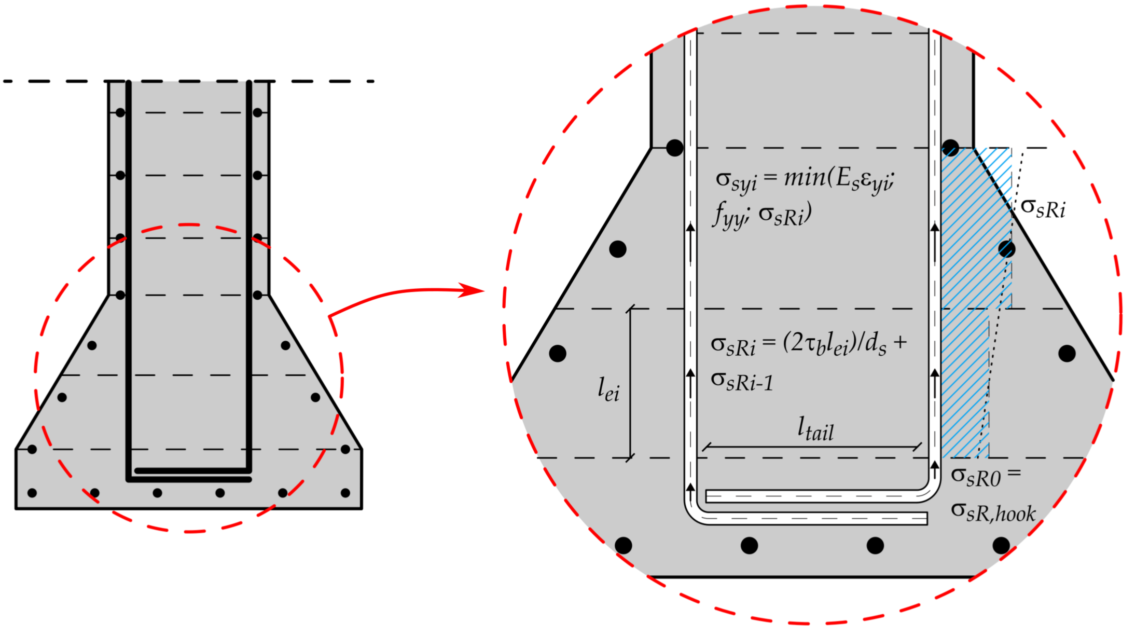


Figure 4.12: Model for the hooked rebar anchorage

$$\sigma_{sRi} = \frac{2\tau_b l_e}{d_s} + \sigma_{sRi-1} \tag{4.13}$$

in which the resistance of the first layer σ_{sR0} is calculated with the following equation:

$$\sigma_{sR0} = \sigma_{sR,hook} = 4\left(\frac{l_{tail}}{d_s}\tau_{tail} + \frac{d_{mand}}{d_s}\tau_{curved} + \frac{V_{max}}{\pi d_s^2}\frac{\frac{l_v}{d_s}}{\frac{1}{2}(\frac{d_{mand}}{d_s}+1)}\right) \tag{4.14}$$

4.3.3 Reduction factor accounting for experimental results

The anchorage capacity of both types of anchorage is based on experimental results, and in these results a maximum pull-out strength is shown. The equations derived by the two referenced studies predict this maximum strength, but in this research it could be the scenario that this does not match reality. The experimental results of the pull-out tests on straight rebar anchorages conducted by Brantschen et al. [12] are shown in Figure 4.13. The peak resistance obtained within these tests is obtained around 1 and 2 mm of slip, which is expected to be a realistic slip value of the shear reinforcement. For this reason, no further reduction factor will be applied to this anchorage capacity of the straight rebar obtained with Equation 4.4. Furthermore, Monney et al. [8] introduce the coefficient η_{cp} to take into account the bond conditions of the rebar. This factor is equal to 1.0 for poor bond conditions and 1.2 for good conditions. In this research, the rebar is expected to have poor bond conditions, so the value of 1.0 is used. In this way, the lower bound is used for the bond strength of the straight rebar anchorage.

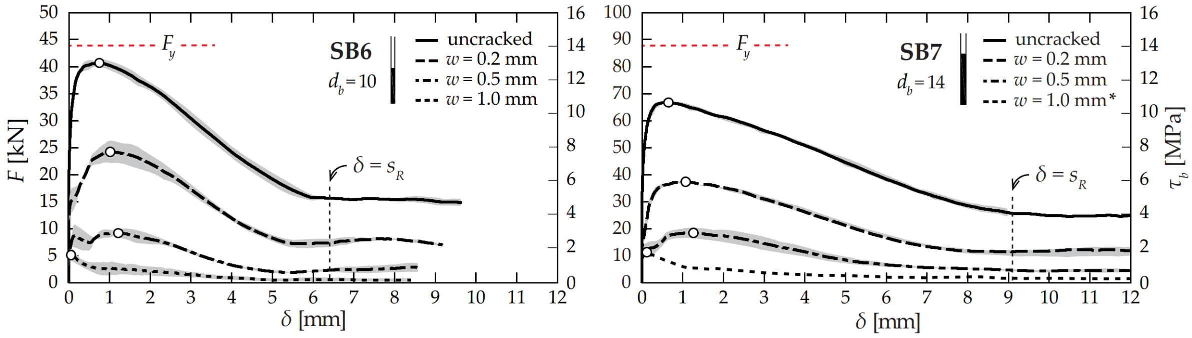


Figure 4.13: Experimental results of Brantschen et al. [12]

The experimental results of the research performed by Monney et al. [8], which performed pull-out tests on L-shaped anchorages, are shown in Figure 4.14. In this figure, the blue and red lines are the pull-out tests in which extensive yielding deformations of the reinforcement was the failure mode. The other two lines represent the pull-out failure, and it can be clearly seen that there is a peak resistance in the results. However, compared to the previous results, the peak resistance is obtained at a larger slip value. To take into account the fact that the peak resistance is obtained at a higher slip value, a reduction factor will be applied in the hooked rebar anchorage capacity, obtained with Equation 4.14.

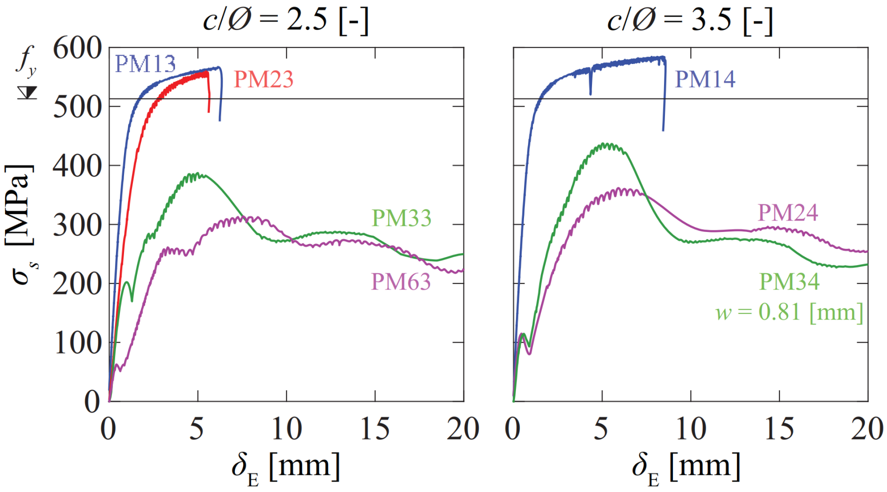


Figure 4.14: Experimental results of Monney et al. [8]

In the same research conducted by Monney et al. [8], a design equation based on reliability analysis is given for the anchorage capacity. A partial factor γ_R of 1.4 is introduced, which is used to reduce the anchorage capacity. With this partial factor, a reduction factor is obtained, which is equal to $1/\gamma_R \approx 0.714$. In this research, two other reduction factors will be used because the equation to derive the anchorage capacity is adjusted compared to the original proposed one. First, a reduction factor of 0.75 will be applied, close to one based on reliability analysis. The second one will be equal to 0.5, and this is applied to see what the influence is of a significantly lower reduction factor. In the next chapter, these reduction factors will be used in the shear capacity prediction, and the results will be compared to those that do not have a reduction factor.

CHAPTER 5

Results and Discussion

With the implementation of anchorage influence, the proposed model is close to completion. The only remaining component is the validation of this model, which is included in this chapter, as it represents a crucial point of discussion. Following this validation, the proposed model will be used to predict the shear capacity of the cross sections within the case. With these results, comparisons will be made with the shear capacity predicted without the anchorage influence, and the shear capacity obtained with the RBK [2]. Next, the results of the proposed model will be further analyzed to see what the influence is of the anchorages in the model. The final section extends the discussion of this chapter, focusing primarily on the proposed model and its limitations.

In Chapter 3, the verification of the layered model was performed using the Response-2000 program [14]. Notably, it was observed that as the bending moments increased, the layered model did not obtain results similar to those obtained with the program, and these results were significantly conservative. Therefore, this chapter focuses on the part where the results are similar to the program results, specifically up to approximately 50% of the ultimate bending moment resistance. Furthermore, during the verification of the layered model, an effective shear depth was selected based on the model proposed by M. Roosen [28]. Although his model did not exactly match the program results, it yielded the most conservative outcomes, and this same model is used to obtain the results in this chapter.

5.1 VALIDATION OF THE PROPOSED MODEL

Due to the specific development approach of the proposed model, a limited validation has been carried out. In the model's development, several assumptions are made based on the cross section of the case, and these assumptions constrain the validation of the model. The assumptions are mainly about the reinforcement ratios and the yield strength of the reinforcement, and these assumptions / limitations are further described in Section 5.4. The literature review in this thesis has already highlighted two studies on reinforced concrete beams with non conforming stirrups. The first study, conducted by Rupf [9], involved experiments on post-tensioned girders with a low amount of shear reinforcement. Since the proposed model does not work properly with a low amount of shear reinforcement, this experiment cannot be used for further validation of the proposed model. Additionally, different yield strengths are used for the longitudinal reinforcement layers, which is also a limitation of the proposed model. The second study, conducted by Schramm [10], also mentioned in the literature review, similarly uses a low amount of shear reinforcement, which makes it unsuitable for the validation of the model within this research. In this section, the experimental results obtained by Dégee et al. [13] will be used to validate the proposed model. These three mentioned studies were found in literature that performed experiments on reinforced concrete beams with non conforming stirrups, no other relevant research was found in literature.

5.1.1 Experimental research by Dégee et al.

In a presentation by Dégee et al. [13], the experimental results of tests performed on three existing beams are shown. These beams were removed from an existing bridge, and Figure 5.1 shows a cross section and side view of one of these girders. Each beam was tested with a point load that increased with increments of 400 kN. The location of this point load differed for each beam; one positioned in the middle of the span, and the other two closer to the support. To determine the material properties within the cross section, three material tests were done; cross bow test to determine the tension forces in the prestress cables, concrete compression test to determine the concrete compressive strength, and reinforcement tension tests to determine the tensile strength of the reinforcement.

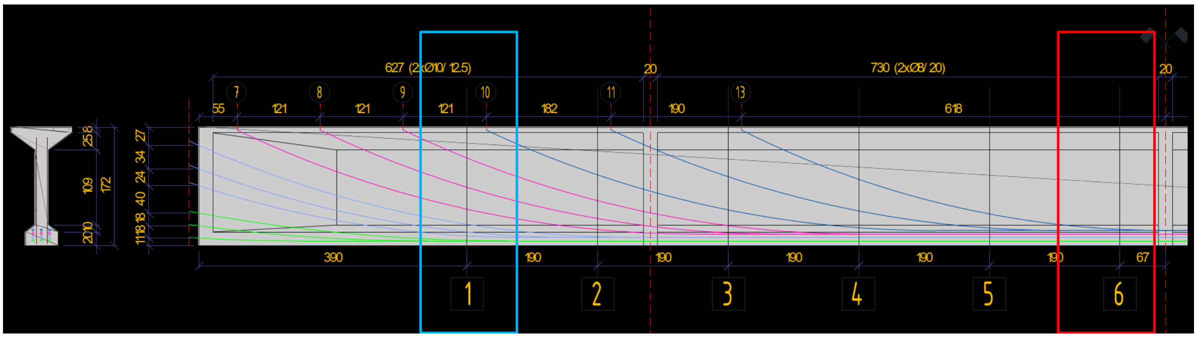
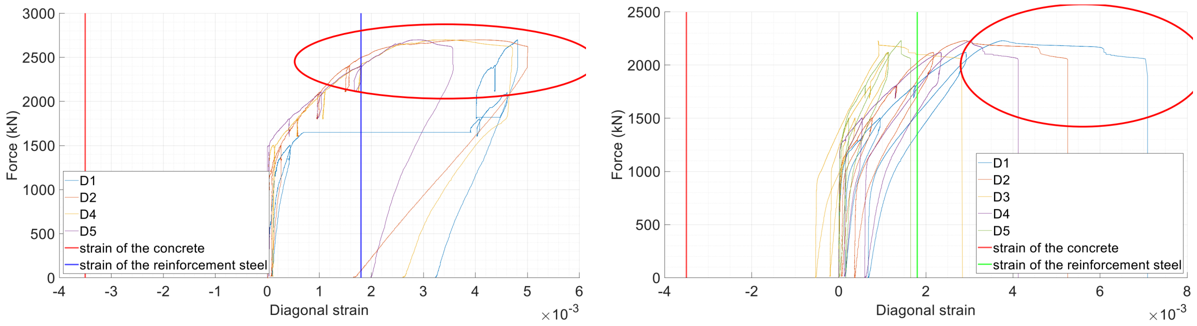


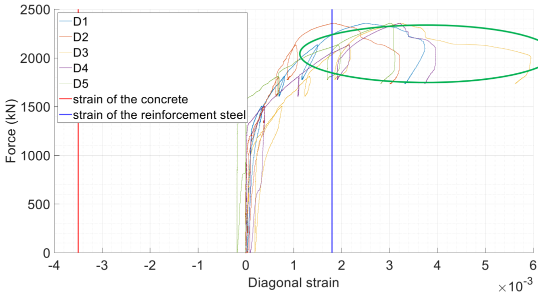
Figure 5.1: Existing reinforced concrete beam tested by H. Dégee et al.[13]

In the presentation, limited details are provided in addition to the material properties, which is why several assumptions are made to predict the shear capacity of these existing beams. These assumptions are mainly about cross sectional properties and the applied sectional forces within the cross section, to provide essential input for the proposed model. Two cross sections are given in the presentation; one in the span of the bridge and one closer to the support. The difference between these two cross sections lies in the applied stirrups; either two straight rebars with a diameter of 8 mm every 200 mm or two straight rebars with a diameter of 10 mm every 125 mm. In addition to the information about the applied stirrups, not much is given about the longitudinal reinforcement. It is mentioned that there are two 18 mm rebars in the bottom of the cross section, together with six additional 15 mm bars in the bottom flange. Although more longitudinal reinforcement bars are illustrated in the web and in the top flange of the cross section, no specific details are provided about these rebars. For the purpose of analysis, it is assumed that the remaining longitudinal bars also have a diameter of 15 mm.

Furthermore, the normal force in the cross section due to the prestress is derived from the concrete shear capacity, calculated with the Eurocode 2 [4], which is given in the presentation slides. This capacity is approximately 1000 kN, and using this value, the parameter σ_{cp} is calculated, which is the normal stress due to an applied normal force in the cross section. With this normal stress, the normal force is determined by multiplying this stress by the concrete area, resulting in a significant normal force of approximately 10000 kN. This force is then used in the Response-2000 program to assess the shear behavior in both cross sections. As a result, the shear capacity of the cross section with the lowest amount of stirrups does not exceed 1500 kN, and the other cross section reaches approximately 2400 kN. In Figure 5.2 the experimental results of the three tested beams are shown. Figure 5.2a shows the results of the experiments in which the point load was closest to the support, in Figure 5.2b the point load is in the middle of the span, and the results of Figure 5.2c are obtained by placing a point in between the previous distances. In these figures, multiple lines are plotted that represent different strain measurement points in the experiments. Based on these results and those obtained with the Repsonse-2000 program, the section closer to the support is further examined with the proposed model.



(a) Experimental results by H. Dégee et al.[13] **(b)** Experimental results by H. Dégee et al.[13]



(c) Experimental results by H. Dégee et al.[13]

Figure 5.2: Experimental results by H. Dégee et al.[13]

Due to the significant amount of normal force within the cross section, the original model needed to be adjusted. The strain in the bottom fiber starts around the cracking strain in the original model, because it is assumed that this bottom fiber of the cross section is cracked. However, due to the significant normal force, the bottom fiber is no longer cracked, and this is why this bottom strain must be reduced. Based on the results of the Response-2000 results [14], this bottom strain is reduced, and due to this adjustment, convergence was found for bending moments up to around 2500 kNm. This is not similar to 50% of the maximum bending moment, as was found for the cross section of the case. Therefore, it is expected that this significant normal force also influences up to what point the model predicts the shear capacity and converges. In Table 5.1 the predicted shear capacities are given. This table consists of three columns, the first being the increasing applied bending moment in the cross section, and the other two are the predicted shear capacities. The results $V_{u,closed}$ are those obtained with the layered model without any anchorage influence, and $V_{u,straight}$ are those obtained with the proposed model, including the straight rebar anchorage of the stirrups.

Bending moment [kNm]	$V_{u,closed}$ [kN]	$V_{u,straight}$ [kN]
0	2822	2780
500	3147	3139
1000	2805	2737
1500	2748	2470
2000	2667	2611
2500	2537	2335

Table 5.1: Predicted shear capacity for the cross section tested by Dégee et al. [13]

The results show a maximum difference of around 10% and a minimum difference below 1%. Notably, it is observed that the difference does not show a constant decrease. To provide a clearer understanding of these results, Figure 5.3 shows a graph in which these results are plotted. A slight increase in the shear capacity can be seen in the first bending moment increment, and after this first increment the capacity has a gradual decrease. The shear capacity of the cross section with the straight stirrups is relatively the same, only at the two points a slight difference can be seen. Furthermore, the results of the Response-2000 program are included in the graph $V_{u,R2K}$, where closed stirrups were chosen in the program.

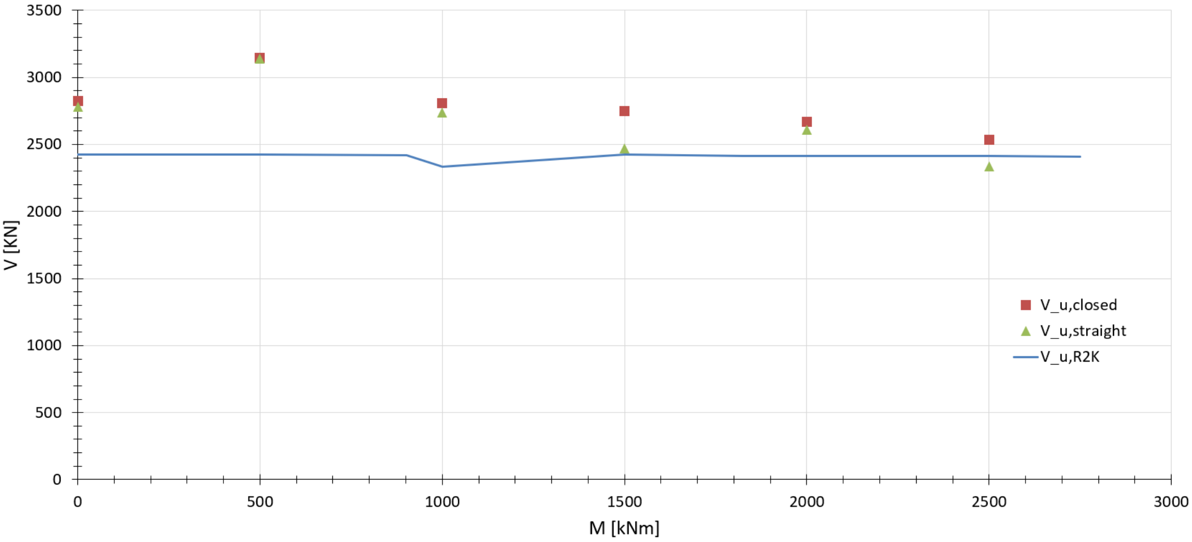


Figure 5.3: Predicted shear capacity for the cross section tested by Dégee et al. [13]

These results are subject to the influence of several input parameters within the model. First, the cross section is divided into ten layers based on the distribution of the longitudinal reinforcement. Due to this distribution, the web is divided into four large layers, and the other six layers are divided between the top and bottom flanges. This is approximately half of the layers that are used in the cross section of the case, making it more challenging to achieve convergence since fewer layers in the cross section can be adjusted to satisfy equilibrium. In Figure 5.4, both cross sections are shown, highlighting the layer distribution in each. This figure clearly shows the difference in the layer distribution and also the height difference; 3500 mm versus 1720 mm (scaled in the figure).

Moreover, the significant normal force within the cross section is a crucial point of discussion. As mentioned previously, it has a significant influence on the shear capacity prediction. The model needed to be adjusted because now the strain in the bottom fiber does not crack due to this normal force, and therefore the starting bottom strain in the model needs to be decreased below the cracking strain. Furthermore, it could be the case that different longitudinal rebars are applied compared to those assumed to be in the cross section. However, no further details are given in the presentation, and that is why assumptions were made. Lastly, the effective shear depth selected in Chapter 3 overestimates the cross section shear capacity, compared to the shear capacity obtained with the Response-2000 program.

These input parameters of the proposed model also explain the limited difference observed between the shear capacities of the closed stirrups and the applied stirrups. The most significant factor is the substantial normal force, which greatly influences the results because the starting bottom fiber strain is adjusted. As mentioned earlier, the value of this normal force is calculated using the concrete shear capacity, and no further linear elastic analysis is performed for this beam. Due to these changes, reduced convergence was found and this was also the case for the prediction of the shear capacity, including the anchorage influence. In this prediction, the calculation of the initial behavior before cracking diverged considerably. When the first convergence was achieved, the crack width

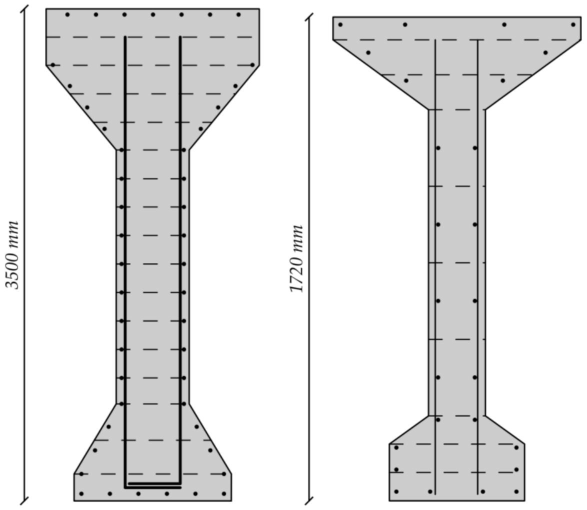


Figure 5.4: Comparison between cross sections

had already reached around 1 mm. This is a significant crack width compared to the results obtained for the closed stirrups, and because of this, the results are not completely justified.

Furthermore, comparing the results of the proposed model with those in the presentation is challenging, primarily because a linear elastic analysis is not performed. In the model, the applied bending moment within the cross section is increased to 2500 kNm, and it is not extended further due to the convergence problem of the model. The model uses the bending moment, which includes the moment due to the loading and the prestressing based on linear elastic analysis. However, it is difficult to determine the applied bending moment due to the loading and prestressing of the beam based on the limited information provided in the presentation. For the results in Figure 5.3, the prestress load is based on the concrete shear capacity since a linear elastic analysis cannot be performed with the information available in the presentation. Therefore, due to the limited information given, no linear elastic analysis is performed to determine the sectional forces, and with no further details of the applied bending moment, it is hard to compare the results.

An additional point that is not considered in this research is that in the presentation, it is given that the 8 mm stirrups have a smooth surface, and no further properties of the 10 mm stirrups are provided. Consequently, the properties of the 8 mm stirrups are applied to the 10 mm stirrups. Moreover, due to the smooth surface, the number of lugs per rib becomes zero, which is used in Equation 4.1, which determines the bond strength of a straight rebar. When the number of lugs becomes zero, the part that takes into account the crack width in the equation becomes zero, and therefore no further influence is determined when the number of lugs is equal to zero. This is the reason why the number of lugs is assumed to be two, the same amount as used in the cross section of the case. A smooth surface area is expected to reduce the bond strength compared to that of a ribbed bar, but this aspect is not investigated further in this research.

Ultimately, the prediction of the shear capacity for this cross section could be more accurate. However, due to limited information provided in the presentation slides, numerous assumptions were necessary for the input of the model. Based on these input parameters, the model needed to be adjusted and, due to these adjustments, limited convergence was achieved for the shear capacity prediction.

5.2 SHEAR CAPACITY PREDICTION FOR THE CASE CROSS SECTIONS

In this second section, the results obtained for the cross sections of the case will be discussed, these cross sections are the one in the span region and the other in the support region. The use of two cross sections for the case is explained in Section 3.1.2, which describes the linear elastic analysis used as input for the layered model. For each cross section, several results are obtained. The first results will be a comparison between the results obtained using the layered model without any influence of the stirrups and the proposed model, which includes the anchorage influence. Furthermore, the results obtained using the RBK [2] are presented and compared.

5.2.1 Cross section in span region

The tension zone of the cross section within the span region of the bridge is expected to be in the lower part of the cross section due to the applied load. In this tension zone, the stirrups are anchored by the applied L-shaped anchorage, which does not enclose the longitudinal reinforcement. Therefore, the prediction of the shear capacity of this cross section is carried out using the model described in Section 4.3.2. To recap; this model uses the hooked rebar anchorage capacity for the first layer within the cross section, and in the layers after that, this capacity is increased by the straight rebar anchorage capacity. In Table 5.2 the results of the calculations are shown. Notably, the bending moment now increases to 15000 kNm, exceeding 50% of the ultimate bending moment resistance. The second column shows the predicted shear capacity of the layered model without any influence of the stirrups $V_{u,closed}$. The following three columns give the ratio between the shear capacity without any influence and with the hooked anchorage influence. The last two columns introduce a reduction factor for the anchorage capacity of the hooked rebar anchorage in the first layer, the reason for the application of this reduction factor is described in Section 4.3.

Bending moment [kNm]	$V_{u,closed}$ [kN]	$V_{u,closed} / V_{u,hooked-1.0}$ [-]	$V_{u,closed} / V_{u,hooked-0.75}$ [-]	$V_{u,closed} / V_{u,hooked-0.50}$ [-]
0	7328	1.000	1.001	1.005
2564	6806	1.000	0.999	1.007
5000	6328	0.999	1.004	1.023
7539	5759	1.000	0.999	1.017
10000	5043	0.998	0.999	0.996
13438	3929	1.000	1.000	0.997
15000	3266	1.004	0.993	1.004

Table 5.2: Influence of the hooked stirrups compared to the enclosing stirrups

To better understand the results of Table 5.2, Figure 5.5 provides a visual representation of the results of the table. The x-axis represents the increasing bending moment, and the y-axis represents the ratio. In this figure, the same red marked region is included as is done in the verification of the layered model in Section 3.1.2. The results in this region are less reliable compared to the results in the first part of the graph. Notably, without any reduction factor in the hooked anchorage capacity, the predicted shear capacity $V_{u,hooked-1.0}$ is similar to that obtained without any influence of the anchorage $V_{u,closed}$ (the maximum difference is 0.4%). Introducing the reduction factor of 0.75 in the fourth column $V_{u,hooked-0.75}$, leads to a slightly larger difference between the results, but it remains relatively small. The most noticeable differences are shown when the reduction factor 0.5 is applied in the last column $V_{u,hooked-0.50}$, which is logical because the anchorage capacity is the lowest in this case, but the differences are still not that significant. In Figure 5.5 the results are shown with the different reduction factors; the results of the second column without any reduction factor are represented by the blue squares 1.00, those with the reduction factor of 0.75 are represented by the red triangles, and the green circles are those obtained with the reduction factor 0.50.

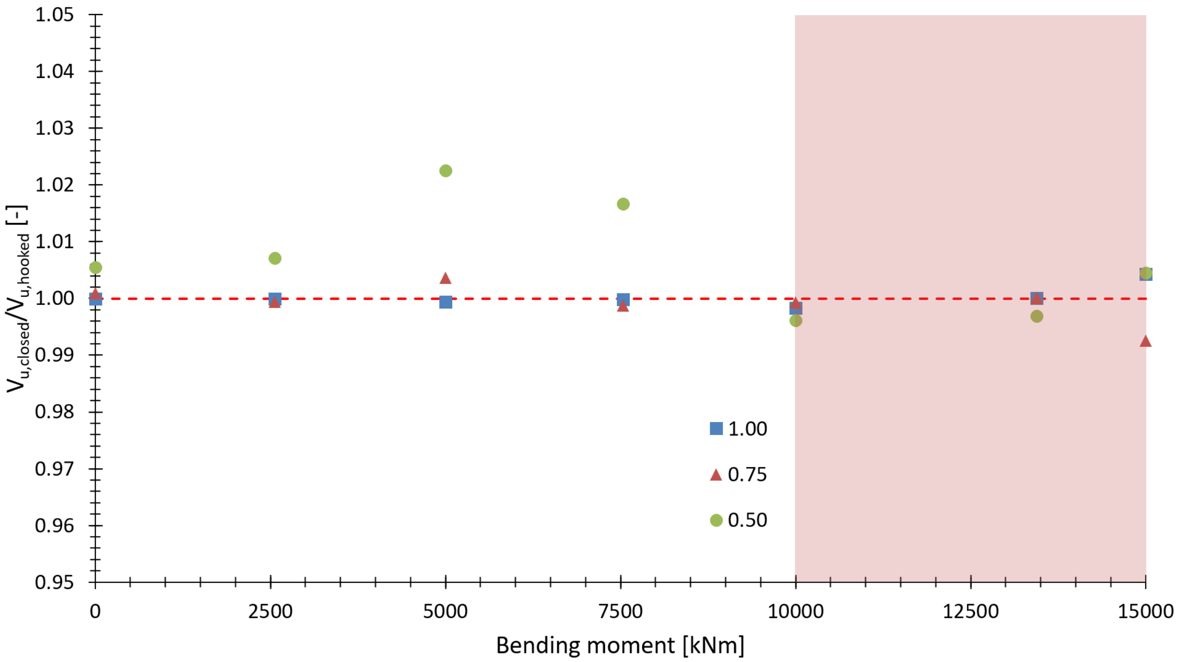


Figure 5.5: Influence of the hooked stirrups compared to the enclosing stirrups

The small differences can be explained by looking at Figure 5.6, in which Equation 4.14 is plotted with an increasing crack width. Five lines are shown in this figure, with the blue, orange, and yellow representing the results of the equation. The red line is the yield strength of the reinforcement and the green line is the maximum crack width w_{max} according to Eurocode 2 [1]. When no reduction factor is used (blue line), the hooked anchorage capacity remains above the yielding line until after a crack width of 1.00 mm, which is already significantly greater than the maximum crack width. Because this capacity remains above the yielding line, there is no influence of the predicted shear capacity. The reduction factor 0.75 already has more influence, but the anchorage capacity remains relatively large, still above 300 MPa at 1.00 mm of crack width. Only with the reduction factor of 0.50, the results remain below the yield strength of the rebar, which is why this reduction factor has the greatest influence on the predicted shear capacity.

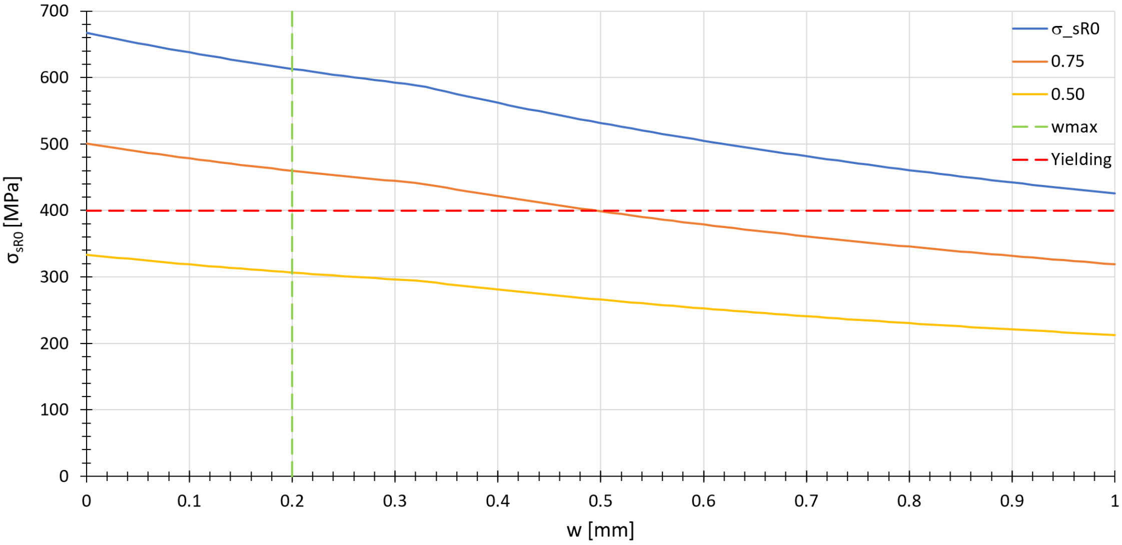


Figure 5.6: Hooked anchorage capacity based on Equation 4.14

As mentioned, in Figure 5.6, the hooked anchorage capacity of the first layer is plotted. When applying the reduction factor of 0.5 to predict the shear capacity, the hooked anchorage capacity starts at around 300 MPa depending on the crack width, which is close to the yield strength of the rebar. As this anchorage capacity increases with each layer in the cross section, it may be the case that the anchorage capacity in the second or third layer exceeds the yield strength. When this happens, the hooked anchorage no longer has any influence on the prediction of the shear capacity. Furthermore, these reduction factors are used to see how much the predicted shear capacity could be reduced compared to the results obtained with the layered model, which does not take into account the anchorage influence. As shown by the results, the reduction factor of 0.5 has the greatest influence on the predicted shear capacity, but it still remains relatively small. This is the lower bound within this research, further investigation must be conducted to obtain a realistic reduction factor that takes into account the anchorage capacity at lower slip values.

5.2.2 Cross section in support region

Next, the shear capacity of the cross section in the support region is predicted in this part. In this region of the bridge, the tension zone is expected to lie within the upper part of the cross section, and here the stirrups are anchored with no additional hooks or bends, just a straight rebar end as anchorage. To predict the shear capacity of this cross section, the model described in Section 4.3.1 is applied. This model is based on the model given by Brantschen et al. [12] with an additional factor given by Monney et al. [8]. With Equation 4.12 within that section, the pull-out strength is determined for each layer, and with each layer this strength increases. Similarly to the previous section, Table 5.3 shows the results of the calculation. The bending moment is again increased to 15000 kNm, which is slightly more than 50% of the maximum bending moment resistance. The second column gives the predicted shear capacity without any influence using the layered approach $V_{u,closed}$, and the third column shows the ratio between the predicted shear capacity with a closed stirrup anchorage and a straight anchorage $V_{u,straight}$. Compared to the previous cross section, no further reduction factors will be applied on the anchorage capacity, the reason for this is explained in Section 4.3.

Bending moment [kNm]	$V_{u,closed}$ [kN]	$V_{u,closed} / V_{u,straight}$ [-]
0	7317	1.050
2665	6835	1.025
5000	6450	1.042
7936	5923	1.352
10000	5561	1.394
12920	4364	1.246
15000	3865	1.257

Table 5.3: Influence of the straight stirrups compared to the enclosing stirrups

In the same way as before, the results of Table 5.3 are plotted in Figure 5.7. Again, the red region in the graph represents the region in which the results of the model are less reliable than in the first part of the graph. Compared to the results of the hooked anchorage, a much larger difference can be seen between the results of the predicted shear capacity with closed stirrups and straight end stirrups. It can be seen that the graph shows little difference at lower bending moments, and after some point this difference is drastically increased. This drastic increase in difference is mainly due to the limitation of the proposed model, which obtains less convergence at higher bending moments.

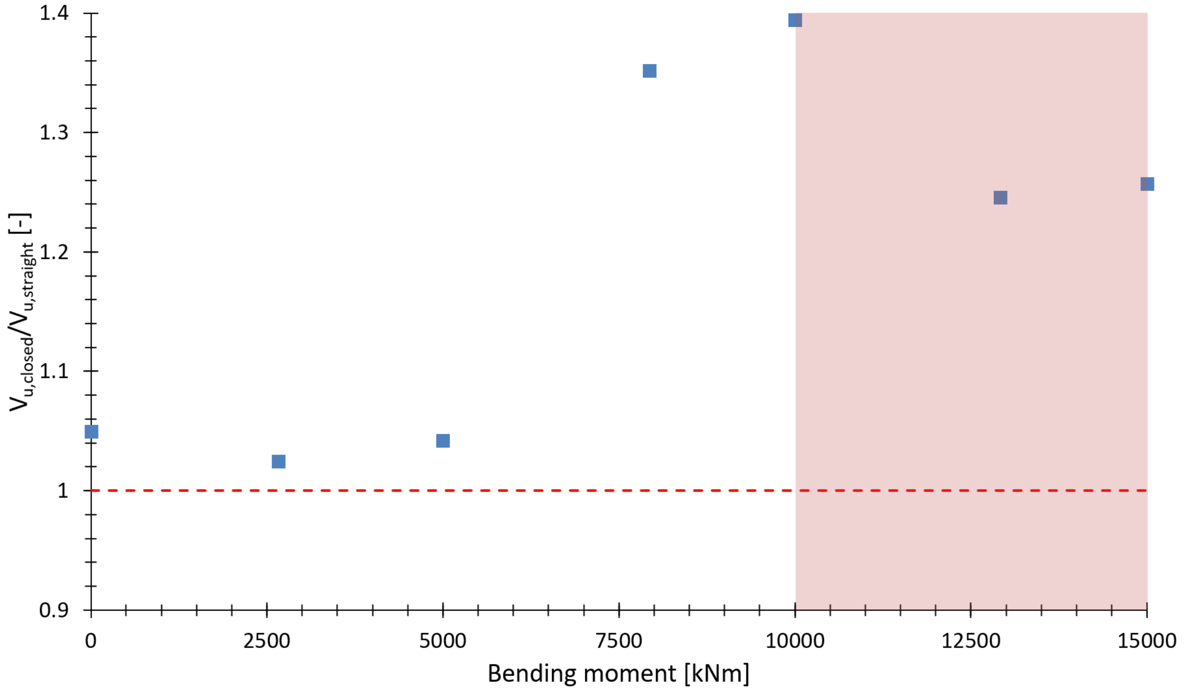


Figure 5.7: Influence of the straight stirrups compared to the enclosing stirrups

The larger difference in results compared to the hooked anchorage can be explained by plotting the straight rebar anchorage capacity with increasing crack width. The first part of Equation 4.13 is shown in Figure 5.8. In addition to this straight anchorage capacity, the yield strength and the maximum crack width w_{max} are plotted. In this graph, it is clearly shown that the anchorage capacity is significantly lower than the yield strength of the rebar. This observation also serves as an additional reason for not applying any reduction factors to this anchorage capacity. Furthermore, because of this low capacity, this type of anchorage has much more influence on the predicted shear capacity than the hooked anchorage. The resistance starts around 100 MPa and increases with each layer until the yield strength is exceeded. Therefore, if the crack width is around 0.2 mm in the first few layers, it would take about four layers to reach the yield strength, compared to the hooked anchorage capacity, the yield strength could already be reached in the second layer.

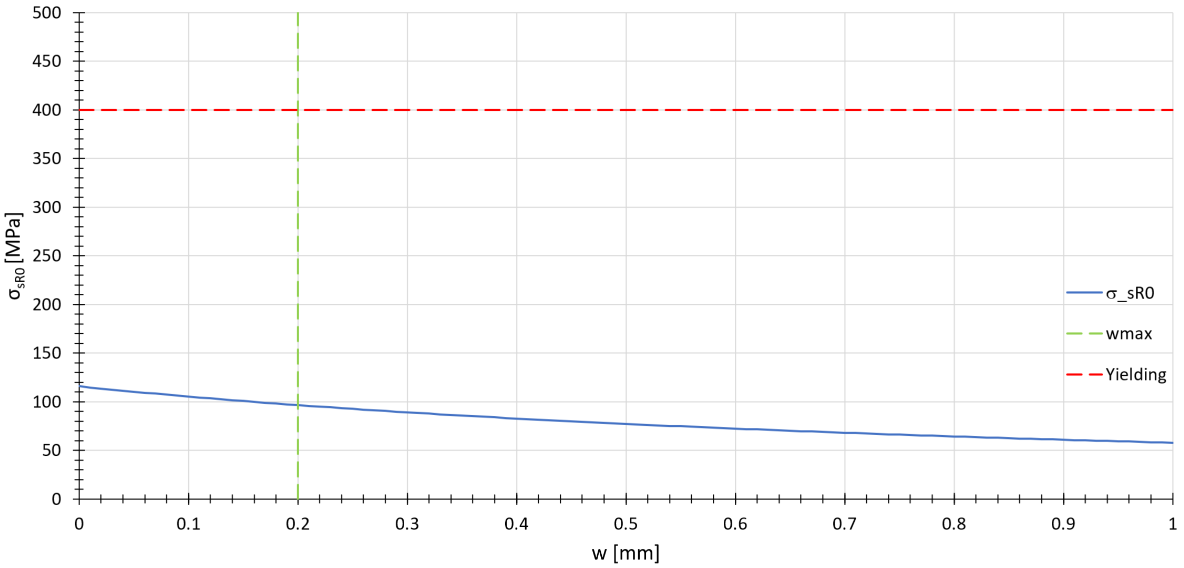


Figure 5.8: Straight anchorage capacity based on the first part of Equation 4.12

5.2.3 RBK

As mentioned before, in The Netherlands, the RBK [2] is used to examine existing bridges, which is an additional guideline and is used in combination with the Eurocode 2 [1]. To recap; in this document, the shear capacity of a reinforced concrete beam is the sum of the shear capacity of the concrete and the applied stirrups, only if these stirrups are detailed according to Eurocode 2 [1], otherwise it depends only on the concrete shear capacity. In the reinforced concrete beams of the case, the stirrups are not detailed correctly, therefore, the shear capacity is only dependent on the concrete capacity. That being mentioned, the results obtained with the RBK [2] will be compared to those obtained with the proposed model. Again, this section is divided into the cross section in the span region and the one in the support region, as described in Section 3.1.2.

CROSS SECTION IN SPAN REGION In Table 5.4, four different results are given for the cross section in the span region for each increment of the bending moment up to 15000 kNm. The two columns on the left calculate the shear capacity based on the RBK [2], the first being the sum of the shear capacities $V_{u,RBK-c+s}$, both the concrete and the stirrup shear capacity, and the second is only the concrete shear capacity $V_{u,RBK-c}$. The two other columns give the results obtained with the layered model. Again, the predicted shear capacity of the closed stirrups $V_{u,closed}$ is given and the capacity that takes into account the hook is given $V_{u,hooked-0.5}$. For the shear capacity of the hooked anchorage, the reduction factor of 0.5 is chosen because this has the greatest influence on the capacity, as shown in Section 5.2.1. However, it should be taken into account that this is the reduction factor that serves as the lower bound in this research.

Bending moment [kNm]	$V_{u,RBK-c+s}$ [kN]	$V_{u,RBK-c}$ [kN]	$V_{u,closed}$ [kN]	$V_{u,hooked-0.5}$ [kN]
0	7430	1635	7328	7288
2564	7403	1613	6806	6758
5000	7404	1620	6328	6188
7539	7404	1620	5759	5665
10000	7407	1629	5043	5062
13438	7407	1629	3929	3942
15000	7417	1653	3266	3251

Table 5.4: Span region cross section results using the RBK and the model

From the first two columns, it can be seen that the sum of the shear capacities is significantly higher than the concrete shear capacity alone, which means that the stirrups have a significant influence on the total shear capacity. It is also noted that the shear capacities of the cross section, based on the RBK [2], remain relatively constant with the increasing bending moment. The results obtained with the proposed model start at a shear capacity similar to the one given in the first column, but it quickly drops due to the applied bending moment. To better understand these results, Figure 5.9 shows these results plotted with increasing bending moment on the x-axis and on the y-axis the shear capacity. In addition to the results obtained with the RBK and the proposed model, the results of the Response-2000 [14] program are also plotted. With these additional results, it is again shown that the proposed model predicts conservative results, which increase with increments of the bending moment. This was already mentioned in the verification of the layered model in Section 3.1.2.

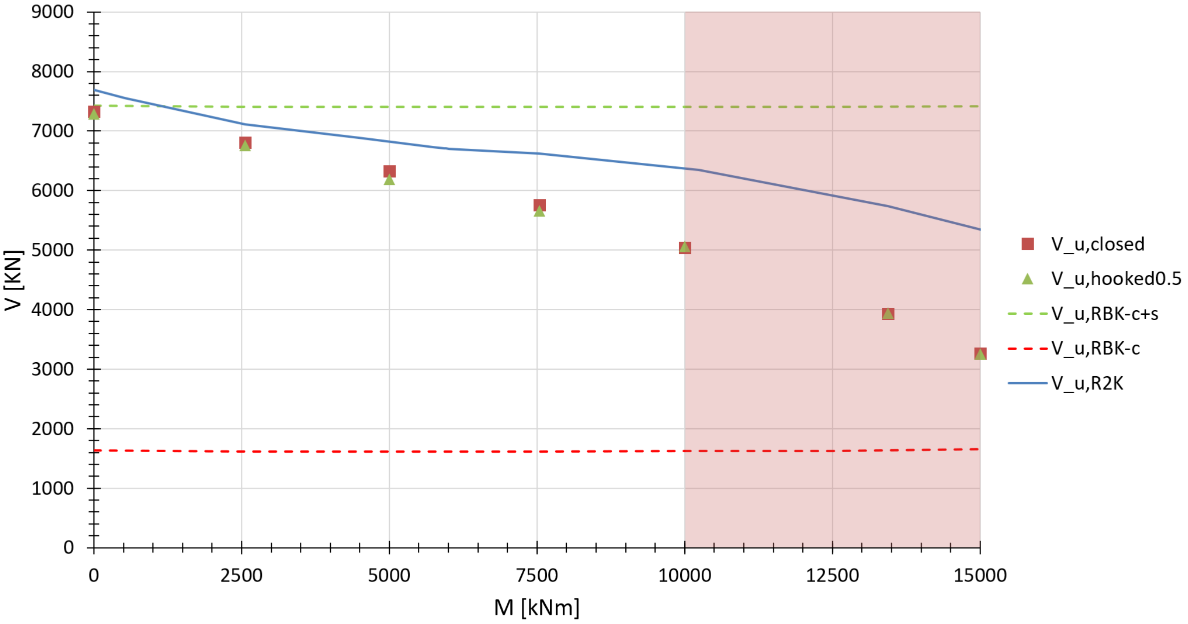


Figure 5.9: Span region cross section results using the RBK, the model and Response-2000

According to these results, the hook anchorage of the stirrup has little influence on the shear capacity of the reinforced concrete section, this is due to the high pull-out strength of the hook anchorage which is explained in Section 5.2.1. Even with a lower bound reduction factor of 0.5, the influence of the hooked rebar anchorage is negligible, as can be seen in the results in the table and figure. Based on this observation for stirrups with a hooked rebar anchorage, it can be concluded that the use of only the concrete shear capacity is too conservative, and that there is still a significant shear capacity available from the stirrups with non conforming hooked rebar anchorages.

CROSS SECTION IN SUPPORT REGION The same calculations are made for the cross section in the support region. In Table 5.5 the same columns are included as in the table for the previous cross section, only now the last column includes the predicted shear capacity based on the model which takes into account the straight rebar anchorage influence $V_{u,straight}$. Again, the sum of the shear capacities is much higher than the concrete shear capacity, so there is a significant shear capacity of the applied stirrups. The model starts at relatively the same shear capacity as the sum of the capacities obtained with the RBK [2], but again, with the increasing bending moment, the shear capacity predicted with the model decreases.

Bending moment [kNm]	$V_{u,RBK-c+s}$ [kN]	$V_{u,RBK-c}$ [kN]	$V_{u,closed}$ [kN]	$V_{u,straight}$ [kN]
0	7428	1632	7317	6972
2665	7373	1584	6835	6670
5000	7301	1524	6450	6190
72920	7301	1524	5923	4382
10000	7253	1484	5562	3989
12920	7197	1436	4364	3504
15000	7197	1436	3865	3074

Table 5.5: Support region cross section results using the RBK and the model

The results of these tables are also plotted in a graph, shown in Figure 5.10. In both the table and the figure it is clearly shown that the straight rebar anchorage has a bigger influence on the shear capacity than the hooked rebar anchorage, and this is due to the lower pull-out strength of a stirrup anchored by only a straight rebar. However, based on these results, the shear capacity predicted by the model is higher than the concrete shear capacity alone. The influence of these straight rebar anchorage is greater than that of the hooked rebar anchorage. However, based on the results, a similar conclusion as for the hooked anchorage can be made, that there is still a shear capacity available from stirrups with non conforming straight rebar anchorages.

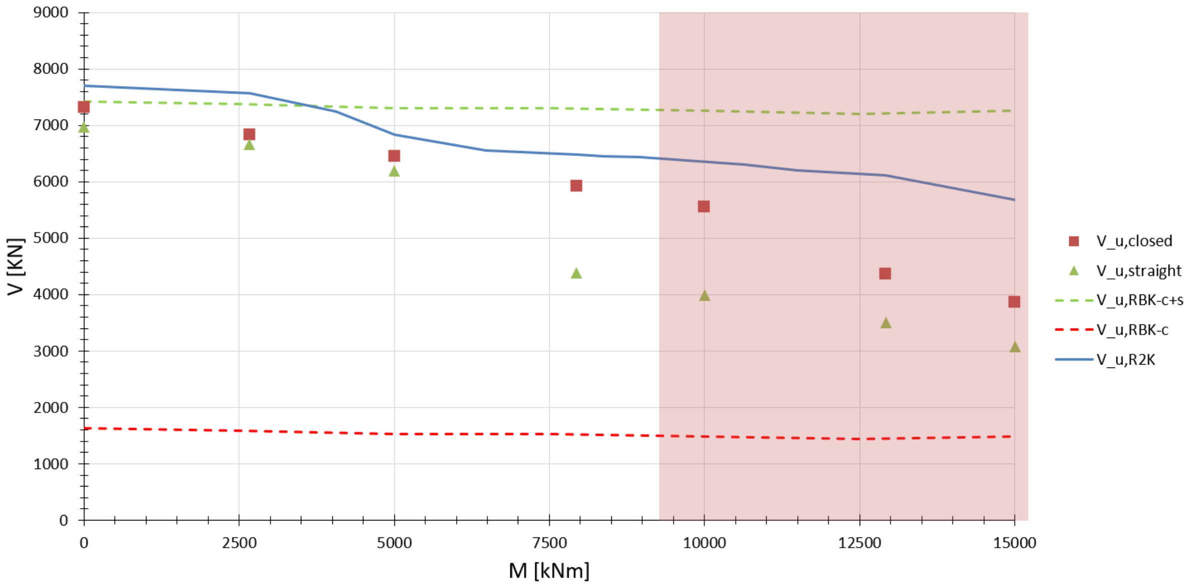


Figure 5.10: Support region cross section results using the RBK, the model and Response-2000

5.3 ANALYSIS OF PROPOSED MODEL RESULTS

In this second to last section, the results of the proposed model with the hooked and straight rebar anchorages are further analyzed. This analysis of results focuses on the results obtained from the cross sections of the case. The first results are those of the cross section in the span region. In Figure 5.11, the shear force is plotted against the mean value of the shear strain at a bending moment increment of 2564 kNm. The graph includes both the shear forces of the model with closed stirrups V_{Closed} and with hooked rebar anchorage V_{Hooked}. Additionally, the blue line represents the Response-2000 results (V_{R2K}). As can be seen, the results of the closed stirrup model and the hooked rebar anchorage model are relatively the same. Initially, both models do not achieve convergence in the first segment of the graph. The closed stirrup model finds convergence first, followed by the hooked rebar anchorage model a few increments later. The hooked rebar anchorage model indicates a decreasing shear force as the mean value of the shear strain increases. This is the expected behavior because of the increasing crack width, which decreases the anchorage capacity of the stirrup. However, due to the large capacity of this type of anchorage, there is little influence on the shear force calculated by the model. In addition, the ultimate shear force for each increment in bending moment is used in Section 5.2. As can be seen in the graph, the ultimate shear force of both models are relatively the same, and the hooked anchorage is more of an influence after the ultimate shear capacity is reached. To make reliable comparisons, the ultimate shear force is selected in the comparisons of the previous sections.

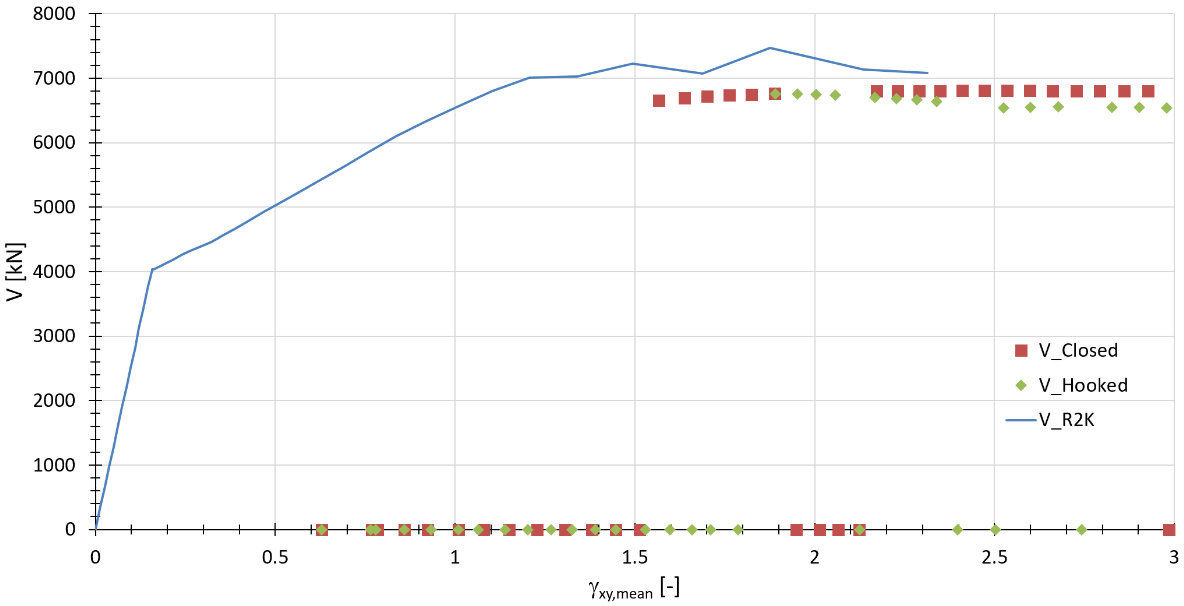


Figure 5.11: Proposed model results with hooked rebar anchorage M = 2564 kNm

For the straight rebar anchorage, a similar graph is made for the bending momenet increment of 7936 kNm, which is shown in Figure 5.12. This graph presents the same results as previously discussed; the shear force of the model with closed stirrups V_{closed}, with straight rebar anchorage $V_{straight}$ and those of Response-2000 V_{R2K}. The model with the closed stirrups does not find convergence in the first part of the graph, only after a few increments more convergence is found. In contrast to this, the straight rebar anchorage model obtains convergence for the first few increments and also in the later part of the graph. Furthermore, it is noted that this predicted shear force is much lower than the closed stirrup shear force. Similarly to the hooked rebar anchorage, this is the expected behavior for this type of anchorage. The straight rebar anchorage has a much lower anchorage capacity, which is why it has a greater influence on the calculated shear force.

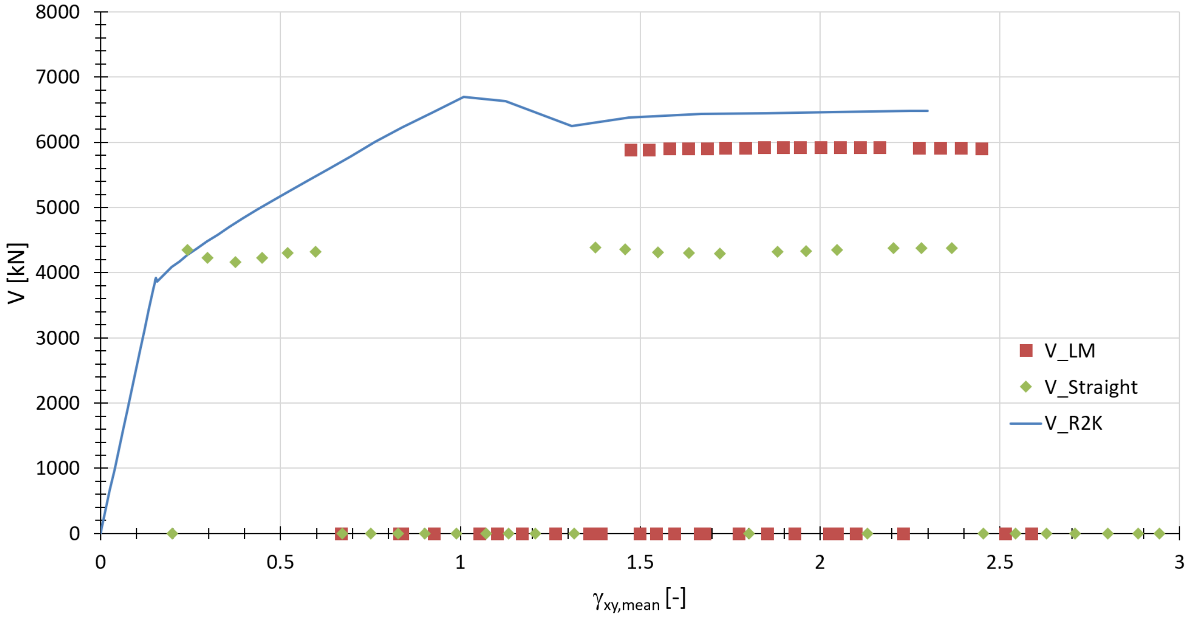


Figure 5.12: Proposed model results with straight rebar anchorage M = 7936 kNm

The detailed results of the proposed model, including the hooked and the straight rebar anchorage, are given in Appendices E and F, respectively. In contrast to the results in Appendices C and D, an additional column is included, which represents the anchorage capacity within each layer (σ_{sRi}). In the results of the hooked rebar anchorage, it is observed that this capacity starts at a high value and decreases with every increment in bottom strain due to the increase in crack width. This is the reason why the shear force in Figure 5.11 decreases after the first converged values are found. The anchorage capacity of the straight rebar anchorage starts with zero capacity in the first layer, and in each layer this capacity increases. However, this type of anchorage has a similar behavior as the hooked rebar anchorage; the anchorage capacity of each layer decreases as a result of the increasing crack width.

The shear stress distribution in both models, including the anchorage behavior, remains constant throughout the cross section. In the layered model, it is assumed that there is a constant shear stress distribution to reduce computational time, but still obtain conservative results. The proposed model still uses this same assumption and does not adjust this shear stress distribution due to the anchorage influence. In this proposed model, the constant shear stress distribution is adjusted according to the influence of the anchorage on the stress in the shear reinforcement. Therefore, this distribution is reduced compared to the distribution in the layered model in which proper anchorage is achieved by enclosed stirrups.

5.4 LIMITATIONS OF PROPOSED MODEL

In this last section of this chapter, a detailed discussion of the proposed model will be given, with a primary focus on the limitations of this model. The first part is about the development of the proposed model, it is explained which reference cross section is used and how this forms a limitation of the model. Following this, the input of the model will be discussed and how this influences the end results. The final segment addresses the end results of the model and how they need to be interpreted.

5.4.1 Basis of development

During the development of this proposed model, the cross section of the case served as a reference. Using this in the development of the model, several assumptions were made based on these cross sectional properties. The first assumption is that there is a smeared longitudinal reinforcement ratio, which means that the longitudinal reinforcement ratio is the same in each layer of the cross section. This choice was made due to the longitudinal reinforcement in the cross section of the case, presented in Figure 5.13, where it can be seen that the longitudinal reinforcement is almost evenly distributed throughout the cross section. However, it is important to note that this smeared reinforcement ratio across the entire cross section is a simplification within the proposed model. An alternative approach, as outlined by S. Güner [35] based on the CEB-FIP Model Code 1990 [36], involves calculating the effective concrete areas for each reinforcement layer. The smeared reinforcement ratios are then determined by dividing the total reinforcement area by the effective concrete area. This alternative approach is considered to be more accurate as it allows for different reinforcement ratios for each layer in the cross section. In the PhD thesis of S. Güner [35] this approach is explained in more detail using an example.

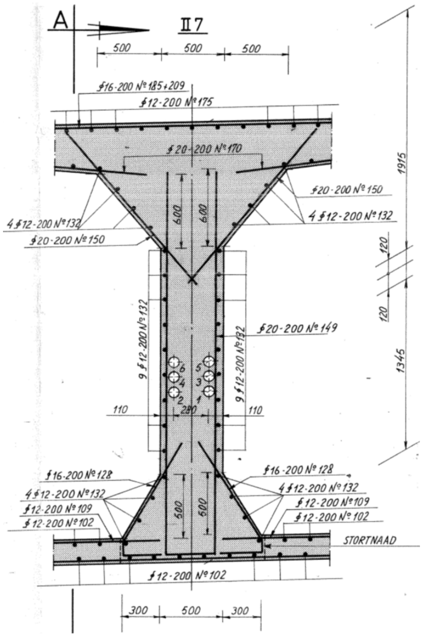


Figure 5.13: Cross section of one beam in the box girder from the case

In Figure 5.13 it can also be seen that a large amount of shear reinforcement is applied in the cross section. These stirrups have a diameter of 20 mm and are applied every 200 mm, resulting in a shear reinforcement ratio approximately five to six times greater than the minimum shear reinforcement ratio given in the Eurocode 2 [4]. This is a notably high shear reinforcement ratio because in literature many experiments are conducted with low shear reinforcement ratios. The proposed model cannot be used with these low ratios, below a certain ratio, the model has difficulties to find convergence. In addition to the reinforcement ratios, only two reinforcement yield strengths are used in the model, one for longitudinal reinforcement and the other for the shear reinforcement. No difference is made in yield strength for each layer of longitudinal reinforcement, this is done because the yield strength is the same for both the shear and longitudinal reinforcement.

5.4.2 Input

The results for the cross sections discussed in the previous sections were obtained with certain assumptions as input. Firstly, the cross sections are divided into a certain number of layers. The cross section of the case study is divided into 17 layers and that of the experiment [13] into 10 layers. The number of elements is based on the height of the elements, the top flange and the web of the cross section of the case are divided in layers with a height of 200 mm. The skewed part of the bottom flange is divided into two layers of 250 mm and the straight part is again 200 mm, resulting in 17 layers. The beam of the experiment is divided into a top layer of 80 mm, two layers of 125 mm within the skewed part of the upper flange, four layers of 272.5 mm in the web, one layer of 100 mm which is the skewed part of the lower flange, and finally two layers of 100 mm at the bottom of the cross section. These heights were mainly based on how the longitudinal reinforcement is distributed throughout the cross section. Compared to the Response-2000 program [14], significantly fewer layers are used in the proposed model, a choice made to reduce the computational time of the model.

Two other input parameters that significantly influence the computational time are the amount of bending moment increments and the bottom strain increments. For the cross section of the case, an input list of the bending moment was given which started at 0 kNm and ended at around 17500 kNm, in this list steps of approximately 2500 kNm were used, resulting in a list of eight steps. For the cross section of the experiment by Dégee et al. [13], a similar amount of increments was chosen. For the bottom strain, increments of around 0.5 mm/m were used. The choice of these increments also greatly influences the computational time. The increment size of both the bending moment and the bottom strain is not further decreased to save computational time.

5.4.3 Results

In the verification of the layered model in Section 3.1.2, it was already observed that the accuracy of the proposed model decreases at higher applied bending moments. The predicted shear capacities at higher applied bending moments were conservative values compared to the results of the Response-2000 program [14]. At approximately 50% of the maximum bending resistance of the cross section, this problem begins to occur in the results of the cross section of the case, after which the precision decreases. This end point of the increments in bending moments is even lower for the beams that were tested by Dégee et al. [13]. These tested beams were around half the height of the cross section of the case, but still had a similar normal force in the cross section. It is expected that this normal force has a lot of influence on the convergence of the model, it decreases the amount of convergence which is found and also the end point of the increasing bending moment.

To determine the shear capacity of a cross section with the layered model, an effective shear depth must be given. In the verification of the layered model in Section 3.1.2, five different effective depths were used to identify which obtained the most efficient results. Ultimately, the model given by M. Roosen [28] did not give the most accurate results, but with this model the shear capacity was estimated to be lower than that obtained with Response-2000 [14], resulting in a conservative estimation. This model was also chosen to be applied to the cross sections tested by Dégee et al. [13], which were not as tall as the cross section of the case. However, the use of the same model led to an overestimation of the shear capacity, as shown in Figure 5.3. Because of this, the assumption to use the model of M. Roosen [28] is not sufficient for other types of cross sections, the effective shear depth in a smaller cross section is expected to be lower, but this has not been further investigated in this research. Additionally, it should be noted that the effective shear depth model of M. Roosen [28] was specifically developed for prestressed beams without flexural cracks. This is not the scenario in this research because the strain in the bottom fiber is assumed to be cracked.

During the attempt to validate the proposed model, it became clear that low shear reinforcement ratios did not work in the model. To further investigate this problem, the cross section in the span region of the case is used, and the shear reinforcement in this cross section was systematically reduced. In the experiments found in literature ([9], [10]) the shear reinforcement ratios were lower than the minimum shear reinforcement ratio given by the Eurocode [1]. This minimum ratio is translated to a bar diameter and resulted in a bar diameter of approximately 8 mm with the same distance of 200 mm. Only this ratio was changed in the proposed model, and it was immediately noticed that the model had a hard time achieving equilibrium. In addition to this diameter, some other diameters were also used in the proposed model, and from these results it was seen that problems occurred when the diameter was lowered and so the shear reinforcement ratio, and with the increasing diameter of the stirrups the amount of convergence also increased. E. Bentz noticed the same in the development of Response-2000 [14], for reinforced concrete beams that did not have shear reinforcement or a small amount, a large scatter of results was found, which is shown in Figure 5.14. The x-axis of the graph represents the increase in the percentage of shear reinforcement, while the y-axis shows the ratio between the experimental and predicted shear capacity. It must be noted that most of the beams, which E. Bentz [14] used had no or a small amount of shear reinforcement, and here the largest scatter of results is found, for the other beams a smaller scatter is shown but there were also fewer beams used in this region.

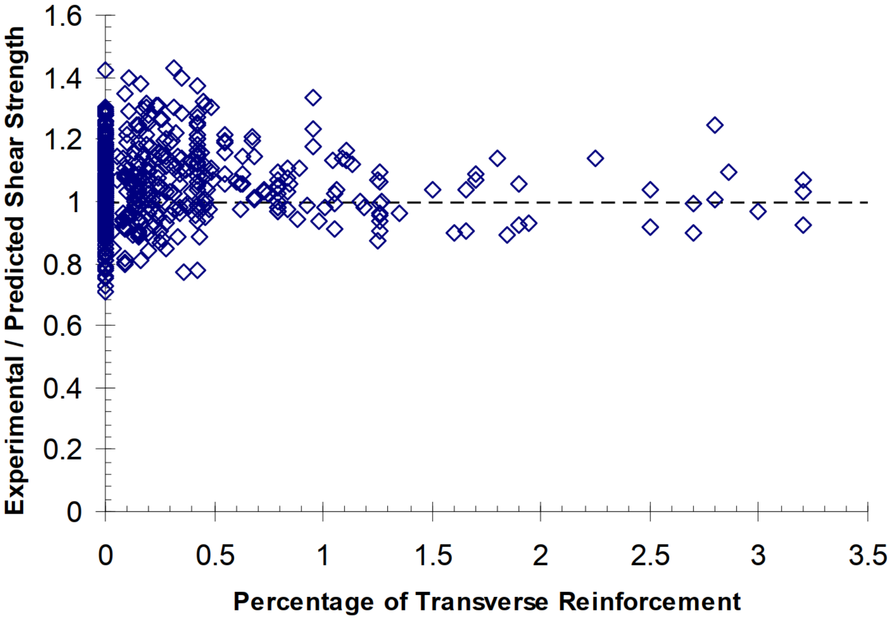


Figure 5.14: Influence of the shear reinforcement percentage [14]

In other literature the same problem was observed with using the Modified Compression Field Theory [3] for panels containing a small amount of transverse reinforcement [37]. In the same research paper, it was also observed that there was a reduced accuracy of the theory when applied to beams that contained a small amount of shear reinforcement. Due to this limitation and some other weaknesses of the original theory, the Disturbed Stress Field Model [37] was developed. In this model, new compatibility conditions, equilibrium conditions, and constitutive relations are given. In addition to this, alternative crack slip models are discussed. With these new formulations, an improved method is given on the original theory, which still remains a simple but powerful shear prediction model that can be applied in most practical situations according to F. Vecchio [37]. However, for further development of the proposed model, this improvement of the theory could be used to also predict the shear capacity of reinforced concrete beams with a low amount of shear reinforcement.

The results obtained by the proposed model, which takes into account the influence of the hooked or straight rebar anchorage, are based on a conservative assumption for these anchorages. Both models are based on experimental research that conducted pull-out tests. In these pull-out experiments, the crack was initiated by crack initiators, which ensures that the crack starts at the position where you want it to be. The desired position in these experiments was in the plane of the reinforcement, perfectly along the reinforcement bar without any inclination. This is expected to be the ideal situation to obtain the lowest anchorage capacity, resulting in a conservative assumption for the anchorage capacity. In reality, cracks may not align perfectly with the applied stirrups. Even if one does, there could be variations in crack spacing and stirrup spacing, causing the next stirrup not to align perfectly with the crack. Additionally, the crack starts with a straight flexural crack, but after this, it is expected that the crack propagates under a certain inclination, the diagonal crack. This would not compare to the perfectly aligned crack of experiments that do not have an inclination. So, to summarize, the experiments use the situation in which the crack perfectly aligns with the reinforcement bar, but in reality this does not have to be the case because there could be a crack inclination and the crack spacing could be different compared to the stirrup spacing. This means that the proposed model within this research predicts the shear capacity based on a conservative assumption.

5.4.4 Usability

In the end, obtaining the results presented in this chapter is a time-intensive process. After the input on the material and cross sectional properties are given, it still takes time to find the results that converge, because this convergence is dependent on the initial estimations, which is described in Section 3.1.2. The main initial estimation, which influences the results, is the constant shear stress in the cross section. For each increment in the bending moment, a value must be given, and in this research the Response-2000 [14] was used to make a first estimation of these values. When the model is done with the calculation procedure, the results can be examined and it can be seen if the initial estimated parameters need to be adjusted.

For the cross section of the case, it took a few attempts to obtain convergence for each increment of the bending moment. The amount of normal force used for this cross section was not so significant that, without a bending moment, the cross section would not crack, so the bottom strain around the cracking strain was chosen. The strain in the top fiber was estimated to be just below zero. It took longer to obtain the results for the cross section of the experiments by Dégee et al. [13] due to the significant amount of normal force. First, the same values as for the case cross section were used, but this did not work. As mentioned before, the Response-2000 program [14] was used to change these values. It was noticed that this normal force caused the cross section not to crack during the first few increments in the bending moment, which is why the bottom strain was lowered. After decreasing the bottom strain, better results were obtained but not yet accurate enough. In the end, the initial guesses for the top strain were also adjusted due to this significant normal force.

The results of the proposed model are mainly dependent on the initial estimation, but now it is also seen that these initial guesses depend on the applied sectional forces in the cross section. This procedure in adjusting the initial guesses based on the results obtained by the model takes a significant amount of time. In this research, no further optimization of this process is included.

CHAPTER 6

Conclusion and Recommendations

This chapter concludes this thesis by summarizing the results and providing recommendations for future research. The first section provides a comprehensive overview of the study's findings, by first addressing the subquestions and then the main research question. Following this, recommendations are made for future research with a primary focus on further developing the proposed model.

6.1 CONCLUSION

Chapter 1 outlines the problem within existing reinforced concrete bridges, which concerns the applied stirrups that deviate from Eurocode 2 [4] by not enclosing the longitudinal reinforcement. This non-compliance leads to the exclusion of their shear capacity in predicting the overall shear capacity of the bridge. However, these stirrups are expected to still contribute to the shear capacity. The primary research question that guided this study is the following:

How can the shear capacity of existing reinforced concrete beams be accurately modeled considering the influence of non conforming stirrup detailing?

In Chapter 1, four subquestions are presented to systematically address the main research. The first question examines how the shear capacity is verified in current design codes and the theoretical foundations underlying such verifications. In the Netherlands, the RBK [2] is used to assess the shear capacity of existing reinforced concrete structures, which is an addition to the Eurocode 2 [1]. Both guidelines use similar equations and are based on experimental research and equilibrium conditions. Another guideline studied is the fib Model Code 2010 [6], which uses the same equation to determine the shear reinforcement capacity as in the standards described above. However, it differs in determining the concrete shear capacity, relying on a simplification [25] of the Modified Compression Field Theory (MCFT) [3], which assesses the response of a single layer subjected to shear.

The following subquestion within this study is about how the shear capacity prediction can be structured to ultimately incorporate a specific type of anchorage influence. Chapter 3 starts by laying out the development of a model that predicts the shear capacity based on a layered approach. This model uses an iterative procedure to derive sectional equilibrium and satisfy compatibility conditions. After defining the input, the calculation starts by estimating two parameters that are iteratively adjusted until convergence is achieved. Throughout this process, each layer is individually analyzed with the MCFT [3]. A notable parameter derived in this individual layer analysis is the axial reinforcement stress, which will be adjusted to accommodate a specific type of anchorage influence.

Addressing the third subquestion involves determining the specific type of anchorage influence. Chapter 4 begins with an examination of the anchorage behavior of straight rebar, followed by an exploration of the anchorage behavior of hooked rebar. For both types of anchorage an equation is given for the anchorage capacity, which is based on existing experimental research. Within the determination of the anchorage capacity, the crack width is included, which reduces this capacity, due to the fact that the contact area between the reinforcement rib and the surrounding concrete is reduced.

The final subquestion focuses on integrating the insights gained from the third subquestion into the model established in the second subquestion. This involves addressing how the anchorage behaviors are incorporated into the shear capacity prediction model, as described in the last section of Chapter 4. Two distinct approaches are presented for both types of anchorage, which use the anchorage capacity derived in the third subquestion to determine the axial stress in the stirrups. Originally, the layered approach used elastoplastic behavior to determine this axial stress. However, with integration of the anchorage capacity, this elastoplastic behavior may be limited due to this new capacity.

With the insights from each subquestion and the comprehensive results outlined in Chapter 5, the main research question can be effectively addressed. The answer to this question is that the proposed model could potentially be used to predict the shear capacity of reinforced concrete beams with non conforming stirrups. However, the accuracy of this predicted shear capacity remains a subject of discussion, given the absence of a complete validation of the results. This is due to the constraints of the proposed model and limited existing experimental research on reinforced concrete beams with non conforming stirrups. Despite the incomplete validation, the influence of non conforming stirrups on the predicted shear capacity for the cross section in the case study is observed to be relatively small. Notably, this predicted shear capacity exceeds the concrete shear capacity based on the RBK [2], underscoring the importance of considering these non conforming stirrups for a potentially more accurate prediction of the shear capacity. However, the absence of complete validation highlights the need to carefully evaluate the limitations of the model. To address these considerations, the next section provides recommendations for the further development of a model like this.

6.2 FUTURE RESEARCH RECOMMENDATIONS

In this final section of this entire thesis, recommendations are addressed which emerged from the findings of this study and will offer insight on how to proceed in future research. These recommendations aim to guide this future research and contribute to the next development in determining the shear capacity of existing bridges with non conforming stirrup detailing. The following recommendations are made:

- The primary recommendation is to further develop the layered approach described in Chapter 3. The development of this model is based on a layered approach given found in literature [11] and uses several simplifications. It was shown that, for some cases, similar results were obtained to those calculated by the Response-2000 program [14], but notable differences were also observed. To obtain more accurate results, it is recommended to further develop this layered approach, using the verification program as a reference. This development could lead to more precise results and a more accurate shear distribution in the cross section, eliminating the need for an effective shear depth, as assumed in this research.

- In addition to the first recommendation, the second suggestion is to consider integrating the Disturbed Stress Field Model (DSFM) [37] into the model instead of using the Modified Compression Field Theory [3]. The DSFM is an improved version of the original theory, designed to address limitations present in the original theory. By using the DSFM, the model could potentially benefit from improved accuracy and overcome certain constraints associated with the Modified Compression Field Theory.

- Another recommendation is to conduct further research on the anchorage behavior of non conforming stirrups in reinforced concrete beams. Since the anchorage behaviors in the model are based on experimental results, where the cracks were perfectly aligned with the rebar, it is essential to investigate the actual behavior in realistic scenarios. In reinforced concrete beams, the cracks are expected to have some inclination, and there may also be variations in crack spacing compared to stirrup spacing. Research focused on these more practical conditions will provide valuable insights into the anchorage behavior, ensuring that the model aligns more accurately with realistic scenarios.

- More research is recommended on the model used for the hooked rebar anchorage, specifically addressing the assumption that concrete spalling failure cannot occur due to the presence of longitudinal reinforcement outside the hook. In the current model, spalling failure is excluded, but to fully account for the influence of the longitudinal reinforcement outside the hook, additional research is needed. Investigating this aspect could reveal potential variations in the anchorage behavior, providing a better understanding of how the longitudinal reinforcement outside the hook influences the behavior of this type of anchorage.

- The second to last recommendation is to further develop the bond strength equation used in this research to account for stirrups with a smooth surface. The cross section tested by H. Dégee et al. [13] included smooth surfaced stirrups, while the bond strength equation used in this research only considers rebars with ribs. Therefore, this bond strength equation needs to be further developed to account for these types of rebars, and this will contribute to a more applicable model.

- The final recommendation is to conduct additional research on reinforced concrete beams with non conforming stirrups. Due to the limited experimental studies available, new research on this topic could provide more insight into the behavior of these beams. Moreover, it will also enable the validation of further developed prediction models based on these experimental studies, thus improving the reliability and applicability of the models.

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APPENDIX A

Python Code for Proposed model with Straight Rebar Anchorage

```python
import numpy as np
import matplotlib.pyplot as plt
from scipy.optimize import minimize
import pandas as pd

#-------------------------------------------------------------------------------
# INPUT
#-------------------------------------------------------------------------------

# Cross section
# Case study
h = 3500
d = 2925
b = 500
m = 17

A_ci_list = [3e5] * 2 + [266667, 2e5, 133333] +  [1e5] * 9 + [1.625e5, 2.375e5, 2.2e5]

N = -12500
M_u = [0, 2664.76, 5000, 7935.53, 10000, 12920.1, 15000]

y = 1956
y_ci_list = [3400, 3200, 3000, 2800, 2600, 2400, 2200, 2000, 1800, 1600, 1400, 1200, 1000, 800, 575, 325, 100]
y_sj_list = [3470, 3110, 2940, 2790, 2600, 2300, 2100, 1900, 1700, 1500, 1300, 1100, 900, 700, 575, 325, 30]
A_sxj_list = [792] + [226] * 3 + [452] + [226] * 10 + [452] + [679]
rho_sx_list = [0.0029728] * m
rho_sy_list = [0.006283] * m
s_mx_list = [200] * m
s_my_list = [200] * m

# Concrete
f_c = -30
f_cr = 0.45 * (-f_c) ** 0.4
a = 31.5
E_c = 3320 * np.sqrt(-f_c) + 6900
n = 0.8 + -f_c / 17
eps_c = f_c / E_c * n / (n - 1)
eps_cr = f_cr  / E_c

n_cp = 1.0

# Reinforcement
f_yx = 400
f_yy = 400
f_yy_list = [f_yy] * m
E_s = 2e5

```

```
n_l = 2
f_R = 0.075
d_s = 20
l_e_list = [0] + [200] * 13 + [250] * 2 + [200]

# Initial estimations
eps_b_i_list = [0.01e-3] * 7
eps_b_increment = [0.05e-3] * 7
eps_b_max_list = [4.5e-3] * 7

eps_ti_list = [0] + [-0.1e-3] * 6
v_xy_i_list = [3.5, 3.5, 2.5, 2.0, 1.75, 1.75, 1.5]

#------------------------------------------------------------------------------
# FUNCTIONS
#------------------------------------------------------------------------------

# Anchorage strength
def Straightanchorage(w, l_e):
    # Bond stresses
    k_b = 1 / (1 + 0.75 * n_l * w / (f_R * d_s))
    tau_b = n_cp * k_b * 0.6 * (-f_c) ** (2/3)

    # Resistance
    sigma_sR = 2 * tau_b * l_e / d_s

    return sigma_sR

# Element stresses and strains
def MCFT_element(eps_2, theta, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my,
    prev_sigma_sR, l_e):
    eps_1 = (eps_x * (np.tan(theta) ** 2 + 1) - eps_2) / np.tan(theta) ** 2
    eps_y =  eps_1 + eps_2 - eps_x
    gamma_xy = 2 * (eps_1 - eps_y) / np.tan(theta)

    f_c2max = max(f_c / (0.8 + 170 * eps_1), f_c)
    f_c2 = f_c2max * (2 * eps_2 / eps_c - (eps_2 / eps_c) ** 2)

    if eps_x < 0 or eps_1 <= eps_cr:
        s_theta = 0
        w = 0
    else:
        s_theta = 1 / (np.sin(theta) / s_mx + np.cos(theta) / s_my)
        w = s_theta * eps_1

    sigma_sRi = Straightanchorage(w, l_e)
    sigma_sR = sigma_sRi + prev_sigma_sR

    f_sy = min(E_s * eps_y, f_yy, sigma_sR)

    # Before cracking
    v_ci = 0
    if eps_1 <= eps_cr:
        f_c1 = E_c * eps_1
        f_c1b = 0
        f_c1c = 0
        f_c1d = 0

        f_c2c = f_c1 - v_xy * (np.tan(theta) + 1 / np.tan(theta))

        v_cimax = 0
        v_ci = 0

        f_cx = f_c1 - v_xy / np.tan(theta)
        f_cy = f_c1 - v_xy * np.tan(theta)
        f_sxcr = 0
        f_sycr = 0
```

```

    # After cracking
    else:
        f_c1a = f_cr / (1 + np.sqrt(500 * eps_1))

        v_ci1 = 0.18 * np.sqrt(-f_c) / (0.31 + 24 * w / (a + 16))

        Delta_fsx = rho_sx * (f_yx - f_sx)
        Delta_fsy = rho_sy * (f_yy - f_sy)

        f_c1b = Delta_fsx * np.sin(theta) ** 2 + Delta_fsy * np.cos(theta) ** 2

        v_ci2 = (Delta_fsx - Delta_fsy) * np.sin(theta) * np.cos(theta)

        v_cimax = v_ci1

        f_c1c = Delta_fsx - min(v_ci1, v_ci2) / np.tan(theta)
        f_c1d = Delta_fsy + min(v_ci1, v_ci2) * np.tan(theta)

        f_c1 = min(f_c1a, f_c1b, f_c1c, f_c1d)

        f_c2c = f_c1 - v_xy * (np.tan(theta) + 1 / np.tan(theta))

        if Delta_fsx == 0 and Delta_fsy == 0:
            v_ci = 0
        elif Delta_fsx > Delta_fsy and Delta_fsy < f_c1:
            v_ci = (f_c1 - Delta_fsy) / np.tan(theta)
        elif Delta_fsx > Delta_fsy and Delta_fsy > f_c1:
            v_ci = 0
        elif Delta_fsx < Delta_fsy and Delta_fsx < f_c1:
            v_ci = (Delta_fsx - f_c1) * np.tan(theta)
        elif Delta_fsx < Delta_fsy and Delta_fsx > f_c1:
            v_ci = 0

        if v_ci < 0:
            v_cimax = min(v_ci1, v_ci2) * -1
        else:
            v_cimax = min(v_ci1, v_ci2)

        f_cx = f_c1 - v_xy / np.tan(theta)
        f_cy = f_c1 - v_xy * np.tan(theta)

        f_sxcr = f_sx + (f_c1 + v_ci / np.tan(theta)) / rho_sx
        f_sycr = f_sy + (f_c1 - v_ci * np.tan(theta)) / rho_sy

    return [gamma_xy, eps_y, eps_1, s_theta, w, f_sy, f_c1, f_c1b, f_c1c, f_c1d, f_c2, f_c2c, f_c2max, v_ci, v_cimax, f_cx, f_cy, f_sxcr, f_sycr, sigma_sR]

# Element equilibrium
def Element_equilibrium(assumptions, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e):
    eps_2, theta = assumptions
    gamma_xy, eps_y, eps_1, s_theta, w, f_sy, f_c1, f_c1b, f_c1c, f_c1d, f_c2, f_c2c, f_c2max, v_ci, v_cimax, f_cx, f_cy, f_sxcr, f_sycr, sigma_sR = MCFT_element(eps_2, theta, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e)

    # Equilibrium equations
    v = (f_c1 - f_c2) / (np.tan(theta) + 1 / np.tan(theta)) - v_xy
    f_y = f_cy + rho_sy * f_sy

    eq1 = v
    eq2 = f_y

    return  eq1 ** 2 + eq2 ** 2

# Cross section stresses and strains, in the form of lists: response of each element in the cross section
```

```python
def MCFT_optimization(v_xy, eps_x_list, f_yy_list, f_sx_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, l_e_list):

    # Assumption 1 - Epsilon_2
    eps_2i = 0

    # Assumption 2 - Theta
    theta_degrees = 45
    theta_i = np.radians(theta_degrees)

    eps_x_list_f = []
    f_sx_list_f = []
    v_xy_list_f = []
    theta_list = []
    eps_2_list = []
    gamma_xy_list = []
    eps_y_list = []
    eps_1_list = []
    s_theta_list = []
    w_list = []
    f_sy_list = []
    f_c1_list = []
    f_c1b_list = []
    f_c1c_list = []
    f_c1d_list = []
    f_c2max_list =[]
    f_c2_list =[]
    f_c2c_list =[]
    v_ci_list = []
    v_cimax_list = []
    f_cx_list = []
    f_cy_list = []
    f_sxcr_list = []
    f_sycr_list = []
    sigma_sR_list = []

    failure_statuses = []

    prev_sigma_sR = 0

    # Calculate response of each element
    for i, eps_x in enumerate(eps_x_list):
        rho_sx = rho_sx_list[i]
        rho_sy = rho_sy_list[i]
        s_mx = s_mx_list[i]
        s_my = s_my_list[i]
        f_yy = f_yy_list[i]
        f_sx = f_sx_list[i]
        l_e = l_e_list[i]

        initial_guess = [eps_2i, theta_i]

        bounds = [(None, None), (0, np.pi / 2)]

        # Optimization element assumptions
        result = minimize(Element_equilibrium, x0 = initial_guess, args = (eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e), tol = 1e-6, method = 'Nelder-Mead', bounds = bounds)

        if result.success:
            optimized_epsilon2, optimized_theta = result.x

            gamma_xy, eps_y, eps_1, s_theta, w, f_sy, f_c1, f_c1b, f_c1c, f_c1d, f_c2, f_c2c, f_c2max, v_ci, v_cimax, f_cx, f_cy, f_sxcr, f_sycr, sigma_sR = MCFT_element(optimized_epsilon2, optimized_theta, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e)

```

```python
            eps_2i = eps_2i
            theta_i = theta_i

            eps_x_list_f.append(eps_x * 10 ** 3)
            f_sx_list_f.append(f_sx)
            v_xy_list_f.append(v_xy)
            theta_list.append(np.degrees(optimized_theta))
            eps_2_list.append(optimized_epsilon2 * 10 ** 3)
            gamma_xy_list.append(gamma_xy * 10 ** 3)
            eps_y_list.append(eps_y * 10 ** 3)
            eps_1_list.append(eps_1 * 10 ** 3)
            s_theta_list.append(s_theta)
            w_list.append(w)
            f_sy_list.append(f_sy)
            f_c1_list.append(f_c1)
            f_c1b_list.append(f_c1b)
            f_c1c_list.append(f_c1c)
            f_c1d_list.append(f_c1d)
            f_c2_list.append(f_c2)
            f_c2c_list.append(f_c2c)
            f_c2max_list.append(f_c2max)
            v_ci_list.append(v_ci)
            v_cimax_list.append(v_cimax)
            f_cx_list.append(f_cx)
            f_cy_list.append(f_cy)
            f_sxcr_list.append(f_sxcr)
            f_sycr_list.append(f_sycr)
            sigma_sR_list.append(sigma_sR)

            failure_statuses.append(False)

            prev_sigma_sR = sigma_sR

        else:
            print("Optimization failed. Details:", result.message)
            failure_statuses.append(True)

    return failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list,
    gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list,
    f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list,
    v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list

# Reinforcement stress
def Reinforcement_stresses(eps_x_list, A_sxj_list):
    f_sx_list = []

    for eps_x in eps_x_list:

        f_sx = E_s * eps_x

        if f_sx > f_yx:
            f_sx = f_yx
        elif f_sx < -f_yx:
            f_sx = -f_yx

        f_sx_list.append(f_sx)

    return f_sx_list

# Normal force equilibrium
def Normal_force_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list,
    rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, l_e_list
    ):

    failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list,
    gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list,
    f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list,
```

```
    v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list =
    MCFT_optimization(v_xy, eps_x_list, f_yy_list, f_sx_list, rho_sx_list, rho_sy_list,
    s_mx_list, s_my_list, l_e_list)

    N_total = 0

    if any(failure_statuses):
        print('error')
        return 1e6
    else:
        N_c = sum(A_ci_list[i] * f_cx_list[i] for i in range(m))
        N_s = sum(f_sx_list[i] * A_sxj_list[i] for i in range(m))
        N_total = (N_c + N_s) * 10 ** -3 - N

        return N_total

# Moment equilibirum
def Moment_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list, rho_sx_list
    , rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list):

    failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list,
    gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list,
    f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list,
    v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list =
    MCFT_optimization(v_xy, eps_x_list, f_yy_list, f_sx_list, rho_sx_list, rho_sy_list,
    s_mx_list, s_my_list, l_e_list)

    M_total = 0

    if any(failure_statuses):
        print('error')
        return 1e6
    else:
        M_c = sum(A_ci_list[i] * f_cx_list[i] * (y - y_ci_list[i]) for i in range(m))
        M_s = sum(f_sx_list[i] * A_sxj_list[i] * (y - y_sj_list[i]) for i in range(m))
        M_total = abs(M_c + M_s) * 10 ** -6 - M

        return M_total

# Cross section equilibrium in case of pure shear
def Cross_section_equilibrium(variables2, eps_b, f_yy_list, A_sxj_list, rho_sx_list,
    rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list):

    eps_t, v_xy = variables2
    eps_x_list = [eps_t + (eps_b - eps_t) * y_ci / h for y_ci in y_ci_list]

    f_sx_list = Reinforcement_stresses(eps_x_list, A_sxj_list)

    N_eq = Normal_force_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list
    , rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list,
    l_e_list)
    M_eq = Moment_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list,
    rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M,
    l_e_list)

    if M == 0:
        return N_eq ** 2
    else:
        return N_eq ** 2 + M_eq ** 2

#-------------------------------------------------------------------------------
# CALCULATION
#-------------------------------------------------------------------------------

for M, eps_b, eps_b_increment, eps_b_max, eps_ti, v_xyi in zip(M_u, eps_b_i_list,
    eps_b_increment, eps_b_max_list, eps_ti_list, v_xy_i_list):

```

```python
    V_f_list = []
    eps_t_f_list =[]
    eps_mean_list = []
    mean_gamma_xy_list = []
    all_results = []

    while True:

        initial_guess2 = [eps_ti, v_xyi]
        bounds2 = [(None, None), (0, None)]

        result2 = minimize(Cross_section_equilibrium, x0 = initial_guess2, args=(eps_b, f_yy_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list), tol = 1e-3, method = 'Nelder-Mead', bounds = bounds2)

        if result2.success:

            optimized_eps_t, optimized_v_xy = result2.x
            optimization = optimized_eps_t, optimized_v_xy
            eps_x_f_list = [optimized_eps_t + (eps_b - optimized_eps_t) * y_ci / h for y_ci in y_ci_list]

            f_sx_f_list = Reinforcement_stresses(eps_x_f_list, A_sxj_list)

            N_total_f = Normal_force_equilibrium(optimized_v_xy, eps_x_f_list, eps_b, f_yy_list, f_sx_f_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, l_e_list)
            N_list = [N_total_f] * m
            M_total_f = Moment_equilibrium(optimized_v_xy, eps_x_f_list, eps_b, f_yy_list, f_sx_f_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list)
            M_list = [M_total_f] * m

            print(f'good {N_total_f} & {M_total_f}')

            failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list, gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list, f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list, v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list = MCFT_optimization(optimized_v_xy, eps_x_f_list, f_yy_list, f_sx_f_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, l_e_list)

            if not any(failure_statuses):
                results_dict = {
                    'y_ci': y_ci_list,
                    'eps_2': eps_2_list,
                    'eps_1': eps_1_list,
                    'theta_degrees': theta_list,
                    'eps_x': eps_x_list_f,
                    'eps_y': eps_y_list,
                    'gamma_xy': gamma_xy_list,
                    's_theta': s_theta_list,
                    'w': w_list,
                    'f_sx': f_sx_list_f,
                    'f_sy': f_sy_list,
                    'sigma_sR': sigma_sR_list,
                    'f_c2max': f_c2max_list,
                    'f_c2': f_c2_list,
                    'f_c1': f_c1_list,
                    'f_c1b': f_c1b_list,
                    'f_c1c': f_c1c_list,
                    'f_c1d': f_c1d_list,
                    'v_ci': v_ci_list,
                    'v_cimax': v_cimax_list,
                    'v_xy': v_xy_list_f,
                    'f_sxcr': f_sxcr_list,
                    'f_sycr': f_sycr_list,
```

```
                    'f_cx': f_cx_list,
                    'f_cy': f_cy_list,
                    'N': N_list,
                    'M': M_list
                }

                all_results.append(results_dict)

            mean_gamma_xy = np.mean(gamma_xy_list)
            mean_gamma_xy_list.append(mean_gamma_xy)

            eps_mean = (optimized_eps_t + (eps_b - optimized_eps_t) / 2) * 10 ** 3
            eps_mean_list.append(eps_mean)

            if abs(N_total_f) < 0.01 * N and abs(M_total_f) < 0.01 * M or M == 0:
                eps_ti = optimized_eps_t
                v_xyi = optimized_v_xy
            else:
                eps_ti = eps_ti
                v_xyi = v_xyi

        else:
            print("Optimization failed. Details:", result2.message)

        eps_b += eps_b_increment

        if eps_b > eps_b_max:
            print(f"eps_b reached a value of {eps_b_max} without achieving equilibrium. Exiting loop.")
            break

    df_combined = pd.concat([pd.DataFrame(result) for result in all_results], ignore_index=True)

    # Save combined results to Excel
    excel_filename_combined = f'results_combined{M}.xlsx'
    df_combined.to_excel(excel_filename_combined, index=False)
```

APPENDIX B

Python Code for Proposed model with Hooked Rebar Anchorage

```python
import numpy as np
import matplotlib.pyplot as plt
from scipy.optimize import minimize
import pandas as pd

#--------------------------------------------------------------------------------
# INPUT
#--------------------------------------------------------------------------------

# Cross section
# Case study
h = 3500
d = 2925
b = 500
c = 36
m = 17
A_ci_list = [2.2e5, 2.375e5, 1.625e5] + [1e5] * 9 + [133333, 2e5, 266667] + [3e5] * 2

N = -12500
M_u = [0, 2563.81, 5000, 7538.93, 10000, 13437.5, 15000]

y = 1544
y_ci_list = [3400, 3175, 2925, 2700, 2500, 2300, 2100, 1900, 1700, 1500, 1300, 1100, 900, 700, 500, 300, 100]
y_sj_list = [3470, 3175, 2925, 2800, 2600, 2400, 2200, 2000, 1800, 1600, 1400, 1200, 900, 710, 560, 390, 30]
A_sxj_list = [679] + [452] + [226] * 10 + [452] + [226] * 3 + [792]
rho_sx_list = [0.0029728] * m
rho_sy_list = [0.006283] * m
s_mx_list = [200] * m
s_my_list = [200] * m

# Concrete
f_c = -30
f_cr = 0.45 * (-f_c) ** 0.4
a = 31.5
E_c = 3320 * np.sqrt(-f_c) + 6900
n = 0.8 + -f_c / 17
eps_c = f_c / E_c * n / (n - 1)
eps_cr = f_cr   / E_c

n_cp = 1.0
n_is = 1.0
n_ct = 0.8
n_fc = min((30 / (-f_c)) ** (1/3), 1.0)

# Reinforcement
f_yx = 400
f_yy = 400
```

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f_yy_list = [f_yy] * m
E_s = 2e5

n_l = 2
f_R = 0.075
d_s = 20
d_mand = 4 * d_s
mu = 0.4
l_tail = 200
l_e_list = [0] + [250] * 2 + [200] * 14

# Initial estimations
eps_b_i_list = [0.01e-3] * 7
eps_b_increment = [0.05e-3] * 7
eps_b_max_list = [4.5e-3] * 7

eps_ti_list = [0] + [-0.1e-3] * 6
v_xy_i_list = [3.5, 3.25, 3.0, 2.5, 2.0, 1.75, 1.5]

#--------------------------------------------------------------------------------
# FUNCTIONS
#--------------------------------------------------------------------------------

# Hook anchorage strength
def Hookanchorage(w, l_e, i):

    # Bond stresses
    k_b = 1 / (1 + 0.75 * n_l * w / (f_R * d_s))
    tau_b = n_cp * k_b * 0.6 * (-f_c) ** (2/3)

    if i == 0:

        # Tail region
        d_mand = 4 * d_s
        l_v = min(3 * d_s, l_tail)
        V_max = 0.95 / 6 * d_s ** 3 * f_yy / l_v
        R_M = V_max * (1 + (l_v / d_s) / ((d_mand / d_s + 1) / 2))
        tau_tail = tau_b + mu * (V_max + R_M) / (np.pi * d_s * l_tail)

        # Curved region
        k_A = 1.0
        k_B = 0.75
        k_C = 13.2
        f_cteff = n_is * n_ct * 0.3 * (-f_c) ** (2/3)
        f_c3 = n_fc * -f_c + 4 * f_cteff * (c / d_s + 1 / 2) * (k_B / k_A + 4 * k_C * d_s / (np.pi * k_A * d_mand))
        p_avg = min(np.pi * d_s * (2 * tau_tail * l_tail / d_mand + tau_b * np.pi / 4) / (1 - mu * np.pi / 4), f_c3 * d_s)
        tau_curved = tau_b + mu * p_avg / (np.pi * d_s)

        # Resistance
        k_sR = 0.5 #0.75 #1.0
        sigma_sR = k_sR * (4 * tau_tail * l_tail / d_s + 4 * tau_curved * d_mand / d_s + 4 * V_max / (np.pi * d_s ** 2) * (l_v / d_s) / ((d_mand / d_s + 1) / 2))

    else:

        # Resistance
        sigma_sR = 2 * tau_b * l_e / d_s

    return sigma_sR

# Element stresses and strains
def MCFT_element(eps_2, theta, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e, i):
    eps_1 = (eps_x * (np.tan(theta) ** 2 + 1) - eps_2) / np.tan(theta) ** 2
    eps_y =  eps_1 + eps_2 - eps_x
```

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    gamma_xy = 2 * (eps_1 - eps_y) / np.tan(theta)

    f_c2max = max(f_c / (0.8 + 170 * eps_1), f_c)
    f_c2 = f_c2max * (2 * eps_2 / eps_c - (eps_2 / eps_c) ** 2)

    if eps_x < 0 or eps_1 <= eps_cr:
        s_theta = 0
        w = 0
    else:
        s_theta = 1 / (np.sin(theta) / s_mx + np.cos(theta) / s_my)
        w = s_theta * eps_1

    sigma_sRi = Hookanchorage(w, l_e, i)
    sigma_sR = sigma_sRi + prev_sigma_sR

    f_sy = min(E_s * eps_y, f_yy, sigma_sR)

    # Before cracking
    v_ci = 0
    if eps_1 <= eps_cr:
        f_c1 = E_c * eps_1
        f_c1b = 0
        f_c1c = 0
        f_c1d = 0

        f_c2c = f_c1 - v_xy * (np.tan(theta) + 1 / np.tan(theta))

        v_cimax = 0
        v_ci = 0

        f_cx = f_c1 - v_xy / np.tan(theta)
        f_cy = f_c1 - v_xy * np.tan(theta)
        f_sxcr = 0
        f_sycr = 0

    # After cracking
    else:
        f_c1a =  f_cr / (1 + np.sqrt(500 * eps_1))

        v_ci1 = 0.18 * np.sqrt(-f_c) / (0.31 + 24 * w / (a + 16))

        Delta_fsx = rho_sx * (f_yx - f_sx)
        Delta_fsy = rho_sy * (f_yy - f_sy)

        f_c1b = Delta_fsx * np.sin(theta) ** 2 + Delta_fsy * np.cos(theta) ** 2

        v_ci2 = (Delta_fsx - Delta_fsy) * np.sin(theta) * np.cos(theta)

        v_cimax = v_ci1

        f_c1c = Delta_fsx - min(v_ci1, v_ci2) / np.tan(theta)
        f_c1d = Delta_fsy + min(v_ci1, v_ci2) * np.tan(theta)

        f_c1 = min(f_c1a, f_c1b, f_c1c, f_c1d)

        f_c2c = f_c1 - v_xy * (np.tan(theta) + 1 / np.tan(theta))

        if Delta_fsx == 0 and Delta_fsy == 0:
            v_ci = 0
        elif Delta_fsx > Delta_fsy and Delta_fsy < f_c1:
            v_ci = (f_c1 - Delta_fsy) / np.tan(theta)
        elif Delta_fsx > Delta_fsy and Delta_fsy > f_c1:
            v_ci = 0
        elif Delta_fsx < Delta_fsy and Delta_fsx < f_c1:
            v_ci = (Delta_fsx - f_c1) * np.tan(theta)
        elif Delta_fsx < Delta_fsy and Delta_fsx > f_c1:
            v_ci = 0
```

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        if v_ci < 0:
            v_cimax = min(v_ci1, v_ci2) * -1
        else:
            v_cimax = min(v_ci1, v_ci2)

        f_cx = f_c1 - v_xy / np.tan(theta)
        f_cy = f_c1 - v_xy * np.tan(theta)

        f_sxcr = f_sx + (f_c1 + v_ci / np.tan(theta)) / rho_sx
        f_sycr = f_sy + (f_c1 - v_ci * np.tan(theta)) / rho_sy

    return [gamma_xy, eps_y, eps_1, s_theta, w, f_sy, f_c1, f_c1b, f_c1c, f_c1d, f_c2, f_c2c, f_c2max, v_ci, v_cimax, f_cx, f_cy, f_sxcr, f_sycr, sigma_sR]

# Element equilibrium
def Element_equilibrium(assumptions, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e, i):
    eps_2, theta = assumptions
    gamma_xy, eps_y, eps_1, s_theta, w, f_sy, f_c1, f_c1b, f_c1c, f_c1d, f_c2, f_c2c, f_c2max, v_ci, v_cimax, f_cx, f_cy, f_sxcr, f_sycr, sigma_sR = MCFT_element(eps_2, theta, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e, i)

    # Equilibrium equations
    v = (f_c1 - f_c2) / (np.tan(theta) + 1 / np.tan(theta)) - v_xy
    f_y = f_cy + rho_sy * f_sy

    eq1 = v
    eq2 = f_y

    return eq1 ** 2 + eq2 ** 2

# Cross section stresses and strains, in the form of lists: response of each element in the cross section
def MCFT_optimization(v_xy, eps_x_list, f_yy_list, f_sx_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, l_e_list):

    # Assumption 1 - Epsilon_2
    eps_2i = 0

    # Assumption 2 - Theta
    theta_degrees = 45
    theta_i = np.radians(theta_degrees)

    eps_x_list_f = []
    f_sx_list_f = []
    v_xy_list_f = []
    theta_list = []
    eps_2_list = []
    gamma_xy_list = []
    eps_y_list = []
    eps_1_list = []
    s_theta_list = []
    w_list = []
    f_sy_list = []
    f_c1_list = []
    f_c1b_list = []
    f_c1c_list = []
    f_c1d_list = []
    f_c2max_list =[]
    f_c2_list =[]
    f_c2c_list =[]
    v_ci_list = []
    v_cimax_list = []
    f_cx_list = []
    f_cy_list = []
    f_sxcr_list = []
```

```python
    f_sycr_list = []
    sigma_sR_list = []

    failure_statuses = []

    prev_sigma_sR = 0

    # Calculate response of each element
    for i in range(m):
        eps_x = eps_x_list[i]
        rho_sx = rho_sx_list[i]
        rho_sy = rho_sy_list[i]
        s_mx = s_mx_list[i]
        s_my = s_my_list[i]
        f_yy = f_yy_list[i]
        f_sx = f_sx_list[i]
        l_e = l_e_list[i]

        initial_guess = [eps_2i, theta_i]

        bounds = [(None, None), (0, np.pi / 2)]

        # Optimization element assumptions
        result = minimize(Element_equilibrium, x0 = initial_guess, args = (eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e, i), tol = 1e-6, method = 'Nelder-Mead', bounds = bounds)

        if result.success:
            optimized_epsilon2, optimized_theta = result.x

            gamma_xy, eps_y, eps_1, s_theta, w, f_sy, f_c1, f_c1b, f_c1c, f_c1d, f_c2, f_c2c, f_c2max, v_ci, v_cimax, f_cx, f_cy, f_sxcr, f_sycr, sigma_sR = MCFT_element(optimized_epsilon2, optimized_theta, eps_x, f_yy, f_sx, v_xy, rho_sx, rho_sy, s_mx, s_my, prev_sigma_sR, l_e, i)

            eps_2i = eps_2i
            theta_i = theta_i

            eps_x_list_f.append(eps_x * 10 ** 3)
            f_sx_list_f.append(f_sx)
            v_xy_list_f.append(v_xy)
            theta_list.append(np.degrees(optimized_theta))
            eps_2_list.append(optimized_epsilon2 * 10 ** 3)
            gamma_xy_list.append(gamma_xy * 10 ** 3)
            eps_y_list.append(eps_y * 10 ** 3)
            eps_1_list.append(eps_1 * 10 ** 3)
            s_theta_list.append(s_theta)
            w_list.append(w)
            f_sy_list.append(f_sy)
            f_c1_list.append(f_c1)
            f_c1b_list.append(f_c1b)
            f_c1c_list.append(f_c1c)
            f_c1d_list.append(f_c1d)
            f_c2_list.append(f_c2)
            f_c2c_list.append(f_c2c)
            f_c2max_list.append(f_c2max)
            v_ci_list.append(v_ci)
            v_cimax_list.append(v_cimax)
            f_cx_list.append(f_cx)
            f_cy_list.append(f_cy)
            f_sxcr_list.append(f_sxcr)
            f_sycr_list.append(f_sycr)
            sigma_sR_list.append(sigma_sR)

            failure_statuses.append(False)

            prev_sigma_sR = sigma_sR
```

```python

        else:
            print("Optimization failed. Details:", result.message)
            failure_statuses.append(True)

    return failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list, gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list, f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list, v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list

# Reinforcement stress
def Reinforcement_stresses(eps_x_list, A_sxj_list):
    f_sx_list = []

    for eps_x in eps_x_list:

        f_sx = E_s * eps_x

        if f_sx > f_yx:
            f_sx = f_yx
        elif f_sx < -f_yx:
            f_sx = -f_yx

        f_sx_list.append(f_sx)

    return f_sx_list

# Normal force equilibrium
def Normal_force_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, l_e_list):

    failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list, gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list, f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list, v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list = MCFT_optimization(v_xy, eps_x_list, f_yy_list, f_sx_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, l_e_list)

    N_total = 0

    if any(failure_statuses):
        print('error')
        return 1e6
    else:
        N_c = sum(A_ci_list[i] * f_cx_list[i] for i in range(m))
        N_s = sum(f_sx_list[i] * A_sxj_list[i] for i in range(m))
        N_total = (N_c + N_s) * 10 ** -3 - N

        return N_total

# Moment equilibirum
def Moment_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list):

    failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list, gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list, f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list, v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list = MCFT_optimization(v_xy, eps_x_list, f_yy_list, f_sx_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, l_e_list)

    M_total = 0

    if any(failure_statuses):
        print('error')
        return 1e6
```

```python
    else:
        M_c = sum(A_ci_list[i] * f_cx_list[i] * (y - y_ci_list[i]) for i in range(m))
        M_s = sum(f_sx_list[i] * A_sxj_list[i] * (y - y_sj_list[i]) for i in range(m))
        M_total = abs(M_c + M_s) * 10 ** -6 - M

        return M_total

# Cross section equilibrium in case of pure shear
def Cross_section_equilibrium(variables2, eps_b, f_yy_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list):

    eps_t, v_xy = variables2
    eps_x_list = [eps_t + (eps_b - eps_t) * y_ci / h for y_ci in y_ci_list]

    f_sx_list = Reinforcement_stresses(eps_x_list, A_sxj_list)

    N_eq = Normal_force_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, l_e_list)
    M_eq = Moment_equilibrium(v_xy, eps_x_list, eps_b, f_yy_list, f_sx_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list)

    if M == 0:
        return N_eq ** 2
    else:
        return N_eq ** 2 + M_eq ** 2

#------------------------------------------------------------------------------
# CALCULATION
#------------------------------------------------------------------------------

for M, eps_b, eps_b_increment, eps_b_max, eps_ti, v_xyi in zip(M_u, eps_b_i_list, eps_b_increment, eps_b_max_list, eps_ti_list, v_xy_i_list):

    V_f_list = []
    eps_t_f_list =[]
    eps_mean_list = []
    mean_gamma_xy_list = []
    all_results = []

    while True:

        initial_guess2 = [eps_ti, v_xyi]
        bounds2 = [(None, None), (0, None)]

        result2 = minimize(Cross_section_equilibrium, x0 = initial_guess2, args=(eps_b, f_yy_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list), tol = 1e-3, method = 'Nelder-Mead', bounds = bounds2)

        if result2.success:

            optimized_eps_t, optimized_v_xy = result2.x
            optimization = optimized_eps_t, optimized_v_xy
            eps_x_f_list = [optimized_eps_t + (eps_b - optimized_eps_t) * y_ci / h for y_ci in y_ci_list]

            f_sx_f_list = Reinforcement_stresses(eps_x_f_list, A_sxj_list)

            N_total_f = Normal_force_equilibrium(optimized_v_xy, eps_x_f_list, eps_b, f_yy_list, f_sx_f_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, l_e_list)
            N_list = [N_total_f] * m
            M_total_f = Moment_equilibrium(optimized_v_xy, eps_x_f_list, eps_b, f_yy_list, f_sx_f_list, A_sxj_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, y_ci_list, y_sj_list, A_ci_list, M, l_e_list)
            M_list = [M_total_f] * m
```

```python
        print(f'good {N_total_f} & {M_total_f}')

        failure_statuses, eps_x_list_f, f_sx_list_f, v_xy_list_f, theta_list, eps_2_list, gamma_xy_list, eps_y_list, eps_1_list, s_theta_list, w_list, f_sy_list, f_c1_list, f_c1b_list, f_c1c_list, f_c1d_list, f_c2_list, f_c2c_list, f_c2max_list, v_ci_list, v_cimax_list, f_cx_list, f_cy_list, f_sxcr_list, f_sycr_list, sigma_sR_list = MCFT_optimization(optimized_v_xy, eps_x_f_list, f_yy_list, f_sx_f_list, rho_sx_list, rho_sy_list, s_mx_list, s_my_list, l_e_list)

        if not any(failure_statuses):
            results_dict = {
                'y_ci': y_ci_list,
                'eps_2': eps_2_list,
                'eps_1': eps_1_list,
                'theta_degrees': theta_list,
                'eps_x': eps_x_list_f,
                'eps_y': eps_y_list,
                'gamma_xy': gamma_xy_list,
                's_theta': s_theta_list,
                'w': w_list,
                'f_sx': f_sx_list_f,
                'f_sy': f_sy_list,
                'sigma_sR': sigma_sR_list,
                'f_c2max': f_c2max_list,
                'f_c2': f_c2_list,
                'f_c1': f_c1_list,
                'f_c1b': f_c1b_list,
                'f_c1c': f_c1c_list,
                'f_c1d': f_c1d_list,
                'v_ci': v_ci_list,
                'v_cimax': v_cimax_list,
                'v_xy': v_xy_list_f,
                'f_sxcr': f_sxcr_list,
                'f_sycr': f_sycr_list,
                'f_cx': f_cx_list,
                'f_cy': f_cy_list,
                'N': N_list,
                'M': M_list
            }

            all_results.append(results_dict)

        mean_gamma_xy = np.mean(gamma_xy_list)
        mean_gamma_xy_list.append(mean_gamma_xy)

        eps_mean = (optimized_eps_t + (eps_b - optimized_eps_t) / 2) * 10 ** 3
        eps_mean_list.append(eps_mean)

        if abs(N_total_f) < 0.01 * N and abs(M_total_f) < 0.01 * M or M == 0:
            eps_ti = optimized_eps_t
            v_xyi = optimized_v_xy
        else:
            eps_ti = eps_ti
            v_xyi = v_xyi

    else:
        print("Optimization failed. Details:", result2.message)

    eps_b += eps_b_increment

    if eps_b > eps_b_max:
        print(f"eps_b reached a value of {eps_b_max} without achieving equilibrium. Exiting loop.")
        break
```

```
    df_combined = pd.concat([pd.DataFrame(result) for result in all_results], ignore_index=
    True)

    # Save combined results to Excel
    excel_filename_combined = f'results_combined{M}.xlsx'
    df_combined.to_excel(excel_filename_combined, index=False)
```

APPENDIX C

Span Region Cross Section Results M = 2564 kNm

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.23399	0.814951	28.63145	0.006856	0.574107019	0.882327	147.3955	0.12012	1.371175	114.8214	-30	-6.73439	1.070674	0	-0.25518	3.282655	361.5281	285.2296	-4.94228	-0.72143	-3.90338	-1716.38	0	0.628801
210375	3175	-0.23476	0.796242	28.48673	-0.00022	0.561704149	0.864408	0	0	-0.04368	112.3408	-30	-6.75508	1.075513	0	-0.25912	3.282655	361.7407	283.519	-4.97373	-0.70584	-3.90338	-1716.38		
162500	2925	-0.23563	0.77524	28.32384	-0.00808	0.547685448	0.844389	0	0	-1.61574	109.5371	-30	-6.77871	1.081065	0	-0.26356	3.282655	362.0364	281.599	-5.00942	-0.68822	-3.90338	-1716.38		
100000	2700	-0.23645	0.756143	28.17527	-0.01515	0.534850569	0.826273	0	0	-3.0306	106.9701	-30	-6.80056	1.086231	0	-0.26762	3.282655	362.3592	279.8542	-5.04225	-0.67209	-3.90338	-1716.38		
100000	2500	-0.23718	0.738996	28.04173	-0.02144	0.523252429	0.810084	0	0	-4.28825	104.6505	-30	-6.82045	1.090968	0	-0.27128	3.282655	362.695	278.2885	-5.07198	-0.65752	-3.90338	-1716.38		
100000	2300	-0.23794	0.72169	27.9067	-0.02773	0.511478042	0.793819	0	0	-5.5459	102.2956	-30	-6.84082	1.095847	0	-0.27499	3.282655	363.0787	276.7103	-5.10226	-0.64272	-3.90338	-1716.38		
100000	2100	-0.09942	0.069929	38.42285	-0.03402	0.004522638	0.164909	0	0	-6.80355	0.904528	-30	-2.96596	1.754127	0	0	3.282655	0	0	-2.38416	-0.84981	-3.90338	-1716.38		
100000	1900	-0.23951	0.686557	27.63229	-0.04031	0.48735497	0.761033	0	0	-8.0612	97.47099	-30	-6.88293	1.106077	0	-0.28258	3.282655	364.0044	273.5138	-5.16445	-0.61241	-3.90338	-1716.38		
100000	1700	-0.24032	0.668719	27.49289	-0.04659	0.474993578	0.744511	0	0	-9.31885	94.99872	-30	-6.90472	1.111446	0	-0.28645	3.282655	364.553	271.8961	-5.19639	-0.59688	-3.90338	-1716.38		
100000	1500	-0.24115	0.650685	27.35201	-0.05288	0.46241882	0.727894	0	0	-10.5765	92.48376	-30	-6.92697	1.117002	0	-0.29038	3.282655	365.1643	270.2655	-5.22888	-0.58108	-3.90338	-1716.38		
100000	1300	-0.12872	0.069929	36.27806	-0.05917	0.000378821	0.189514	0	0	-11.8342	0.075764	-30	-3.81048	1.754127	0	0	3.282655	0	0	-2.71825	-0.65529	-3.90338	-1716.38		
100000	1100	-0.24286	0.613996	27.06585	-0.06546	0.436593676	0.694367	0	0	-13.0918	87.31874	-30	-6.97292	1.128728	0	-0.29843	3.282655	366.5934	266.9667	-5.29558	-0.54862	-3.90338	-1716.38		
133333	900	-0.24374	0.595315	26.92067	-0.07175	0.423317686	0.677445	0	0	-14.3495	84.66354	-30	-6.99662	1.134931	0	-0.30256	3.282655	367.4223	265.2988	-5.32975	-0.53194	-3.90338	-1716.38		
200000	700	-0.24465	0.576398	26.77408	-0.07804	0.409785976	0.660413	0	0	-15.6071	81.9572	-30	-7.0208	1.141384	0	-0.30676	3.282655	368.3354	263.6195	-5.36448	-0.51494	-3.90338	-1716.38		
266667	500	-0.15416	0.069929	33.93539	-0.08432	9.06208E-05	0.207584	0	0	-16.8648	0.018124	-30	-4.53299	1.754127	0	0	3.282655	0	0	-3.12447	-0.45467	-3.90338	-1716.38		
75000	300	-0.2465	0.537783	26.47685	-0.09061	0.3818905	0.625979	0	0	-18.1224	76.3781	-30	-7.07053	1.155135	0	-0.3154	3.282655	370.4455	260.2289	-5.43552	-0.47988	-3.90338	-1716.38		
0	100	-0.16596	0.069929	32.75689	-0.0969	0.000869578	0.214673	0	0	-19.3801	0.173916	-30	-4.8646	1.754127	0	0	3.282655	0	0	-3.34798	-0.35791	-3.90338	-1716.38		
0	3400	-0.24826	1.029902	29.17302	0.055439	0.726202647	1.088014	146.9939	0.151389	11.08775	145.2405	-30	-7.11748	1.021266	0	-0.18918	3.463981	354.6244	307.7848	-5.18366	-0.91255	-106.424	-421.985	0	0.76884
210375	3175	-0.2493	1.004689	28.98587	0.045176	0.710213134	1.063115	147.131	0.147821	9.035179	142.0426	-30	-7.14526	1.026548	0	-0.19435	3.463981	354.3487	305.4276	-5.22628	-0.89245	-106.424	-421.985		
162500	2925	-0.2505	0.976366	28.77427	0.033773	0.692091549	1.035288	147.2881	0.143807	6.754547	138.4183	-30	-7.17736	1.032628	0	-0.20019	3.463981	354.1134	302.7711	-5.27504	-0.86969	-106.424	-421.985		
100000	2700	-0.25163	0.950591	28.58033	0.02351	0.675454689	1.010096	147.4342	0.14015	4.701979	135.0909	-30	-7.20737	1.038303	0	-0.20555	3.463981	353.9698	300.3469	-5.32028	-0.84878	-106.424	-421.985		
100000	2500	-0.25266	0.927439	28.40514	0.014387	0.660390367	0.987582	147.5678	0.13686	2.877473	132.0781	-30	-7.23498	1.043521	0	-0.21038	3.463981	353.9004	298.1645	-5.36161	-0.82985	-106.424	-421.985		
100000	2300	-0.25373	0.904055	28.22722	0.005265	0.645058049	0.964954	147.7052	0.133534	1.052968	129.0116	-30	-7.26352	1.048912	0	-0.21529	3.463981	353.8893	295.9561	-5.40402	-0.81058	-106.424	-421.985		
100000	2100	-0.25484	0.880424	28.04657	-0.00386	0.629442862	0.942207	0	0	-0.77154	125.8886	-30	-7.29301	1.054489	0	-0.22028	3.463981	353.9409	293.7207	-5.44756	-0.79096	-106.424	-421.985		
100000	1900	-0.25598	0.856534	27.86315	-0.01298	0.613530613	0.919337	0	0	-2.59604	122.7061	-30	-7.32347	1.060266	0	-0.22535	3.463981	354.0597	291.4577	-5.49224	-0.77097	-106.424	-421.985		
100000	1700	-0.25717	0.832382	27.67683	-0.0221	0.597316683	0.896348	0	0	-4.42055	119.4633	-30	-7.35498	1.066255	0	-0.23049	3.463981	354.2498	289.1681	-5.53814	-0.75059	-106.424	-421.985		
100000	1500	-0.25839	0.807949	27.48764	-0.03123	0.580780148	0.873233	0	0	-6.24505	116.156	-30	-7.38756	1.072474	0	-0.23572	3.463981	354.5171	286.8506	-5.58528	-0.72981	-106.424	-421.985		
100000	1300	-0.25966	0.783223	27.29552	-0.04035	0.563908668	0.84999	0	0	-8.06956	112.7817	-30	-7.42125	1.078939	0	-0.24104	3.463981	354.8674	284.5053	-5.63369	-0.70861	-106.424	-421.985		
100000	1100	-0.26097	0.758188	27.10038	-0.04947	0.546684969	0.826613	0	0	-9.89406	109.337	-30	-7.45606	1.085672	0	-0.24645	3.463981	355.3078	282.1322	-5.68343	-0.68697	-106.424	-421.985		
133333	900	-0.12844	0.069929	36.3975	-0.05859	8.27724E-05	0.189492	0	0	-11.7186	0.016554	-30	-3.80242	1.754127	0	0	3.463981	0	0	-2.94473	-0.79951	-106.424	-421.985		
200000	700	-0.26373	0.707121	26.70114	-0.06772	0.511101662	0.779443	0	0	-13.5431	102.2203	-30	-7.52926	1.100035	0	-0.25754	3.463981	356.4904	277.3016	-5.78698	-0.64225	-106.424	-421.985		
266667	500	-0.15686	0.069929	36.44217	-0.07684	-0.010093421	0.216745	0	0	-15.3676	-2.01868	-30	-4.60902	1.754127	0	0	3.463981	0	0	-2.93707	-0.80368	-106.424	-421.985		
75000	300	-0.15737	0.069929	34.09005	-0.08596	-0.001476915	0.211011	0	0	-17.1921	-0.29538	-30	-4.62327	1.754127	0	0	3.463981	0	0	-3.36407	-0.59029	-106.424	-421.985		
0	100	-0.1663	0.069929	33.30349	-0.09508	-0.001290525	0.216814	0	0	-19.0166	-0.25811	-30	-4.8742	1.754127	0	0	3.463981	0	0	-3.51858	-0.52159	-106.424	-421.985		
0	3400	-0.20928	0.979323	30.88074	0.103835	0.666212749	1.047138	145.8268	0.142812	20.76708	133.2425	-30	-6.0635	1.031986	0	-0.24168	3.125505	367.9099	297.4931	-4.19434	-0.83716	-126.623	-1544.35	0	0.784377
210375	3175	-0.21023	0.946005	30.63311	0.089965	0.645812909	1.013857	145.9868	0.138104	17.99302	129.1626	-30	-6.08951	1.039328	0	-0.24817	3.125505	367.6053	294.5816	-4.23865	-0.81153	-126.623	-1544.35		
162500	2925	-0.21134	0.908393	30.35104	0.074554	0.622496945	0.976507	146.1729	0.132782	14.91072	124.4994	-30	-6.11998	1.047902	0	-0.2556	3.125505	367.4075	291.2832	-4.28984	-0.78223	-126.623	-1544.35		
100000	2700	-0.2124	0.873974	30.0907	0.060683	0.600889623	0.942544	146.3483	0.127905	12.13666	120.1779	-30	-6.14888	1.056035	0	-0.26249	3.125505	367.3691	288.2561	-4.33776	-0.75508	-126.623	-1544.35		
100000	2500	-0.21339	0.842897	29.85395	0.048354	0.581153786	0.912066	146.5107	0.123493	9.670822	116.2308	-30	-6.17583	1.063629	0	-0.26878	3.125505	367.4577	285.5176	-4.38191	-0.73028	-126.623	-1544.35		
100000	2300	-0.21442	0.811326	29.6121	0.036025	0.560879568	0.881298	146.6796	0.119005	7.204986	112.1759	-30	-6.20399	1.071604	0	-0.27524	3.125505	367.6746	282.732	-4.42758	-0.7048	-126.623	-1544.35		
100000	2100	-0.2155	0.779236	29.36492	0.023696	0.540038666	0.850232	146.8553	0.114435	4.739151	108.0077	-30	-6.23343	1.079998	0	-0.28187	3.125505	368.0325	279.8999	-4.47483	-0.67861	-126.623	-1544.35		
100000	1900	-0.21663	0.746588	29.11237	0.011367	0.518587821	0.818853	147.0381	0.109777	2.273315	103.7176	-30	-6.26424	1.088859	0	-0.28869	3.125505	368.5471	277.0199	-4.52371	-0.65166	-126.623	-1544.35		
100000	1700	-0.21782	0.713335	28.85427	-0.00096	0.496482133	0.78714	0	0	-0.19252	99.29643	-30	-6.29641	1.09824	0	-0.29571	3.125505	369.237	274.0919	-4.5743	-0.62388	-126.623	-1544.35		
100000	1500	-0.21905	0.679426	28.59065	-0.01329	0.473667257	0.755071	0	0	-2.65836	94.73345	-30	-6.33001	1.108209	0	-0.30295	3.125505	370.1244	271.1155	-4.6266	-0.59521	-126.623	-1544.35		
100000	1300	-0.22034	0.644805	28.32142	-0.02562	0.450084996	0.722621	0	0	-5.12419	90.017	-30	-6.36507	1.118843	0	-0.31041	3.125505	371.2357	268.0916	-4.68066	-0.56558	-126.623	-1544.35		
100000	1100	-0.22168	0.609396	28.04668	-0.03795	0.425660906	0.689753	0	0	-7.59003	85.13218	-30	-6.40157	1.130241	0	-0.31813	3.125505	372.6039	265.0209	-4.73645	-0.53489	-126.623	-1544.35		
133333	900	-0.22308	0.57312	27.7665	-0.05028	0.400317134	0.656431	0	0	-10.0559	80.06343	-30	-6.4395	1.142521	0	-0.32613	3.125505	374.2689	261.9066	-4.79394	-0.50304	-126.623	-1544.35		
200000	700	-0.22453	0.535866	27.48124	-0.06261	0.373944564	0.622594	0	0	-12.5217	74.78891	-30	-6.47874	1.155839	0	-0.33445	3.125505	376.2831	258.7518	-4.853	-0.4699	-126.623	-1544.35		
266667	500	-0.22602	0.497499	27.19142	-0.07494	0.346416136	0.588168	0	0	-14.9875	69.28323	-30	-6.51913	1.170395	0	-0.34314	3.125505	378.7136	255.5628	-4.91342	-0.4353	-126.623	-1544.35		
75000	300	-0.22754	0.457845	26.89785	-0.08727	0.317568999	0.553051	0	0	-17.4534	63.5138	-30	-6.56033	1.186457	0	-0.35227	3.125505	381.6507	252.3498	-4.97483	-0.39906	-126.623	-1544.35		
0	100	-0.22908	0.416664	26.60194	-0.0996	0.287183125	0.517091	0	0	-19.9192	57.43663	-30	-6.60181	1.204398	0	-0.36194	3.125505	385.2202	249.1282	-5.03656	-0.36087	-126.623	-1544.35		
0	3400	-0.20911	1.10618	31.61826	0.152394	0.744679123	1.174385	145.3681	0.160803	30.47879	148.9358	-30	-6.0589	1.00598	0	-0.21381	3.154015	368.8734	309.0472	-4.11714	-0.93577	-91.1689	-1346.71	0	0.858421
210375	3175	-0.21013	1.066959	31.33639	0.13528	0.721553152	1.13456	145.5402	0.155285	27.05608	144.3106	-30	-6.08672	1.013714	0	-0.22113	3.154015	368.0524	305.6529	-4.16631	-0.9067	-91.1689	-1346.71		
162500	2925	-0.21133	1.022648	31.01399	0.116265	0.695051253	1.089821	145.7419	0.149043	23.25307	139.0103	-30	-6.11967	1.022773	0	-0.22954	3.154015	367.2968	301.7945	-4.22349	-0.8734	-91.1689	-1346.71		
100000	2700	-0.21249	0.982055	30.7151	0.099152	0.670416022	1.049088	145.9335	0.143315	19.83036	134.0832	-30	-6.15122	1.031394	0	-0.23738	3.154015	366.7741	298.2396	-4.27738	-0.84245	-91.1689	-1346.71		
100000	2500	-0.21358	0.945372	30.44213	0.08394	0.647855716	1.012502	146.1124	0.138131	16.78795	129.5711	-30	-6.18095	1.039469	0	-0.24457	3.154015	366.448	295.0127	-4.32737	-0.8141	-91.1689	-1346.71		
100000	2300	-0.21473	0.90808	30.16198	0.068728	0.624624488	0.975539	146.2999	0.132852	13.74554	124.9249	-30	-6.21233	1.047975	0	-0.25198	3.154015	366.2668	291.7202	-4.37945	-0.78491	-91.1689	-1346.71		
100000	2100	-0.21594	0.870131	29.87442	0.053516	0.600670979	0.938179	146.4965	0.127471	10.70313	120.1342	-30	-6.24548	1.056961	0	-0.25962	3.154015	366.247	288.3597	-4.43371	-0.75481	-91.1689	-1346.71		
100000	1900	-0.21723	0.831476	29.57916	0.038304	0.57594146	0.900406	146.7028	0.12198	7.660715	115.1883	-30	-6.28051	1.066483	0	-0.2675	3.154015	366.4076	284.9293	-4.49029	-0.72373	-91.1689	-1346.71		
100000	1700	-0.21859	0.792056	29.27594	0.023092	0.550373179	0.862197	146.9194	0.116368	4.618305	110.0746	-30	-6.31753	1.076609	0	-0.27565	3.154015	366.7714	281.4273	-4.54931	-0.6916	-91.1689	-1346.71		
100000	1500	-0.22003	0.751804	28.96451	0.007879	0.523893583	0.823524	147.1467	0.110625	1.575894	104.7787	-30	-6.35664	1.08742	0	-0.28406	3.154015	367.3659	277.8522	-4.61089	-0.65833	-91.1689	-1346.71		
100000	1300	-0.22155	0.710638	28.6447	-0.00733	0.496418668	0.784354	0	0	-1.46652	99.28373	-30	-6.39795	1.099018	0	-0.29278	3.154015	368.2246	274.203	-4.67513	-0.6238	-91.1689	-1346.71		
100000	1100	-0.22316	0.668464	28.31636	-0.02254	0.467850995	0.744649	0	0	-4.50893	93.5702	-30	-6.44154	1.111524	0	-0.30182	3.154015	369.389	270.4799	-4.74211	-0.5879	-91.1689	-1346.71		
133333	900	-0.22485	0.625162	27.9795	-0.03776	0.438068249	0.704352	0	0	-7.55134	87.61365	-30	-6.48743	1.125097	0	-0.31122	3.154015	370.9124	266.6837	-4.81187	-0.55048	-91.1689	-1346.71		
200000	700	-0.22663	0.580595	27.63428	-0.05297	0.406932579	0.663404	0	0	-10.5937	81.38652	-30	-6.53565	1.139937	0	-0.32102	3.154015	372.862	262.8185	-4.88436	-0.51135	-91.1689	-1346.71		
266667	500	-0.22849	0.534559	27.28123	-0.06818	0.374247581	0.621694	0	0	-13.6362	74.84952	-30	-6.58599	1.15632	0	-0.3313	3.154015	375.3305	258.889	-4.95939	-0.47028	-91.1689	-1346.71		
75000	300	-0.23042	0.486817	26.92112	-0.08339	0.339786564	0.579097	0	0	-16.6786	67.95731	-30	-6.63819	1.174614	0	-0.34214	3.154015	378.4419	254.9085	-5.03661	-0.42697	-91.1689	-1346.71		
0	100	-0.2324	0.437008	26.55588	-0.0986	0.303211787	0.535398	0	0	-19.721	60.64236	-30	-6.69157	1.195362	0	-0.35369	3.154015	382.3788	250.8958	-5.11519	-0.38101	-91.1689	-1346.71		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.21144	1.231963	32.30346	0.200777	0.819745611	1.303952	144.9661	0.178593	40.15541	163.9491	-29.7196	-6.06543	0.98279	0	-0.18671	3.183637	370.7493	320.3696	-4.05255	-1.03009	-119.305	-1126.17	0	0.92359
210375	3175	-0.21072	1.18302	31.97092	0.180025	0.792272591	1.252066	145.1583	0.171725	36.0051	158.4545	-29.9666	-6.09623	0.991538	0	-0.19564	3.183637	369.5419	316.2674	-4.1091	-0.99557	-119.305	-1126.17		
162500	2925	-0.21177	1.130882	31.60472	0.156968	0.762142828	1.198533	145.3763	0.164403	31.39363	152.4286	-30	-6.13169	1.001238	0	-0.20518	3.183637	368.1933	311.7852	-4.17273	-0.95771	-119.305	-1126.17		
100000	2700	-0.21302	1.083487	31.26575	0.136217	0.734246206	1.150348	145.584	0.157738	27.24332	146.8492	-30	-6.16587	1.010423	0	-0.21401	3.183637	367.1327	307.6678	-4.2328	-0.92265	-119.305	-1126.17		
100000	2500	-0.21422	1.040605	30.95487	0.117771	0.708618587	1.107012	145.7795	0.151699	23.55415	141.7237	-30	-6.19839	1.019059	0	-0.22216	3.183637	366.3485	303.9168	-4.28887	-0.89045	-119.305	-1126.17		
100000	2300	-0.21549	0.996961	30.63446	0.099325	0.682148431	1.063179	145.986	0.145542	19.86498	136.4297	-30	-6.23305	1.028191	0	-0.2306	3.183637	365.7313	300.0762	-4.34766	-0.85719	-119.305	-1126.17		
100000	2100	-0.21685	0.952499	30.304	0.080879	0.654772886	1.01883	146.2044	0.139259	16.17581	130.9546	-30	-6.27005	1.037878	0	-0.23933	3.183637	365.3007	296.1429	-4.40939	-0.82279	-119.305	-1126.17		
100000	1900	-0.2183	0.907144	29.96306	0.062433	0.626411462	0.973937	146.4355	0.132838	12.48664	125.2823	-30	-6.30959	1.048193	0	-0.24839	3.183637	365.081	292.1123	-4.47425	-0.78715	-119.305	-1126.17		
100000	1700	-0.21985	0.860815	29.61118	0.043987	0.59697363	0.928467	146.6803	0.126265	8.797465	119.3947	-30	-6.35184	1.059221	0	-0.25778	3.183637	365.1015	287.9799	-4.54245	-0.75016	-119.305	-1126.17		
100000	1500	-0.22152	0.813421	29.24777	0.025541	0.566363453	0.882387	146.9397	0.119524	5.108295	113.2727	-30	-6.397	1.071066	0	-0.26753	3.183637	365.3971	283.7432	-4.61424	-0.71169	-119.305	-1126.17		
100000	1300	-0.2233	0.764855	28.87243	0.007096	0.534462954	0.835661	147.2149	0.112598	1.419124	106.8926	-30	-6.44531	1.08386	0	-0.27768	3.183637	366.0114	279.3993	-4.68985	-0.6716	-119.305	-1126.17		
100000	1100	-0.2252	0.714974	28.48486	-0.01135	0.501122915	0.788227	0	0	-2.27005	100.2246	-30	-6.49694	1.097769	0	-0.28824	3.183637	367.0009	274.945	-4.76946	-0.62972	-119.305	-1126.17		
133333	900	-0.22724	0.663624	28.08468	-0.0298	0.466182461	0.740027	0	0	-5.95922	93.23649	-30	-6.55207	1.113003	0	-0.29928	3.183637	368.4362	270.3816	-4.85326	-0.58581	-119.305	-1126.17		
200000	700	-0.22941	0.610587	27.67196	-0.04824	0.429420687	0.690964	0	0	-9.64839	85.88414	-30	-6.61077	1.129848	0	-0.31085	3.183637	370.4135	265.7103	-4.9413	-0.53961	-119.305	-1126.17		
266667	500	-0.23171	0.555589	27.24707	-0.06669	0.390565202	0.640907	0	0	-13.3376	78.11304	-30	-6.67297	1.148694	0	-0.32304	3.183637	373.0638	260.9388	-5.0335	-0.49078	-119.305	-1126.17		
75000	300	-0.23413	0.498237	26.81125	-0.08513	0.349237542	0.589651	0	0	-17.0267	69.84751	-30	-6.73829	1.170106	0	-0.33598	3.183637	376.5773	256.0812	-5.12935	-0.43885	-119.305	-1126.17		
0	100	-0.23664	0.437968	26.36702	-0.10358	0.304906746	0.536876	0	0	-20.7159	60.98135	-30	-6.80582	1.194944	0	-0.34991	3.183637	381.2432	251.1682	-5.22773	-0.38314	-119.305	-1126.17		
0	3400	-0.21752	1.362365	32.9364	0.249526	0.895323617	1.441862	144.615	0.197018	49.90519	179.0647	-29.081	-6.09562	0.960988	0	-0.15851	3.220064	373.1653	332.0152	-4.00955	-1.12507	-101.532	-988.541	0	1.009348
210375	3175	-0.21663	1.309027	32.58877	0.225959	0.866440485	1.384703	144.8054	0.189554	45.19187	173.2881	-29.3389	-6.12602	0.969656	0	-0.16775	3.220064	371.3678	327.6182	-4.06759	-1.08877	-101.532	-988.541		
162500	2925	-0.21568	1.248511	32.18649	0.199774	0.83305437	1.320159	145.0331	0.181075	39.95485	166.6109	-29.637	-6.16287	0.979905	0	-0.17854	3.220064	369.5785	322.5722	-4.13615	-1.04682	-101.532	-988.541		
100000	2700	-0.21487	1.192806	31.80878	0.176208	0.801725324	1.261067	145.254	0.17326	35.24153	160.3451	-29.9169	-6.19909	0.989762	0	-0.18875	3.220064	368.1808	317.8752	-4.20189	-1.00745	-101.532	-988.541		
100000	2500	-0.21548	1.144649	31.47246	0.15526	0.773909453	1.211289	145.4567	0.166497	31.05191	154.7819	-30	-6.23282	0.998637	0	-0.19766	3.220064	366.9766	313.7246	-4.2617	-0.97249	-101.532	-988.541		
100000	2300	-0.21679	1.096792	31.13098	0.134311	0.745691046	1.162631	145.6681	0.159768	26.86229	149.1382	-30	-6.26849	1.007808	0	-0.20662	3.220064	365.8718	309.5405	-4.32363	-0.93704	-101.532	-988.541		
100000	2100	-0.2182	1.04803	30.77789	0.113363	0.716470748	1.113369	145.8929	0.1529	22.67267	143.2941	-30	-6.30676	1.017541	0	-0.21594	3.220064	364.9563	305.2455	-4.38891	-0.90032	-101.532	-988.541		
100000	1900	-0.21971	0.998293	30.41251	0.092415	0.686165978	1.063482	146.132	0.145883	18.48305	137.2332	-30	-6.34797	1.027907	0	-0.22561	3.220064	364.2538	300.8346	-4.45781	-0.86224	-101.532	-988.541		
100000	1700	-0.22134	0.94749	30.03412	0.071467	0.654678278	1.012935	146.3868	0.1387	14.29343	130.9357	-30	-6.39233	1.038995	0	-0.23568	3.220064	363.794	296.3018	-4.53066	-0.82267	-101.532	-988.541		
100000	1500	-0.22311	0.895514	29.64204	0.050519	0.62188957	0.961689	146.6585	0.131335	10.10382	124.3779	-30	-6.44012	1.050913	0	-0.24616	3.220064	363.6131	291.6408	-4.60775	-0.78147	-101.532	-988.541		
100000	1300	-0.22501	0.842252	29.23555	0.029571	0.587672094	0.909708	146.9486	0.123768	5.914198	117.5344	-30	-6.49171	1.063789	0	-0.25707	3.220064	363.755	286.8467	-4.68945	-0.73847	-101.532	-988.541		
100000	1100	-0.22706	0.787553	28.81392	0.008623	0.551866026	0.856934	147.2585	0.115974	1.724579	110.3732	-30	-6.54738	1.077794	0	-0.26847	3.220064	364.2763	281.9145	-4.77611	-0.69347	-101.532	-988.541		
133333	900	-0.22929	0.731237	28.37662	-0.01233	0.514276739	0.803301	0	0	-2.46504	102.8553	-30	-6.60744	1.093143	0	-0.28038	3.220064	365.2499	276.8396	-4.86805	-0.64624	-101.532	-988.541		
200000	700	-0.23168	0.67309	27.92311	-0.03327	0.474680446	0.74873	0	0	-6.65466	94.93609	-30	-6.67219	1.110119	0	-0.29287	3.220064	366.7708	271.6223	-4.9656	-0.59648	-101.532	-988.541		
266667	500	-0.23426	0.612809	27.45341	-0.05422	0.432766954	0.69309	0	0	-10.8443	86.55339	-30	-6.74179	1.129117	0	-0.30602	3.220064	368.9719	266.2633	-5.06887	-0.54382	-101.532	-988.541		
75000	300	-0.23703	0.550006	26.96799	-0.07517	0.388147908	0.636205	0	0	-15.0339	77.62958	-30	-6.81622	1.150695	0	-0.31997	3.220064	372.0404	260.7737	-5.17778	-0.48774	-101.532	-988.541		
0	100	-0.23995	0.484089	26.46864	-0.09612	0.340254363	0.577768	0	0	-19.2235	68.05087	-30	-6.89486	1.175704	0	-0.3349	3.220064	376.2635	255.1755	-5.29161	-0.42756	-101.532	-988.541		
0	3400	-0.22247	1.482543	33.53998	0.298034	0.962043477	1.570397	144.2981	0.213928	59.6069	192.4087	-28.5162	-6.1051	0.942587	0	-0.13465	3.24563	376.6772	342.4305	-3.9536	-1.20891	-81.0089	-818.808	0	1.078597
210375	3175	-0.22138	1.423711	33.17153	0.271112	0.93122015	1.506844	144.4895	0.205711	54.22242	186.244	-28.7899	-6.13539	0.951409	0	-0.14431	3.24563	374.2603	337.6699	-4.01382	-1.17017	-81.0089	-818.808		
162500	2925	-0.22022	1.356953	32.7441	0.241198	0.895536119	1.43503	144.7196	0.196378	48.23967	179.1072	-29.1069	-6.17237	0.961852	0	-0.15566	3.24563	371.7906	332.1953	-4.08519	-1.12533	-81.0089	-818.808		
100000	2700	-0.21922	1.295507	32.34161	0.214276	0.862008557	1.369251	144.9444	0.187776	42.85519	172.4017	-29.405	-6.20904	0.971906	0	-0.16645	3.24563	369.7881	327.09	-4.15393	-1.0832	-81.0089	-818.808		
100000	2500	-0.21838	1.239677	31.96854	0.190345	0.830953273	1.309789	145.1597	0.179951	38.06899	166.1907	-29.6811	-6.24463	0.981441	0	-0.17655	3.24563	368.2091	322.3964	-4.21901	-1.04418	-81.0089	-818.808		
100000	2300	-0.21758	1.182596	31.57975	0.166414	0.798604109	1.249328	145.3914	0.171939	33.28278	159.7208	-29.9688	-6.2834	0.991615	0	-0.18715	3.24563	366.8456	317.546	-4.28826	-1.00353	-81.0089	-818.808		
100000	2100	-0.21882	1.127982	31.19453	0.142483	0.766678804	1.193421	145.6283	0.164266	28.49658	153.3358	-30	-6.32374	1.00179	0	-0.19733	3.24563	365.4818	312.7802	-4.35854	-0.96341	-81.0089	-818.808		
100000	1900	-0.22042	1.072679	30.79685	0.118552	0.733706373	1.137406	145.8807	0.156483	23.71038	146.7413	-30	-6.36724	1.01257	0	-0.20784	3.24563	364.3218	307.9015	-4.43271	-0.92197	-81.0089	-818.808		
100000	1700	-0.22216	1.016138	30.38358	0.094621	0.699356764	1.080592	146.1513	0.14851	18.92418	139.8714	-30	-6.41449	1.024134	0	-0.21883	3.24563	363.4258	302.8722	-4.51154	-0.87881	-81.0089	-818.808		
100000	1500	-0.22406	0.95825	29.95354	0.07069	0.66350317	1.022948	146.442	0.140328	14.13797	132.7006	-30	-6.46592	1.036603	0	-0.2303	3.24563	362.8337	297.6859	-4.59554	-0.83376	-81.0089	-818.808		
100000	1300	-0.22612	0.898849	29.50577	0.046759	0.625967863	0.964406	146.7548	0.13191	9.351771	125.1936	-30	-6.52188	1.050129	0	-0.2423	3.24563	362.5976	292.3318	-4.68515	-0.78659	-81.0089	-818.808		
100000	1100	-0.22838	0.837771	29.03915	0.022828	0.586564842	0.904917	147.0918	0.123229	4.565568	117.313	-30	-6.58292	1.064906	0	-0.25488	3.24563	362.7819	286.8029	-4.78094	-0.73708	-81.0089	-818.808		
133333	900	-0.23084	0.774795	28.5527	-0.0011	0.545054367	0.844406	0	0	-0.22063	109.0109	-30	-6.64954	1.081184	0	-0.26807	3.24563	363.4716	281.0918	-4.88343	-0.68492	-81.0089	-818.808		
200000	700	-0.23354	0.709647	28.04548	-0.02503	0.501144741	0.78277	0	0	-5.00684	100.2289	-30	-6.72219	1.099304	0	-0.28195	3.24563	364.7806	275.1938	-4.99317	-0.62973	-81.0089	-818.808		
266667	500	-0.23647	0.641962	27.51713	-0.04897	0.454453879	0.719873	0	0	-9.79304	90.89078	-30	-6.80131	1.119738	0	-0.29662	3.24563	366.8679	269.1078	-5.11051	-0.57106	-81.0089	-818.808		
75000	300	-0.23966	0.57124	26.96783	-0.0729	0.404475369	0.655496	0	0	-14.5792	80.89507	-30	-6.88702	1.143175	0	-0.31222	3.24563	369.9657	262.8424	-5.23558	-0.50826	-81.0089	-818.808		
0	100	-0.24308	0.496734	26.39937	-0.09683	0.350478368	0.589276	0	0	-19.3654	70.09567	-30	-6.97887	1.170695	0	-0.329	3.24563	374.4365	256.423	-5.36777	-0.44041	-81.0089	-818.808		
0	3400	-0.22783	1.600611	34.08952	0.34657	1.026214139	1.69743	144.0247	0.230528	69.31408	205.2428	-27.9824	-6.12627	0.925857	0	-0.11168	3.273421	380.7568	352.6019	-3.91087	-1.28954	-75.0978	-664.045	0	1.14999
210375	3175	-0.22654	1.536565	33.70402	0.316354	0.993676424	1.627808	144.215	0.221596	63.27076	198.7353	-28.2695	-6.1562	0.934778	0	-0.12165	3.273421	377.7143	347.5142	-3.97276	-1.24865	-75.0978	-664.045		
162500	2925	-0.22515	1.463908	33.2558	0.28278	0.955977043	1.549105	144.4452	0.211454	56.55595	191.1954	-28.6024	-6.19296	0.945344	0	-0.13341	3.273421	374.5539	341.656	-4.04635	-1.20128	-75.0978	-664.045		
100000	2700	-0.22396	1.397028	32.83286	0.252563	0.920506343	1.476974	144.6711	0.20211	50.51263	184.1013	-28.9158	-6.22968	0.955526	0	-0.14466	3.273421	371.9354	336.1824	-4.11744	-1.15671	-75.0978	-664.045		
100000	2500	-0.22294	1.336267	32.43988	0.225704	0.887619223	1.41174	144.8888	0.19361	45.14079	177.5238	-29.2066	-6.26554	0.965188	0	-0.15523	3.273421	369.8138	331.1428	-4.18497	-1.11539	-75.0978	-664.045		
100000	2300	-0.22198	1.274149	32.0294	0.198845	0.853324014	1.345384	145.1241	0.18491	39.76895	170.6648	-29.51	-6.30488	0.975507	0	-0.16637	3.273421	367.9132	325.9262	-4.25709	-1.07229	-75.0978	-664.045		
100000	2100	-0.22107	1.210521	31.59981	0.171986	0.817465974	1.277813	145.3793	0.175985	34.39711	163.4932	-29.8273	-6.34811	0.986581	0	-0.17812	3.273421	366.2666	320.5171	-4.33433	-1.02723	-75.0978	-664.045		
100000	1900	-0.22143	1.147529	31.1618	0.145126	0.780975512	1.212327	145.6488	0.167136	29.02526	156.1951	-30	-6.39458	0.998096	0	-0.18995	3.273421	364.7681	315.0518	-4.41511	-0.98138	-75.0978	-664.045		
100000	1700	-0.22325	1.085595	30.71811	0.118267	0.744075216	1.149541	145.9316	0.158423	23.65342	148.815	-30	-6.44411	1.010007	0	-0.20174	3.273421	363.4027	309.5673	-4.4991	-0.93501	-75.0978	-664.045		
100000	1500	-0.22526	1.022135	30.25482	0.091408	0.705470385	1.085778	146.2373	0.149474	18.28158	141.0941	-30	-6.49844	1.02288	0	-0.2141	3.273421	362.3613	303.8953	-4.58906	-0.88649	-75.0978	-664.045		
100000	1300	-0.22746	0.956969	29.77057	0.064549	0.664959563	1.020971	146.5686	0.140262	12.90974	132.9919	-30	-6.55811	1.036886	0	-0.22708	3.273421	361.7008	298.0223	-4.68564	-0.83559	-75.0978	-664.045		
100000	1100	-0.22989	0.889899	29.26379	0.037689	0.622318691	0.95506	146.9281	0.130751	7.537896	124.4637	-30	-6.62382	1.052237	0	-0.24072	3.273421	361.4928	291.9374	-4.78958	-0.782	-75.0978	-664.045		
133333	900	-0.23257	0.820664	28.73304	0.01083	0.577260212	0.887956	147.319	0.120899	2.166054	115.452	-30	-6.69623	1.069217	0	-0.25509	3.273421	361.8327	285.6282	-4.90163	-0.72538	-75.0978	-664.045		
200000	700	-0.23554	0.748943	28.1769	-0.01603	0.529434777	0.819554	0	0	-3.20579	105.887	-30	-6.7761	1.088208	0	-0.27025	3.273421	362.8492	279.0858	-5.02261	-0.66529	-75.0978	-664.045		
266667	500	-0.23881	0.67431	27.59434	-0.04289	0.478389115	0.749704	0	0	-8.57763	95.67782	-30	-6.86413	1.10975	0	-0.28631	3.273421	364.7237	272.3052	-5.15323	-0.60114	-75.0978	-664.045		
75000	300	-0.24241	0.596166	26.98512	-0.06975	0.423506221	0.678164	0	0	-13.9495	84.70124	-30	-6.96076	1.134645	0	-0.30344	3.273421	367.726	265.2909	-5.29393	-0.53218	-75.0978	-664.045		
0	100	-0.24633	0.513616	26.35075	-0.09661	0.36389507	0.604528	0	0	-19.3213	72.77901	-30	-7.0658	1.164169	0	-0.32192	3.273421	372.2858	258.0678	-5.44435	-0.45727	-75.0978	-664.045		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.23371	1.717799	34.58988	0.395224	1.088863282	1.824077	143.7882	0.246999	79.04484	217.7727	-27.4719	-6.16004	0.910398	0	-0.08917	3.304364	385.2876	362.6713	-3.88136	-1.36827	-65.0792	-542.504	0	1.227843
210375	3175	-0.23222	1.649208	34.19292	0.361979	1.055010358	1.749134	143.9749	0.237444	72.39575	211.0021	-27.7684	-6.18925	0.919317	0	-0.09928	3.304364	381.6384	357.3202	-3.9442	-1.32573	-65.0792	-542.504		
162500	2925	-0.23061	1.571426	33.73069	0.325039	1.015772324	1.664403	144.2016	0.226602	65.00786	203.1545	-28.1125	-6.22537	0.929878	0	-0.11126	3.304364	377.8034	351.1536	-4.01906	-1.27642	-65.0792	-542.504		
100000	2700	-0.22923	1.499853	33.29386	0.291794	0.978834054	1.586723	144.4252	0.216617	58.35876	195.7668	-28.4367	-6.2616	0.940055	0	-0.12277	3.304364	374.5775	345.3856	-4.09153	-1.23	-65.0792	-542.504		
100000	2500	-0.22804	1.434847	32.88739	0.262242	0.94456501	1.516452	144.6415	0.207538	52.44845	188.913	-28.7377	-6.29716	0.949712	0	-0.13363	3.304364	371.9158	340.0689	-4.16052	-1.18695	-65.0792	-542.504		
100000	2300	-0.22691	1.368411	32.46215	0.232691	0.908811525	1.444958	144.8762	0.19825	46.53814	181.7623	-29.052	-6.3364	0.960025	0	-0.14511	3.304364	369.4746	334.5596	-4.23436	-1.14202	-65.0792	-542.504		
100000	2100	-0.22584	1.300387	32.0163	0.203139	0.871411215	1.372142	145.1318	0.188728	40.62783	174.2822	-29.3811	-6.37975	0.971091	0	-0.15726	3.304364	367.2867	328.8408	-4.31365	-1.09501	-65.0792	-542.504		
100000	1900	-0.22483	1.23058	31.54795	0.173588	0.832159802	1.297887	145.4107	0.17894	34.71752	166.432	-29.7266	-6.42782	0.983032	0	-0.17015	3.304364	365.393	322.891	-4.39908	-1.04569	-65.0792	-542.504		
100000	1700	-0.2246	1.160105	31.06184	0.144036	0.791473323	1.224019	145.7117	0.169041	28.80721	158.2947	-30	-6.48053	0.995751	0	-0.18349	3.304364	363.7612	316.778	-4.49021	-0.99457	-65.0792	-542.504		
100000	1500	-0.22667	1.09191	30.57402	0.114484	0.750760259	1.154899	146.0255	0.159447	22.8969	150.1521	-30	-6.53657	1.008764	0	-0.19652	3.304364	362.2281	310.7065	-4.5844	-0.94341	-65.0792	-542.504		
100000	1300	-0.22896	1.021872	30.06254	0.084933	0.707981322	1.084612	146.3674	0.149569	16.98659	141.5963	-30	-6.59858	1.022935	0	-0.21024	3.304364	361.0848	304.4063	-4.68599	-0.88965	-65.0792	-542.504		
100000	1100	-0.2315	0.94976	29.52551	0.055381	0.662874891	1.013081	146.7408	0.139368	11.07628	132.575	-30	-6.66735	1.038489	0	-0.22471	3.304364	360.4064	297.8604	-4.79589	-0.83297	-65.0792	-542.504		
133333	900	-0.23434	0.875302	28.9609	0.02583	0.615133712	0.940225	147.1494	0.1288	5.16597	123.0267	-30	-6.74382	1.055716	0	-0.23999	3.304364	360.2911	291.0541	-4.91512	-0.77298	-65.0792	-542.504		
200000	700	-0.2375	0.798136	28.36683	-0.00372	0.564357382	0.865926	0	0	-0.74434	112.8715	-30	-6.82894	1.075018	0	-0.25615	3.304364	360.8738	283.971	-5.04474	-0.70917	-65.0792	-542.504		
266667	500	-0.24103	0.717809	27.74148	-0.03327	0.510053608	0.790042	0	0	-6.65465	102.0107	-30	-6.92376	1.096956	0	-0.27329	3.304364	362.3428	276.6018	-5.18587	-0.64093	-65.0792	-542.504		
75000	300	-0.24496	0.633666	27.08397	-0.06282	0.451532158	0.712333	0	0	-12.565	90.30643	-30	-7.02914	1.122369	0	-0.29159	3.304364	364.9811	268.9422	-5.33938	-0.56739	-65.0792	-542.504		
0	100	-0.24931	0.544757	26.39485	-0.09238	0.387827357	0.632409	0	0	-18.4753	77.56547	-30	-7.14543	1.152591	0	-0.31133	3.304364	369.2369	261.0114	-5.50551	-0.48734	-65.0792	-542.504		
0	3400	-0.23975	1.832757	35.05366	0.443906	1.149097504	1.948846	143.5794	0.263146	88.78128	229.8195	-26.9889	-6.198	0.896208	0	-0.06773	3.335448	390.2506	372.4596	-3.85782	-1.44396	-54.2996	-435.346	0	1.306547
210375	3175	-0.23805	1.759817	34.64735	0.407696	1.114066218	1.868832	143.7618	0.252994	81.53917	222.8132	-27.2933	-6.2264	0.905106	0	-0.07789	3.335448	386.0017	366.8696	-3.92136	-1.39994	-54.2996	-435.346		
162500	2925	-0.23623	1.677133	34.17376	0.367462	1.073444973	1.77835	143.9841	0.24148	73.49238	214.689	-27.6469	-6.2617	0.915643	0	-0.09	3.335448	381.4993	360.4224	-3.99716	-1.34889	-54.2996	-435.346		
100000	2700	-0.23464	1.601087	33.72557	0.331251	1.035198129	1.695388	144.2042	0.230883	66.25027	207.0396	-27.9803	-6.2973	0.925792	0	-0.10168	3.335448	377.6712	354.3884	-4.07067	-1.30083	-54.2996	-435.346		
100000	2500	-0.23328	1.53204	33.30807	0.299064	0.999699775	1.620325	144.4178	0.221254	59.81284	199.94	-28.29	-6.33242	0.935422	0	-0.11275	3.335448	374.473	348.8213	-4.14076	-1.25623	-54.2996	-435.346		
100000	2300	-0.23197	1.461505	32.87062	0.266877	0.96265623	1.543942	144.6506	0.211408	53.3754	192.5312	-28.6135	-6.37128	0.945702	0	-0.12448	3.335448	371.4937	343.0489	-4.21592	-1.20967	-54.2996	-435.346		
100000	2100	-0.23073	1.389298	32.4115	0.23469	0.923876654	1.466123	144.9048	0.201316	46.93797	184.7753	-28.9525	-6.41444	0.956732	0	-0.13696	3.335448	368.7667	337.0485	-4.29676	-1.16095	-54.2996	-435.346		
100000	1900	-0.22956	1.315235	31.92834	0.202503	0.883168879	1.386758	145.1834	0.19095	40.50054	176.6338	-29.3086	-6.46251	0.96863	0	-0.15022	3.335448	366.3314	330.8006	-4.38409	-1.10979	-54.2996	-435.346		
100000	1700	-0.22848	1.239081	31.41857	0.170316	0.840287365	1.305705	145.4897	0.180273	34.06311	168.0575	-29.6841	-6.51626	0.981545	0	-0.16435	3.335448	364.2382	324.2797	-4.47882	-1.05591	-54.2996	-435.346		
100000	1500	-0.22812	1.161781	30.88582	0.138128	0.795533184	1.224599	145.8235	0.169415	27.62567	159.1066	-30	-6.57593	0.99544	0	-0.17909	3.335448	362.4751	317.5406	-4.58082	-0.99966	-54.2996	-435.346		
100000	1300	-0.23048	1.087143	30.35093	0.105941	0.750724119	1.149077	146.173	0.158911	21.18824	150.1448	-30	-6.63965	1.009701	0	-0.19348	3.335448	360.8348	310.8485	-4.6866	-0.94336	-54.2996	-435.346		
100000	1100	-0.23311	1.010284	29.78771	0.073754	0.703415497	1.072178	146.5567	0.148064	14.75081	140.6831	-30	-6.71081	1.025365	0	-0.20868	3.335448	359.6665	303.8799	-4.80155	-0.88391	-54.2996	-435.346		
133333	900	-0.23607	0.93091	29.19364	0.041567	0.653270429	0.993815	146.979	0.136824	8.313376	130.6541	-30	-6.79054	1.042731	0	-0.22478	3.335448	359.0706	296.6148	-4.92691	-0.8209	-54.2996	-435.346		
200000	700	-0.2394	0.848646	28.56613	0.00938	0.599864608	0.913879	147.4449	0.125129	1.875943	119.9729	-30	-6.88006	1.062206	0	-0.24184	3.335448	359.184	289.0332	-5.06405	-0.75378	-54.2996	-435.346		
266667	500	-0.24315	0.762982	27.90288	-0.02281	0.542639544	0.83221	0	0	-4.56149	108.5279	-30	-6.98068	1.084368	0	-0.25999	3.335448	360.2016	281.1155	-5.21443	-0.68188	-54.2996	-435.346		
75000	300	-0.24737	0.673251	27.20195	-0.05499	0.480871743	0.748598	0	0	-10.9989	96.17435	-30	-7.09379	1.11007	0	-0.27936	3.335448	362.4101	272.8527	-5.37947	-0.60426	-54.2996	-435.346		
0	100	-0.25211	0.578452	26.46298	-0.08718	0.413521241	0.662672	0	0	-17.4364	82.70425	-30	-7.22034	1.140675	0	-0.30024	3.335448	366.2675	264.2537	-5.56004	-0.51963	-54.2996	-435.346		
0	3400	-0.2455	1.943688	35.49445	0.492531	1.205660684	2.069776	143.3902	0.278706	98.50623	241.1321	-26.5386	-6.23085	0.883326	0	-0.04816	3.363067	395.6421	381.7219	-3.83249	-1.51504	-41.4422	-325.232	0	1.380428
210375	3175	-0.24358	1.866198	35.07835	0.453226	1.169389211	1.984512	143.5685	0.267927	90.64525	233.8778	-26.8516	-6.25845	0.892245	0	-0.05836	3.363067	390.7814	375.8872	-3.89676	-1.46946	-41.4422	-325.232		
162500	2925	-0.24152	1.778391	34.5927	0.409554	1.127318808	1.88808	143.7869	0.255709	81.91083	225.4638	-27.2152	-6.29296	0.902806	0	-0.07057	3.363067	385.5997	369.1541	-3.97357	-1.41659	-41.4422	-325.232		
100000	2700	-0.23972	1.697647	34.13257	0.370249	1.087678988	1.799633	144.0039	0.244468	74.04985	217.5358	-27.5583	-6.32792	0.912982	0	-0.08241	3.363067	381.1617	362.8457	-4.04817	-1.36677	-41.4422	-325.232		
100000	2500	-0.23817	1.62436	33.70332	0.335312	1.050875371	1.719593	144.2154	0.234258	67.06231	210.1751	-27.8774	-6.36259	0.922637	0	-0.09367	3.363067	377.4219	357.0216	-4.11944	-1.32053	-41.4422	-325.232		
100000	2300	-0.23669	1.549504	33.25305	0.300374	1.012441701	1.638121	144.4466	0.223821	60.07477	202.4883	-28.211	-6.40116	0.932947	0	-0.10567	3.363067	373.9025	350.9759	-4.19599	-1.27223	-41.4422	-325.232		
100000	2100	-0.23527	1.472897	32.7797	0.265436	0.972190175	1.5551	144.7001	0.213128	53.08723	194.438	-28.5608	-6.44419	0.94401	0	-0.11846	3.363067	370.6363	344.6863	-4.27851	-1.22165	-41.4422	-325.232		
100000	1900	-0.23393	1.394333	32.28074	0.230498	0.92990566	1.470397	144.9791	0.202149	46.0997	185.9811	-28.9286	-6.49232	0.955946	0	-0.13212	3.363067	367.6638	338.1291	-4.36786	-1.16852	-41.4422	-325.232		
100000	1700	-0.23268	1.313559	31.75342	0.195561	0.885322509	1.383861	145.287	0.190843	39.11216	177.0645	-29.3168	-6.54643	0.968906	0	-0.14671	3.363067	365.036	331.2753	-4.46503	-1.1125	-41.4422	-325.232		
100000	1500	-0.23153	1.230286	31.19423	0.160623	0.838136406	1.295328	145.6285	0.179165	32.12462	167.6273	-29.728	-6.60754	0.983084	0	-0.16233	3.363067	362.8175	324.0945	-4.57126	-1.0532	-41.4422	-325.232		
100000	1300	-0.2318	1.146698	30.61345	0.125685	0.789213896	1.208297	145.9997	0.167418	25.13708	157.8428	-30	-6.67532	0.998252	0	-0.17841	3.363067	360.9324	316.7242	-4.68534	-0.99173	-41.4422	-325.232		
100000	1100	-0.23453	1.064805	30.02262	0.090748	0.739526408	1.12577	146.3947	0.155882	18.14954	147.9053	-30	-6.74899	1.014146	0	-0.1944	3.363067	359.2913	309.3164	-4.80555	-0.92929	-41.4422	-325.232		
133333	900	-0.23762	0.980195	29.39735	0.05581	0.686766334	1.041615	146.8321	0.143924	11.16201	137.3533	-30	-6.83212	1.031797	0	-0.21138	3.363067	358.2413	301.5737	-4.93733	-0.86299	-41.4422	-325.232		
200000	700	-0.24112	0.892444	28.73453	0.020872	0.630452119	0.955709	147.3179	0.131473	4.174467	126.0904	-30	-6.92621	1.051636	0	-0.22943	3.363067	357.9271	293.4684	-5.08235	-0.79222	-41.4422	-325.232		
266667	500	-0.2451	0.801021	28.03094	-0.01407	0.569982805	0.867908	0	0	-2.81307	113.9966	-30	-7.03301	1.074267	0	-0.24868	3.363067	358.5524	284.9766	-5.24251	-0.71624	-41.4422	-325.232		
75000	300	-0.24964	0.705183	27.28386	-0.049	0.504546473	0.777991	0	0	-9.80061	100.9093	-30	-7.15434	1.100598	0	-0.26926	3.363067	360.4221	276.0801	-5.41973	-0.63401	-41.4422	-325.232		
0	100	-0.25479	0.603842	26.49193	-0.08394	0.432991144	0.68559	0	0	-16.7881	86.59823	-30	-7.29174	1.132079	0	-0.29147	3.363067	364.0243	266.7796	-5.61557	-0.54409	-41.4422	-325.232		
0	3400	-0.2508	2.050213	35.91826	0.541061	1.258353587	2.186355	143.2167	0.293625	108.2121	251.6707	-26.1202	-6.25604	0.871626	-0.00304	0.030655	3.386247	400	390.7492	-3.80315	-1.58125	-29.6712	-203.803	0	1.447249
210375	3175	-0.24866	1.967832	35.49098	0.498447	1.220725442	2.095506	143.3916	0.282171	99.68936	244.1451	-26.4426	-6.2829	0.880619	0	-0.04088	3.386247	395.9147	384.3041	-3.86831	-1.53396	-29.6712	-203.803		
162500	2925	-0.24634	1.874479	34.9917	0.451098	1.177038843	1.992709	143.6067	0.269188	90.21964	235.4078	-26.8178	-6.31663	0.891274	0	-0.05319	3.386247	390.0293	377.2627	-3.94628	-1.47907	-29.6712	-203.803		
100000	2700	-0.24432	1.788655	34.51788	0.408484	1.135851837	1.898398	143.8215	0.257247	81.69688	227.1704	-27.1722	-6.35103	0.901545	0	-0.0652	3.386247	384.9616	370.66	-4.02218	-1.42731	-29.6712	-203.803		
100000	2500	-0.24258	1.710773	34.07519	0.370606	1.097588555	1.813031	144.0317	0.246406	74.12111	219.5177	-27.502	-6.38537	0.911296	0	-0.07667	3.386247	380.6657	364.5592	-4.09484	-1.37923	-29.6712	-203.803		
100000	2300	-0.2409	1.631221	33.61013	0.332727	1.057592987	1.726098	144.2624	0.235324	66.54533	211.5186	-27.8472	-6.42375	0.921715	0	-0.08894	3.386247	376.5948	358.2185	-4.17304	-1.32897	-29.6712	-203.803		
100000	2100	-0.23929	1.549802	33.12042	0.294848	1.01566157	1.637464	144.5166	0.223972	58.96955	203.1323	-28.2096	-6.46672	0.932905	0	-0.1021	3.386247	372.7831	351.6131	-4.25754	-1.27628	-29.6712	-203.803		
100000	1900	-0.23777	1.466316	32.60321	0.256969	0.971577611	1.54701	144.7974	0.212319	51.39377	194.3155	-28.5912	-6.51516	0.944986	0	-0.11619	3.386247	369.2712	344.7192	-4.34929	-1.22088	-29.6712	-203.803		
100000	1700	-0.23634	1.380469	32.05543	0.21909	0.925039216	1.454547	145.109	0.200318	43.81799	185.0078	-28.9945	-6.56988	0.958119	0	-0.13132	3.386247	366.113	337.5017	-4.44936	-1.1624	-29.6712	-203.803		
100000	1500	-0.23502	1.291942	31.47326	0.181211	0.875708145	1.359888	145.4562	0.187921	36.24221	175.1416	-29.4224	-6.63206	0.972503	0	-0.14757	3.386247	363.376	329.9249	-4.55914	-1.10042	-29.6712	-203.803		
100000	1300	-0.23384	1.200327	30.85216	0.143332	0.823157172	1.2628	145.8451	0.175062	28.66643	164.6314	-29.8788	-6.70313	0.988406	0	-0.16506	3.386247	361.1498	321.9458	-4.68034	-1.03438	-29.6712	-203.803		
100000	1100	-0.23571	1.111006	30.21998	0.105453	0.769837898	1.17143	146.2608	0.162497	21.09065	153.9676	-30	-6.78089	1.005046	0	-0.18241	3.386247	359.1711	313.9303	-4.80845	-0.96738	-29.6712	-203.803		
133333	900	-0.23895	1.020572	29.55925	0.067574	0.714043949	1.080964	146.7169	0.149735	13.51488	142.8088	-30	-6.86803	1.023206	0	-0.20039	3.386247	357.7043	305.662	-4.94755	-0.89727	-29.6712	-203.803		
200000	700	-0.24266	0.926683	28.85608	0.029695	0.654327303	0.988534	147.2271	0.136433	5.939097	130.8655	-30	-6.96754	1.043693	0	-0.21959	3.386247	357.02	296.9793	-5.10161	-0.82223	-29.6712	-203.803		
266667	500	-0.24692	0.828734	28.10632	-0.00818	0.589999341	0.893982	0	0	-1.63668	117.9999	-30	-7.08158	1.067173	0	-0.24012	3.386247	357.3425	287.8508	-5.27302	-0.74139	-29.6712	-203.803		
75000	300	-0.25182	0.725889	27.30632	-0.04606	0.520130407	0.797083	0	0	-9.21246	104.0261	-30	-7.21255	1.094654	0	-0.26214	3.386247	359.0108	278.2508	-5.4643	-0.65359	-29.6712	-203.803		
0	100	-0.25745	0.616887	26.45392	-0.08394	0.443372982	0.697433	0	0	-16.7882	88.6746	-30	-7.3626	1.127783	0	-0.28598	3.386247	362.5789	268.1721	-5.67768	-0.55714	-29.6712	-203.803		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.25619	2.156013	36.30873	0.58959	1.310234696	2.30204	143.0642	0.308448	117.918	262.0469	-25.7175	-6.28271	0.856876	-0.01345	0.013449	3.406767	400	400	-3.77939	-1.64644	-7.41384	-92.7834	0	1.512307
210375	3175	-0.2535	2.066452	35.88676	0.543667	1.269287393	2.203552	143.2293	0.295976	108.7335	253.8575	-26.0576	-6.30355	0.869897	-0.00291	0.024855	3.406767	400	392.6448	-3.83866	-1.59499	-7.41384	-92.7834		
162500	2925	-0.25093	1.967656	35.375	0.492642	1.22408761	2.094538	143.4405	0.282242	98.52848	244.8175	-26.4433	-6.33641	0.880638	0	-0.0372	3.406767	394.7605	384.9796	-3.91758	-1.53819	-7.41384	-92.7834		
100000	2700	-0.24868	1.876835	34.88873	0.44672	1.181439638	1.994488	143.6525	0.269612	89.34397	236.2879	-26.8082	-6.37014	0.890999	0	-0.0493	3.406767	389.061	378.099	-3.99454	-1.4846	-7.41384	-92.7834		
100000	2500	-0.24673	1.794425	34.43376	0.4059	1.141790365	1.903891	143.8607	0.258147	81.17996	228.3581	-27.148	-6.40394	0.90084	0	-0.06093	3.406767	384.2073	371.7354	-4.06833	-1.43477	-7.41384	-92.7834		
100000	2300	-0.24486	1.710251	33.9552	0.36508	1.10031155	1.8116	144.0902	0.246431	73.01596	220.0623	-27.5042	-6.44194	0.911363	0	-0.07343	3.406767	379.583	365.1144	-4.14791	-1.38266	-7.41384	-92.7834		
100000	2100	-0.24306	1.624123	33.45035	0.32426	1.056803842	1.717484	144.3441	0.234433	64.85195	211.3608	-27.8784	-6.48475	0.922669	0	-0.08687	3.406767	375.2223	358.2124	-4.2341	-1.32798	-7.41384	-92.7834		
100000	1900	-0.24135	1.535788	32.91635	0.28344	1.011002416	1.621375	144.6258	0.222115	56.68794	202.2005	-28.273	-6.5332	0.934888	0	-0.10135	3.406767	371.1687	350.997	-4.32788	-1.27043	-7.41384	-92.7834		
100000	1700	-0.23973	1.444965	32.34958	0.24262	0.962611584	1.523097	144.9399	0.209433	48.52393	192.5223	-28.6904	-6.58828	0.948182	0	-0.11695	3.406767	367.4764	343.4346	-4.43048	-1.20962	-7.41384	-92.7834		
100000	1500	-0.23824	1.35129	31.74591	0.2018	0.911248393	1.422425	145.2915	0.196331	40.35993	182.2497	-29.1342	-6.65122	0.962761	0	-0.13378	3.406767	364.2164	335.4823	-4.54339	-1.14507	-7.41384	-92.7834		
100000	1300	-0.23689	1.254323	31.10026	0.16098	0.856450758	1.319108	145.6874	0.182739	32.19592	171.2902	-29.6081	-6.72362	0.978901	0	-0.15196	3.406767	361.4817	327.0916	-4.6685	-1.07621	-7.41384	-92.7834		
100000	1100	-0.23666	1.15537	30.41694	0.12016	0.798554538	1.215532	146.1291	0.168833	24.03191	159.7109	-30	-6.80624	0.996631	0	-0.17117	3.406767	359.2819	318.3344	-4.80613	-1.00346	-7.41384	-92.7834		
133333	900	-0.24003	1.059199	29.72234	0.07934	0.739828791	1.118817	146.6022	0.155281	15.8679	147.9658	-30	-6.89696	1.015275	0	-0.19013	3.406767	357.3893	309.5566	-4.95202	-0.92967	-7.41384	-92.7834		
200000	700	-0.24393	0.95926	28.98022	0.038519	0.676814879	1.019918	147.1351	0.141141	7.703898	135.363	-30	-7.00146	1.036379	0	-0.21044	3.406767	356.3245	300.3127	-5.1146	-0.85049	-7.41384	-92.7834		
266667	500	-0.24844	0.85486	28.1856	-0.0023	0.608719229	0.918657	0	0	-0.46011	121.7438	-30	-7.12233	1.060676	0	-0.23222	3.406767	356.3336	290.5607	-5.29675	-0.76491	-7.41384	-92.7834		
75000	300	-0.2537	0.745056	27.33374	-0.04312	0.534479372	0.814793	0	0	-8.62412	106.8959	-30	-7.26259	1.089282	0	-0.25568	3.406767	357.7922	280.2657	-5.50168	-0.67162	-7.41384	-92.7834		
0	100	-0.25981	0.628419	26.42142	-0.08394	0.452551359	0.707901	0	0	-16.7881	90.51027	-30	-7.42512	1.124048	0	-0.28113	3.406767	361.3229	269.4134	-5.7324	-0.56867	-7.41384	-92.7834		
0	3400	-0.2653	2.290196	36.47832	0.637944	1.386948448	2.443271	143.0001	0.327498	127.5887	277.3897	-25.2242	-6.36559	0.784309	0.018865	0.018865	3.417951	400	400	-3.83844	-1.74284	0.002044	0.025148	6657.74124	1.566385
210375	3175	-0.25786	2.162222	36.25013	0.588317	1.316040172	2.308081	143.0866	0.309385	117.6634	263.208	-25.6942	-6.31521	0.852424	-0.0096	0.009601	3.417951	400	400	-3.80905	-1.65373	0.002044	0.025148		
162500	2925	-0.25437	2.052438	35.75313	0.533176	1.264897056	2.187676	143.2833	0.29408	106.6352	252.9794	-26.1116	-6.33675	0.871389	0	-0.02448	3.417951	399.7557	391.6693	-3.8759	-1.58947	0.002044	0.025148		
100000	2700	-0.25187	1.955898	35.25052	0.483549	1.220479173	2.081146	143.4937	0.280659	96.7099	244.0958	-26.49	-6.36983	0.881953	0	-0.03673	3.417951	393.3839	384.4671	-3.95424	-1.53366	0.002044	0.025148		
100000	2500	-0.24972	1.868299	34.77939	0.439437	1.179146113	1.984646	143.7016	0.268478	87.88737	235.8292	-26.843	-6.40329	0.891998	0	-0.04856	3.417951	387.9406	377.7993	-4.02957	-1.48172	0.002044	0.025148		
100000	2300	-0.24763	1.778812	34.28282	0.395324	1.135857189	1.886287	143.9319	0.256028	79.06485	227.1714	-27.2134	-6.44108	0.902754	0	-0.06134	3.417951	382.7363	370.8535	-4.111	-1.42731	0.002044	0.025148		
100000	2100	-0.24562	1.687204	33.75805	0.351212	1.09037048	1.785907	144.1879	0.243275	70.24232	218.0741	-27.6033	-6.48394	0.914332	0	-0.07518	3.417951	377.8084	363.5989	-4.19944	-1.37016	0.002044	0.025148		
100000	1900	-0.24371	1.593229	33.20157	0.307099	1.042422735	1.683341	144.4737	0.23018	61.4198	208.4845	-28.0152	-6.53278	0.926867	0	-0.09015	3.417951	373.2024	356.0044	-4.296	-1.30991	0.002044	0.025148		
100000	1700	-0.2419	1.496555	32.60942	0.262986	0.991666539	1.578372	144.794	0.216692	52.59727	198.3333	-28.4518	-6.58868	0.940535	0	-0.10637	3.417951	368.9776	348.0286	-4.40203	-1.24613	0.002044	0.025148		
100000	1500	-0.24023	1.396783	31.97684	0.218874	0.937681463	1.470755	145.1549	0.20275	43.77475	187.5363	-28.917	-6.65308	0.955564	0	-0.12395	3.417951	365.2104	339.6235	-4.51922	-1.17829	0.002044	0.025148		
100000	1300	-0.23871	1.293405	31.29798	0.174761	0.879935036	1.360184	145.564	0.188273	34.95222	175.987	-29.4153	-6.7277	0.972258	0	-0.14305	3.417951	362.0036	330.7313	-4.64973	-1.10572	0.002044	0.025148		
100000	1100	-0.23738	1.185772	30.5658	0.130648	0.817744937	1.246297	146.0309	0.173159	26.1297	163.549	-29.9526	-6.8149	0.991037	0	-0.16384	3.417951	359.498	321.2821	-4.79628	-1.02758	0.002044	0.025148		
133333	900	-0.24056	1.08196	29.82284	0.086536	0.754865598	1.141224	146.5323	0.158542	17.30717	150.9731	-30	-6.91115	1.010725	0	-0.18422	3.417951	357.2981	311.8397	-4.95184	-0.94856	0.002044	0.025148		
200000	700	-0.24471	0.974641	29.02979	0.042423	0.687506038	1.034741	147.0986	0.143368	8.484646	137.5012	-30	-7.02252	1.033004	0	-0.20595	3.417951	355.9698	301.9137	-5.12559	-0.86392	0.002044	0.025148		
266667	500	-0.24958	0.862243	28.1763	-0.00169	0.61435097	0.925553	0	0	-0.33788	122.8702	-30	-7.15279	1.058873	0	-0.22938	3.417951	355.8491	291.4	-5.32192	-0.772	0.002044	0.025148		
75000	300	-0.25532	0.743617	27.25631	-0.0458	0.534102751	0.813375	0	0	-9.1604	106.8206	-30	-7.30572	1.089681	0	-0.25473	3.417951	357.3901	280.2539	-5.54489	-0.67116	0.002044	0.025148		
0	100	-0.26207	0.616979	26.26591	-0.08991	0.444826782	0.697691	0	0	-17.9829	88.96536	-30	-7.48505	1.127753	0	-0.28242	3.417951	361.3741	268.4581	-5.79832	-0.55897	0.002044	0.025148		
0	3400	-0.27583	2.430114	36.61032	0.686556	1.467726701	2.590735	142.9511	0.347387	137.3112	293.5453	-24.7296	-6.46973	0.708712	0.053648	0.053648	3.436398	400	400	-3.91666	-1.84434	0.013789	-0.00181	6693.674209	1.637248
210375	3175	-0.26786	2.295793	36.37396	0.633806	1.394125374	2.448313	143.0394	0.328389	126.7613	278.8251	-25.2041	-6.41731	0.779259	0.024325	0.024325	3.436398	400	400	-3.8862	-1.75186	0.013789	-0.00181		
162500	2925	-0.25897	2.143672	36.10215	0.575196	1.309502166	2.287684	143.144	0.306854	115.0392	261.9004	-25.7638	-6.35762	0.860545	-0.00978	0.009782	3.436398	400	400	-3.85156	-1.64552	0.013789	-0.00181		
100000	2700	-0.25614	2.041835	35.59679	0.522447	1.263248712	2.175293	143.3475	0.292692	104.4894	252.6497	-26.1526	-6.38788	0.872524	0	-0.02239	3.436398	397.9919	391.5204	-3.92795	-1.5874	0.013789	-0.00181		
100000	2500	-0.25379	1.950202	35.1176	0.475558	1.220858115	2.074148	143.5514	0.279954	95.11169	244.1716	-26.5127	-6.42043	0.882592	0	-0.03421	3.436398	392.0008	384.6446	-4.00372	-1.53413	0.013789	-0.00181		
100000	2300	-0.2515	1.856608	34.61216	0.42867	1.176437272	1.971031	143.7779	0.266939	85.73403	235.2875	-26.8908	-6.45738	0.893374	0	-0.04705	3.436398	386.2501	377.4766	-4.08571	-1.47831	0.013789	-0.00181		
100000	2100	-0.2493	1.760838	34.07734	0.381782	1.12975786	1.865792	144.0306	0.253615	76.35636	225.9516	-27.289	-6.49954	0.904979	0	-0.06099	3.436398	380.7761	369.9877	-4.17489	-1.41966	0.013789	-0.00181		
100000	1900	-0.24719	1.662602	33.5096	0.334894	1.080519453	1.758222	144.3137	0.239936	66.9787	216.1039	-27.71	-6.54772	0.917547	0	-0.07614	3.436398	375.6261	362.1403	-4.2724	-1.35778	0.013789	-0.00181		
100000	1700	-0.2452	1.561573	32.90466	0.288005	1.028372825	1.64811	144.6321	0.225854	57.60104	205.6746	-28.1567	-6.60318	0.931252	0	-0.09262	3.436398	370.8587	353.8924	-4.37966	-1.29225	0.013789	-0.00181		
100000	1500	-0.24334	1.457322	32.25745	0.241117	0.972869698	1.535178	144.9924	0.211301	48.22338	194.5739	-28.6329	-6.66731	0.946327	0	-0.11055	3.436398	366.5518	345.191	-4.49847	-1.2225	0.013789	-0.00181		
100000	1300	-0.24164	1.349319	31.56171	0.194229	0.91345261	1.419105	145.4024	0.196194	38.84571	182.6905	-29.1436	-6.74199	0.963078	0	-0.1301	3.436398	362.8089	335.9736	-4.63108	-1.14784	0.013789	-0.00181		
100000	1100	-0.24014	1.236893	30.80973	0.14734	0.849412169	1.299509	145.8724	0.180429	29.46805	169.8824	-29.695	-6.82977	0.981926	0	-0.15146	3.436398	359.7716	326.1655	-4.78046	-1.06737	0.013789	-0.00181		
133333	900	-0.24127	1.124015	30.01958	0.100452	0.782288561	1.182841	146.3968	0.164552	20.09039	156.4577	-30	-6.93036	1.002546	0	-0.17361	3.436398	357.3302	316.0226	-4.94478	-0.98302	0.013789	-0.00181		
200000	700	-0.24554	1.011454	29.19636	0.053564	0.712347808	1.070534	146.977	0.14866	10.71273	142.4696	-30	-7.04477	1.025119	0	-0.19622	3.436398	355.5455	305.6271	-5.12451	-0.89513	0.013789	-0.00181		
266667	500	-0.25059	0.89349	28.30722	0.006675	0.636227062	0.955289	147.6432	0.131918	1.335066	127.2454	-30	-7.17964	1.051389	0	-0.22067	3.436398	355.0047	294.5841	-5.32877	-0.79948	0.013789	-0.00181		
75000	300	-0.25658	0.768885	27.34478	-0.04021	0.552514551	0.836816	0	0	-8.0426	110.5029	-30	-7.33943	1.082771	0	-0.24721	3.436398	356.1835	282.8364	-5.56238	-0.69429	0.013789	-0.00181		
0	100	-0.26372	0.635735	26.30358	-0.0871	0.459116645	0.714609	0	0	-17.4203	91.82333	-30	-7.52887	1.12171	0	-0.27623	3.436398	359.9041	270.3542	-5.83022	-0.57693	0.013789	-0.00181		
0	3400	-0.28534	2.562826	36.76654	0.735069	1.542415196	2.731345	142.8942	0.366213	147.0138	308.483	-24.2781	-6.55345	0.638442	0.084907	0.084907	3.44846	400	400	-3.97683	-1.9382	0.000584	-0.01284	6717.168292	1.701351
210375	3175	-0.27683	2.421846	36.52161	0.678974	1.466043202	2.58135	142.984	0.346285	135.7948	293.2086	-24.7583	-6.49888	0.711509	0.054742	0.054742	3.44846	400	400	-3.94514	-1.84223	0.000584	-0.01284		
162500	2925	-0.26734	2.262137	36.23959	0.616646	1.37815094	2.412128	143.0907	0.323691	123.3292	275.6302	-25.3258	-6.43668	0.795769	0.019583	0.019583	3.44846	400	400	-3.90913	-1.73178	0.000584	-0.01284		
100000	2700	-0.25962	2.121651	35.93585	0.560551	1.301475477	2.263075	143.2097	0.303841	112.1102	260.2951	-25.8469	-6.39303	0.864117	-0.006	0.010419	3.44846	400	398.5199	-3.89347	-1.63544	0.000584	-0.01284		
100000	2500	-0.25706	2.025629	35.44668	0.510689	1.257876196	2.156942	143.4102	0.290496	102.1377	251.5752	-26.2156	-6.42475	0.874272	0	-0.02224	3.44846	396.228	390.724	-3.96982	-1.58065	0.000584	-0.01284		
100000	2300	-0.25457	1.927573	34.92999	0.460826	1.212173018	2.048717	143.6341	0.276865	92.16525	242.4346	-26.6031	-6.46095	0.885151	0	-0.03514	3.44846	389.9152	383.3149	-4.05259	-1.52321	0.000584	-0.01284		
100000	2100	-0.25217	1.827223	34.38269	0.410964	1.164093283	1.938209	143.8847	0.262909	82.19279	232.8187	-27.0117	-6.50241	0.896871	0	-0.04923	3.44846	383.885	375.5643	-4.14274	-1.46281	0.000584	-0.01284		
100000	1900	-0.24986	1.724309	33.80076	0.361102	1.113349877	1.825228	144.1666	0.248588	72.22033	222.67	-27.4441	-6.55013	0.90957	0	-0.0646	3.44846	378.1845	367.4368	-4.24153	-1.39904	0.000584	-0.01284		
100000	1700	-0.24767	1.618455	33.17973	0.311239	1.059549086	1.709515	144.4852	0.233843	62.24787	211.9098	-27.9034	-6.6053	0.923433	0	-0.08139	3.44846	372.8753	358.8831	-4.35044	-1.33143	0.000584	-0.01284		
100000	1500	-0.24562	1.509222	32.51396	0.261377	1.002228661	1.590785	144.8472	0.218607	52.27542	200.4457	-28.3938	-6.66948	0.938697	0	-0.09975	3.44846	368.0372	349.8483	-4.47139	-1.2594	0.000584	-0.01284		
100000	1300	-0.24374	1.396033	31.79676	0.211515	0.940780415	1.468679	145.2612	0.202789	42.30296	188.1561	-28.9205	-6.74467	0.955681	0	-0.11986	3.44846	363.7779	340.2619	-4.60682	-1.18218	0.000584	-0.01284		
100000	1100	-0.24207	1.278163	31.0196	0.161652	0.874440116	1.342773	145.7384	0.186277	32.3305	174.888	-29.4902	-6.83357	0.974826	0	-0.14193	3.44846	360.2456	330.041	-4.75993	-1.09882	0.000584	-0.01284		
133333	900	-0.24158	1.156471	30.18211	0.11179	0.803103827	1.215165	146.2863	0.169176	22.35804	160.6208	-30	-6.93849	0.996426	0	-0.16574	3.44846	357.5391	319.2116	-4.93288	-1.00918	0.000584	-0.01284		
200000	700	-0.24599	1.037941	29.32224	0.061928	0.7300197	1.096423	146.886	0.152459	12.38558	146.0039	-30	-7.05685	1.019606	0	-0.18939	3.44846	355.364	308.2841	-5.11989	-0.91734	0.000584	-0.01284		
266667	500	-0.25126	0.913547	28.3897	0.012066	0.65022142	0.974439	147.5797	0.134821	2.413123	130.0443	-30	-7.19759	1.046709	0	-0.21508	3.44846	354.5084	296.6381	-5.33383	-0.81707	0.000584	-0.01284		
75000	300	-0.25758	0.78191	27.37567	-0.0378	0.562122935	0.848908	0	0	-7.55934	112.4246	-30	-7.36604	1.079287	0	-0.24305	3.44846	355.4948	284.2036	-5.58039	-0.70637	0.000584	-0.01284		
0	100	-0.26519	0.640882	26.2731	-0.08766	0.463345656	0.719283	0	0	-17.5318	92.66913	-30	-7.56793	1.120079	0	-0.27377	3.44846	359.2438	270.9404	-5.8656	-0.58224	0.000584	-0.01284		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.29447	2.691758	36.9293	0.783547	1.613743326	2.868504	142.8361	0.38448	156.7093	322.7487	-23.855	-6.6285	0.571245	0.114253	0.114253	3.457962	400	400	-4.02943	-2.02783	0.009315	0.008398	6735.677859	1.763274
210375	3175	-0.2854	2.54408	36.67599	0.724027	1.534649528	2.710879	142.9271	0.363618	144.8053	306.9299	-24.3409	-6.57171	0.646793	0.083297	0.083297	3.457962	400	400	-3.99648	-1.92844	0.009315	0.008398		
162500	2925	-0.2753	2.376742	36.38395	0.657893	1.443544343	2.533003	143.0356	0.339959	131.5787	288.7089	-24.916	-6.50698	0.73398	0.047145	0.047145	3.457962	400	400	-3.95904	-1.81395	0.009315	0.008398		
100000	2700	-0.26618	2.222927	36.11098	0.598373	1.358372919	2.370243	143.1405	0.318191	119.6747	271.6746	-25.4691	-6.44707	0.815675	0.012895	0.012895	3.457962	400	400	-3.92447	-1.70693	0.009315	0.008398		
100000	2500	-0.26005	2.098038	35.76507	0.545467	1.29252275	2.236623	143.2784	0.300604	109.0934	258.5046	-25.9366	-6.42494	0.866571	-0.00127	0.011481	3.457962	400	396.5733	-3.93418	-1.62419	0.009315	0.008398		
100000	2300	-0.25735	1.995421	35.23705	0.49256	1.245510585	2.123214	143.4996	0.286342	98.51205	249.1021	-26.3338	-6.46038	0.877566	0	-0.02442	3.457962	393.7105	388.7752	-4.01768	-1.56511	0.009315	0.008398		
100000	2100	-0.25473	1.890416	34.67687	0.439654	1.196028106	2.007378	143.7482	0.271744	87.93072	239.2056	-26.753	-6.50116	0.889418	0	-0.03862	3.457962	387.1161	380.7651	-4.10882	-1.50292	0.009315	0.008398		
100000	1900	-0.25222	1.782709	34.08049	0.386747	1.143741135	1.888888	144.0291	0.256762	77.3494	228.7482	-27.1971	-6.54835	0.902275	0	-0.05421	3.457962	380.8595	372.354	-4.20886	-1.43722	0.009315	0.008398		
100000	1700	-0.24983	1.671922	33.4429	0.33384	1.088252886	1.767481	144.3479	0.241339	66.76807	217.6506	-27.6695	-6.60323	0.916324	0	-0.07131	3.457962	375.004	363.4923	-4.31942	-1.3675	0.009315	0.008398		
100000	1500	-0.24758	1.557579	32.75806	0.280934	1.029060579	1.642839	144.712	0.2254	56.18675	205.8121	-28.1746	-6.66744	0.931812	0	-0.0901	3.457962	369.6326	354.119	-4.44253	-1.29311	0.009315	0.008398		
100000	1300	-0.24552	1.439059	32.01864	0.228027	0.965512492	1.51457	145.1304	0.208851	45.60542	193.1025	-28.718	-6.74315	0.949074	0	-0.11076	3.457962	364.858	344.1568	-4.58082	-1.21327	0.009315	0.008398		
100000	1100	-0.24368	1.315585	31.21524	0.17512	0.896785644	1.382209	145.6154	0.191569	35.0241	179.3571	-29.3069	-6.83324	0.968572	0	-0.13354	3.457962	360.8355	333.5147	-4.73778	-1.1269	0.009315	0.008398		
133333	900	-0.24212	1.186089	30.33613	0.122214	0.821756248	1.245157	146.1829	0.173386	24.44277	164.3512	-29.951	-6.94166	0.99098	0	-0.15873	3.457962	357.7917	322.0752	-4.91806	-1.03262	0.009315	0.008398		
200000	700	-0.24628	1.060572	29.43364	0.069307	0.744980794	1.118632	146.8062	0.155698	13.86145	148.9962	-30	-7.06462	1.014998	0	-0.18367	3.457962	355.2897	310.5429	-5.11348	-0.93614	0.009315	0.008398		
266667	500	-0.25178	0.929489	28.45555	0.016401	0.661304383	0.9897	147.5292	0.137127	3.280122	132.2609	-30	-7.21158	1.043054	0	-0.21064	3.457962	354.146	298.273	-5.33752	-0.83099	0.009315	0.008398		
75000	300	-0.25846	0.790476	27.38689	-0.03651	0.568525227	0.856854	0	0	-7.3012	113.705	-30	-7.38924	1.077024	0	-0.24015	3.457962	354.9916	285.1238	-5.5978	-0.71441	0.009315	0.008398		
0	100	-0.26658	0.641071	26.21912	-0.08941	0.463904808	0.71949	0	0	-17.8825	92.78096	-30	-7.60453	1.120019	0	-0.27268	3.457962	358.873	271.0428	-5.90157	-0.58294	0.009315	0.008398		
0	3400	-0.30332	2.817606	37.09508	0.832002	1.682283789	3.002866	142.7781	0.402292	166.4003	336.4568	-23.456	-6.69718	0.50663	0.142018	0.142018	3.465656	400	400	-4.07661	-2.11396	0.002531	-0.01153	6750.665039	1.823784
210375	3175	-0.2937	2.663226	36.83376	0.769005	1.600523977	2.8376	142.87	0.380495	153.801	320.1048	-23.9473	-6.63817	0.584613	0.11032	0.11032	3.465656	400	400	-4.04234	-2.01121	0.002531	-0.01153		
162500	2925	-0.28298	2.488265	36.53208	0.699009	1.506274898	2.651063	142.9801	0.355772	139.8018	301.255	-24.5297	-6.57088	0.674667	0.073231	0.073231	3.465656	400	400	-4.00342	-1.89279	0.002531	-0.01153		
100000	2700	-0.27331	2.32742	36.24958	0.636012	1.418101733	2.480345	143.0868	0.333023	127.2024	283.6203	-25.0907	-6.50861	0.7591	0.038034	0.038034	3.465656	400	400	-3.96753	-1.78199	0.002531	-0.01153		
100000	2500	-0.26467	2.181471	35.98927	0.580015	1.336785377	2.326135	143.1884	0.312361	116.0031	267.3571	-25.6224	-6.45175	0.837149	0.005169	0.005169	3.465656	400	400	-3.9348	-1.67981	0.002531	-0.01153		
100000	2300	-0.25992	2.060933	35.5342	0.524018	1.276994028	2.19531	143.3735	0.295483	104.8037	255.3988	-26.0788	-6.45721	0.870483	0	-0.01465	3.465656	397.6196	393.9446	-3.98206	-1.60467	0.002531	-0.01153		
100000	2100	-0.2571	1.951219	34.96143	0.468021	1.226102512	2.074118	143.6201	0.280234	93.60428	245.2205	-26.5086	-6.4973	0.882478	0	-0.02894	3.465656	390.455	385.6753	-4.07409	-1.54073	0.002531	-0.01153		
100000	1900	-0.25438	1.838692	34.35061	0.412024	1.172292259	1.950108	143.8998	0.264587	82.4049	234.4585	-26.9644	-6.54395	0.895499	0	-0.0447	3.465656	383.6359	376.9858	-4.17534	-1.4731	0.002531	-0.01153		
100000	1700	-0.25178	1.722923	33.69653	0.356028	1.115117126	1.822973	144.2188	0.248478	71.20551	223.0234	-27.45	-6.59846	0.909746	0	-0.06208	3.465656	377.2289	367.8183	-4.28747	-1.40126	0.002531	-0.01153		
100000	1500	-0.24934	1.603414	32.99265	0.300031	1.054046346	1.692378	144.5847	0.231829	60.00612	210.8093	-27.9699	-6.66267	0.925475	0	-0.08127	3.465656	371.3203	358.1075	-4.41267	-1.32452	0.002531	-0.01153		
100000	1300	-0.24708	1.47951	32.23082	0.244034	0.988394004	1.557898	145.0076	0.21454	48.80673	197.6788	-28.5302	-6.73882	0.943033	0	-0.10248	3.465656	366.0273	347.7716	-4.55378	-1.24201	0.002531	-0.01153		
100000	1100	-0.24506	1.350346	31.40098	0.188037	0.917245899	1.419007	145.5005	0.196476	37.60734	183.4492	-29.1387	-6.83004	0.962912	0	-0.12597	3.465656	361.5149	336.706	-4.71452	-1.15261	0.002531	-0.01153		
133333	900	-0.24334	1.21478	30.49	0.13204	0.839396966	1.275057	146.0808	0.177456	26.40796	167.8794	-29.8059	-6.94065	0.985823	0	-0.15207	3.465656	358.0224	324.7827	-4.90004	-1.05479	0.002531	-0.01153		
200000	700	-0.24646	1.080608	29.53583	0.076043	0.758108404	1.13837	146.7335	0.158561	15.20857	151.6217	-30	-7.06924	1.010993	0	-0.1787	3.465656	355.2896	312.5309	-5.10561	-0.95264	0.002531	-0.01153		
266667	500	-0.25219	0.942685	28.51087	0.020046	0.670443827	1.002357	147.487	0.139034	4.009179	134.0888	-30	-7.22254	1.040072	0	-0.207	3.465656	353.8719	299.6262	-5.33999	-0.84248	0.002531	-0.01153		
75000	300	-0.25923	0.796067	27.38567	-0.03595	0.572787434	0.862026	0	0	-7.19021	114.5575	-30	-7.40978	1.075558	0	-0.23809	3.465656	354.6096	285.743	-5.61447	-0.71977	0.002531	-0.01153		
0	100	-0.26789	0.637938	26.14989	-0.09195	0.461994259	0.716712	0	0	-18.3896	92.39885	-30	-7.63925	1.12101	0	-0.27252	3.465656	358.6994	270.8184	-5.93771	-0.58054	0.002531	-0.01153		
0	3400	-0.31255	2.943835	37.24987	0.880523	1.750766819	3.137944	142.7251	0.420159	176.1045	350.1534	-23.0689	-6.76969	0.442302	0.169796	0.169796	3.474842	400	400	-4.12737	-2.20002	0.095292	-19.1959	6768.558305	1.888513
210375	3175	-0.30237	2.783162	36.98156	0.814199	1.666595218	2.965453	142.8177	0.397485	162.8398	333.319	-23.5638	-6.70861	0.522478	0.13747	0.13747	3.474842	400	400	-4.09188	-2.09425	0.095292	-19.1959		
162500	2925	-0.29104	2.601083	36.67126	0.740506	1.569532556	2.770761	142.9288	0.37177	148.1011	313.9065	-24.151	-6.63901	0.615085	0.099597	0.099597	3.474842	400	400	-4.05166	-1.97227	0.095292	-19.1959		
100000	2700	-0.28083	2.433653	36.38045	0.674182	1.478644828	2.592534	143.0369	0.348102	134.8364	295.729	-24.7174	-6.5746	0.701977	0.063581	0.063581	3.474842	400	400	-4.01455	-1.85807	0.095292	-19.1959		
100000	2500	-0.27171	2.281713	36.11203	0.615227	1.394775203	2.431517	143.1401	0.326605	123.0455	278.955	-25.2548	-6.51578	0.782341	0.029903	0.029903	3.474842	400	400	-3.98076	-1.75268	0.095292	-19.1959		
100000	2300	-0.26276	2.128043	35.8242	0.556273	1.309010696	2.269211	143.2545	0.304852	111.2545	261.8021	-25.8227	-6.45862	0.863458	-0.00366	0.004705	3.474842	400	399.6507	-3.95024	-1.64491	0.095292	-19.1959		
100000	2100	-0.25973	2.013981	35.24145	0.497318	1.256937139	2.143064	143.4977	0.289002	99.46363	251.3874	-26.261	-6.49781	0.875536	0	-0.01899	3.474842	393.9792	390.7374	-4.04281	-1.57946	0.095292	-19.1959		
100000	1900	-0.2568	1.896989	34.61938	0.438364	1.201826661	2.013933	143.7746	0.272739	87.67272	240.3653	-26.7263	-6.54364	0.888657	0	-0.03483	3.474842	386.6021	381.8037	-4.14477	-1.51021	0.095292	-19.1959		
100000	1700	-0.254	1.776642	33.95233	0.379409	1.143232372	1.88151	144.0916	0.255999	75.88181	228.6465	-27.2225	-6.59752	0.903022	0	-0.05239	3.474842	379.6432	372.3711	-4.2579	-1.43659	0.095292	-19.1959		
100000	1500	-0.25136	1.652404	33.23335	0.320455	1.080592512	1.745422	144.4569	0.238701	64.0909	216.1185	-27.7544	-6.66124	0.918893	0	-0.07185	3.474842	373.1911	362.3692	-4.38448	-1.35787	0.095292	-19.1959		
100000	1300	-0.24891	1.523583	32.45387	0.2615	1.013173667	1.605215	144.8809	0.220738	52.29999	202.6347	-28.3284	-6.73727	0.93663	0	-0.09346	3.474842	367.3666	351.7084	-4.52748	-1.27316	0.095292	-19.1959		
100000	1100	-0.24671	1.389282	31.60287	0.202545	0.940029864	1.460334	145.3774	0.20197	40.50908	188.006	-28.9526	-6.82888	0.956735	0	-0.1175	3.474842	362.3387	340.2796	-4.69091	-1.18124	0.095292	-19.1959		
133333	900	-0.24482	1.248267	30.66633	0.143591	0.859858385	1.310062	145.9652	0.182204	28.71817	171.9717	-29.6383	-6.94065	0.979948	0	-0.14432	3.474842	358.3561	327.9398	-4.88019	-1.0805	0.095292	-19.1959		
200000	700	-0.24663	1.105699	29.66528	0.084636	0.774435844	1.163168	146.6422	0.162142	16.92726	154.8872	-30	-7.07378	1.006073	0	-0.17256	3.474842	355.3533	315.0134	-5.09456	-0.97315	0.095292	-19.1959		
266667	500	-0.25255	0.961604	28.60056	0.025682	0.683377008	1.020587	147.4188	0.141759	5.136353	136.6754	-30	-7.23189	1.035862	0	-0.202	3.474842	353.5828	301.5427	-5.3373	-0.85873	0.095292	-19.1959		
75000	300	-0.25987	0.808183	27.42653	-0.03327	0.581581258	0.873327	0	0	-6.65456	116.3163	-30	-7.42688	1.072413	0	-0.23446	3.474842	354.0873	287.0012	-5.62365	-0.73082	0.095292	-19.1959		
0	100	-0.26899	0.642309	26.13083	-0.09223	0.465541683	0.720672	0	0	-18.4455	93.10834	-30	-7.66838	1.119628	0	-0.27056	3.474842	358.1786	271.3079	-5.96376	-0.585	0.095292	-19.1959		
0	3400	-0.3211	3.065056	37.41581	0.928974	1.814983362	3.268184	142.6694	0.43729	185.7948	362.9967	-22.709	-6.83021	0.381747	0.195106	0.195106	3.480354	400	400	-4.16777	-2.28071	0.978498	-25.9383	0	1.94859
210375	3175	-0.31035	2.897867	37.14039	0.859165	1.728347245	3.088236	142.7625	0.413707	171.833	345.6694	-23.2084	-6.76696	0.464185	0.162167	0.162167	3.480354	400	400	-4.13093	-2.17185	0.978498	-25.9383		
162500	2925	-0.29841	2.708394	36.82147	0.7816	1.628383336	2.885104	142.8744	0.38696	156.32	325.6767	-23.8015	-6.69489	0.559443	0.123509	0.123509	3.480354	400	400	-4.08921	-2.04623	0.978498	-25.9383		
100000	2700	-0.28764	2.534158	36.52205	0.711791	1.534727911	2.699132	142.9838	0.362344	142.3582	306.9456	-24.3743	-6.62819	0.648859	0.086689	0.086689	3.480354	400	400	-4.05079	-1.92854	0.978498	-25.9383		
100000	2500	-0.27804	2.376015	36.24532	0.649739	1.448240659	2.531083	143.0885	0.33998	129.9478	289.6481	-24.9185	-6.56728	0.731608	0.052199	0.052199	3.480354	400	400	-4.01581	-1.81986	0.978498	-25.9383		
100000	2300	-0.26839	2.214464	35.95807	0.587687	1.358386667	2.36021	143.2008	0.317113	117.5373	271.6773	-25.5003	-6.50463	0.817786	0.015901	0.015901	3.480354	400	400	-3.97989	-1.70695	0.978498	-25.9383		
100000	2100	-0.26187	2.072136	35.51148	0.525635	1.284629057	2.207152	143.383	0.297109	105.1269	256.9258	-26.0357	-6.49148	0.869295	0	-0.01056	3.480354	397.543	395.2824	-4.00792	-1.61427	0.978498	-25.9383		
100000	1900	-0.25873	1.950417	34.87647	0.463582	1.228100519	2.072646	143.658	0.280193	92.71646	245.6201	-26.5118	-6.53658	0.882568	0	-0.02649	3.480354	389.5975	386.0893	-4.11077	-1.54324	0.978498	-25.9383		
100000	1700	-0.25573	1.825202	34.19447	0.40153	1.167945116	1.934652	143.9741	0.262782	80.30602	233.589	-27.0201	-6.58988	0.897113	0	-0.04424	3.480354	382.0798	376.3732	-4.22514	-1.46764	0.978498	-25.9383		
100000	1500	-0.25288	1.695919	33.4581	0.339478	1.103558262	1.792766	144.3401	0.244789	67.89558	220.7117	-27.5658	-6.65334	0.913205	0	-0.06402	3.480354	375.0824	366.057	-4.3534	-1.38673	0.978498	-25.9383		
100000	1300	-0.25024	1.561831	32.65806	0.277426	1.034166606	1.646494	144.767	0.226102	55.48514	206.8333	-28.1555	-6.72948	0.931216	0	-0.08609	3.480354	368.7307	355.0454	-4.49873	-1.29954	0.978498	-25.9383		
100000	1100	-0.24785	1.421973	31.7825	0.215373	0.958749385	1.495226	145.2697	0.20657	43.07469	191.7499	-28.7981	-6.8218	0.951675	0	-0.11075	3.480354	363.2021	343.2181	-4.66539	-1.20476	0.978498	-25.9383		
133333	900	-0.24579	1.275028	30.81603	0.153321	0.875912516	1.338194	145.8683	0.185986	30.66425	175.1825	-29.5056	-6.93531	0.975358	0	-0.1384	3.480354	358.7582	330.4201	-4.85928	-1.10067	0.978498	-25.9383		
200000	700	-0.2466	1.124151	29.76704	0.091269	0.786277272	1.181497	146.5711	0.164768	18.25381	157.2555	-30	-7.0732	1.00252	0	-0.16821	3.480354	355.4848	316.8162	-5.08263	-0.98804	0.978498	-25.9383		
266667	500	-0.25274	0.973288	28.65665	0.029217	0.691328119	1.031871	147.3764	0.14344	5.843368	138.2656	-30	-7.23714	1.033299	0	-0.19893	3.480354	353.4278	302.7251	-5.33513	-0.86872	0.978498	-25.9383		
75000	300	-0.26042	0.812281	27.42648	-0.03284	0.584694806	0.877125	0	0	-6.56707	116.939	-30	-7.44142	1.071359	0	-0.23297	3.480354	353.8201	287.4561	-5.63534	-0.73473	0.978498	-25.9383		
0	100	-0.27009	0.637579	26.062	-0.09489	0.462378474	0.716459	0	0	-18.9775	92.47569	-30	-7.69724	1.121124	0	-0.271	3.480354	358.1498	270.9134	-5.99511	-0.58102	0.978498	-25.9383		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.3302	3.187683	37.56758	0.977503	1.879980338	3.400153	142.6196	0.454626	195.5007	375.9961	-22.3563	-6.89721	0.320742	0.22091	0.22091	3.488194	400	400	-4.21408	-2.36239	2.072007	-51.4995	0	2.013439
210375	3175	-0.31889	3.01442	37.28598	0.904386	1.791140469	3.213199	142.7129	0.430196	180.8771	358.2281	-22.858	-6.83199	0.405194	0.18747	0.18747	3.488194	400	400	-4.17604	-2.25075	2.072007	-51.4995		
162500	2925	-0.30633	2.818063	36.95955	0.823144	1.688584187	3.002145	142.8254	0.402491	164.6288	337.7168	-23.4545	-6.75768	0.502808	0.14816	0.14816	3.488194	400	400	-4.13299	-2.12188	2.072007	-51.4995		
100000	2700	-0.29502	2.637497	36.65267	0.750026	1.592453751	2.808907	142.9356	0.376992	150.0053	318.4908	-24.0312	-6.68893	0.594465	0.110661	0.110661	3.488194	400	400	-4.09338	-2.00108	2.072007	-51.4995		
100000	2500	-0.28493	2.473584	36.36878	0.685033	1.503619733	2.63426	143.0413	0.353825	137.0066	300.7239	-24.5799	-6.62613	0.679335	0.075477	0.075477	3.488194	400	400	-4.05734	-1.88945	2.072007	-51.4995		
100000	2300	-0.27481	2.306136	36.07359	0.62004	1.411286878	2.456665	143.1552	0.330135	124.0079	282.2574	-25.1669	-6.56156	0.767754	0.038403	0.038403	3.488194	400	400	-4.02039	-1.77342	2.072007	-51.4995		
100000	2100	-0.26463	2.134755	35.76648	0.555046	1.315074656	2.275835	143.2779	0.305863	111.0092	263.0149	-25.7974	-6.495	0.860142	-0.00074	0.000742	3.488194	400	400	-3.98233	-1.65252	2.072007	-51.4995		
100000	1900	-0.26105	2.007036	35.13238	0.490053	1.255928693	2.13487	143.5449	0.2881	98.01055	251.1857	-26.2882	-6.53543	0.876293	0	-0.01753	3.488194	392.7809	390.6563	-4.08095	-1.5782	2.072007	-51.4995		
100000	1700	-0.25784	1.877386	34.43922	0.425059	1.194484268	1.991779	143.8582	0.270077	85.01187	238.8969	-26.8059	-6.58791	0.890935	0	-0.03536	3.488194	384.7073	380.6977	-4.19597	-1.50099	2.072007	-51.4995		
100000	1500	-0.25479	1.743531	33.68976	0.360066	1.128671933	1.844599	144.2222	0.251456	72.01319	225.7344	-27.3623	-6.65066	0.907143	0	-0.05533	3.488194	377.1607	370.1149	-4.32521	-1.41829	2.072007	-51.4995		
100000	1300	-0.25195	1.604711	32.87417	0.295073	1.057687863	1.692812	144.6487	0.232119	59.01451	211.5376	-27.9642	-6.72635	0.925298	0	-0.07769	3.488194	370.2692	358.8076	-4.47196	-1.32909	2.072007	-51.4995		
100000	1100	-0.24937	1.459899	31.97997	0.230079	0.980447949	1.535758	145.153	0.211909	46.01583	196.0896	-28.621	-6.81864	0.945942	0	-0.10281	3.488194	364.2148	346.6454	-4.64068	-1.23203	2.072007	-51.4995		
133333	900	-0.24714	1.307714	30.99066	0.165086	0.895491516	1.372614	145.7567	0.190608	33.01714	179.0983	-29.3453	-6.93276	0.969873	0	-0.13108	3.488194	359.2663	333.463	-4.8376	-1.12527	2.072007	-51.4995		
200000	700	-0.24664	1.1488	29.89915	0.100092	0.802064203	1.206026	146.4795	0.168276	20.01846	160.4128	-30	-7.07424	0.997858	0	-0.16236	3.488194	355.6812	319.2316	-5.06851	-1.00787	2.072007	-51.4995		
266667	500	-0.25294	0.991962	28.75151	0.035099	0.703927099	1.049972	147.3051	0.146121	7.019782	140.7854	-30	-7.2423	1.029261	0	-0.19415	3.488194	353.2458	304.6022	-5.32848	-0.88455	2.072007	-51.4995		
75000	300	-0.26088	0.824325	27.47466	-0.02989	0.593339884	0.888397	0	0	-5.9789	118.668	-30	-7.45358	1.068287	0	-0.22951	3.488194	353.3751	288.6962	-5.63971	-0.74559	2.072007	-51.4995		
0	100	-0.27099	0.642025	26.05159	-0.09489	0.465923552	0.720477	0	0	-18.9776	93.18471	-30	-7.72103	1.119718	0	-0.26916	3.488194	357.6766	271.3986	-6.01582	-0.58548	2.072007	-51.4995		
0	3400	-0.33782	3.301256	37.745	1.025835	1.937601871	3.523002	142.5627	0.470636	205.167	387.5204	-22.0392	-6.94151	0.266068	0.242408	0.242408	3.488842	400	400	-4.24065	-2.43479	1.34025	-31.5116	0	2.065253
210375	3175	-0.32592	3.121093	37.45617	0.948964	1.846209724	3.328189	142.6561	0.445243	189.7929	369.2419	-22.5465	-6.8739	0.3529	0.208386	0.208386	3.488842	400	400	-4.20106	-2.31995	1.34025	-31.5116		
162500	2925	-0.31271	2.916908	37.12092	0.863552	1.740644879	3.108239	142.7692	0.416445	172.7105	348.129	-23.1504	-6.79688	0.4533	0.168317	0.168317	3.488842	400	400	-4.15628	-2.18729	1.34025	-31.5116		
100000	2700	-0.30082	2.729122	36.80528	0.786682	1.641622935	2.90682	142.8803	0.389938	157.3363	328.3246	-23.7351	-6.7256	0.547623	0.13002	0.13002	3.488842	400	400	-4.11511	-2.06287	1.34025	-31.5116		
100000	2500	-0.29023	2.558638	36.51281	0.718352	1.550060946	2.724754	142.9872	0.365853	143.6704	310.0122	-24.2921	-6.6605	0.635004	0.094029	0.094029	3.488842	400	400	-4.07769	-1.94781	1.34025	-31.5116		
100000	2300	-0.2796	2.384436	36.20828	0.650023	1.454813088	2.539568	143.1027	0.341219	130.0045	290.9626	-24.8889	-6.59357	0.726105	0.056034	0.056034	3.488842	400	400	-4.03935	-1.82812	1.34025	-31.5116		
100000	2100	-0.26893	2.206089	35.89094	0.581693	1.355470529	2.350951	143.2276	0.315973	116.3386	271.0941	-25.5312	-6.52454	0.821379	0.015841	0.015841	3.488842	400	400	-3.99987	-1.70328	1.34025	-31.5116		
100000	1900	-0.26232	2.052982	35.36717	0.513363	1.277295003	2.185646	143.4439	0.294488	102.6727	255.459	-26.1095	-6.52029	0.871331	0	-0.01145	3.488842	395.7737	394.1397	-4.04391	-1.60505	1.34025	-31.5116		
100000	1700	-0.25889	1.918	34.65618	0.445034	1.214071812	2.03653	143.7577	0.275727	89.00677	242.8144	-26.6416	-6.57236	0.886242	0	-0.0295	3.488842	387.1239	383.8684	-4.16053	-1.5256	1.34025	-31.5116		
100000	1500	-0.25564	1.77859	33.88586	0.376704	1.146248234	1.883052	144.1244	0.256338	75.34085	229.2496	-27.2143	-6.63509	0.902782	0	-0.04984	3.488842	379.0215	372.9361	-4.29193	-1.44037	1.34025	-31.5116		
100000	1300	-0.2526	1.633923	33.0455	0.308375	1.072952582	1.724636	144.5564	0.236194	61.67494	214.5905	-27.8353	-6.7113	0.921353	0	-0.07275	3.488842	371.6027	361.2328	-4.44166	-1.34827	1.34025	-31.5116		
100000	1100	-0.24983	1.48289	32.12135	0.240045	0.993015932	1.560562	145.0707	0.215124	48.00902	198.6032	-28.5146	-6.80493	0.942536	0	-0.09861	3.488842	365.0622	348.6168	-4.61455	-1.24782	1.34025	-31.5116		
133333	900	-0.24743	1.32397	31.09518	0.171716	0.904827543	1.389904	145.6906	0.19289	34.34311	180.9655	-29.2662	-6.92163	0.967194	0	-0.12789	3.488842	359.691	334.9038	-4.81743	-1.13701	1.34025	-31.5116		
200000	700	-0.24643	1.156829	29.9528	0.103386	0.80701587	1.214099	146.4425	0.169409	20.67719	161.4032	-30	-7.06846	0.99636	0	-0.16069	3.488842	355.8359	319.9834	-5.05801	-1.01409	1.34025	-31.5116		
266667	500	-0.25301	0.992185	28.74946	0.035056	0.70411876	1.050174	147.3067	0.146155	7.011278	140.8238	-30	-7.24426	1.029213	0	-0.19403	3.488842	353.2212	304.6329	-5.33025	-0.88479	1.34025	-31.5116		
75000	300	-0.26142	0.815601	27.40333	-0.03327	0.587454045	0.880154	0	0	-6.65464	117.4908	-30	-7.4679	1.070508	0	-0.23131	3.488842	353.4464	287.8725	-5.65919	-0.73819	1.34025	-31.5116		
0	100	-0.27225	0.622469	25.8951	-0.1016	0.451820358	0.703028	0	0	-20.3206	90.36407	-30	-7.75431	1.125968	0	-0.27341	3.488842	358.436	269.5727	-6.06058	-0.56775	1.34025	-31.5116		
0	3400	-0.34617	3.417347	37.90463	1.074273	1.99690235	3.648675	142.5127	0.487015	214.8545	399.3805	-21.7242	-6.99515	0.210158	0.264916	0.264916	3.492726	400	400	-4.2757	-2.50931	1.388059	-36.6896	0	2.12363
210375	3175	-0.33368	3.230815	37.6098	0.993886	1.903244167	3.446553	142.606	0.460733	198.7773	380.6488	-22.2348	-6.9254	0.299094	0.23042	0.23042	3.492726	400	400	-4.2347	-2.39162	1.388059	-36.6896		
162500	2925	-0.31984	3.019443	37.26706	0.904568	1.795036082	3.218364	142.7192	0.430933	180.9136	359.0072	-22.8431	-6.84598	0.40193	0.189742	0.189742	3.492726	400	400	-4.1884	-2.25564	1.388059	-36.6896		
100000	2700	-0.30738	2.825042	36.94397	0.824182	1.69348089	3.009382	142.8309	0.403503	164.8363	338.6962	-23.4328	-6.77248	0.498574	0.150796	0.150796	3.492726	400	400	-4.14587	-2.12803	1.388059	-36.6896		
100000	2500	-0.29629	2.648551	36.64418	0.752727	1.599531844	2.820464	142.9387	0.37858	150.5454	319.9064	-23.9951	-6.70537	0.588134	0.114142	0.114142	3.492726	400	400	-4.10726	-2.00997	1.388059	-36.6896		
100000	2300	-0.28517	2.468174	36.33171	0.681273	1.501727169	2.628266	143.0554	0.353086	136.2545	300.3454	-24.5984	-6.63633	0.681565	0.075379	0.075379	3.492726	400	400	-4.06769	-1.88707	1.388059	-36.6896		
100000	2100	-0.27401	2.283483	36.00557	0.609818	1.399654383	2.432475	143.182	0.326954	121.9636	279.9309	-25.2484	-6.56514	0.779329	0.034313	0.034313	3.492726	400	400	-4.02701	-1.7588	1.388059	-36.6896		
100000	1900	-0.26411	2.103537	35.60397	0.538363	1.30106397	2.241437	143.3445	0.301531	107.6727	260.2128	-25.9157	-6.51277	0.865997	0	-0.00438	3.492726	398.9796	398.0446	-4.01188	-1.63492	1.388059	-36.6896		
100000	1700	-0.26047	1.963781	34.8799	0.466909	1.236403119	2.086904	143.6564	0.28211	93.38178	247.2806	-26.4587	-6.56411	0.881071	0	-0.02253	3.492726	389.7591	387.5115	-4.12938	-1.55367	1.388059	-36.6896		
100000	1500	-0.257	1.819428	34.09409	0.395454	1.166971547	1.927777	144.0225	0.262039	79.09087	233.3943	-27.044	-6.6263	0.897808	0	-0.04307	3.492726	381.0983	376.289	-4.26207	-1.46642	1.388059	-36.6896		
100000	1300	-0.25376	1.669607	33.23521	0.324	1.091849791	1.763444	144.456	0.241185	64.79996	218.37	-27.6795	-6.70231	0.916627	0	-0.06633	3.492726	373.1379	364.26	-4.41367	-1.37202	1.388059	-36.6896		
100000	1100	-0.2508	1.513137	32.28858	0.252545	1.009794068	1.593123	144.9746	0.219366	50.50904	201.9588	-28.3759	-6.79629	0.938131	0	-0.09272	3.492726	366.0807	351.2715	-4.58925	-1.2689	1.388059	-36.6896		
133333	900	-0.24822	1.348399	31.23453	0.181091	0.919091092	1.415818	145.6034	0.196332	36.21813	183.8182	-29.1481	-6.91425	0.963226	0	-0.12274	3.492726	360.2311	337.1249	-4.79611	-1.15492	1.388059	-36.6896		
200000	700	-0.2463	1.173317	30.04801	0.109636	0.81738217	1.230611	146.3773	0.171747	21.92722	163.4764	-30	-7.06501	0.993313	0	-0.15696	3.492726	356.0609	321.5717	-5.04458	-1.02712	1.388059	-36.6896		
266667	500	-0.25309	1.001915	28.79989	0.038182	0.71064805	1.059629	147.2689	0.147551	7.636305	142.1296	-30	-7.24627	1.027137	0	-0.19157	3.492726	353.1478	305.6083	-5.32614	-0.893	1.388059	-36.6896		
75000	300	-0.26185	0.81766	27.39696	-0.03327	0.589084469	0.882049	0	0	-6.65461	117.8169	-30	-7.47928	1.069982	0	-0.23044	3.492726	353.2694	288.1149	-5.66904	-0.74024	1.388059	-36.6896		
0	100	-0.27326	0.615348	25.81724	-0.10473	0.446811896	0.696731	0	0	-20.9455	89.36238	-30	-7.78096	1.128286	0	-0.27456	3.492726	358.5908	268.9399	-6.09122	-0.56146	1.388059	-36.6896		
0	3400	-0.35438	3.573621	37.8201	1.12253	2.096713231	3.805278	142.5391	0.509381	224.5059	400	-21.3142	-7.00968	0.19616	0.252705	0.252705	3.490355	400	400	-4.30032	-2.5132	0.020072	-0.01255	6798.775565	2.171783
210375	3175	-0.34006	3.331601	37.78397	1.038221	1.953316875	3.5558	142.5504	0.474921	207.6443	390.6634	-21.956	-6.95687	0.251299	0.24849	0.24849	3.490355	400	400	-4.25104	-2.45453	0.020072	-0.01255		
162500	2925	-0.32555	3.112184	37.4327	0.944545	1.842093159	3.318492	142.6638	0.443996	188.9091	368.4186	-22.5722	-6.87456	0.356961	0.207111	0.207111	3.490355	400	400	-4.20284	-2.31477	0.020072	-0.01255		
100000	2700	-0.3125	2.910393	37.10099	0.860237	1.737659055	3.101154	142.776	0.415534	172.0474	347.5318	-23.1702	-6.79844	0.456287	0.167427	0.167427	3.490355	400	400	-4.15862	-2.18354	0.020072	-0.01255		
100000	2500	-0.30089	2.727167	36.79277	0.785296	1.640977126	2.904646	142.8848	0.389671	157.0593	328.1954	-23.7413	-6.72894	0.548382	0.130009	0.130009	3.490355	400	400	-4.1185	-2.06205	0.020072	-0.01255		
100000	2300	-0.28926	2.539868	36.47105	0.710356	1.540248027	2.704676	143.0028	0.363208	142.0712	308.0496	-24.355	-6.65741	0.64452	0.090365	0.090365	3.490355	400	400	-4.07741	-1.93548	0.020072	-0.01255		
100000	2100	-0.27759	2.348036	36.13471	0.635415	1.435028071	2.50091	143.1313	0.336077	127.083	287.0056	-25.0174	-6.58363	0.745198	0.048284	0.048284	3.490355	400	400	-4.03519	-1.80325	0.020072	-0.01255		
100000	1900	-0.26586	2.151098	35.78272	0.560474	1.32476671	2.292929	143.2713	0.308191	112.0949	264.9533	-25.7359	-6.50727	0.851023	0.003504	0.003504	3.490355	400	400	-3.99155	-1.6647	0.020072	-0.01255		
100000	1700	-0.2611	1.999324	35.08028	0.485534	1.252688954	2.126262	143.5677	0.287038	97.10673	250.5378	-26.3184	-6.54403	0.877138	0	-0.01817	3.490355	392.1611	390.1427	-4.09277	-1.57413	0.020072	-0.01255		
100000	1500	-0.25742	1.84915	34.27217	0.410593	1.181137075	1.960587	143.937	0.266161	82.11859	236.2274	-26.9214	-6.60623	0.894256	0	-0.03908	3.490355	382.9314	378.5569	-4.22776	-1.48422	0.020072	-0.01255		
100000	1300	-0.25397	1.693177	33.38656	0.335652	1.103554403	1.789332	144.377	0.244456	67.13045	220.7109	-27.5776	-6.68284	0.913559	0	-0.06291	3.490355	374.4364	366.1126	-4.38254	-1.38673	0.020072	-0.01255		
100000	1100	-0.25082	1.530128	32.40722	0.260712	1.01859634	1.611642	144.9072	0.221727	52.14231	203.7193	-28.2986	-6.77834	0.935694	0	-0.0901	3.490355	366.8942	352.644	-4.56269	-1.27997	0.020072	-0.01255		
133333	900	-0.24808	1.358213	31.31241	0.185771	0.9243668	1.426408	145.5551	0.197695	37.15417	184.8734	-29.1009	-6.89938	0.961651	0	-0.1212	3.490355	360.6373	337.9293	-4.77617	-1.16155	0.020072	-0.01255		
200000	700	-0.24595	1.174918	30.0729	0.11083	0.818133088	1.232316	146.3604	0.171961	22.16603	163.6266	-30	-7.05581	0.993019	0	-0.15694	3.490355	356.2009	321.6751	-5.03473	-1.02806	0.020072	-0.01255		
266667	500	-0.25308	0.99502	28.76204	0.035889	0.706050809	1.052919	147.2972	0.146564	7.177886	141.2102	-30	-7.24614	1.028606	0	-0.19327	3.490355	353.1836	304.9227	-5.3303	-0.88722	0.020072	-0.01255		
75000	300	-0.2624	0.800798	27.27985	-0.03905	0.577449098	0.866209	0	0	-7.81026	115.4898	-30	-7.4939	1.074325	0	-0.23433	3.490355	353.5747	286.479	-5.69395	-0.72563	0.020072	-0.01255		
0	100	-0.27469	0.585934	25.60205	-0.11399	0.425232265	0.670758	0	0	-22.7984	85.04645	-30	-7.81862	1.138109	0	-0.28134	3.490355	360.0424	266.1875	-6.14615	-0.53434	0.020072	-0.01255		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.36381	3.742821	37.68562	1.17093	2.208079948	3.973505	142.5816	0.533657	234.186	400	-20.8873	-7.03349	0.18422	0.238476	0.238476	3.491865	400	400	-4.33607	-2.5132	0.014514	0.018376	6801.715734	2.230157
210375	3175	-0.34749	3.442363	37.90662	1.083022	2.011851603	3.67427	142.5121	0.490578	216.6044	400	-21.6575	-6.99763	0.20579	0.264285	0.264285	3.491865	400	400	-4.27864	-2.5132	0.014514	0.018376		
162500	2925	-0.33218	3.20991	37.58141	0.985347	1.892381387	3.423989	142.6151	0.457782	197.0694	378.4763	-22.2935	-6.9153	0.309327	0.226216	0.226216	3.491865	400	400	-4.228	-2.37797	0.014514	0.018376		
100000	2700	-0.31856	3.001503	37.2427	0.897439	1.785503067	3.199088	142.7275	0.428397	179.4879	357.1006	-22.8963	-6.83692	0.410913	0.185968	0.185968	3.491865	400	400	-4.18234	-2.24366	0.014514	0.018376		
100000	2500	-0.30646	2.812259	36.92762	0.819299	1.686504654	2.995719	142.8367	0.401694	163.8598	337.3009	-23.4726	-6.76534	0.505138	0.147955	0.147955	3.491865	400	400	-4.14092	-2.11926	0.014514	0.018376		
100000	2300	-0.29433	2.618803	36.59831	0.741159	1.583312214	2.788751	142.9556	0.374372	148.2318	316.6624	-24.0926	-6.69168	0.603533	0.107623	0.107623	3.491865	400	400	-4.09856	-1.98959	0.014514	0.018376		
100000	2100	-0.28217	2.420636	36.2536	0.663019	1.47544525	2.577816	143.0853	0.346357	132.6038	295.089	-24.7625	-6.61573	0.706632	0.064741	0.064741	3.491865	400	400	-4.05504	-1.85405	0.014514	0.018376		
100000	1900	-0.26995	2.217151	35.89229	0.584879	1.362322383	2.362467	143.2271	0.317556	116.9757	272.4645	-25.4904	-6.53708	0.815078	0.01903	0.01903	3.491865	400	400	-4.01011	-1.7119	0.014514	0.018376		
100000	1700	-0.26237	2.041732	35.29273	0.506739	1.272623478	2.173088	143.4756	0.292939	101.3477	254.5247	-26.153	-6.53225	0.872535	0	-0.01235	3.491865	394.8539	393.3971	-4.06053	-1.59918	0.014514	0.018376		
100000	1500	-0.25848	1.886541	34.46907	0.428598	1.199466169	2.001716	143.8442	0.271368	85.71967	239.8932	-26.7687	-6.59382	0.889868	0	-0.03344	3.491865	385.0564	381.5243	-4.19671	-1.50725	0.014514	0.018376		
100000	1300	-0.25482	1.725324	33.56469	0.350458	1.120044686	1.824476	144.2855	0.248939	70.09164	224.0089	-27.4397	-6.67017	0.909441	0	-0.05759	3.491865	376.0124	368.7553	-4.35327	-1.40745	0.014514	0.018376		
100000	1100	-0.25147	1.556716	32.56236	0.272318	1.032923391	1.640436	144.8201	0.225444	54.4636	206.5847	-28.1785	-6.76595	0.931933	0	-0.08529	3.491865	367.9502	354.9108	-4.53606	-1.29798	0.014514	0.018376		
133333	900	-0.24855	1.378825	31.43858	0.194178	0.936097459	1.448414	145.4774	0.200588	38.83557	187.2195	-29.0023	-6.88825	0.958378	0	-0.11714	3.491865	361.2177	339.7545	-4.75356	-1.17629	0.014514	0.018376		
200000	700	-0.2462	1.18878	30.16087	0.116038	0.826539148	1.246741	146.3007	0.173919	23.20754	165.3078	-29.9374	-7.0477	0.990491	0	-0.15397	3.491865	356.3921	322.954	-5.01857	-1.03863	0.014514	0.018376		
266667	500	-0.25302	1.000771	28.79633	0.037898	0.709849667	1.058527	147.2716	0.147385	7.579506	141.9699	-30	-7.24463	1.02738	0	-0.19191	3.491865	353.1728	305.4873	-5.32526	-0.892	0.014514	0.018376		
75000	300	-0.26274	0.798375	27.2523	-0.04024	0.575879255	0.863918	0	0	-8.04853	115.1759	-30	-7.50285	1.074956	0	-0.23468	3.491865	353.5486	286.2655	-5.70425	-0.72365	0.014514	0.018376		
0	100	-0.2757	0.573343	25.49587	-0.11838	0.416029679	0.65975	0	0	-23.6766	83.20594	-30	-7.84499	1.142443	0	-0.28398	3.491865	360.6222	265.0368	-6.17976	-0.52278	0.014514	0.018376		
0	3400	-0.37334	3.913308	37.55633	1.219324	2.320645458	4.142757	142.6233	0.558129	243.8647	400	-20.4741	-7.05598	0.172454	0.224289	0.224289	3.492896	400	400	-4.37032	-2.5132	-0.00476	-0.01781	6803.725578	2.289792
210375	3175	-0.35598	3.596597	37.78467	1.127802	2.112816366	3.827872	142.5502	0.512696	225.5604	400	-21.2552	-7.0187	0.194671	0.251107	0.251107	3.492896	400	400	-4.31083	-2.5132	-0.00476	-0.01781		
162500	2925	-0.33872	3.306174	37.72874	1.026111	1.941339547	3.528121	142.5679	0.471354	205.2222	388.2679	-22.0256	-6.95408	0.262931	0.244567	0.244567	3.492896	400	400	-4.25167	-2.43949	-0.00476	-0.01781		
100000	2700	-0.32453	3.09118	37.38335	0.934589	1.832065225	3.295691	142.6802	0.44105	186.9178	366.413	-22.633	-6.87343	0.366743	0.203791	0.203791	3.492896	400	400	-4.20453	-2.30217	-0.00476	-0.01781		
100000	2500	-0.31192	2.89596	37.06167	0.853236	1.730806484	3.085505	142.7897	0.413513	170.6472	346.1613	-23.2142	-6.7998	0.463052	0.165223	0.165223	3.492896	400	400	-4.16181	-2.17493	-0.00476	-0.01781		
100000	2300	-0.2993	2.696401	36.72497	0.771883	1.625218169	2.871592	142.9092	0.385341	154.3767	325.0436	-23.84	-6.72407	0.563648	0.124249	0.124249	3.492896	400	400	-4.11817	-2.04225	-0.00476	-0.01781		
100000	2100	-0.28665	2.491939	36.37217	0.690531	1.514759198	2.653525	143.04	0.356447	138.1061	302.9518	-24.5172	-6.64592	0.669119	0.080603	0.080603	3.492896	400	400	-4.07335	-1.90345	-0.00476	-0.01781		
100000	1900	-0.27394	2.281959	36.00182	0.609178	1.3988398	2.430855	143.1835	0.326739	121.8356	279.768	-25.2539	-6.56503	0.780126	0.034005	0.034005	3.492896	400	400	-4.02711	-1.75778	-0.00476	-0.01781		
100000	1700	-0.26359	2.083278	35.50028	0.527825	1.291867527	2.21901	143.3877	0.298716	105.565	258.3735	-25.993	-6.52017	0.868119	0	-0.00688	3.492896	397.5856	396.543	-4.02869	-1.62337	-0.00476	-0.01781		
100000	1500	-0.25948	1.923091	34.66147	0.446472	1.217138861	2.041981	143.7553	0.276454	89.2945	243.4278	-26.6211	-6.58109	0.885661	0	-0.0281	3.492896	387.2161	384.3893	-4.16598	-1.52946	-0.00476	-0.01781		
100000	1300	-0.25562	1.756647	33.73872	0.36512	1.135911706	1.858786	144.1976	0.253304	73.02395	227.1823	-27.3067	-6.6571	0.905501	0	-0.05255	3.492896	377.6193	371.3016	-4.32422	-1.42738	-0.00476	-0.01781		
100000	1100	-0.25207	1.582508	32.71372	0.283767	1.046668646	1.668433	144.7363	0.229046	56.7534	209.3337	-28.0629	-6.75313	0.928343	0	-0.08074	3.492896	369.0324	357.0885	-4.50954	-1.31524	-0.00476	-0.01781		
133333	900	-0.24896	1.398638	31.56141	0.202414	0.947260859	1.469623	145.4025	0.203365	40.48285	189.4522	-28.9082	-6.87654	0.955275	0	-0.11333	3.492896	361.8214	341.4934	-4.73093	-1.19033	-0.00476	-0.01781		
200000	700	-0.24646	1.201995	30.24643	0.121061	0.834472926	1.260583	146.243	0.175783	24.2123	166.8946	-29.8704	-7.03882	0.988107	0	-0.1512	3.492896	356.5948	324.1613	-5.00212	-1.0486	-0.00476	-0.01781		
266667	500	-0.25294	1.005783	28.82778	0.039709	0.713135023	1.063428	147.2481	0.1481	7.941748	142.627	-30	-7.24238	1.026316	0	-0.19075	3.492896	353.1773	305.9751	-5.31995	-0.89613	-0.00476	-0.01781		
75000	300	-0.26305	0.795121	27.22106	-0.04164	0.573711415	0.860856	0	0	-8.3288	114.7423	-30	-7.51123	1.075806	0	-0.23527	3.492896	353.5541	285.9671	-5.71449	-0.72092	-0.00476	-0.01781		
0	100	-0.2767	0.559663	25.38434	-0.123	0.405962214	0.647845	0	0	-24.5994	81.19244	-30	-7.87134	1.147245	0	-0.28692	3.492896	361.3145	263.7875	-6.21397	-0.51014	-0.00476	-0.01781		
0	3400	-0.38309	4.086051	37.42811	1.267719	2.435245856	4.313938	142.6654	0.582938	253.5439	400	-20.0719	-7.07842	0.160822	0.210133	0.210133	3.493927	400	400	-4.4044	-2.5132	0.010142	-0.0104	6805.733192	2.349447
210375	3175	-0.36465	3.752764	37.66358	1.172588	2.215526675	3.983135	142.5887	0.535102	234.5176	400	-20.8627	-7.03975	0.183668	0.237951	0.237951	3.493927	400	400	-4.34289	-2.5132	0.010142	-0.0104		
162500	2925	-0.34528	3.401634	37.87295	1.066886	1.989462663	3.631563	142.5226	0.48481	213.3773	397.8925	-21.7663	-6.99247	0.217346	0.262439	0.262439	3.493927	400	400	-4.27518	-2.49995	0.010142	-0.0104		
100000	2700	-0.3305	3.180108	37.52127	0.971755	1.877850343	3.391663	142.6347	0.453594	194.351	375.5701	-22.3777	-6.90959	0.323336	0.221173	0.221173	3.493927	400	400	-4.22654	-2.35971	0.010142	-0.0104		
100000	2500	-0.31739	2.978985	37.19322	0.887194	1.774404628	3.174733	142.7443	0.425233	177.4387	354.8809	-22.9634	-6.83392	0.421668	0.182096	0.182096	3.493927	400	400	-4.18254	-2.22972	0.010142	-0.0104		
100000	2300	-0.30427	2.773375	36.84954	0.802632	1.666472252	2.953926	142.8644	0.396217	160.5265	333.2945	-23.5947	-6.7561	0.524418	0.140513	0.140513	3.493927	400	400	-4.1376	-2.09409	0.010142	-0.0104		
100000	2100	-0.29113	2.562705	36.48893	0.718071	1.553505758	2.728812	142.9961	0.366457	143.6142	310.7012	-24.2785	-6.67583	0.632186	0.096154	0.096154	3.493927	400	400	-4.09149	-1.95214	0.010142	-0.0104		
100000	1900	-0.27793	2.346311	36.10987	0.63351	1.434868492	2.498896	143.141	0.335853	126.702	286.9737	-25.0235	-6.59269	0.74568	0.048714	0.048714	3.493927	400	400	-4.04396	-1.80306	0.010142	-0.0104		
100000	1700	-0.26482	2.124556	35.70341	0.548949	1.310791408	2.264662	143.3036	0.304457	109.7897	262.1583	-25.8359	-6.50884	0.863817	-0.00078	0.001574	3.493927	400	399.7319	-3.99789	-1.64714	0.010142	-0.0104		
100000	1500	-0.2605	1.959425	34.85021	0.464387	1.234541383	2.082045	143.6697	0.28151	92.87745	246.9083	-26.476	-6.56903	0.881558	0	-0.02291	3.493927	389.4186	387.2167	-4.13616	-1.55133	0.010142	-0.0104		
100000	1300	-0.25642	1.787813	33.90998	0.379826	1.151562924	1.892968	144.1125	0.257646	75.9652	230.3126	-27.1757	-6.64463	0.901649	0	-0.04762	3.493927	379.2646	373.8186	-4.29591	-1.44706	0.010142	-0.0104		
100000	1100	-0.25268	1.608202	32.86327	0.295265	1.060258251	1.696367	144.6546	0.232634	59.05294	212.0517	-27.9487	-6.74071	0.924823	0	-0.07626	3.493927	370.1478	359.2461	-4.48357	-1.33232	0.010142	-0.0104		
133333	900	-0.24938	1.418444	31.68331	0.210703	0.958357226	1.49086	145.329	0.206141	42.14069	191.6714	-28.8147	-6.8651	0.952216	0	-0.10954	3.493927	362.45	343.2257	-4.70862	-1.20427	0.010142	-0.0104		
200000	700	-0.24673	1.215285	30.33217	0.126142	0.842417281	1.274528	146.1855	0.177657	25.22843	168.4835	-29.8033	-7.03004	0.985734	0	-0.14842	3.493927	356.8127	325.3725	-4.98571	-1.05859	0.010142	-0.0104		
266667	500	-0.25285	1.010935	28.86025	0.041581	0.716504645	1.06847	147.224	0.148834	8.316175	143.3009	-30	-7.23999	1.025228	0	-0.18957	3.493927	353.1857	306.4759	-5.3144	-0.90036	0.010142	-0.0104		
75000	300	-0.26336	0.792036	27.19117	-0.04298	0.571655413	0.857955	0	0	-8.59608	114.3311	-30	-7.51937	1.076614	0	-0.23582	3.493927	353.5588	285.6846	-5.72441	-0.71834	0.010142	-0.0104		
0	100	-0.2777	0.546077	25.27385	-0.12754	0.395916418	0.636084	0	0	-25.5083	79.18328	-30	-7.89772	1.152113	0	-0.28984	3.493927	362.043	262.5531	-6.24809	-0.49751	0.010142	-0.0104		
0	3400	-0.39281	4.259043	37.30839	1.316111	2.550125298	4.485188	142.7053	0.607788	263.2223	400	-19.6846	-7.09843	0.149375	0.196023	0.196023	3.49407	400	400	-4.43586	-2.5132	-0.00578	0.014585	6806.011798	2.410553
210375	3175	-0.37327	3.908931	37.55107	1.217362	2.318300857	4.138255	142.625	0.557511	243.4724	400	-20.4846	-7.05836	0.172846	0.224842	0.224842	3.49407	400	400	-4.37232	-2.5132	-0.00578	0.014585		
162500	2925	-0.35253	3.530083	37.82511	1.107641	2.069910728	3.76148	142.5375	0.503169	221.5281	400	-21.4268	-7.01365	0.199533	0.257004	0.257004	3.49407	400	400	-4.30092	-2.5132	-0.00578	0.014585		
100000	2700	-0.3363	3.267302	37.66003	1.008891	1.922112283	3.485966	142.5898	0.465884	201.7782	384.4225	-22.133	-6.94263	0.281309	0.237679	0.237679	3.49407	400	400	-4.24601	-2.41532	-0.00578	0.014585		
100000	2500	-0.32268	3.060316	37.32602	0.921114	1.816525558	3.262341	142.6994	0.436705	184.2228	363.3051	-22.7229	-6.86495	0.381629	0.198127	0.198127	3.49407	400	400	-4.20068	-2.28265	-0.00578	0.014585		
100000	2300	-0.30906	2.848723	36.97561	0.833337	1.706323902	3.034716	142.8197	0.406854	166.6674	341.2648	-23.3593	-6.78506	0.486471	0.155983	0.155983	3.49407	400	400	-4.15442	-2.14417	-0.00578	0.014585		
100000	2100	-0.29543	2.631923	36.60743	0.74556	1.590931284	2.802633	142.9522	0.376239	149.1119	318.1863	-24.0495	-6.70265	0.596467	0.110964	0.110964	3.49407	400	400	-4.10703	-1.99916	-0.00578	0.014585		
100000	1900	-0.28175	2.409187	36.22	0.657782	1.469650806	2.565546	143.0982	0.34475	131.5565	293.9302	-24.8024	-6.6173	0.712382	0.06273	0.06273	3.49407	400	400	-4.05816	-1.84676	-0.00578	0.014585		
100000	1700	-0.268	2.179681	35.81149	0.570005	1.34168009	2.322851	143.2596	0.31226	114.001	268.336	-25.6291	-6.52856	0.83511	0.010901	0.010901	3.49407	400	400	-4.00749	-1.68596	-0.00578	0.014585		
100000	1500	-0.26141	1.994844	35.03653	0.482228	1.251207646	2.121166	143.5869	0.286433	96.4456	250.2415	-26.336	-6.55556	0.877629	0	-0.01811	3.49407	391.6654	389.9247	-4.10565	-1.57227	-0.00578	0.014585		
100000	1300	-0.25713	1.818092	34.07924	0.394451	1.166516037	1.926251	144.0297	0.261859	78.89016	233.3032	-27.0496	-6.6306	0.897969	0	-0.04305	3.49407	380.9517	376.2236	-4.26678	-1.46585	-0.00578	0.014585		
100000	1100	-0.25318	1.633053	33.01122	0.306674	1.073198929	1.72346	144.5748	0.236098	61.33473	214.6398	-27.8392	-6.72669	0.92147	0	-0.07211	3.49407	371.3017	361.3006	-4.45662	-1.34858	-0.00578	0.014585		
133333	900	-0.2497	1.437432	31.8041	0.218896	0.968837553	1.511289	145.2568	0.208797	43.77929	193.7675	-28.7256	-6.85192	0.94932	0	-0.10605	3.49407	363.1147	344.861	-4.68514	-1.21744	-0.00578	0.014585		
200000	700	-0.24688	1.227772	30.41704	0.131119	0.849774963	1.287681	146.129	0.179413	26.22385	169.955	-29.7406	-7.01928	0.983526	0	-0.14592	3.49407	357.0654	326.4926	-4.96792	-1.06783	-0.00578	0.014585		
266667	500	-0.25268	1.015359	28.89228	0.043342	0.719338703	1.072823	147.2002	0.149461	8.668406	143.8677	-30	-7.23544	1.024298	0	-0.18864	3.49407	353.225	306.8946	-5.30722	-0.90392	-0.00578	0.014585		
75000	300	-0.26359	0.788147	27.16013	-0.04444	0.56899382	0.854314	0	0	-8.88703	113.7988	-30	-7.52538	1.077637	0	-0.23665	3.49407	353.612	285.3151	-5.73274	-0.715	-0.00578	0.014585		
0	100	-0.27864	0.531416	25.16071	-0.13221	0.384991116	0.623449	0	0	-26.4425	76.99822	-30	-7.9223	1.157481	0	-0.29311	3.49407	362.9148	261.2225	-6.28103	-0.48378	-0.00578	0.014585		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.40271	4.43397	37.19036	1.364504	2.666751428	4.658075	142.7453	0.632928	272.9009	400	-19.3078	-7.11814	0.138055	0.181944	0.181944	3.494118	400	400	-4.46688	-2.5132	-0.01084	-0.01245	6806.104533	2.472187
210375	3175	-0.38204	4.06671	37.44014	1.262139	2.422535496	4.294743	142.6614	0.580162	252.4278	400	-20.1161	-7.07669	0.162136	0.211758	0.211758	3.494118	400	400	-4.40135	-2.5132	-0.01084	-0.01245		
162500	2925	-0.36013	3.66968	37.72236	1.1484	2.161148174	3.900477	142.5699	0.523186	229.68	400	-21.0697	-7.03042	0.18954	0.245038	0.245038	3.494118	400	400	-4.32768	-2.5132	-0.01084	-0.01245		
100000	2700	-0.34208	3.353677	37.79658	1.046035	1.965560092	3.579539	142.5464	0.478055	209.207	393.112	-21.8958	-6.97507	0.240057	0.253718	0.253718	3.494118	400	400	-4.26509	-2.46992	-0.01084	-0.01245		
100000	2500	-0.32795	3.140892	37.4568	0.955044	1.857898036	3.349286	142.6559	0.448067	191.0088	371.5796	-22.4896	-6.89539	0.342312	0.213733	0.213733	3.494118	400	400	-4.21843	-2.33464	-0.01084	-0.01245		
100000	2300	-0.31384	2.923375	37.09996	0.864053	1.745485979	3.114901	142.7764	0.417389	172.8105	349.0972	-23.1308	-6.81343	0.449198	0.171066	0.171066	3.494118	400	400	-4.17086	-2.19338	-0.01084	-0.01245		
100000	2100	-0.29971	2.700498	36.72457	0.773061	1.627721415	2.875906	142.9094	0.385926	154.6123	325.5443	-23.8268	-6.72891	0.561375	0.125421	0.125421	3.494118	400	400	-4.12215	-2.04539	-0.01084	-0.01245		
100000	1900	-0.28555	2.471502	36.32901	0.68207	1.503878142	2.631728	143.0564	0.353564	136.414	300.7756	-24.587	-6.64139	0.679638	0.076441	0.076441	3.494118	400	400	-4.07198	-1.88977	-0.01084	-0.01245		
100000	1700	-0.27132	2.235501	35.91132	0.591079	1.373104427	2.381717	143.2195	0.320167	118.2158	274.6209	-25.423	-6.55038	0.804934	0.02372	0.02372	3.494118	400	400	-4.01999	-1.72544	-0.01084	-0.01245		
100000	1500	-0.26232	2.029969	35.21957	0.500088	1.267563723	2.159991	143.5071	0.291315	100.0175	253.5127	-26.1987	-6.54245	0.873802	0	-0.01347	3.494118	393.9499	392.5868	-4.07584	-1.59281	-0.01084	-0.01245		
100000	1300	-0.25783	1.848141	34.24586	0.409096	1.181218929	1.959317	143.9496	0.266039	81.81928	236.2438	-26.9255	-6.61692	0.894376	0	-0.03861	3.494118	382.6723	378.5923	-4.23822	-1.48431	-0.01084	-0.01245		
100000	1100	-0.25368	1.657714	33.1574	0.318105	1.08593215	1.750386	144.497	0.239535	63.62103	217.1864	-27.7313	-6.71284	0.918191	0	-0.06806	3.494118	372.4851	363.3254	-4.43006	-1.36459	-0.01084	-0.01245		
133333	900	-0.25	1.456306	31.92382	0.227114	0.979186937	1.531627	145.186	0.211435	45.42278	195.8374	-28.6377	-6.83876	0.946479	0	-0.10263	3.494118	363.8024	346.4786	-4.66186	-1.23043	-0.01084	-0.01245		
200000	700	-0.24702	1.24021	30.50176	0.136123	0.857066242	1.300805	146.073	0.181161	27.22453	171.4132	-29.6784	-7.00839	0.981348	0	-0.14345	3.494118	357.3334	327.6042	-4.95007	-1.07699	-0.01084	-0.01245		
266667	500	-0.25249	1.019792	28.92494	0.045131	0.72216524	1.07719	147.176	0.150089	9.026287	144.433	-30	-7.23054	1.02337	0	-0.18772	3.494118	353.2706	307.3122	-5.29971	-0.90747	-0.01084	-0.01245		
75000	300	-0.2638	0.784285	27.12978	-0.04586	0.566342521	0.850702	0	0	-9.17196	113.2685	-30	-7.53104	1.078658	0	-0.23747	3.494118	353.6704	284.9473	-5.74071	-0.71166	-0.01084	-0.01245		
0	100	-0.27957	0.516637	25.04784	-0.13685	0.373920271	0.610782	0	0	-27.3702	74.78405	-30	-7.94672	1.163021	0	-0.29643	3.494118	363.8505	259.8901	-6.31383	-0.46987	-0.01084	-0.01245		
0	3400	-0.41283	4.611005	37.07342	1.412899	2.785274405	4.832756	142.7856	0.658385	282.5797	400	-18.9409	-7.13774	0.126856	0.167895	0.167895	3.494146	400	400	-4.49769	-2.5132	-0.00026	0.022877	6806.159529	2.534279
210375	3175	-0.39097	4.226264	37.33015	1.30692	2.528370858	4.452745	142.698	0.603079	261.3841	400	-19.7568	-7.09491	0.151533	0.198698	0.198698	3.494146	400	400	-4.43019	-2.5132	-0.00026	0.022877		
162500	2925	-0.36786	3.81073	37.62037	1.189167	2.253698622	4.04072	142.6026	0.54342	237.8334	400	-20.7208	-7.0471	0.179636	0.233091	0.233091	3.494146	400	400	-4.35427	-2.5132	-0.00026	0.022877		
100000	2700	-0.34806	3.44723	37.88616	1.083189	2.015979119	3.678877	142.5185	0.491294	216.6377	400	-21.6446	-7.00385	0.205564	0.26419	0.26419	3.494146	400	400	-4.2851	-2.5132	-0.00026	0.022877		
100000	2500	-0.33322	3.22082	37.58534	0.988986	1.898609549	3.435668	142.6139	0.459334	197.7972	379.7219	-22.2628	-6.92545	0.303638	0.228962	0.228962	3.494146	400	400	-4.23601	-2.38579	-0.00026	0.022877		
100000	2300	-0.31861	2.997428	37.22236	0.894783	1.784037827	3.194577	142.7344	0.427836	178.9566	356.8076	-22.9084	-6.84146	0.412526	0.185805	0.185805	3.494146	400	400	-4.18711	-2.24182	-0.00026	0.022877		
100000	2100	-0.30399	2.768538	36.84003	0.80058	1.663964291	2.948732	142.8678	0.395535	160.1161	332.7929	-23.6099	-6.75485	0.526828	0.139572	0.139572	3.494146	400	400	-4.1371	-2.09094	-0.00026	0.022877		
100000	1900	-0.28935	2.533349	36.43663	0.706377	1.53762321	2.697526	143.0157	0.362309	141.2755	307.5246	-24.377	-6.66518	0.647381	0.089886	0.089886	3.494146	400	400	-4.08563	-1.93218	-0.00026	0.022877		
100000	1700	-0.27463	2.290911	36.01016	0.612175	1.404105596	2.440256	143.1802	0.328013	122.4349	280.8211	-25.2216	-6.57189	0.77519	0.036308	0.036308	3.494146	400	400	-4.0323	-1.7644	-0.00026	0.022877		
100000	1500	-0.26324	2.064863	35.39937	0.517972	1.28365425	2.198585	143.4302	0.296164	103.5944	256.7309	-26.0637	-6.52988	0.870065	0	-0.00897	3.494146	396.2698	395.2101	-4.04679	-1.61304	-0.00026	0.022877		
100000	1300	-0.25853	1.878005	34.40994	0.423769	1.195702347	1.992213	143.8719	0.270192	84.7538	239.1405	-26.8034	-6.60371	0.890862	0	-0.03428	3.494146	384.4249	380.9298	-4.21031	-1.50252	-0.00026	0.022877		
100000	1100	-0.25418	1.682261	33.30168	0.329566	1.098515107	1.777222	144.4212	0.242954	65.91323	219.703	-27.6247	-6.69939	0.914975	0	-0.06408	3.494146	373.6954	365.3301	-4.40401	-1.3804	-0.00026	0.022877		
133333	900	-0.25032	1.475117	32.04262	0.235363	0.989436263	1.551934	145.1164	0.214064	47.07267	197.8873	-28.5505	-6.82589	0.943682	0	-0.09925	3.494146	364.5113	348.0833	-4.63888	-1.24332	-0.00026	0.022877		
200000	700	-0.24717	1.252664	30.58635	0.141161	0.864335937	1.313967	146.0174	0.182911	28.2321	172.8672	-29.6164	-6.99761	0.979187	0	-0.141	3.494146	357.6142	328.7143	-4.93231	-1.08612	-0.00026	0.022877		
266667	500	-0.25231	1.024298	28.95824	0.046958	0.725032884	1.081635	147.1514	0.150727	9.39154	145.0066	-30	-7.22553	1.02243	0	-0.18679	3.494146	353.3197	307.7361	-5.29203	-0.91108	-0.00026	0.022877		
75000	300	-0.26401	0.780511	27.10023	-0.04725	0.563747361	0.847176	0	0	-9.44902	112.7495	-30	-7.53651	1.079659	0	-0.23829	3.494146	353.7302	284.5877	-5.74843	-0.7084	-0.00026	0.022877		
0	100	-0.2805	0.501816	24.93545	-0.14145	0.362763887	0.598154	0	0	-28.2896	72.55278	-30	-7.97117	1.168711	0	-0.29977	3.494146	364.8452	258.5644	-6.3466	-0.45585	-0.00026	0.022877		
0	3400	-0.42314	4.789972	36.95819	1.461293	2.905534933	5.009065	142.8259	0.684132	292.2586	400	-18.584	-7.15704	0.11578	0.153878	0.153878	3.494075	400	400	-4.52806	-2.5132	0.021546	-0.01269	6806.020756	2.597935
210375	3175	-0.40006	4.387415	37.22174	1.351702	2.635649769	4.612096	142.7346	0.626236	270.3404	400	-19.4067	-7.11284	0.141039	0.185666	0.185666	3.494075	400	400	-4.45861	-2.5132	0.021546	-0.01269		
162500	2925	-0.37571	3.953034	37.51992	1.229935	2.347389267	4.182024	142.6352	0.563842	245.9869	400	-20.3802	-7.06349	0.169829	0.221166	0.221166	3.494075	400	400	-4.38046	-2.5132	0.021546	-0.01269		
100000	2700	-0.35488	3.573415	37.7931	1.120344	2.098188073	3.804648	142.5475	0.509382	224.0688	400	-21.3147	-7.01885	0.19641	0.253273	0.253273	3.494075	400	400	-4.30924	-2.5132	0.021546	-0.01269		
100000	2500	-0.33848	3.300015	37.71203	1.02293	1.938604997	3.521391	142.5732	0.470494	204.586	387.721	-22.0426	-6.9549	0.265647	0.243782	0.243782	3.494075	400	400	-4.2532	-2.43605	0.021546	-0.01269		
100000	2300	-0.32336	3.070805	37.34313	0.925516	1.8219299	3.273651	142.6936	0.438184	185.1032	364.386	-22.6923	-6.8689	0.376492	0.200172	0.200172	3.494075	400	400	-4.20298	-2.28944	0.021546	-0.01269		
100000	2100	-0.30825	2.835954	36.95414	0.828102	1.699600015	3.021013	142.8273	0.405052	165.6204	339.92	-23.3989	-6.78025	0.492875	0.153386	0.153386	3.494075	400	400	-4.15165	-2.13572	0.021546	-0.01269		
100000	1900	-0.29312	2.594631	36.54316	0.730688	1.570823167	2.762839	142.9759	0.37097	146.1376	314.1646	-24.1724	-6.68843	0.615663	0.103031	0.103031	3.494075	400	400	-4.09888	-1.97389	0.021546	-0.01269		
100000	1700	-0.27792	2.345837	36.10809	0.633274	1.434639879	2.498386	143.1417	0.335787	126.6548	286.928	-25.0252	-6.59292	0.745914	0.048644	0.048644	3.494075	400	400	-4.04424	-1.80277	0.021546	-0.01269		
100000	1500	-0.26415	2.099456	35.57602	0.53586	1.299443065	2.236871	143.3561	0.30097	107.172	259.8886	-25.9312	-6.51768	0.866423	0	-0.00464	3.494075	398.622	397.7881	-4.01837	-1.63288	0.021546	-0.01269		
100000	1300	-0.25924	1.907608	34.57144	0.438446	1.209926043	2.024853	143.7967	0.274308	87.68916	241.9852	-26.6834	-6.59075	0.887434	0	-0.03008	3.494075	386.2069	383.2288	-4.18292	-1.5204	0.021546	-0.01269		
100000	1100	-0.25468	1.706594	33.44406	0.341032	1.110885205	1.80386	144.3473	0.246342	68.20636	222.177	-27.5199	-6.68613	0.911831	0	-0.0602	3.494075	374.9311	367.3038	-4.37835	-1.39594	0.021546	-0.01269		
133333	900	-0.25062	1.493769	32.16019	0.243618	0.999529845	1.5721	145.0483	0.216669	48.72356	199.906	-28.4646	-6.81306	0.940942	0	-0.09594	3.494075	365.2405	349.6659	-4.61611	-1.25601	0.021546	-0.01269		
200000	700	-0.2473	1.26501	30.6705	0.146204	0.871502433	1.327039	145.9625	0.184644	29.24075	174.3005	-29.5551	-6.98673	0.977065	0	-0.13859	3.494075	357.9091	329.8098	-4.91453	-1.09513	0.021546	-0.01269		
266667	500	-0.25211	1.028762	28.99172	0.04879	0.72786235	1.086045	147.1267	0.151358	9.757949	145.5725	-30	-7.22027	1.021502	0	-0.18588	3.494075	353.3741	308.1544	-5.28413	-0.91463	0.021546	-0.01269		
75000	300	-0.2642	0.77669	27.07091	-0.04862	0.561110923	0.843612	0	0	-9.72485	112.2222	-30	-7.54167	1.080678	0	-0.23912	3.494075	353.7969	284.2224	-5.7559	-0.70509	0.021546	-0.01269		
0	100	-0.28143	0.486768	24.82283	-0.14604	0.351378416	0.585407	0	0	-29.2077	70.27568	-30	-7.9955	1.174634	0	-0.30319	3.494075	365.9194	257.2299	-6.37933	-0.44155	0.021546	-0.01269		
0	3400	-0.43366	4.970931	36.84445	1.509689	3.027582817	5.18706	142.8662	0.710178	301.9379	400	-18.2364	-7.17609	0.104823	0.139893	0.139893	3.49393	400	400	-4.55806	-2.5132	-0.00642	0.001502	6805.739435	2.661895
210375	3175	-0.40931	4.550226	37.11473	1.39649	2.744421494	4.772853	142.7713	0.649642	279.2981	400	-19.0653	-7.13053	0.13065	0.172658	0.172658	3.49393	400	400	-4.48669	-2.5132	-0.00642	0.001502		
162500	2925	-0.38368	4.096695	37.42066	1.270714	2.442300935	4.324482	142.6678	0.584467	254.1427	400	-20.0476	-7.07966	0.16011	0.209259	0.209259	3.49393	400	400	-4.40635	-2.5132	-0.00642	0.001502		
100000	2700	-0.3618	3.700696	37.70118	1.157514	2.181382828	3.931356	142.5766	0.527633	231.5029	400	-20.992	-7.03362	0.187332	0.242369	0.242369	3.49393	400	400	-4.33309	-2.5132	-0.00642	0.001502		
100000	2500	-0.34373	3.378585	37.83682	1.056893	1.977961056	3.606559	142.5338	0.481563	211.3786	395.5922	-21.8284	-6.98389	0.228265	0.258232	0.258232	3.49393	400	400	-4.27011	-2.4855	-0.00642	0.001502		
100000	2300	-0.3281	3.143603	37.46228	0.956272	1.859229989	3.352223	142.6541	0.448448	191.2543	371.846	-22.4818	-6.89589	0.341028	0.214199	0.214199	3.49393	400	400	-4.21856	-2.33631	-0.00642	0.001502		
100000	2100	-0.3125	2.902842	37.06692	0.85565	1.734695262	3.092843	142.7878	0.414491	171.1301	346.9391	-23.1932	-6.80517	0.45945	0.166891	0.166891	3.49393	400	400	-4.1659	-2.17982	-0.00642	0.001502		
100000	1900	-0.29688	2.65545	36.64867	0.755029	1.603542906	2.827767	142.9371	0.379562	151.0058	320.7086	-23.9726	-6.71125	0.58442	0.115905	0.115905	3.49393	400	400	-4.11182	-2.01501	-0.00642	0.001502		
100000	1700	-0.2812	2.400366	36.20532	0.654408	1.464758279	2.556195	143.1039	0.343502	130.8815	292.9517	-24.8332	-6.61352	0.717053	0.060746	0.060746	3.49393	400	400	-4.05587	-1.84062	-0.00642	0.001502		
100000	1500	-0.26542	2.136338	35.73416	0.553786	1.317134113	2.27722	143.291	0.306118	110.7572	263.4268	-25.7914	-6.51132	0.858694	0.00084	0.00084	3.49393	400	400	-3.99751	-1.65511	-0.00642	0.001502		
100000	1300	-0.25994	1.937054	34.73078	0.453165	1.223949348	2.057347	143.7237	0.278401	90.63297	244.7899	-26.5651	-6.57809	0.884075	0	-0.02599	3.49393	388.021	385.499	-4.15601	-1.53801	-0.00642	0.001502		
100000	1100	-0.25518	1.73083	33.58498	0.352543	1.123110866	1.830421	144.2752	0.249716	70.50869	224.6222	-27.4163	-6.67308	0.908744	0	-0.0564	3.49393	376.1948	369.2575	-4.35304	-1.4113	-0.00642	0.001502		
133333	900	-0.25093	1.512386	32.27714	0.251922	1.00953893	1.592257	144.9811	0.219267	50.38442	201.9078	-28.3794	-6.80032	0.93824	0	-0.09268	3.49393	365.9925	351.2377	-4.5935	-1.26858	-0.00642	0.001502		
200000	700	-0.24743	1.277389	30.75493	0.151301	0.878653001	1.340166	145.9077	0.186381	30.26014	175.7306	-29.494	-6.97573	0.974957	0	-0.1362	3.49393	358.2194	330.9044	-4.89666	-1.10412	-0.00642	0.001502		
266667	500	-0.2519	1.033325	29.02625	0.050679	0.730745918	1.090556	147.1012	0.152003	10.13587	146.1492	-30	-7.21467	1.020558	0	-0.18496	3.49393	353.4343	308.5808	-5.27585	-0.91825	-0.00642	0.001502		
75000	300	-0.26438	0.772998	27.04293	-0.04994	0.558557093	0.840172	0	0	-9.98841	111.7114	-30	-7.54643	1.081666	0	-0.23993	3.49393	353.8658	283.8689	-5.76288	-0.70188	-0.00642	0.001502		
0	100	-0.28235	0.471714	24.71136	-0.15056	0.339931848	0.57273	0	0	-30.1127	67.98637	-30	-8.01955	1.180713	0	-0.30662	3.49393	367.0592	255.9082	-6.41167	-0.42716	-0.00642	0.001502		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.44426	5.152895	36.73515	1.558088	3.150547581	5.365838	142.9056	0.736377	311.6175	400	-17.8998	-7.19389	0.093995	0.125942	0.125942	3.493346	400	400	-4.58669	-2.5132	-0.0048	0.00782	6804.601687	2.726962
210375	3175	-0.41862	4.713792	37.01207	1.441285	2.853889327	4.934186	142.807	0.673162	288.2569	400	-18.7343	-7.147	0.12038	0.15968	0.15968	3.493346	400	400	-4.51341	-2.5132	-0.0048	0.00782		
162500	2925	-0.39167	4.240863	37.32575	1.311504	2.537687546	4.46731	142.6995	0.605169	262.3007	400	-19.7246	-7.0946	0.150501	0.197376	0.197376	3.493346	400	400	-4.4309	-2.5132	-0.0048	0.00782		
100000	2700	-0.36872	3.828312	37.61354	1.194701	2.264895492	4.058291	142.6048	0.545936	238.9401	400	-20.6781	-7.04718	0.178355	0.231486	0.231486	3.493346	400	400	-4.35563	-2.5132	-0.0048	0.00782		
100000	2500	-0.34928	3.471751	37.87373	1.090876	2.031598367	3.703417	142.5223	0.494802	218.1752	400	-21.5797	-7.00484	0.203726	0.261946	0.261946	3.493346	400	400	-4.28792	-2.5132	-0.0048	0.00782		
100000	2300	-0.33276	3.215446	37.5815	0.987051	1.895639523	3.429897	142.6151	0.458571	197.4102	379.1279	-22.2779	-6.9213	0.306379	0.227706	0.227706	3.493346	400	400	-4.23286	-2.38206	-0.0048	0.00782		
100000	2100	-0.31666	2.968859	37.17998	0.883226	1.768977009	3.163867	142.7489	0.423801	176.6452	353.7954	-22.9937	-6.82856	0.426775	0.179925	0.179925	3.493346	400	400	-4.17888	-2.2229	-0.0048	0.00782		
100000	1900	-0.30055	2.715471	36.75477	0.779401	1.635517076	2.891966	142.8985	0.388037	155.8803	327.1034	-23.7788	-6.73254	0.553869	0.128349	0.128349	3.493346	400	400	-4.12348	-2.05519	-0.0048	0.00782		
100000	1700	-0.2844	2.454189	36.30344	0.675577	1.494212805	2.61337	143.0662	0.351111	135.1153	298.8426	-24.6465	-6.63265	0.688811	0.072466	0.072466	3.493346	400	400	-4.06621	-1.87763	-0.0048	0.00782		
100000	1500	-0.26814	2.183691	35.82311	0.571752	1.343794716	2.327112	143.2549	0.312825	114.3503	268.7589	-25.6142	-6.52813	0.833012	0.01167	0.01167	3.493346	400	400	-4.00652	-1.68861	-0.0048	0.00782		
100000	1300	-0.2606	1.966142	34.88904	0.467927	1.237616247	2.089487	143.6523	0.282441	93.58538	247.5232	-26.4493	-6.56483	0.880807	0	-0.0221	3.493346	389.8741	387.7122	-4.12883	-1.55519	-0.0048	0.00782		
100000	1100	-0.25563	1.754759	33.7255	0.364102	1.135031044	1.856695	144.2042	0.253044	72.82041	227.0062	-27.3147	-6.65928	0.905737	0	-0.05277	3.493346	377.495	371.1629	-4.32727	-1.42628	-0.0048	0.00782		
133333	900	-0.25118	1.530765	32.39438	0.260277	1.019308484	1.612203	144.9145	0.22183	52.05545	203.8617	-28.2957	-6.78668	0.935603	0	-0.08955	3.493346	366.7767	352.772	-4.57022	-1.28086	-0.0048	0.00782		
200000	700	-0.24752	1.28961	30.84038	0.156452	0.885640724	1.35316	145.8527	0.188093	31.29048	177.1281	-29.4339	-6.96367	0.972895	0	-0.1339	3.493346	358.556	331.9737	-4.87787	-1.1129	-0.0048	0.00782		
266667	500	-0.25164	1.037795	29.06268	0.052628	0.733528745	1.094994	147.0745	0.152633	10.52552	146.7057	-30	-7.20769	1.019637	0	-0.18412	3.493346	353.5141	308.9907	-5.2663	-0.92176	-0.0048	0.00782		
75000	300	-0.2645	0.769224	27.01697	-0.0512	0.555917312	0.836663	0	0	-10.2394	111.1835	-30	-7.54963	1.08268	0	-0.24082	3.493346	353.956	283.5024	-5.76838	-0.69857	-0.0048	0.00782		
0	100	-0.2832	0.456396	24.60161	-0.15502	0.328215211	0.559899	0	0	-31.0044	65.64304	-30	-8.042	1.187065	0	-0.31018	3.493346	368.3044	254.5759	-6.4425	-0.41243	-0.0048	0.00782		
0	3400	-0.45507	5.336864	36.62706	1.606486	3.275303406	5.546315	142.945	0.762878	321.2973	400	-17.5719	-7.21151	0.083277	0.112023	0.112023	3.492714	400	400	-4.61503	-2.5132	0.024118	-0.00123	6803.3704	2.793201
210375	3175	-0.42809	4.879019	36.91051	1.486081	2.964847919	5.096925	142.8427	0.696932	297.2162	400	-18.4113	-7.16328	0.110208	0.146727	0.146727	3.492714	400	400	-4.53987	-2.5132	0.024118	-0.00123		
162500	2925	-0.39979	4.386349	37.23183	1.352297	2.634261906	4.611258	142.7312	0.626069	270.4594	400	-19.4089	-7.10938	0.140975	0.185514	0.185514	3.492714	400	400	-4.4552	-2.5132	0.024118	-0.00123		
100000	2700	-0.37573	3.956983	37.52681	1.231892	2.349362745	4.186125	142.6329	0.564396	246.3783	400	-20.3709	-7.06058	0.16945	0.220618	0.220618	3.492714	400	400	-4.37794	-2.5132	0.024118	-0.00123		
100000	2500	-0.35539	3.586195	37.79365	1.124864	2.105941975	3.817534	142.5474	0.511203	224.9729	400	-21.2818	-7.01702	0.195405	0.251973	0.251973	3.492714	400	400	-4.3084	-2.5132	0.024118	-0.00123		
100000	2300	-0.3374	3.286731	37.69899	1.017837	1.931493284	3.507074	142.5773	0.468613	203.5675	386.2987	-22.0792	-6.94633	0.272263	0.240894	0.240894	3.492714	400	400	-4.24695	-2.42712	0.024118	-0.00123		
100000	2100	-0.3208	3.034358	37.29158	0.91081	1.802744834	3.234434	142.711	0.433036	182.1621	360.549	-22.7991	-6.85156	0.394599	0.192667	0.192667	3.492714	400	400	-4.19164	-2.26532	0.024118	-0.00123		
100000	1900	-0.30421	2.775023	36.85966	0.803783	1.667026163	2.955759	142.8608	0.396442	160.7566	333.4052	-23.5895	-6.75346	0.523775	0.140533	0.140533	3.492714	400	400	-4.13491	-2.09478	0.024118	-0.00123		
100000	1700	-0.28758	2.5076	36.40059	0.696756	1.523259125	2.670196	143.0293	0.35866	139.3512	304.6518	-24.464	-6.65143	0.660976	0.083962	0.083962	3.492714	400	400	-4.07632	-1.91413	0.024118	-0.00123		
100000	1500	-0.27086	2.230695	35.91138	0.589729	1.37010716	2.376717	143.2194	0.319479	117.9458	274.0214	-25.4406	-6.54466	0.807681	0.022312	0.022312	3.492714	400	400	-4.0153	-1.72168	0.024118	-0.00123		
100000	1300	-0.26126	1.995032	35.04494	0.482702	1.251071944	2.121428	143.5832	0.286453	96.54037	250.2144	-26.3353	-6.55189	0.877609	0	-0.01832	3.492714	391.7532	389.8943	-4.10219	-1.5721	0.024118	-0.00123		
100000	1100	-0.25608	1.778539	33.86425	0.375675	1.146786268	1.882831	144.1351	0.25635	75.13495	229.3573	-27.2145	-6.64578	0.902788	0	-0.04923	3.492714	378.8177	373.0447	-4.30193	-1.44106	0.024118	-0.00123		
133333	900	-0.25143	1.549045	32.51052	0.268648	1.028963616	1.632067	144.8491	0.224378	53.72953	205.7927	-28.2131	-6.77323	0.933012	0	-0.08648	3.492714	367.579	354.2905	-4.54723	-1.29299	0.024118	-0.00123		
200000	700	-0.2476	1.301778	30.9255	0.161621	0.892562338	1.36612	145.7982	0.189797	32.32411	178.5125	-29.3743	-6.95162	0.97086	0	-0.13163	3.492714	358.905	333.0341	-4.85915	-1.1216	0.024118	-0.00123		
266667	500	-0.25137	1.04228	29.09936	0.054593	0.736315154	1.09945	147.0477	0.153265	10.91869	147.263	-30	-7.20057	1.018716	0	-0.18327	3.492714	353.5976	309.4015	-5.25662	-0.92525	0.024118	-0.00123		
75000	300	-0.26462	0.765477	26.99138	-0.05243	0.553291733	0.833182	0	0	-10.4867	110.6583	-30	-7.55267	1.083692	0	-0.2417	3.492714	354.049	283.1383	-5.7737	-0.69527	0.024118	-0.00123		
0	100	-0.28406	0.440896	24.49211	-0.15946	0.31630122	0.546997	0	0	-31.8922	63.26024	-30	-8.06434	1.193674	0	-0.31381	3.492714	369.6398	253.245	-6.47319	-0.39747	0.024118	-0.00123		
0	3400	-0.46614	5.52309	36.5195	1.654887	3.402067356	5.728715	142.9847	0.789717	330.9774	400	-17.252	-7.22916	0.072666	0.098133	0.098133	3.492113	400	400	-4.6433	-2.5132	0.015721	-0.01718	6802.200076	2.859778
210375	3175	-0.43776	5.046114	36.80942	1.530882	3.077475407	5.261263	142.8788	0.720983	306.1764	400	-18.0958	-7.1796	0.100128	0.133798	0.133798	3.492113	400	400	-4.56628	-2.5132	0.015721	-0.01718		
162500	2925	-0.40806	4.533357	37.13826	1.393099	2.732198032	4.756512	142.7632	0.647196	278.6198	400	-19.1001	-7.12419	0.131527	0.173668	0.173668	3.492113	400	400	-4.47947	-2.51321	0.015721	-0.01718		
100000	2700	-0.38286	4.086928	37.4402	1.269094	2.4349711	4.315063	142.6614	0.583047	253.8189	400	-20.0699	-7.07405	0.160609	0.209762	0.209762	3.492113	400	400	-4.40025	-2.5132	0.015721	-0.01718		
100000	2500	-0.3616	3.701694	37.71362	1.158868	2.1812298	3.93257	142.5727	0.52776	231.7736	400	-20.9895	-7.02924	0.187136	0.242007	0.242007	3.492113	400	400	-4.32891	-2.5132	0.015721	-0.01718		
100000	2300	-0.34206	3.35758	37.81456	1.048642	1.966882682	3.583872	142.5408	0.478592	209.7283	393.3765	-21.8852	-6.97123	0.238597	0.253814	0.253814	3.492113	400	400	-4.26105	-2.47159	0.015721	-0.01718		
100000	2100	-0.32496	3.099456	37.40154	0.938415	1.836082372	3.304664	142.6742	0.442212	187.683	367.2165	-22.609	-6.87447	0.362847	0.205164	0.205164	3.492113	400	400	-4.20439	-2.30722	0.015721	-0.01718		
100000	1900	-0.30788	2.834234	36.96309	0.828189	1.698163951	3.019277	142.8241	0.404797	165.6378	339.6328	-23.4042	-6.77433	0.494056	0.152508	0.152508	3.492113	400	400	-4.14635	-2.13391	0.015721	-0.01718		
100000	1700	-0.29077	2.560728	36.49652	0.717962	1.551991959	2.726803	142.9933	0.366167	143.5925	310.3984	-24.2851	-6.67016	0.633464	0.095283	0.095283	3.492113	400	400	-4.08646	-1.95024	0.015721	-0.01718		
100000	1500	-0.27358	2.277485	35.99864	0.607736	1.396172352	2.426166	143.1847	0.326101	121.5472	279.2345	-25.2701	-6.56114	0.782612	0.032818	0.032818	3.492113	400	400	-4.02411	-1.75443	0.015721	-0.01718		
100000	1300	-0.26193	2.023815	35.19857	0.49751	1.264374195	2.153266	143.5162	0.29045	99.50193	252.8748	-26.2227	-6.53946	0.874468	0	-0.01463	3.492113	393.6583	392.0548	-4.07618	-1.58882	0.015721	-0.01718		
100000	1100	-0.25654	1.802263	34.00133	0.387283	1.158436997	1.908927	144.0676	0.259648	77.45665	231.6874	-27.1153	-6.63272	0.899885	0	-0.04573	3.492113	380.1628	374.9127	-4.27713	-1.45569	0.015721	-0.01718		
133333	900	-0.2517	1.567323	32.62573	0.277057	1.038566321	1.651952	144.7849	0.226925	55.41138	207.7133	-28.1309	-6.76014	0.93045	0	-0.08343	3.492113	368.399	355.8033	-4.52462	-1.30506	0.015721	-0.01718		
200000	700	-0.24768	1.314012	31.01044	0.16683	0.899499255	1.379162	145.7442	0.19151	33.3661	179.8999	-29.3146	-6.93977	0.968832	0	-0.12936	3.492113	359.2648	334.0987	-4.84062	-1.13031	0.015721	-0.01718		
266667	500	-0.25111	1.046881	29.13673	0.056604	0.739170858	1.104025	147.0204	0.153913	11.32082	147.8342	-30	-7.19348	1.017775	0	-0.1824	3.492113	353.6833	309.8229	-5.24686	-0.92884	0.015721	-0.01718		
75000	300	-0.26473	0.761876	26.96666	-0.05362	0.550768103	0.82984	0	0	-10.7245	110.1536	-30	-7.55563	1.084668	0	-0.24254	3.492113	354.1396	282.789	-5.77886	-0.69209	0.015721	-0.01718		
0	100	-0.28491	0.425362	24.38355	-0.16385	0.304304521	0.534148	0	0	-32.7697	60.8609	-30	-8.08659	1.200492	0	-0.31746	3.492113	371.0555	251.9307	-6.50371	-0.38239	0.015721	-0.01718		
0	3400	-0.47745	5.711555	36.41262	1.703288	3.530821298	5.913024	143.0248	0.816894	340.6576	400	-16.9399	-7.24681	0.06216	0.084273	0.084273	3.491522	400	400	-4.67144	-2.5132	0.023304	-0.00231	6801.048497	2.926739
210375	3175	-0.44762	5.21508	36.70888	1.575687	3.191771944	5.427196	142.9151	0.745314	315.1373	400	-17.7876	-7.19592	0.090141	0.120894	0.120894	3.491522	400	400	-4.59258	-2.5132	0.023304	-0.00231		
162500	2925	-0.41648	4.681899	37.04501	1.433907	2.83150933	4.903081	142.7955	0.668554	286.7814	400	-18.7979	-7.13904	0.122156	0.161842	0.161842	3.491522	400	400	-4.50368	-2.5132	0.023304	-0.00231		
100000	2700	-0.39011	4.218076	37.35403	1.306305	2.521657441	4.445035	142.69	0.601877	261.2611	400	-19.7749	-7.08753	0.151833	0.19892	0.19892	3.491522	400	400	-4.42249	-2.5132	0.023304	-0.00231		
100000	2500	-0.3679	3.818199	37.63385	1.192882	2.257420093	4.048476	142.5982	0.544468	238.5764	400	-20.7026	-7.04149	0.178923	0.232052	0.232052	3.491522	400	400	-4.34938	-2.5132	0.023304	-0.00231		
100000	2300	-0.34676	3.429681	37.91866	1.079458	2.003462626	3.661655	142.5084	0.488758	215.8916	400	-21.6913	-6.99525	0.206701	0.265341	0.265341	3.491522	400	400	-4.27535	-2.5132	0.023304	-0.00231		
100000	2100	-0.32912	3.164148	37.50985	0.966035	1.868997396	3.374544	142.6384	0.451329	193.2069	373.7995	-22.4231	-6.89721	0.331509	0.217419	0.217419	3.491522	400	400	-4.21711	-2.34858	0.023304	-0.00231		
100000	1900	-0.31155	2.893082	37.06512	0.852611	1.72892254	3.082489	142.7885	0.413099	170.5222	345.7845	-23.223	-6.79504	0.464714	0.164269	0.164269	3.491522	400	400	-4.15775	-2.17256	0.023304	-0.00231		
100000	1700	-0.29396	2.613545	36.59129	0.739187	1.580395885	2.783158	142.9581	0.373628	147.8375	316.0792	-24.1099	-6.68876	0.606286	0.106422	0.106422	3.491522	400	400	-4.09655	-1.98592	0.023304	-0.00231		
100000	1500	-0.27629	2.324018	36.08503	0.625764	1.421960462	2.475417	143.1507	0.332685	125.1527	284.3921	-25.1029	-6.57755	0.757829	0.043173	0.043173	3.491522	400	400	-4.03287	-1.78684	0.023304	-0.00231		
100000	1300	-0.26261	2.052465	35.34992	0.51234	1.277512327	2.18497	143.4512	0.294429	102.468	255.5025	-26.1115	-6.52746	0.871386	0	-0.01103	3.491522	395.5876	394.1919	-4.05077	-1.60532	0.023304	-0.00231		
100000	1100	-0.25701	1.825889	34.13674	0.398916	1.169958662	1.934937	144.0019	0.262932	79.78327	233.9917	-27.0173	-6.62002	0.897031	0	-0.04231	3.491522	381.5294	376.7628	-4.25281	-1.47017	0.023304	-0.00231		
133333	900	-0.25197	1.585554	32.73991	0.285493	1.04809082	1.671808	144.7219	0.229464	57.09855	209.6182	-28.0493	-6.74732	0.927923	0	-0.08042	3.491522	369.2362	357.306	-4.50236	-1.31703	0.023304	-0.00231		
200000	700	-0.24777	1.326257	31.09512	0.172069	0.906413775	1.392233	145.6907	0.193223	34.41382	181.2828	-29.2551	-6.92807	0.96682	0	-0.1271	3.491522	359.6357	335.1614	-4.82226	-1.139	0.023304	-0.00231		
266667	500	-0.25084	1.051551	29.17449	0.058645	0.742066823	1.108673	146.9929	0.154571	11.72909	148.4134	-30	-7.18636	1.016824	0	-0.18152	3.491522	353.7716	310.2507	-5.23705	-0.93248	0.023304	-0.00231		
75000	300	-0.26484	0.758357	26.94266	-0.05478	0.548296958	0.826577	0	0	-10.9556	109.6594	-30	-7.55849	1.085626	0	-0.24337	3.491522	354.2307	282.4472	-5.78386	-0.68899	0.023304	-0.00231		
0	100	-0.28575	0.409712	24.2757	-0.1682	0.292160514	0.521286	0	0	-33.6404	58.4321	-30	-8.10875	1.207569	0	-0.32116	3.491522	372.5655	250.6283	-6.53405	-0.36713	0.023304	-0.00231		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N_eq	M_eq	V_u	gamma_m
0	3400	-0.4876	5.890495	36.33551	1.751564	3.651329723	6.088596	143.054	0.842659	350.3129	400	-16.6539	-7.25451	0.051857	0.070503	0.070503	3.487366	400	400	-4.68946	-2.5132	-1.42651	32.20594	0	2.98499
210375	3175	-0.45634	5.374056	36.63912	1.620084	3.297631209	5.583848	142.9406	0.768171	324.0169	400	-17.5071	-7.20226	0.080445	0.108165	0.108165	3.487366	400	400	-4.60861	-2.5132	-1.42651	32.20594		
162500	2925	-0.42377	4.81996	36.98392	1.473996	2.922193119	5.039785	142.8168	0.688371	294.7991	400	-18.5255	-7.1438	0.113185	0.150289	0.150289	3.487366	400	400	-4.51741	-2.5132	-1.42651	32.20594		
100000	2700	-0.39625	4.338449	37.301	1.342516	2.599684209	4.564745	142.7078	0.619131	268.5031	400	-19.5117	-7.09085	0.143559	0.188441	0.188441	3.487366	400	400	-4.4341	-2.5132	-1.42651	32.20594		
100000	2500	-0.3731	3.923679	37.58835	1.225645	2.324929009	4.153784	142.6129	0.559567	245.1289	400	-20.4495	-7.04355	0.171306	0.222539	0.222539	3.487366	400	400	-4.35904	-2.5132	-1.42651	32.20594		
100000	2300	-0.35112	3.521022	37.88098	1.108773	2.061130642	3.753197	142.5201	0.501816	221.7547	400	-21.4504	-6.99599	0.199781	0.256805	0.256805	3.487366	400	400	-4.28301	-2.5132	-1.42651	32.20594		
100000	2100	-0.33226	3.220594	37.62524	0.991902	1.896436264	3.435776	142.601	0.45926	198.3805	379.2873	-22.2634	-6.90738	0.305024	0.226887	0.226887	3.487366	400	400	-4.21929	-2.38306	-1.42651	32.20594		
100000	1900	-0.31419	2.943136	37.17332	0.875031	1.753913209	3.136519	142.7512	0.420136	175.0063	350.7826	-23.071	-6.80285	0.44053	0.173145	0.173145	3.487366	400	400	-4.15835	-2.20397	-1.42651	32.20594		
100000	1700	-0.29612	2.656984	36.69114	0.75816	1.602703389	2.829766	142.9215	0.37974	151.632	320.5407	-23.9676	-6.69414	0.584605	0.114559	0.114559	3.487366	400	400	-4.09557	-2.01396	-1.42651	32.20594		
100000	1500	-0.27797	2.360542	36.17515	0.641289	1.441278676	2.514317	143.1156	0.33783	128.2578	288.2557	-24.9731	-6.58032	0.738931	0.050384	0.050384	3.487366	400	400	-4.03029	-1.81111	-1.42651	32.20594		
100000	1300	-0.2627	2.073637	35.48107	0.524418	1.28651548	2.20855	143.3958	0.297351	104.8836	257.3031	-26.03	-6.50917	0.869136	0	-0.0091	3.487366	397.2463	395.6344	-4.02339	-1.61664	-1.42651	32.20594		
100000	1100	-0.2569	1.841311	34.24525	0.407547	1.176866321	1.952082	143.9498	0.265056	81.5094	235.3733	-26.9536	-6.60164	0.895187	0	-0.04072	3.487366	382.6354	377.851	-4.22761	-1.47885	-1.42651	32.20594		
133333	900	-0.25166	1.594673	32.81827	0.290676	1.052333086	1.681914	144.6791	0.230716	58.13518	210.4666	-28.0087	-6.7299	0.92667	0	-0.0795	3.487366	369.8513	357.955	-4.48088	-1.32236	-1.42651	32.20594		
200000	700	-0.24731	1.328175	31.13139	0.173805	0.907062001	1.394447	145.6679	0.193472	34.76096	181.4124	-29.2458	-6.91372	0.966506	0	-0.12728	3.487366	359.8774	335.2411	-4.80741	-1.13981	-1.42651	32.20594		
266667	500	-0.25057	1.0453	29.1522	0.056934	0.737793639	1.102595	147.0091	0.153669	11.38675	147.5587	-30	-7.17925	1.018098	0	-0.18328	3.487366	353.8577	309.5988	-5.23405	-0.92711	-1.42651	32.20594		
75000	300	-0.26516	0.741767	26.83699	-0.05994	0.536545096	0.81124	0	0	-11.9875	107.309	-30	-7.56699	1.090195	0	-0.24743	3.487366	354.736	280.8241	-5.80256	-0.67423	-1.42651	32.20594		
0	100	-0.28704	0.375883	24.06561	-0.17681	0.265646809	0.493665	0	0	-35.3617	53.12936	-30	-8.14248	1.223648	0	-0.32957	3.487366	376.2531	247.8848	-6.58503	-0.33381	-1.42651	32.20594		

APPENDIX D

Span Region Cross Section Results M = 15000 kNm

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.0107	0.011141	42.89078	-0.00058	0.001023582	0.021783	0	0	-0.11662	0.204716	-30	-0.32663	0.279469	0	0	0.302227	0	0	-0.04587	-0.001286788	-2951.8	-4214.04	0	0.020884
210375	3175	-0.02801	0.00425	19.56339	-0.0244	0.000632481	0.020359	0	0	-4.879	0.126496	-30	-0.85126	0.106605	0	0	0.302227	0	0	-0.74386	-0.000795328	-2951.8	-4214.04		
162500	2925	-0.05277	0.002268	10.74369	-0.05085	0.00035584	0.020159	0	0	-10.1705	0.071168	-30	-1.59328	0.056899	0	0	0.302227	0	0	-1.53593	-0.000446101	-2951.8	-4214.04		
100000	2700	-0.076	0.001584	7.548006	-0.07466	0.000245467	0.020207	0	0	-14.9329	0.049093	-30	-2.28118	0.039739	0	0	0.302227	0	0	-2.24113	-0.000307551	-2951.8	-4214.04		
100000	2500	-0.09689	0.00125	5.965871	-0.09583	0.000189346	0.02029	0	0	-19.1662	0.037869	-30	-2.89231	0.031344	0	0	0.302227	0	0	-2.86072	-0.000239637	-2951.8	-4214.04		
100000	2300	-0.11788	0.001033	4.936317	-0.117	0.000152527	0.020388	0	0	-23.3994	0.030505	-30	-3.49946	0.025912	0	0	0.302227	0	0	-3.47334	-0.000191298	-2951.8	-4214.04		
100000	2100	-0.13892	0.000882	4.214718	-0.13816	0.000126479	0.020493	0	0	-27.6326	0.025296	-30	-4.10129	0.022114	0	0	0.302227	0	0	-4.079	-0.000157858	-2951.8	-4214.04		
100000	1900	-0.15999	0.00077	3.681607	-0.15933	0.000107018	0.020603	0	0	-31.8659	0.021404	-30	-4.69713	0.019312	0	0	0.302227	0	0	-4.67768	-0.000135023	-2951.8	-4214.04		
100000	1700	-0.18109	0.000684	3.271988	-0.1805	9.19883E-05	0.020716	0	0	-36.0991	0.018398	-30	-5.28664	0.017161	0	0	0.302227	0	0	-5.26937	-0.000116818	-2951.8	-4214.04		
100000	1500	-0.2022	0.000616	2.947627	-0.20166	7.99994E-05	0.020831	0	0	-40.3323	0.016	-30	-5.86961	0.01546	0	0	0.302227	0	0	-5.85402	-0.000102303	-2951.8	-4214.04		
100000	1300	-0.22332	0.000561	2.68451	-0.22283	7.0316E-05	0.020948	0	0	-44.5655	0.014063	-30	-6.44591	0.014083	0	0	0.302227	0	0	-6.43165	-8.7613E-05	-2951.8	-4214.04		
100000	1100	-0.24445	0.000516	2.466814	-0.24399	6.23265E-05	0.021067	0	0	-48.7988	0.012465	-30	-7.01545	0.012947	0	0	0.302227	0	0	-7.00242	-7.34868E-05	-2951.8	-4214.04		
133333	900	-0.26558	0.000478	2.283806	-0.26516	5.54029E-05	0.021188	0	0	-53.032	0.011081	-30	-7.57818	0.011988	0	0	0.302227	0	0	-7.56621	-6.52916E-05	-2951.8	-4214.04		
200000	700	-0.28672	0.000445	2.127881	-0.28633	4.92392E-05	0.02131	0	0	-57.2652	0.009848	-30	-8.13406	0.011166	0	0	0.302227	0	0	-8.12291	-6.33899E-05	-2951.8	-4214.04		
266667	500	-0.30787	0.000417	1.993451	-0.30749	4.43468E-05	0.021434	0	0	-61.4985	0.008869	-30	-8.68306	0.01047	0	0	0.302227	0	0	-8.67262	-4.98393E-05	-2951.8	-4214.04		
75000	300	-0.32901	0.000393	1.876394	-0.32866	3.95753E-05	0.02156	0	0	-65.7317	0.007915	-30	-9.22516	0.009852	0	0	0.302227	0	0	-9.21535	-4.95972E-05	-2951.8	-4214.04		
0	100	-0.35016	0.000371	1.77357	-0.34982	3.56047E-05	0.021687	0	0	-69.9649	0.007121	-30	-9.76034	0.009316	0	0	0.302227	0	0	-9.7511	-4.26297E-05	-2951.8	-4214.04		
0	3400	-0.00223	0.050983	77.05088	0.048311	0.000442379	0.023242	0	0	9.662118	0.088476	-30	-0.06821	1.278868	0	0	0.294182	0	0	1.211225	-0.000558311	-797.944	-3030	0	0.020582
210375	3175	-0.00421	0.026958	66.51798	0.022009	0.000738267	0.022782	0	0	4.401885	0.147653	-30	-0.12873	0.676227	0	0	0.294182	0	0	0.548423	-0.000926956	-797.944	-3030		
162500	2925	-0.01422	0.007931	34.2224	-0.00721	0.000924138	0.020602	0	0	-1.44282	0.184828	-30	-0.43368	0.198933	0	0	0.294182	0	0	-0.23358	-0.001161433	-797.944	-3030		
100000	2700	-0.03616	0.003124	15.02713	-0.03352	0.000483555	0.019672	0	0	-6.70305	0.096711	-30	-1.09644	0.078367	0	0	0.294182	0	0	-1.01746	-0.000608569	-797.944	-3030		
100000	2500	-0.05853	0.00194	9.466351	-0.05689	0.000304488	0.01962	0	0	-11.3788	0.060898	-30	-1.76471	0.048669	0	0	0.294182	0	0	-1.71566	-0.000383128	-797.944	-3030		
100000	2300	-0.08146	0.001402	6.87145	-0.08027	0.000216303	0.019685	0	0	-16.0546	0.043261	-30	-2.44146	0.035178	0	0	0.294182	0	0	-2.40601	-0.000272873	-797.944	-3030		
100000	2100	-0.10459	0.001099	5.394142	-0.10365	0.000165224	0.019782	0	0	-20.7303	0.033045	-30	-3.11572	0.027572	0	0	0.294182	0	0	-3.08795	-0.000205691	-797.944	-3030		
100000	1900	-0.1278	0.000905	4.445334	-0.12703	0.000131965	0.019892	0	0	-25.4061	0.026393	-30	-3.78424	0.022706	0	0	0.294182	0	0	-3.76139	-0.000164346	-797.944	-3030		
100000	1700	-0.15107	0.000771	3.785948	-0.15041	0.000108733	0.020008	0	0	-30.0819	0.021747	-30	-4.44575	0.019334	0	0	0.294182	0	0	-4.42628	-0.000133501	-797.944	-3030		
100000	1500	-0.17437	0.000672	3.301641	-0.17379	9.1372E-05	0.020129	0	0	-34.7576	0.018274	-30	-5.09964	0.016856	0	0	0.294182	0	0	-5.08265	-0.000115033	-797.944	-3030		
100000	1300	-0.19769	0.000597	2.931141	-0.19717	7.80656E-05	0.020252	0	0	-39.4334	0.015613	-30	-5.74558	0.014964	0	0	0.294182	0	0	-5.73048	-9.89389E-05	-797.944	-3030		
100000	1100	-0.22102	0.000537	2.638692	-0.22055	6.74793E-05	0.020378	0	0	-44.1092	0.013496	-30	-6.38339	0.013472	0	0	0.294182	0	0	-6.3698	-8.62318E-05	-797.944	-3030		
133333	900	-0.24435	0.000489	2.402085	-0.24392	5.88217E-05	0.020506	0	0	-48.7849	0.011764	-30	-7.01296	0.012264	0	0	0.294182	0	0	-7.00061	-7.64059E-05	-797.944	-3030		
200000	700	-0.2677	0.000449	2.206818	-0.2673	5.18351E-05	0.020636	0	0	-53.4607	0.010367	-30	-7.63421	0.011274	0	0	0.294182	0	0	-7.62282	-6.2477E-05	-797.944	-3030		
266667	500	-0.29105	0.000416	2.04291	-0.29068	4.58284E-05	0.020767	0	0	-58.1365	0.009166	-30	-8.24708	0.010441	0	0	0.294182	0	0	-8.23675	-5.30359E-05	-797.944	-3030		
75000	300	-0.31441	0.000388	1.903521	-0.31406	4.03022E-05	0.020901	0	0	-62.8122	0.00806	-30	-8.85154	0.009723	0	0	0.294182	0	0	-8.84188	-5.36707E-05	-797.944	-3030		
0	100	-0.33777	0.000363	1.783508	-0.33744	3.58963E-05	0.021037	0	0	-67.488	0.007179	-30	-9.44758	0.009116	0	0	0.294182	0	0	-9.43854	-4.39998E-05	-797.944	-3030		
0	3400	-0.00115	0.098646	80.43813	0.095893	0.001600267	0.032695	173.5781	0.017123	19.17852	0.320053	-30	-0.0353	1.17016	-0.2259	0.2259	0.197455	400	400	1.136898	-0.002010121	-844.121	-1236.74	0	0.015003
210375	3175	-0.00079	0.0651	83.10633	0.064151	0.000161425	0.015702	0	0	12.83017	0.032285	-30	-0.02411	1.632996	0	0	0.197455	0	0	1.609123	-0.000200542	-844.121	-1236.74		
162500	2925	-0.00166	0.030866	75.70049	0.028882	0.000325638	0.015569	0	0	5.776462	0.065128	-30	-0.05074	0.774267	0	0	0.197455	0	0	0.723938	-0.000408593	-844.121	-1236.74		
100000	2700	-0.00831	0.006107	37.95477	-0.00286	0.000651771	0.013988	0	0	-0.57188	0.130354	-30	-0.25396	0.153199	0	0	0.197455	0	0	-0.09994	-0.000818832	-844.121	-1236.74		
100000	2500	-0.03239	0.001569	11.35876	-0.03107	0.000251406	0.013115	0	0	-6.21485	0.050281	-30	-0.98324	0.039351	0	0	0.197455	0	0	-0.94357	-0.000315579	-844.121	-1236.74		
100000	2300	-0.06001	0.000853	6.231465	-0.05929	0.000135643	0.013134	0	0	-11.8578	0.027129	-30	-1.80853	0.021389	0	0	0.197455	0	0	-1.78697	-0.000171112	-844.121	-1236.74		
100000	2100	-0.088	0.000586	4.288935	-0.0875	9.03135E-05	0.013213	0	0	-17.5008	0.018063	-30	-2.63299	0.014694	0	0	0.197455	0	0	-2.61818	-0.000114768	-844.121	-1236.74		
100000	1900	-0.1161	0.000447	3.277369	-0.11572	6.65553E-05	0.013304	0	0	-23.1438	0.013311	-30	-3.4483	0.011225	0	0	0.197455	0	0	-3.43697	-8.23122E-05	-844.121	-1236.74		
100000	1700	-0.14424	0.000363	2.658518	-0.14393	5.18508E-05	0.0134	0	0	-28.7867	0.01037	-30	-4.25255	0.009105	0	0	0.197455	0	0	-4.24335	-6.384E-05	-844.121	-1236.74		
100000	1500	-0.17241	0.000306	2.241346	-0.17215	4.19215E-05	0.013499	0	0	-34.4297	0.008384	-30	-5.04506	0.007678	0	0	0.197455	0	0	-5.03732	-4.99437E-05	-844.121	-1236.74		
100000	1300	-0.20059	0.000265	1.94131	-0.20036	3.45226E-05	0.013601	0	0	-40.0727	0.006905	-30	-5.82556	0.006648	0	0	0.197455	0	0	-5.81881	-4.48806E-05	-844.121	-1236.74		
100000	1100	-0.22878	0.000234	1.715217	-0.22858	2.90543E-05	0.013704	0	0	-45.7156	0.005811	-30	-6.59388	0.005876	0	0	0.197455	0	0	-6.58803	-3.7234E-05	-844.121	-1236.74		
133333	900	-0.25698	0.00021	1.538901	-0.25679	2.45194E-05	0.013809	0	0	-51.3586	0.004904	-30	-7.34994	0.005268	0	0	0.197455	0	0	-7.34454	-3.67191E-05	-844.121	-1236.74		
200000	700	-0.28518	0.000191	1.397501	-0.28501	2.12442E-05	0.013915	0	0	-57.0016	0.004249	-30	-8.09369	0.004791	0	0	0.197455	0	0	-8.08902	-2.64138E-05	-844.121	-1236.74		
266667	500	-0.31338	0.000175	1.281721	-0.31322	1.83425E-05	0.014024	0	0	-62.6445	0.003669	-30	-8.8251	0.004395	0	0	0.197455	0	0	-8.82082	-2.23726E-05	-844.121	-1236.74		
75000	300	-0.34158	0.000162	1.185189	-0.34144	1.59501E-05	0.014134	0	0	-68.2875	0.00319	-30	-9.54415	0.004068	0	0	0.197455	0	0	-9.54018	-1.73962E-05	-844.121	-1236.74		
0	100	-0.36979	0.000151	1.103487	-0.36965	1.37322E-05	0.014246	0	0	-73.9305	0.002746	-30	-10.2508	0.003786	0	0	0.197455	0	0	-10.2473	-1.72083E-05	-844.121	-1236.74		
0	3400	-0.00824	0.170154	67.46128	0.143944	0.017971385	0.126313	153.0306	0.026039	28.78871	3.594277	-30	-0.25164	1.307333	-0.49107	0.491069	0.551925	400	400	1.078282	-0.022587417	-715.076	-671.589	0	0.048572
210375	3175	-0.00793	0.127477	67.6016	0.107817	0.011730778	0.095407	153.1861	0.019528	21.56331	2.346156	-30	-0.24221	1.324433	-0.48386	0.48386	0.551925	400	400	1.096965	-0.014742336	-715.076	-671.589		
162500	2925	-0.00759	0.080262	67.75934	0.067675	0.004992584	0.061558	153.3625	0.012309	13.53509	0.998517	-30	-0.23197	1.343437	-0.47577	0.475775	0.551925	400	400	1.117744	-0.006274698	-715.076	-671.589		
100000	2700	-0.00941	0.042491	62.66598	0.031548	0.001535902	0.042338	0	0	6.309689	0.30718	-30	-0.28721	1.065849	0	0	0.551925	0	0	0.780564	-0.001929367	-715.076	-671.589		
100000	2500	-0.01933	0.020617	43.26602	-0.00056	0.001851923	0.039873	0	0	-0.11289	0.370385	-30	-0.58871	0.517163	0	0	0.551925	0	0	-0.06922	-0.002327009	-715.076	-671.589		
100000	2300	-0.04105	0.009713	23.96499	-0.03268	0.001337702	0.037685	0	0	-6.53547	0.26754	-30	-1.24337	0.243647	0	0	0.551925	0	0	-0.99804	-0.001681817	-715.076	-671.589		
100000	2100	-0.06969	0.005756	14.76538	-0.06479	0.000855658	0.037187	0	0	-12.958	0.171132	-30	-2.09515	0.144393	0	0	0.551925	0	0	-1.94968	-0.001075245	-715.076	-671.589		
100000	1900	-0.10034	0.004029	10.4525	-0.0969	0.000594277	0.03724	0	0	-19.3806	0.118855	-30	-2.99251	0.101074	0	0	0.551925	0	0	-2.89069	-0.000745924	-715.076	-671.589		
100000	1700	-0.13167	0.003096	8.066841	-0.12902	0.000442489	0.037449	0	0	-25.8032	0.088498	-30	-3.89474	0.077669	0	0	0.551925	0	0	-3.81651	-0.00055572	-715.076	-671.589		
100000	1500	-0.1633	0.002518	6.573338	-0.16113	0.000345162	0.037715	0	0	-32.2258	0.069032	-30	-4.79008	0.063166	0	0	0.551925	0	0	-4.7265	-0.000433348	-715.076	-671.589		
100000	1300	-0.19509	0.002126	5.556083	-0.19324	0.000277718	0.03801	0	0	-38.6484	0.055544	-30	-5.67411	0.053341	0	0	0.551925	0	0	-5.6204	-0.00034883	-715.076	-671.589		
100000	1100	-0.22697	0.001844	4.820556	-0.22535	0.000228356	0.038321	0	0	-45.0709	0.045671	-30	-6.54484	0.046261	0	0	0.551925	0	0	-6.49827	-0.000284377	-715.076	-671.589		
133333	900	-0.25891	0.001631	4.264917	-0.25747	0.000190412	0.038644	0	0	-51.4935	0.038082	-30	-7.40123	0.040922	0	0	0.551925	0	0	-7.36005	-0.000237951	-715.076	-671.589		
200000	700	-0.29089	0.001465	3.830865	-0.28958	0.000160173	0.038977	0	0	-57.9161	0.032035	-30	-8.24272	0.036753	0	0	0.551925	0	0	-8.20572	-0.000204872	-715.076	-671.589		
266667	500	-0.32289	0.001332	3.482698	-0.32169	0.00013582	0.039318	0	0	-64.3387	0.027164	-30	-9.06894	0.033419	0	0	0.551925	0	0	-9.03541	-0.000170722	-715.076	-671.589		
75000	300	-0.35491	0.001223	3.197522	-0.35381	0.000115464	0.039668	0	0	-70.7612	0.023093	-30	-9.87967	0.03069	0	0	0.551925	0	0	-9.84887	-0.000143002	-715.076	-671.589		
0	100	-0.38695	0.001133	2.959768	-0.38592	9.81783E-05	0.040024	0	0	-77.1838	0.019636	-30	-10.6748	0.028417	0	0	0.551925	0	0	-10.6463	-0.000119103	-715.076	-671.589		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.01006	0.232571	65.91919	0.192177	0.030337855	0.180764	151.401	0.035211	38.43545	6.067571	-30	-0.30699	1.307973	-0.5216	0.521602	0.601596	400	400	1.039108	-0.038120912	-359.386	-267.441	0	0.061419
210375	3175	-0.00966	0.18396	66.05888	0.152076	0.022221357	0.143623	151.5426	0.027878	30.41521	4.444271	-30	-0.29503	1.327031	-0.51426	0.514258	0.601596	400	400	1.059924	-0.027921048	-359.386	-267.441		
162500	2925	-0.00924	0.130196	66.21662	0.107519	0.013440411	0.102909	151.704	0.019751	21.50383	2.688082	-30	-0.28203	1.348185	-0.50599	0.505986	0.601596	400	400	1.083058	-0.016888131	-359.386	-267.441		
100000	2700	-0.00886	0.082031	66.3608	0.067418	0.005754303	0.066774	151.8529	0.012457	13.48358	1.150861	-30	-0.27055	1.367206	-0.49844	0.498441	0.601596	400	400	1.103885	-0.007229179	-359.386	-267.441		
100000	2500	-0.01074	0.044225	61.57609	0.031772	0.001714935	0.046016	0	0	6.354479	0.342987	-30	-0.32776	1.109365	0	0	0.601596	0	0	0.783758	-0.00215493	-359.386	-267.441		
100000	2300	-0.02272	0.020843	41.12937	-0.00387	0.001995046	0.043168	0	0	-0.77463	0.399009	-30	-0.69142	0.522843	0	0	0.601596	0	0	-0.16607	-0.002505991	-359.386	-267.441		
100000	2100	-0.04802	0.009881	22.5322	-0.03952	0.001378248	0.040989	0	0	-7.90373	0.27565	-30	-1.45181	0.247855	0	0	0.601596	0	0	-1.20222	-0.001730768	-359.386	-267.441		
100000	1900	-0.08024	0.005956	14.04609	-0.07516	0.000878686	0.04059	0	0	-15.0328	0.175737	-30	-2.40573	0.149405	0	0	0.601596	0	0	-2.25522	-0.001103392	-359.386	-267.441		
100000	1700	-0.11441	0.004214	10.03711	-0.11081	0.000610874	0.040717	0	0	-22.1619	0.122175	-30	-3.39971	0.105712	0	0	0.601596	0	0	-3.29323	-0.000767497	-359.386	-267.441		
100000	1500	-0.14926	0.003261	7.796029	-0.14646	0.000454274	0.040996	0	0	-29.291	0.090855	-30	-4.3946	0.081793	0	0	0.601596	0	0	-4.31223	-0.000573311	-359.386	-267.441		
100000	1300	-0.18441	0.002665	6.38216	-0.1821	0.000353323	0.041333	0	0	-36.4201	0.070665	-30	-5.37892	0.066848	0	0	0.601596	0	0	-5.31162	-0.000441956	-359.386	-267.441		
100000	1100	-0.21972	0.002259	5.413809	-0.21775	0.000282817	0.0417	0	0	-43.5493	0.056563	-30	-6.34826	0.056661	0	0	0.601596	0	0	-6.29123	-0.000353188	-359.386	-267.441		
133333	900	-0.25513	0.001965	4.710915	-0.25339	0.000230624	0.042086	0	0	-50.6784	0.046125	-30	-7.30064	0.049284	0	0	0.601596	0	0	-7.25104	-0.000291842	-359.386	-267.441		
200000	700	-0.29059	0.001743	4.178379	-0.28904	0.000190564	0.042486	0	0	-57.8075	0.038113	-30	-8.235	0.04371	0	0	0.601596	0	0	-8.19101	-0.000240443	-359.386	-267.441		
266667	500	-0.32609	0.001569	3.761455	-0.32468	0.000158753	0.042898	0	0	-64.9366	0.031751	-30	-9.15075	0.039355	0	0	0.601596	0	0	-9.11119	-0.000196263	-359.386	-267.441		
75000	300	-0.36163	0.00143	3.426565	-0.36033	0.000132612	0.043321	0	0	-72.0657	0.026522	-30	-10.0475	0.03586	0	0	0.601596	0	0	-10.0115	-0.00016134	-359.386	-267.441		
0	100	-0.39718	0.001315	3.151797	-0.39597	0.000110413	0.043753	0	0	-79.1948	0.022083	-30	-10.9251	0.032987	0	0	0.601596	0	0	-10.8923	-0.000139646	-359.386	-267.441		
0	3400	-0.00981	0.288233	66.40256	0.240473	0.037952957	0.218663	151.8962	0.043782	48.0947	7.590591	-30	-0.29942	1.27145	-0.51577	0.520672	0.57625	400	397.8723	1.019724	-0.047693819	0.031629	0.024949	1122.462	0.069118
210375	3175	-0.00938	0.235151	66.5859	0.196539	0.029236801	0.178334	152.0877	0.035764	39.30777	5.84736	-30	-0.28627	1.293996	-0.51204	0.512044	0.57625	400	400	1.044463	-0.036739164	0.031629	0.024949		
162500	2925	-0.00892	0.176596	66.76467	0.147723	0.019950984	0.134505	152.2764	0.026891	29.54451	3.990197	-30	-0.27248	1.317134	-0.50274	0.502744	0.57625	400	400	1.069732	-0.025070803	0.031629	0.024949		
100000	2700	-0.00852	0.124166	66.92813	0.103788	0.011853194	0.09568	152.4507	0.018929	20.75758	2.370639	-30	-0.26035	1.337946	-0.49426	0.494262	0.57625	400	400	1.092489	-0.014892546	0.031629	0.024949		
100000	2500	-0.00818	0.077776	67.07552	0.064735	0.004862668	0.061673	152.6092	0.011869	12.94698	0.972534	-30	-0.24981	1.356438	-0.48663	0.486634	0.57625	400	400	1.112731	-0.006110627	0.031629	0.024949		
100000	2300	-0.01126	0.038666	59.34005	0.025682	0.001719848	0.043804	0	0	5.136376	0.34397	-30	-0.34377	0.969902	0	0	0.57625	0	0	0.628294	-0.00216032	0.031629	0.024949		
100000	2100	-0.02742	0.01584	34.7381	-0.01337	0.001794272	0.04051	0	0	-2.67423	0.358854	-30	-0.83328	0.397326	0	0	0.57625	0	0	-0.4337	-0.00225484	0.031629	0.024949		
100000	1900	-0.05877	0.007423	18.03019	-0.05242	0.001082389	0.038961	0	0	-10.4848	0.216478	-30	-1.7717	0.18621	0	0	0.57625	0	0	-1.58413	-0.00136064	0.031629	0.024949		
100000	1700	-0.09541	0.004614	11.43712	-0.09148	0.000680601	0.03888	0	0	-18.2954	0.13612	-30	-2.8492	0.115727	0	0	0.57625	0	0	-2.73263	-0.000853587	0.031629	0.024949		
100000	1500	-0.13339	0.003333	8.314184	-0.13053	0.00047464	0.039125	0	0	-26.106	0.094928	-30	-3.94381	0.083617	0	0	0.57625	0	0	-3.8596	-0.000594173	0.031629	0.024949		
100000	1300	-0.17184	0.002615	6.53705	-0.16958	0.000353452	0.039465	0	0	-33.9166	0.07069	-30	-5.0292	0.065585	0	0	0.57625	0	0	-4.96318	-0.000447532	0.031629	0.024949		
100000	1100	-0.21052	0.002157	5.399035	-0.20864	0.00027459	0.039845	0	0	-41.7272	0.054918	-30	-6.09749	0.054119	0	0	0.57625	0	0	-6.04306	-0.000343192	0.031629	0.024949		
133333	900	-0.24931	0.001842	4.610746	-0.24769	0.000218725	0.040248	0	0	-49.5379	0.043745	-30	-7.14559	0.046197	0	0	0.57625	0	0	-7.09915	-0.00027596	0.031629	0.024949		
200000	700	-0.28818	0.001611	4.033622	-0.28674	0.000177289	0.040667	0	0	-57.3485	0.035458	-30	-8.17204	0.040415	0	0	0.57625	0	0	-8.13142	-0.000220416	0.031629	0.024949		
266667	500	-0.32709	0.001435	3.593444	-0.3258	0.00014482	0.0411	0	0	-65.1591	0.028964	-30	-9.17608	0.036005	0	0	0.57625	0	0	-9.13997	-0.0001833	0.031629	0.024949		
75000	300	-0.36603	0.001298	3.24713	-0.36485	0.000119063	0.041546	0	0	-72.9697	0.023813	-30	-10.1573	0.032549	0	0	0.57625	0	0	-10.1245	-0.000143648	0.031629	0.024949		
0	100	-0.40499	0.001186	2.967755	-0.4039	9.71294E-05	0.042002	0	0	-80.7803	0.019426	-30	-11.1153	0.029748	0	0	0.57625	0	0	-11.0854	-0.000127184	0.031629	0.024949		
0	3400	-0.01364	0.366148	63.14069	0.288625	0.063886211	0.306153	148.8184	0.05449	57.72493	12.77724	-30	-0.41595	1.228491	-0.41659	0.570494	0.662809	400	339.2261	0.89282	-0.080280499	39.95355	251.2884	0	0.092983
210375	3175	-0.01294	0.303908	63.43309	0.24053	0.05043635	0.253493	149.0696	0.045303	48.10601	10.08727	-30	-0.39481	1.262132	-0.43201	0.561512	0.662809	400	348.4727	0.9307	-0.063379268	39.95355	251.2884		
162500	2925	-0.01213	0.235021	63.8723	0.187092	0.035800476	0.195433	149.4558	0.035125	37.41833	7.160095	-30	-0.37009	1.306322	-0.46573	0.5497	0.662809	400	366.1985	0.981218	-0.044985838	39.95355	251.2884		
100000	2700	-0.01135	0.173475	64.41156	0.138997	0.023125578	0.143996	149.9449	0.026012	27.79942	4.625116	-30	-0.34646	1.355049	-0.51908	0.536658	0.662809	400	392.8163	1.037648	-0.029057983	39.95355	251.2884		
100000	2500	-0.01083	0.120291	64.64556	0.096246	0.013210178	0.101482	150.1622	0.018063	19.24927	2.642036	-30	-0.33069	1.382141	-0.5281	0.528099	0.662809	400	400	1.068062	-0.016601441	39.95355	251.2884		
100000	2300	-0.0164	0.069929	64.13205	0.053496	3.27378E-05	0.067783	149.6893	0.010468	10.69912	0.006548	-30	-0.49988	1.415407	-0.53228	0.532281	0.662809	400	400	1.094023	0.048460147	39.95355	251.2884		
100000	2100	-0.01838	0.031324	49.94993	0.010745	0.002199553	0.048963	0	0	2.148977	0.439911	-30	-0.55991	0.785741	0	0	0.662809	0	0	0.22859	-0.002763619	39.95355	251.2884		
100000	1900	-0.04351	0.013235	26.75602	-0.03201	0.001735173	0.045618	0	0	-6.40117	0.347035	-30	-1.31682	0.331991	0	0	0.662809	0	0	-0.98266	-0.002179765	39.95355	251.2884		
100000	1700	-0.08089	0.007175	15.29698	-0.07476	0.001045456	0.044818	0	0	-14.9513	0.209091	-30	-2.42464	0.179972	0	0	0.662809	0	0	-2.24335	-0.001314759	39.95355	251.2884		
100000	1500	-0.12164	0.004821	10.41319	-0.11751	0.000690081	0.044961	0	0	-23.5015	0.138016	-30	-3.60755	0.120942	0	0	0.662809	0	0	-3.48575	-0.000864207	39.95355	251.2884		
100000	1300	-0.16339	0.00363	7.874889	-0.16026	0.000494463	0.045336	0	0	-32.0516	0.098893	-30	-4.79265	0.091051	0	0	0.662809	0	0	-4.70098	-0.000625058	39.95355	251.2884		
100000	1100	-0.20555	0.002919	6.344522	-0.20301	0.000373435	0.045793	0	0	-40.6018	0.074687	-30	-5.96166	0.073228	0	0	0.662809	0	0	-5.88795	-0.000468362	39.95355	251.2884		
133333	900	-0.24792	0.002449	5.327384	-0.24576	0.000290931	0.046291	0	0	-49.1519	0.058186	-30	-7.10832	0.061437	0	0	0.662809	0	0	-7.04649	-0.000369512	39.95355	251.2884		
200000	700	-0.2904	0.002117	4.604605	-0.28851	0.000231431	0.046814	0	0	-57.702	0.046286	-30	-8.22995	0.053093	0	0	0.662809	0	0	-8.17658	-0.000288608	39.95355	251.2884		
266667	500	-0.33294	0.001869	4.065705	-0.33126	0.00018589	0.047357	0	0	-66.2522	0.037178	-30	-9.3252	0.046881	0	0	0.662809	0	0	-9.27805	-0.000230522	39.95355	251.2884		
75000	300	-0.37554	0.001678	3.649028	-0.37401	0.000149715	0.047918	0	0	-74.8023	0.029943	-30	-10.3934	0.042084	0	0	0.662809	0	0	-10.351	-0.000186278	39.95355	251.2884		
0	100	-0.41817	0.001526	3.317704	-0.41676	0.000120073	0.048496	0	0	-83.3525	0.024015	-30	-11.434	0.038272	0	0	0.662809	0	0	-11.3955	-0.000151018	39.95355	251.2884		
0	3400	-0.02466	0.494462	56.57368	0.336933	0.132866899	0.477333	144.3565	0.071379	67.38666	26.57338	-30	-0.7501	1.171587	-0.27694	0.624084	0.883491	400	279.8242	0.588449	-0.166959541	28.59117	20.00773	1720.93	0.146737
210375	3175	-0.02367	0.418862	56.63821	0.285033	0.110158414	0.406515	144.3899	0.060479	57.00664	22.03168	-30	-0.72013	1.203405	-0.27908	0.622415	0.883491	400	281.0275	0.621695	-0.138425881	28.59117	20.00773		
162500	2925	-0.02247	0.334185	56.82003	0.227366	0.084352731	0.326722	144.485	0.048285	45.47328	16.87055	-30	-0.6837	1.245148	-0.29242	0.619851	0.883491	400	286.226	0.667449	-0.105998625	28.59117	20.00773		
100000	2700	-0.02127	0.2576	57.13201	0.175466	0.060868692	0.254231	144.652	0.037262	35.09326	12.17374	-30	-0.64735	1.290855	-0.31891	0.616246	0.883491	400	296.1817	0.719999	-0.07648854	28.59117	20.00773		
100000	2500	-0.02008	0.189549	57.5908	0.129333	0.040140046	0.189703	144.9061	0.027467	25.86657	8.028009	-30	-0.61132	1.341225	-0.36072	0.611093	0.883491	400	311.9317	0.780345	-0.050440089	28.59117	20.00773		
100000	2300	-0.01872	0.122	58.32565	0.083199	0.020076819	0.125772	145.3344	0.017731	16.63988	4.015364	-30	-0.57034	1.406699	-0.43282	0.602532	0.883491	400	339.5543	0.86159	-0.025228503	28.59117	20.00773		
100000	2100	-0.02839	0.069929	54.68027	0.037066	0.004471655	0.092761	143.4641	0.010032	7.413199	0.894331	-30	-0.8627	1.477797	-0.43852	0.632348	0.883491	400	334.602	0.851793	0.23090821	28.59117	20.00773		
100000	1900	-0.03526	0.029051	39.65536	-0.00907	0.002860794	0.063193	0	0	-1.81349	0.572159	-30	-1.06945	0.728732	0	0	0.883491	0	0	-0.33713	-0.003594277	28.59117	20.00773		
100000	1700	-0.06825	0.015077	23.31341	-0.0552	0.002025219	0.060572	0	0	-11.0402	0.405044	-30	-2.05267	0.378191	0	0	0.883491	0	0	-1.67193	-0.00254521	28.59117	20.00773		
100000	1500	-0.10949	0.00949	15.18096	-0.10133	0.001330641	0.060141	0	0	-20.2669	0.266128	-30	-3.25774	0.23805	0	0	0.883491	0	0	-3.01801	-0.001674401	28.59117	20.00773		
100000	1300	-0.15339	0.006853	11.08358	-0.14747	0.00093101	0.060461	0	0	-29.4935	0.186202	-30	-4.5112	0.171904	0	0	0.883491	0	0	-4.33813	-0.001167284	28.59117	20.00773		
100000	1100	-0.19828	0.005367	8.718687	-0.1936	0.000687477	0.061026	0	0	-38.7202	0.137495	-30	-5.76195	0.134622	0	0	0.883491	0	0	-5.62645	-0.000865773	28.59117	20.00773		
133333	900	-0.24363	0.004423	7.200606	-0.23973	0.000526274	0.061694	0	0	-47.9469	0.105255	-30	-6.99359	0.11096	0	0	0.883491	0	0	-6.882	-0.000659993	28.59117	20.00773		
200000	700	-0.28923	0.003775	6.150155	-0.28587	0.000411599	0.062421	0	0	-57.1736	0.08232	-30	-8.19958	0.094685	0	0	0.883491	0	0	-8.10442	-0.000515271	28.59117	20.00773		
266667	500	-0.33498	0.003302	5.382752	-0.332	0.000325321	0.063187	0	0	-66.4003	0.065064	-30	-9.37686	0.082834	0	0	0.883491	0	0	-9.29365	-0.000412286	28.59117	20.00773		
75000	300	-0.38082	0.002944	4.798954	-0.37813	0.000258373	0.063986	0	0	-75.627	0.051675	-30	-10.5238	0.073856	0	0	0.883491	0	0	-10.4497	-0.000316076	28.59117	20.00773		
0	100	-0.42673	0.002663	4.340802	-0.42427	0.000203472	0.064814	0	0	-84.8537	0.040694	-30	-11.6395	0.066809	0	0	0.883491	0	0	-11.5724	-0.000253758	28.59117	20.00773		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.03025	0.59623	54.52541	0.385234	0.180747787	0.592166	143.3985	0.085499	77.0469	36.14956	-30	-0.91867	1.134623	-0.24494	0.626686	0.970418	400	271.4409	0.44308	-0.227129313	64.78762	-46.7054	1890.253	0.183521
210375	3175	-0.02919	0.512681	54.45085	0.329512	0.153973897	0.512655	143.3673	0.073502	65.90241	30.79478	-30	-0.88693	1.164526	-0.23975	0.62749	0.970418	400	269.5392	0.471077	-0.193483526	64.78762	-46.7054		
162500	2925	-0.0279	0.41847	54.45276	0.267598	0.122969938	0.422292	143.3681	0.059995	53.51965	24.59399	-30	-0.84793	1.203582	-0.24291	0.628492	0.970418	400	270.2616	0.510182	-0.154523975	64.78762	-46.7054		
100000	2700	-0.02659	0.332537	54.57491	0.211876	0.0940664	0.339259	143.4193	0.047692	42.37516	18.81328	-30	-0.80848	1.246041	-0.25712	0.629075	0.970418	400	274.6633	0.555761	-0.11820414	64.78762	-46.7054		
100000	2500	-0.02528	0.255461	54.83641	0.162345	0.067832746	0.264357	143.5313	0.036667	32.46895	13.56655	-30	-0.76887	1.292276	-0.28345	0.62871	0.970418	400	283.2829	0.608644	-0.085236929	64.78762	-46.7054		
100000	2300	-0.02378	0.178146	55.33239	0.112814	0.041554959	0.188932	143.7525	0.025609	22.56275	8.310992	-30	-0.72335	1.350938	-0.33096	0.626395	0.970418	400	299.4914	0.6798	-0.052217664	64.78762	-46.7054		
100000	2100	-0.02197	0.101362	56.24456	0.063283	0.01610583	0.113956	144.1892	0.014615	12.65654	3.221166	-30	-0.66879	1.431795	-0.41941	0.619726	0.970418	400	330.9884	0.783249	-0.02023983	64.78762	-46.7054		
100000	1900	-0.0277	0.044649	49.19412	0.013752	0.003197415	0.071575	0	0	2.750327	0.639483	-30	-0.84183	1.11999	0	0	0.970418	0	0	0.282173	-0.004017027	64.78762	-46.7054		
100000	1700	-0.05543	0.022356	30.17283	-0.03578	0.00270594	0.067597	0	0	-7.15588	0.541188	-30	-1.67257	0.560779	0	0	0.970418	0	0	-1.10839	-0.003401258	64.78762	-46.7054		
100000	1500	-0.09648	0.012954	18.63247	-0.08531	0.00178338	0.066264	0	0	-17.0621	0.356676	-30	-2.88039	0.324952	0	0	0.970418	0	0	-2.55319	-0.002241849	64.78762	-46.7054		
100000	1300	-0.14251	0.008874	13.00476	-0.13484	0.001208276	0.066384	0	0	-26.9683	0.241655	-30	-4.20326	0.222602	0	0	0.970418	0	0	-3.97915	-0.00152107	64.78762	-46.7054		
100000	1100	-0.19024	0.006734	9.937065	-0.18437	0.000868474	0.066962	0	0	-36.8745	0.173695	-30	-5.54019	0.168922	0	0	0.970418	0	0	-5.37016	-0.001090156	64.78762	-46.7054		
133333	900	-0.23869	0.00544	8.051438	-0.2339	0.000650634	0.067713	0	0	-46.7807	0.130127	-30	-6.86101	0.136456	0	0	0.970418	0	0	-6.72373	-0.000815813	64.78762	-46.7054		
200000	700	-0.28751	0.004579	6.786805	-0.28343	0.000499939	0.068553	0	0	-56.6869	0.099988	-30	-8.15475	0.114865	0	0	0.970418	0	0	-8.03928	-0.000623898	64.78762	-46.7054		
266667	500	-0.33654	0.003968	5.884082	-0.33297	0.000389086	0.069448	0	0	-66.5931	0.077817	-30	-9.41658	0.099528	0	0	0.970418	0	0	-9.3166	-0.000482625	64.78762	-46.7054		
75000	300	-0.38571	0.003512	5.209399	-0.3825	0.000303205	0.070387	0	0	-76.4993	0.060641	-30	-10.6441	0.088093	0	0	0.970418	0	0	-10.5557	-0.000382227	64.78762	-46.7054		
0	100	-0.43495	0.00316	4.687229	-0.43203	0.000234592	0.071363	0	0	-86.4056	0.046918	-30	-11.8359	0.07927	0	0	0.970418	0	0	-11.7565	-0.000295388	64.78762	-46.7054		
0	3400	-0.03407	0.688888	53.53479	0.433516	0.221304387	0.691109	143.005	0.098514	86.70317	44.26088	-30	-1.03368	1.105384	-0.23547	0.623154	1.022417	400	270.9048	0.349796	-0.278089787	102.4163	-32.188	1991.541	0.218297
210375	3175	-0.033	0.598923	53.36608	0.373926	0.191997368	0.605167	142.9425	0.085612	74.78529	38.39947	-30	-1.00152	1.13372	-0.22448	0.62494	1.022417	400	266.8912	0.373467	-0.241264103	102.4163	-32.188		
162500	2925	-0.03168	0.497098	53.24067	0.307716	0.157699229	0.507055	142.8968	0.071034	61.5432	31.53985	-30	-0.9619	1.170552	-0.22007	0.627546	1.022417	400	264.7337	0.406817	-0.198165835	102.4163	-32.188		
100000	2700	-0.03035	0.403737	53.2209	0.248127	0.12526251	0.416335	142.8897	0.05769	49.62532	25.0525	-30	-0.92169	1.210329	-0.22572	0.63023	1.022417	400	265.7481	0.446045	-0.157404655	102.4163	-32.188		
100000	2500	-0.029	0.319458	53.32651	0.195158	0.095298355	0.333845	142.928	0.04566	39.03165	19.05967	-30	-0.8811	1.253251	-0.24194	0.632491	1.022417	400	270.2383	0.4919	-0.11975239	102.4163	-32.188		
100000	2300	-0.02745	0.234229	53.62518	0.14219	0.064590025	0.249907	143.039	0.033504	28.43799	12.918	-30	-0.83426	1.306885	-0.27465	0.633873	1.022417	400	280.2677	0.553787	-0.081164767	102.4163	-32.188		
100000	2100	-0.02559	0.148671	54.26236	0.089222	0.033855391	0.165235	143.2896	0.021303	17.84432	6.771078	-30	-0.77825	1.378332	-0.33667	0.632718	1.022417	400	300.6134	0.642631	-0.042541684	102.4163	-32.188		
100000	1900	-0.0277	0.069929	54.03398	0.036253	0.005973348	0.092817	143.1977	0.010014	7.250648	1.19467	-30	-0.84191	1.477797	-0.42753	0.636072	1.022417	400	330.1737	0.735893	0.068803676	102.4163	-32.188		
100000	1700	-0.04443	0.030927	37.33372	-0.01672	0.00321121	0.072676	0	0	-3.34302	0.642242	-30	-1.34451	0.775789	0	0	1.022417	0	0	-0.56469	-0.004035564	102.4163	-32.188		
100000	1500	-0.08396	0.01648	22.14744	-0.06968	0.002205136	0.070141	0	0	-13.9367	0.441027	-30	-2.51471	0.413379	0	0	1.022417	0	0	-2.09856	-0.002767828	102.4163	-32.188		
100000	1300	-0.13182	0.01062	14.69966	-0.12265	0.001448206	0.069925	0	0	-24.5304	0.289641	-30	-3.89914	0.266401	0	0	1.022417	0	0	-3.63091	-0.001818369	102.4163	-32.188		
100000	1100	-0.18239	0.00778	10.87559	-0.17562	0.001010449	0.070473	0	0	-35.124	0.20209	-30	-5.32281	0.195165	0	0	1.022417	0	0	-5.12638	-0.001270043	102.4163	-32.188		
133333	900	-0.234	0.006151	8.633507	-0.22859	0.000739856	0.071283	0	0	-45.7177	0.147971	-30	-6.7347	0.154305	0	0	1.022417	0	0	-6.57948	-0.000932379	102.4163	-32.188		
200000	700	-0.2861	0.005106	7.178943	-0.28156	0.000558201	0.072214	0	0	-56.3114	0.11164	-30	-8.11793	0.128083	0	0	1.022417	0	0	-7.98917	-0.000696586	102.4163	-32.188		
266667	500	-0.33848	0.004381	6.165201	-0.33453	0.000426893	0.073218	0	0	-66.905	0.085379	-30	-9.46562	0.109904	0	0	1.022417	0	0	-9.35514	-0.000537458	102.4163	-32.188		
75000	300	-0.39102	0.003851	5.420908	-0.38749	0.000327097	0.074274	0	0	-77.4987	0.065419	-30	-10.7745	0.096606	0	0	1.022417	0	0	-10.6775	-0.000416928	102.4163	-32.188		
0	100	-0.44366	0.003448	4.852814	-0.44046	0.000248192	0.075377	0	0	-88.0924	0.049638	-30	-12.0427	0.08649	0	0	1.022417	0	0	-11.956	-0.00031419	102.4163	-32.188		
0	3400	-0.03577	0.767606	53.39515	0.481954	0.249882296	0.769128	142.9531	0.109732	96.39074	49.97646	-30	-1.08486	1.083116	-0.24306	0.620675	1.037776	400	274.4462	0.31226	-0.31400351	332.8123	-126.685	0	0.247331
210375	3175	-0.03471	0.673124	53.17606	0.418849	0.219566408	0.679201	142.8736	0.096172	83.76989	43.91328	-30	-1.05294	1.110109	-0.22707	0.622366	1.037776	400	268.8661	0.333076	-0.275907496	332.8123	-126.685		
162500	2925	-0.03341	0.566066	52.97864	0.348734	0.183926727	0.576372	142.8037	0.080836	69.74673	36.78535	-30	-1.01375	1.144985	-0.21642	0.625098	1.037776	400	264.6952	0.362358	-0.231122474	332.8123	-126.685		
100000	2700	-0.03209	0.467715	52.87297	0.285629	0.149996639	0.481048	142.7671	0.066774	57.12589	29.99933	-30	-0.97412	1.182354	-0.21539	0.628216	1.037776	400	263.4663	0.396721	-0.188486953	332.8123	-126.685		
100000	2500	-0.03077	0.378677	52.87669	0.229537	0.118374144	0.394064	142.7683	0.054063	45.90736	23.67483	-30	-0.93428	1.222277	-0.2241	0.631266	1.037776	400	265.3337	0.436749	-0.148749394	332.8123	-126.685		
100000	2300	-0.02925	0.288245	53.03544	0.173444	0.085553746	0.305085	142.8236	0.041168	34.68884	17.11075	-30	-0.88852	1.271443	-0.24641	0.634061	1.037776	400	271.5853	0.490428	-0.107506589	332.8123	-126.685		
100000	2100	-0.02745	0.196846	53.46396	0.117352	0.052043472	0.214578	142.9786	0.028145	23.47031	10.40869	-30	-0.83432	1.335232	-0.29137	0.635448	1.037776	400	285.5123	0.566308	-0.065398293	332.8123	-126.685		
100000	1900	-0.0252	0.105523	54.41624	0.061259	0.019059799	0.123729	143.3529	0.015127	12.25178	3.81196	-30	-0.76648	1.426469	-0.38263	0.632501	1.037776	400	315.962	0.683939	-0.023950132	332.8123	-126.685		
100000	1700	-0.03356	0.04216	45.65735	0.005166	0.003428872	0.075705	0	0	1.033256	0.685774	-30	-1.01854	1.057558	0	0	1.037776	0	0	0.043325	-0.004307944	332.8123	-126.685		
100000	1500	-0.06892	0.020618	26.63559	-0.05093	0.002621615	0.071765	0	0	-10.1853	0.524323	-30	-2.07247	0.517191	0	0	1.037776	0	0	-1.55199	-0.003294766	332.8123	-126.685		
100000	1300	-0.11757	0.012223	16.5667	-0.10702	0.001671103	0.070944	0	0	-21.4038	0.334221	-30	-3.49066	0.306616	0	0	1.037776	0	0	-3.18194	-0.002101508	332.8123	-126.685		
100000	1100	-0.17053	0.008546	11.7458	-0.16311	0.001124572	0.071383	0	0	-32.6223	0.224914	-30	-4.99256	0.214364	0	0	1.037776	0	0	-4.77677	-0.001414302	332.8123	-126.685		
133333	900	-0.22498	0.006575	9.085101	-0.2192	0.000801966	0.072208	0	0	-43.8409	0.160393	-30	-6.49087	0.164936	0	0	1.037776	0	0	-6.32492	-0.001012433	332.8123	-126.685		
200000	700	-0.28007	0.005365	7.428778	-0.2753	0.000593037	0.07319	0	0	-55.0594	0.118607	-30	-7.95985	0.134567	0	0	1.037776	0	0	-7.82457	-0.000746487	332.8123	-126.685		
266667	500	-0.33549	0.00455	6.307097	-0.33139	0.000446352	0.07426	0	0	-66.2779	0.08927	-30	-9.38993	0.11414	0	0	1.037776	0	0	-9.27526	-0.00056216	332.8123	-126.685		
75000	300	-0.39111	0.003967	5.500667	-0.38748	0.000336918	0.075394	0	0	-77.4964	0.067384	-30	-10.7768	0.099514	0	0	1.037776	0	0	-10.6769	-0.000424935	332.8123	-126.685		
0	100	-0.44685	0.003531	4.894828	-0.44357	0.000251515	0.07658	0	0	-88.715	0.050303	-30	-12.1182	0.088564	0	0	1.037776	0	0	-12.0294	-0.000310815	332.8123	-126.685		
0	3400	-0.01549	0.6699	63.35023	0.53201	0.122396175	0.549529	148.9979	0.099814	106.4019	24.47924	-30	-0.47237	1.111087	-0.4748	0.595952	0.634784	400	351.9006	0.792521	-0.153802037	3046.626	-1273.17	0	0.175897
210375	3175	-0.01478	0.589889	63.44391	0.469032	0.106080837	0.483619	149.079	0.08794	93.80632	21.21617	-30	-0.45057	1.136764	-0.4532	0.587721	0.634784	400	346.4619	0.819496	-0.133300531	3046.626	-1273.17		
162500	2925	-0.01394	0.500728	63.61091	0.399056	0.087730848	0.409831	149.2247	0.074721	79.81117	17.54617	-30	-0.4252	1.169134	-0.43791	0.577755	0.634784	400	344.0975	0.854175	-0.110241489	3046.626	-1273.17		
100000	2700	-0.01315	0.420365	63.8363	0.336078	0.071133635	0.343137	149.4238	0.062812	67.21554	14.22673	-30	-0.40125	1.202728	-0.43443	0.56772	0.634784	400	346.3976	0.890875	-0.089388775	3046.626	-1273.17		
100000	2500	-0.01242	0.348968	64.11621	0.280097	0.056450741	0.283873	149.675	0.052232	56.01943	11.29015	-30	-0.37895	1.237293	-0.44249	0.557584	0.634784	400	353.3603	0.929281	-0.070934423	3046.626	-1273.17		
100000	2300	-0.01165	0.27777	64.49694	0.224117	0.042000965	0.224943	150.0238	0.041672	44.82332	8.400193	-30	-0.3556	1.277891	-0.46542	0.545818	0.634784	400	367.0697	0.975073	-0.052777695	3046.626	-1273.17		
100000	2100	-0.01084	0.206993	65.01724	0.168136	0.028013209	0.166788	150.514	0.031155	33.6272	5.602642	-30	-0.33098	1.327166	-0.51082	0.53169	0.634784	400	391.3243	1.031394	-0.035202332	3046.626	-1273.17		
100000	1900	-0.0102	0.138	65.31697	0.112155	0.015643937	0.112467	150.8034	0.020811	22.43109	3.128787	-30	-0.3114	1.361541	-0.52026	0.520256	0.634784	400	400	1.069801	-0.01965572	3046.626	-1273.17		
100000	1700	-0.00992	0.069929	65.47871	0.056175	0.003833707	0.060302	150.9618	0.010557	11.23498	0.766741	-30	-0.30287	1.388718	-0.51076	0.510763	0.634784	400	400	1.099145	-0.002818002	3046.626	-1273.17		
100000	1500	-0.02184	0.024158	43.79676	0.000194	0.00212565	0.045956	0	0	0.038862	0.42513	-30	-0.66469	0.605995	0	0	0.634784	0	0	-0.05603	-0.002671695	3046.626	-1273.17		
100000	1300	-0.06299	0.008414	18.51619	-0.05579	0.001213399	0.043003	0	0	-11.1573	0.24268	-30	-1.89691	0.211071	0	0	0.634784	0	0	-1.68432	-0.001524286	3046.626	-1273.17		
100000	1100	-0.11574	0.00464	10.46402	-0.11177	0.000669507	0.042998	0	0	-22.3534	0.133901	-30	-3.43787	0.116396	0	0	0.634784	0	0	-3.32064	-0.000841958	3046.626	-1273.17		
133333	900	-0.17051	0.003197	7.247676	-0.16775	0.000431988	0.04348	0	0	-33.5495	0.086398	-30	-4.99198	0.080188	0	0	0.634784	0	0	-4.91124	-0.000540219	3046.626	-1273.17		
200000	700	-0.22588	0.00245	5.565152	-0.22373	0.000303152	0.044076	0	0	-44.7456	0.06063	-30	-6.51519	0.061469	0	0	0.634784	0	0	-6.45336	-0.000382655	3046.626	-1273.17		
266667	500	-0.28148	0.001998	4.538677	-0.27971	0.00022268	0.044724	0	0	-55.9417	0.044536	-30	-7.99697	0.050114	0	0	0.634784	0	0	-7.94656	-0.00027601	3046.626	-1273.17		
75000	300	-0.33722	0.001695	3.849663	-0.33569	0.000167121	0.045406	0	0	-67.1378	0.033424	-30	-9.43362	0.042513	0	0	0.634784	0	0	-9.39096	-0.000201884	3046.626	-1273.17		
0	100	-0.39302	0.001478	3.356486	-0.39167	0.000125312	0.046115	0	0	-78.3339	0.025062	-30	-10.8235	0.037065	0	0	0.634784	0	0	-10.7864	-0.000164262	3046.626	-1273.17		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.04367	0.960292	51.92316	0.578444	0.338177044	0.974789	142.4601	0.136803	115.6888	67.63541	-30	-1.32177	1.036151	-0.24373	0.603462	1.1447	400	282.0636	0.139339	-0.424954317	171.8539	-50.2609	0	0.327117
210375	3175	-0.04261	0.853775	51.56811	0.507442	0.303724106	0.872928	142.3557	0.12154	101.4885	60.74482	-30	-1.28997	1.060943	-0.21869	0.605785	1.1447	400	273.4684	0.152627	-0.381658622	171.8539	-50.2609		
162500	2925	-0.04131	0.732625	51.18472	0.428552	0.262764238	0.755969	142.2493	0.104215	85.71041	52.55285	-30	-1.25105	1.092752	-0.19694	0.609852	1.1447	400	265.4392	0.171887	-0.330189777	171.8539	-50.2609		
100000	2700	-0.04	0.620705	50.86822	0.357551	0.223156999	0.64689	142.1664	0.088243	71.51013	44.6314	-30	-1.21174	1.12654	-0.18437	0.614991	1.1447	400	259.9986	0.195213	-0.28041799	171.8539	-50.2609		
100000	2500	-0.03868	0.518619	50.63611	0.294438	0.185503021	0.546547	142.1084	0.0737	58.88766	37.1006	-30	-1.17216	1.16227	-0.18067	0.620808	1.1447	400	257.139	0.223211	-0.233101947	171.8539	-50.2609		
100000	2300	-0.03716	0.413844	50.49413	0.231326	0.145361838	0.442731	142.074	0.058796	46.2652	29.07237	-30	-1.12648	1.205679	-0.1869	0.627754	1.1447	400	257.0453	0.261865	-0.182662694	171.8539	-50.2609		
100000	2100	-0.03534	0.306291	50.52468	0.168214	0.102738626	0.335298	142.0813	0.043518	33.64273	20.54773	-30	-1.07189	1.260748	-0.2084	0.635493	1.1447	400	261.4803	0.317958	-0.129103045	171.8539	-50.2609		
100000	1900	-0.03306	0.196322	50.90385	0.105101	0.058164357	0.224524	142.1755	0.027912	21.02026	11.63287	-30	-1.00323	1.335657	-0.25724	0.642843	1.1447	400	274.6023	0.405512	-0.073088687	171.8539	-50.2609		
100000	1700	-0.0299	0.08554	52.10472	0.041989	0.013652805	0.111906	142.5156	0.012191	8.397796	2.730561	-30	-0.90813	1.453525	-0.37178	0.64557	1.1447	400	310.0953	0.562552	-0.017156195	171.8539	-50.2609		
100000	1500	-0.05125	0.033662	36.55861	-0.02112	0.003536306	0.081252	0	0	-4.22467	0.707261	-30	-1.54812	0.844401	0	0	1.1447	0	0	-0.69927	-0.004445381	171.8539	-50.2609		
100000	1300	-0.09942	0.017513	21.12325	-0.08424	0.002326868	0.078618	0	0	-16.8471	0.465374	-30	-2.9659	0.439311	0	0	1.1447	0	0	-2.52367	-0.002925528	171.8539	-50.2609		
100000	1100	-0.15711	0.011247	13.93289	-0.14735	0.001485759	0.07869	0	0	-29.4696	0.297152	-30	-4.61602	0.282114	0	0	1.1447	0	0	-4.33204	-0.001868153	171.8539	-50.2609		
133333	900	-0.2177	0.008251	10.31102	-0.21046	0.001012369	0.07958	0	0	-42.0921	0.202474	-30	-6.29326	0.20698	0	0	1.1447	0	0	-6.08502	-0.001274212	171.8539	-50.2609		
200000	700	-0.27939	0.006542	8.202481	-0.27357	0.000721759	0.080755	0	0	-54.7145	0.144352	-30	-7.94213	0.164103	0	0	1.1447	0	0	-7.77713	-0.000901395	171.8539	-50.2609		
266667	500	-0.34161	0.005447	6.839318	-0.33669	0.000525333	0.08207	0	0	-67.337	0.105067	-30	-9.54473	0.136635	0	0	1.1447	0	0	-9.40739	-0.000658945	171.8539	-50.2609		
75000	300	-0.4041	0.00469	5.89138	-0.3998	0.000382907	0.083476	0	0	-79.9595	0.076581	-30	-11.0938	0.11764	0	0	1.1447	0	0	-10.9757	-0.000478842	171.8539	-50.2609		
0	100	-0.46677	0.004137	5.196936	-0.46291	0.000273071	0.084959	0	0	-92.5819	0.054614	-30	-12.5859	0.103767	0	0	1.1447	0	0	-12.4818	-0.00034736	171.8539	-50.2609		
0	3400	-0.01771	0.800718	62.54037	0.626692	0.156316364	0.669755	148.3174	0.11876	125.3384	31.26327	-30	-0.53962	1.074346	-0.49614	0.613863	0.660386	400	354.2094	0.731162	-0.196428928	928.2012	993.948	0	0.210285
210375	3175	-0.01687	0.705007	62.56352	0.551749	0.136385011	0.59041	148.3364	0.104578	110.3497	27.277	-30	-0.51423	1.100649	-0.46147	0.605535	0.660386	400	343.9303	0.757804	-0.171381436	928.2012	993.948		
162500	2925	-0.01589	0.598043	62.65219	0.468479	0.113674165	0.501027	148.4092	0.088755	93.69571	22.73483	-30	-0.48439	1.134015	-0.43201	0.595657	0.660386	400	336.1693	0.792466	-0.142844243	928.2012	993.948		
100000	2700	-0.01495	0.501328	62.81071	0.393535	0.092840214	0.419675	148.5406	0.074467	78.70707	18.56804	-30	-0.4559	1.168901	-0.41613	0.585844	0.660386	400	333.5398	0.829665	-0.116662344	928.2012	993.948		
100000	2500	-0.01407	0.415147	63.03918	0.326919	0.074157378	0.346898	148.7323	0.061746	65.38384	14.83148	-30	-0.4291	1.205087	-0.41351	0.575959	0.660386	400	336.0201	0.869172	-0.093187844	928.2012	993.948		
100000	2300	-0.01314	0.328975	63.38272	0.260303	0.055535635	0.274063	149.026	0.049026	52.06061	11.10713	-30	-0.40072	1.247982	-0.42628	0.564394	0.660386	400	345.1212	0.917036	-0.069785485	928.2012	993.948		
100000	2100	-0.01214	0.243122	63.89149	0.193687	0.037293063	0.201745	149.4729	0.03634	38.73738	7.458613	-30	-0.3705	1.300648	-0.46255	0.550223	0.660386	400	364.6886	0.977006	-0.046861114	928.2012	993.948		
100000	1900	-0.01109	0.158193	64.61043	0.127071	0.020028408	0.131149	150.1294	0.023749	25.41414	4.005682	-30	-0.3386	1.366256	-0.53241	0.532408	0.660386	400	400	1.052829	-0.025167422	928.2012	993.948		
100000	1700	-0.01039	0.07611	64.82151	0.060455	0.005269146	0.066606	150.3277	0.011442	12.09091	1.053829	-30	-0.31707	1.39814	-0.52108	0.521083	0.660386	400	400	1.087689	-0.006619895	928.2012	993.948		
100000	1500	-0.02598	0.021981	39.99899	-0.00616	0.002167607	0.047228	0	0	-1.23232	0.433521	-30	-0.78977	0.551385	0	0	0.660386	0	0	-0.23566	-0.002725013	928.2012	993.948		
100000	1300	-0.079	0.007289	15.58222	-0.07278	0.001061864	0.044656	0	0	-14.5556	0.212373	-30	-2.3694	0.182828	0	0	0.660386	0	0	-2.18524	-0.001334068	928.2012	993.948		
100000	1100	-0.14292	0.004097	8.906162	-0.13939	0.000573104	0.044972	0	0	-27.8788	0.114621	-30	-4.2149	0.102765	0	0	0.660386	0	0	-4.11141	-0.00072142	928.2012	993.948		
133333	900	-0.20851	0.002859	6.237612	-0.20601	0.000364089	0.045658	0	0	-41.202	0.072818	-30	-6.04244	0.071724	0	0	0.660386	0	0	-5.97029	-0.000455753	928.2012	993.948		
200000	700	-0.27459	0.002212	4.829817	-0.27263	0.000249722	0.046446	0	0	-54.5252	0.049944	-30	-7.81586	0.055486	0	0	0.660386	0	0	-7.76006	-0.000314339	928.2012	993.948		
266667	500	-0.34088	0.001816	3.965584	-0.33924	0.000177256	0.047287	0	0	-67.8485	0.035451	-30	-9.52639	0.04556	0	0	0.660386	0	0	-9.48062	-0.000219688	928.2012	993.948		
75000	300	-0.40728	0.00155	3.38325	-0.40586	0.000126291	0.04817	0	0	-81.1717	0.025258	-30	-11.1709	0.038884	0	0	0.660386	0	0	-11.1318	-0.000156136	928.2012	993.948		
0	100	-0.47375	0.00136	2.965476	-0.47247	8.79708E-05	0.049093	0	0	-94.4949	0.017594	-30	-12.7481	0.034104	0	0	0.660386	0	0	-12.7138	-0.000106679	928.2012	993.948		
0	3400	-0.03015	0.974192	56.97697	0.675903	0.268138044	0.917841	144.5685	0.140837	135.1807	53.62761	-30	-0.91574	1.033102	-0.37824	0.634686	0.8905	400	310.6744	0.454295	-0.336941903	1666.454	-311.705	0	0.309274
210375	3175	-0.02915	0.868794	56.77336	0.599186	0.240461551	0.823174	144.4605	0.125506	119.8372	48.09231	-30	-0.88548	1.057284	-0.3426	0.631707	0.8905	400	299.6113	0.473965	-0.302162645	1666.454	-311.705		
162500	2925	-0.02794	0.749942	56.57783	0.513944	0.208056949	0.715217	144.3586	0.108261	102.7889	41.61139	-30	-0.84911	1.087933	-0.3097	0.628992	0.8905	400	289.459	0.500262	-0.261445202	1666.454	-311.705		
100000	2700	-0.02676	0.641296	56.44815	0.437227	0.177311491	0.615417	144.2921	0.092534	87.4454	35.4623	-30	-0.81338	1.119948	-0.28768	0.626989	0.8905	400	282.7535	0.529379	-0.222808954	1666.454	-311.705		
100000	2500	-0.02561	0.543331	56.39298	0.369034	0.148690067	0.524537	144.264	0.078383	73.80675	29.73801	-30	-0.77865	1.153109	-0.27597	0.625387	0.8905	400	279.3583	0.561305	-0.186844855	1666.454	-311.705		
100000	2300	-0.02434	0.444085	56.42756	0.30084	0.118902067	0.431651	144.2816	0.064073	60.1681	23.78041	-30	-0.74044	1.192299	-0.27429	0.623635	0.8905	400	279.322	0.60127	-0.149410936	1666.454	-311.705		
100000	2100	-0.02293	0.34372	56.60574	0.232647	0.088139975	0.336974	144.3731	0.049624	46.52945	17.628	-30	-0.6978	1.240051	-0.28708	0.621119	0.8905	400	284.3045	0.653003	-0.110757241	1666.454	-311.705		
100000	1900	-0.02133	0.242668	57.02281	0.164454	0.056884823	0.241088	144.593	0.035088	32.8908	11.37696	-30	-0.64928	1.300962	-0.32307	0.616596	0.8905	400	297.6857	0.723169	-0.071483042	1666.454	-311.705		
100000	1700	-0.01944	0.141886	57.87284	0.096261	0.026183796	0.145313	145.0673	0.020583	19.25215	5.236759	-30	-0.5921	1.385182	-0.40336	0.607277	0.8905	400	327.9359	0.825984	-0.032902796	1666.454	-311.705		
100000	1500	-0.02034	0.051206	55.34031	0.028067	0.002802006	0.066932	0	0	5.6135	0.560401	-30	-0.61921	1.284459	0	0	0.8905	0	0	0.668774	-0.003521733	1666.454	-311.705		
100000	1300	-0.0563	0.018526	27.70768	-0.04013	0.002349151	0.061606	0	0	-8.02515	0.46983	-30	-1.69855	0.464724	0	0	0.8905	0	0	-1.23088	-0.002951626	1666.454	-311.705		
100000	1100	-0.11615	0.009104	14.48043	-0.10832	0.001272727	0.06065	0	0	-21.6638	0.254545	-30	-3.44976	0.228374	0	0	0.8905	0	0	-3.21979	-0.0016002	1666.454	-311.705		
133333	900	-0.18166	0.005924	9.534945	-0.17651	0.000776684	0.061287	0	0	-35.3025	0.155337	-30	-5.30253	0.148597	0	0	0.8905	0	0	-5.15295	-0.000979512	1666.454	-311.705		
200000	700	-0.2486	0.00441	7.123206	-0.24471	0.000519879	0.062263	0	0	-48.9411	0.103976	-30	-7.12645	0.11063	0	0	0.8905	0	0	-7.0152	-0.000653857	1666.454	-311.705		
266667	500	-0.31607	0.003536	5.717714	-0.3129	0.000363973	0.063366	0	0	-62.5798	0.072795	-30	-8.89425	0.088705	0	0	0.8905	0	0	-8.80513	-0.000456542	1666.454	-311.705		
75000	300	-0.3838	0.00297	4.80344	-0.38109	0.000258081	0.064548	0	0	-76.2184	0.051616	-30	-10.5973	0.074504	0	0	0.8905	0	0	-10.5225	-0.00032704	1666.454	-311.705		
0	100	-0.45168	0.002576	4.163853	-0.44929	0.000180671	0.065792	0	0	-89.8571	0.036134	-30	-12.2321	0.064606	0	0	0.8905	0	0	-12.1673	-0.000223653	1666.454	-311.705		
0	3400	-0.01379	0.876769	65.60568	0.724856	0.138120086	0.669956	151.0872	0.132469	144.9713	27.62402	-30	-0.42067	1.027921	-0.59486	0.594865	0.544874	400	400	0.78082	-0.173564298	2895.253	-426.798	0	0.21633
210375	3175	-0.01292	0.778089	65.85948	0.645784	0.119383369	0.590425	151.3408	0.117757	129.1567	23.87667	-30	-0.39421	1.065759	-0.58147	0.581467	0.544874	400	400	0.821563	-0.150015382	2895.253	-426.798		
162500	2925	-0.01199	0.669299	66.15134	0.557925	0.099387636	0.503878	151.6371	0.101491	111.5849	19.87753	-30	-0.36575	1.107668	-0.56613	0.56613	0.544874	400	400	0.866797	-0.124891445	2895.253	-426.798		
100000	2700	-0.0112	0.572512	66.38622	0.478852	0.082460091	0.428477	151.8792	0.086953	95.77035	16.49202	-30	-0.34182	1.142732	-0.54513	0.552439	0.544874	400	396.8313	0.904526	-0.103618666	2895.253	-426.798		
100000	2500	-0.01051	0.486953	66.61194	0.408565	0.067874239	0.362496	152.1151	0.074073	81.71294	13.57485	-30	-0.32094	1.17456	-0.528	0.539847	0.544874	400	394.8255	0.938907	-0.08529052	2895.253	-426.798		
100000	2300	-0.0098	0.401501	66.91707	0.338278	0.053418823	0.296694	152.4389	0.061204	67.65553	10.68376	-30	-0.29934	1.21137	-0.52413	0.525891	0.544874	400	399.2236	0.979154	-0.067125056	2895.253	-426.798		
100000	2100	-0.00915	0.317025	67.18687	0.267991	0.039887056	0.233145	152.7299	0.048419	53.59812	7.977411	-30	-0.27931	1.245254	-0.51225	0.512255	0.544874	400	400	1.016063	-0.05012023	2895.253	-426.798		
100000	1900	-0.00852	0.233246	67.45424	0.197704	0.027023673	0.171226	153.0228	0.035692	39.54071	5.404735	-30	-0.26017	1.278517	-0.49848	0.49848	0.544874	400	400	1.052313	-0.033959643	2895.253	-426.798		
100000	1700	-0.00791	0.150118	67.72753	0.127416	0.014787186	0.110854	153.3268	0.023017	25.4833	2.957437	-30	-0.24174	1.31178	-0.48445	0.484454	0.544874	400	400	1.088617	-0.018580773	2895.253	-426.798		
100000	1500	-0.00606	0.064323	71.35566	0.057129	0.001131482	0.042642	0	0	11.42588	0.226296	-30	-0.18526	1.613504	0	0	0.544874	0	0	1.429664	-0.001422386	2895.253	-426.798		
100000	1300	-0.02625	0.014785	34.39304	-0.01316	0.001691143	0.038255	0	0	-2.63153	0.338229	-30	-0.7981	0.370861	0	0	0.544874	0	0	-0.42511	-0.002124529	2895.253	-426.798		
100000	1100	-0.08727	0.0045	11.78771	-0.08344	0.000669534	0.036706	0	0	-16.6889	0.133907	-30	-2.6118	0.112868	0	0	0.544874	0	0	-2.4981	-0.000840313	2895.253	-426.798		
133333	900	-0.15594	0.002565	6.780548	-0.15373	0.000355415	0.037167	0	0	-30.7463	0.071083	-30	-4.58314	0.06434	0	0	0.544874	0	0	-4.51835	-0.00044434	2895.253	-426.798		
200000	700	-0.2256	0.001807	4.786246	-0.22402	0.000224244	0.037817	0	0	-44.8038	0.044849	-30	-6.50779	0.045339	0	0	0.544874	0	0	-6.46213	-0.000283375	2895.253	-426.798		
266667	500	-0.29556	0.001408	3.727169	-0.29431	0.000152643	0.038527	0	0	-58.8612	0.030529	-30	-8.36442	0.035307	0	0	0.544874	0	0	-8.32894	-0.000187462	2895.253	-426.798		
75000	300	-0.36565	0.001161	3.073495	-0.36459	0.000106429	0.039278	0	0	-72.9186	0.021286	-30	-10.1478	0.029121	0	0	0.544874	0	0	-10.1186	-0.000135604	2895.253	-426.798		
0	100	-0.4358	0.000994	2.631296	-0.43488	7.38713E-05	0.040063	0	0	-86.976	0.014774	-30	-11.8561	0.024945	0	0	0.544874	0	0	-11.8312	-9.53749E-05	2895.253	-426.798		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.01773	0.971802	63.4609	0.774255	0.179819932	0.791086	149.0937	0.14489	154.8509	35.96399	-30	-0.54014	1.033623	-0.61038	0.62296	0.629079	400	394.9908	0.71944	-0.225960837	3984.956	-1663.48	0	0.27222
210375	3175	-0.01694	0.871417	63.44158	0.693828	0.160647375	0.710565	149.0769	0.129908	138.7655	32.12948	-30	-0.51632	1.056651	-0.56027	0.613787	0.629079	400	378.7011	0.742202	-0.201871353	3984.956	-1663.48		
162500	2925	-0.01602	0.759205	63.46314	0.604464	0.138716484	0.619726	149.0957	0.113194	120.8929	27.7433	-30	-0.48846	1.085395	-0.51196	0.603218	0.629079	400	363.6615	0.771242	-0.174312429	3984.956	-1663.48		
100000	2700	-0.01515	0.657655	63.53559	0.524037	0.118463975	0.536825	149.1588	0.098095	104.8075	23.69279	-30	-0.46202	1.114839	-0.47667	0.593145	0.629079	400	353.5332	0.80168	-0.148863236	3984.956	-1663.48		
100000	2500	-0.01434	0.567016	63.65755	0.452547	0.100129614	0.462361	149.2656	0.084636	90.50935	20.02592	-30	-0.43731	1.144652	-0.45359	0.583491	0.629079	400	348.009	0.833161	-0.125822544	3984.956	-1663.48		
100000	2300	-0.01349	0.476139	63.85293	0.381056	0.081597285	0.387373	149.4386	0.071154	76.21122	16.31946	-30	-0.41136	1.178909	-0.44071	0.572842	0.629079	400	346.8365	0.870085	-0.102535128	3984.956	-1663.48		
100000	2100	-0.01259	0.385197	64.14842	0.309565	0.063044321	0.312185	149.7042	0.057666	61.9131	12.60886	-30	-0.38403	1.219108	-0.44176	0.560713	0.629079	400	351.7506	0.914301	-0.079219742	3984.956	-1663.48		
100000	1900	-0.01164	0.294454	64.58477	0.238075	0.044742174	0.237307	150.1055	0.044199	47.61497	8.948435	-30	-0.35513	1.267706	-0.46329	0.546343	0.629079	400	365.8983	0.968792	-0.056223101	3984.956	-1663.48		
100000	1700	-0.01063	0.204315	65.22999	0.166584	0.027105658	0.16354	150.7189	0.030794	33.31684	5.421132	-30	-0.32434	1.329266	-0.51837	0.528441	0.629079	400	395.7853	1.03899	-0.03405936	3984.956	-1663.48		
100000	1500	-0.00987	0.116844	65.52423	0.095094	0.011881691	0.095561	151.0067	0.017644	19.01871	2.376338	-30	-0.3013	1.367004	-0.51497	0.51497	0.629079	400	400	1.080637	-0.014932515	3984.956	-1663.48		
100000	1300	-0.01335	0.038891	57.24929	0.023603	0.001942051	0.047533	0	0	4.720579	0.38841	-30	-0.40709	0.975547	0	0	0.629079	0	0	0.570899	-0.002439437	3984.956	-1663.48		
100000	1100	-0.05587	0.009302	20.48401	-0.04789	0.001321346	0.042729	0	0	-9.57755	0.264269	-30	-1.68564	0.233344	0	0	0.629079	0	0	-1.45064	-0.001659425	3984.956	-1663.48		
133333	900	-0.12306	0.004294	9.785486	-0.11938	0.000615754	0.04266	0	0	-23.8757	0.123151	-30	-3.64826	0.107724	0	0	0.629079	0	0	-3.53976	-0.000772348	3984.956	-1663.48		
200000	700	-0.19329	0.002787	6.38227	-0.19087	0.000364044	0.043323	0	0	-38.1738	0.072809	-30	-5.62452	0.069909	0	0	0.629079	0	0	-5.55417	-0.00045614	3984.956	-1663.48		
266667	500	-0.2642	0.00208	4.768425	-0.26236	0.000239953	0.044118	0	0	-52.4719	0.047991	-30	-7.54158	0.052177	0	0	0.629079	0	0	-7.48916	-0.000299428	3984.956	-1663.48		
75000	300	-0.33536	0.001672	3.834275	-0.33385	0.0001654	0.044974	0	0	-66.7701	0.03308	-30	-9.38648	0.041954	0	0	0.629079	0	0	-9.34437	-0.0002078	3984.956	-1663.48		
0	100	-0.40663	0.001409	3.227692	-0.40534	0.000114991	0.045876	0	0	-81.0682	0.022998	-30	-11.1552	0.035333	0	0	0.629079	0	0	-11.1198	-0.000143413	3984.956	-1663.48		
0	3400	-0.01909	1.038428	62.96451	0.819937	0.199405966	0.856316	148.6693	0.154382	163.9873	39.88119	-30	-0.58132	1.019506	-0.62294	0.632009	0.648129	400	396.4333	0.688762	-0.250572662	1146.324	1303.652	0	0.281862
210375	3175	-0.0182	0.92552	62.90874	0.729794	0.177521671	0.765253	148.6225	0.137553	145.9588	35.50433	-30	-0.55461	1.043959	-0.56447	0.622319	0.648129	400	377.2907	0.712419	-0.223072349	1146.324	1303.652		
162500	2925	-0.01717	0.799116	62.89273	0.629636	0.152312572	0.662179	148.6091	0.118756	125.9272	30.46251	-30	-0.52316	1.074763	-0.50792	0.611265	0.648129	400	359.4491	0.742995	-0.191395556	1146.324	1303.652		
100000	2700	-0.01618	0.684532	62.93766	0.539493	0.128862864	0.567779	148.6467	0.101753	107.8987	25.77257	-30	-0.49304	1.10668	-0.46648	0.600798	0.648129	400	347.2329	0.775553	-0.161929609	1146.324	1303.652		
100000	2500	-0.01524	0.582105	63.04503	0.459367	0.107496834	0.48271	148.7372	0.086581	91.87336	21.49937	-30	-0.46467	1.139419	-0.43934	0.590764	0.648129	400	340.3517	0.809822	-0.135080572	1146.324	1303.652		
100000	2300	-0.01425	0.479276	63.24237	0.37924	0.085785116	0.396803	148.9052	0.071367	75.84803	17.15702	-30	-0.43459	1.177639	-0.42443	0.5796	0.648129	400	338.5657	0.850847	-0.107798905	1146.324	1303.652		
100000	2100	-0.0132	0.376285	63.56842	0.299114	0.063974789	0.310494	149.1875	0.056137	59.82271	12.79496	-30	-0.40257	1.22345	-0.42683	0.566619	0.648129	400	344.1805	0.901271	-0.080391984	1146.324	1303.652		
100000	1900	-0.01207	0.273534	64.08587	0.218987	0.042477643	0.224531	149.6475	0.040934	43.79738	8.495529	-30	-0.36829	1.280552	-0.45615	0.550668	0.648129	400	361.7289	0.96564	-0.053378554	1146.324	1303.652		
100000	1700	-0.01086	0.171758	64.88502	0.13886	0.02203735	0.140364	150.3879	0.02583	27.77205	4.40747	-30	-0.3315	1.354971	-0.52994	0.529942	0.648129	400	400	1.051159	-0.027694007	1146.324	1303.652		
100000	1500	-0.01003	0.073488	65.14544	0.058734	0.004725918	0.063704	150.6371	0.01107	11.74672	0.945184	-30	-0.30617	1.393239	-0.51604	0.516038	0.648129	400	400	1.093012	-0.005939348	1146.324	1303.652		
100000	1300	-0.03515	0.015649	31.35479	-0.02139	0.001896119	0.04514	0	0	-4.2786	0.379224	-30	-1.06607	0.392535	0	0	0.648129	0	0	-0.67116	-0.002382641	1146.324	1303.652		
100000	1100	-0.10602	0.005267	11.60381	-0.10152	0.000764592	0.043855	0	0	-20.3039	0.152918	-30	-3.15733	0.132125	0	0	0.648129	0	0	-3.02425	-0.000962123	1146.324	1303.652		
133333	900	-0.18433	0.003094	6.874164	-0.18165	0.000409451	0.044543	0	0	-36.3293	0.08189	-30	-5.37667	0.077622	0	0	0.648129	0	0	-5.29855	-0.000514119	1146.324	1303.652		
200000	700	-0.26373	0.002211	4.920261	-0.26177	0.00025508	0.045451	0	0	-52.3546	0.051016	-30	-7.52912	0.055473	0	0	0.648129	0	0	-7.47334	-0.000322577	1146.324	1303.652		
266667	500	-0.34347	0.001737	3.865766	-0.3419	0.000168166	0.046441	0	0	-68.3799	0.033633	-30	-9.59176	0.043578	0	0	0.648129	0	0	-9.54797	-0.000218206	1146.324	1303.652		
75000	300	-0.42336	0.001443	3.209429	-0.42203	0.000111732	0.047491	0	0	-84.4052	0.022346	-30	-11.5587	0.036203	0	0	0.648129	0	0	-11.5223	-0.000140394	1146.324	1303.652		
0	100	-0.50333	0.001243	2.763437	-0.50215	7.06301E-05	0.048596	0	0	-100.431	0.014126	-30	-13.4278	0.031192	0	0	0.648129	0	0	-13.3964	-9.25848E-05	1146.324	1303.652		
0	3400	-0.02007	1.108775	62.72566	0.871725	0.216983112	0.919565	148.4699	0.16462	174.3449	43.39662	-30	-0.61108	1.000458	-0.63935	0.63935	0.656385	400	400	0.662045	-0.27266263	4843.809	-2489.94	0	0.329462
210375	3175	-0.01916	0.999707	62.7156	0.785605	0.194943231	0.830184	148.4616	0.148418	157.121	38.98865	-30	-0.58353	1.027606	-0.59244	0.629933	0.656385	400	385.3519	0.689047	-0.244966147	4843.809	-2489.94		
162500	2925	-0.01819	0.87915	62.66329	0.689916	0.171040745	0.732114	148.4184	0.130482	137.9833	34.20815	-30	-0.55425	1.054794	-0.53365	0.619794	0.656385	400	366.39	0.715476	-0.21493117	4843.809	-2489.94		
100000	2700	-0.01727	0.769839	62.65837	0.603797	0.148770511	0.642259	148.4143	0.114255	120.7593	29.7541	-30	-0.52633	1.082514	-0.48812	0.610397	0.656385	400	352.299	0.743125	-0.186943615	4843.809	-2489.94		
100000	2500	-0.01641	0.67206	62.70116	0.527246	0.128406107	0.561174	148.4497	0.099767	105.4492	25.68122	-30	-0.50012	1.110431	-0.45492	0.60163	0.656385	400	342.7061	0.771663	-0.161354366	4843.809	-2489.94		
100000	2300	-0.0155	0.573771	62.80532	0.450695	0.10757953	0.47907	148.5361	0.085226	90.13899	21.51591	-30	-0.47244	1.142295	-0.43039	0.592208	0.656385	400	336.6415	0.805036	-0.135183986	4843.809	-2489.94		
100000	2100	-0.01453	0.475097	62.99464	0.374144	0.08642174	0.396172	148.6947	0.070644	74.82882	17.28435	-30	-0.44312	1.179333	-0.41728	0.581735	0.656385	400	335.3012	0.84481	-0.10859693	4843.809	-2489.94		
100000	1900	-0.01351	0.376256	63.30466	0.297593	0.065157273	0.312869	148.9587	0.056047	59.51865	13.03145	-30	-0.41193	1.223465	-0.42017	0.569587	0.656385	400	340.7498	0.893405	-0.081875402	4843.809	-2489.94		
100000	1700	-0.01241	0.277606	63.79199	0.221042	0.044155806	0.229825	149.3844	0.04147	44.20848	8.831161	-30	-0.37858	1.277994	-0.44754	0.554729	0.656385	400	356.9456	0.954899	-0.055485677	4843.809	-2489.94		
100000	1500	-0.01122	0.179732	64.55816	0.144492	0.024020304	0.148154	150.0807	0.026974	28.89831	4.804061	-30	-0.34244	1.34956	-0.51783	0.535272	0.656385	400	392.8453	1.037298	-0.030181377	4843.809	-2489.94		
100000	1300	-0.01035	0.08512	64.9007	0.067941	0.006826159	0.073348	150.4028	0.012802	13.58814	1.365232	-30	-0.31604	1.3927	-0.52085	0.520846	0.656385	400	400	1.085236	-0.008575972	4843.809	-2489.94		
100000	1100	-0.02721	0.020728	38.52762	-0.00861	0.002128547	0.04672	0	0	-1.72203	0.425709	-30	-0.82705	0.519955	0	0	0.656385	0	0	-0.30442	-0.002673531	4843.809	-2489.94		
133333	900	-0.09054	0.006301	13.63413	-0.08516	0.000919822	0.044369	0	0	-17.0322	0.183964	-30	-2.70727	0.158053	0	0	0.656385	0	0	-2.54806	-0.001157524	4843.809	-2489.94		
200000	700	-0.16476	0.003532	7.738209	-0.16171	0.00048042	0.044908	0	0	-32.3424	0.096084	-30	-4.83106	0.088587	0	0	0.656385	0	0	-4.74188	-0.000605201	4843.809	-2489.94		
266667	500	-0.24044	0.002472	5.428221	-0.23826	0.000297788	0.045751	0	0	-47.6525	0.059558	-30	-6.90786	0.061997	0	0	0.656385	0	0	-6.84551	-0.000375535	4843.809	-2489.94		
75000	300	-0.31653	0.001919	4.215176	-0.31481	0.000198099	0.046687	0	0	-62.9627	0.03962	-30	-8.90613	0.048126	0	0	0.656385	0	0	-8.85784	-0.000250538	4843.809	-2489.94		
0	100	-0.39281	0.001581	3.472112	-0.39136	0.000134293	0.047683	0	0	-78.2729	0.026859	-30	-10.8184	0.039655	0	0	0.656385	0	0	-10.7786	-0.000170652	4843.809	-2489.94		
0	3400	-0.01683	1.131231	64.57362	0.919594	0.194802728	0.890354	150.0951	0.169792	183.9188	38.96055	-30	-0.51304	0.942115	-0.63052	0.63052	0.564254	400	400	0.673869	-0.244789515	4449.153	-1819.24	0	0.306754
210375	3175	-0.01574	1.015142	64.83058	0.82868	0.170726452	0.793602	150.3363	0.152613	165.736	34.14529	-30	-0.47969	0.986229	-0.61673	0.61673	0.564254	400	400	0.721079	-0.214534093	4449.153	-1819.24		
162500	2925	-0.01455	0.887172	65.12845	0.727664	0.144956233	0.688155	150.6207	0.133627	145.5329	28.99125	-30	-0.44373	1.035008	-0.60082	0.600819	0.564254	400	400	0.773431	-0.182154141	4449.153	-1819.24		
100000	2700	-0.01352	0.772958	65.4078	0.63675	0.12268667	0.595221	150.8922	0.116633	127.3501	24.53733	-30	-0.41242	1.078713	-0.58596	0.585965	0.564254	400	400	0.82047	-0.15416728	4449.153	-1819.24		
100000	2500	-0.01272	0.673378	65.5607	0.555938	0.104721842	0.516849	151.0427	0.101709	111.1876	20.94437	-30	-0.38802	1.110032	-0.55331	0.573661	0.564254	400	391.4005	0.853608	-0.131593791	4449.153	-1819.24		
100000	2300	-0.01192	0.574117	65.73266	0.475126	0.087069876	0.439152	151.2136	0.086814	95.02512	17.41398	-30	-0.36379	1.142174	-0.52247	0.560953	0.564254	400	383.6522	0.887791	-0.109410876	4449.153	-1819.24		
100000	2100	-0.01109	0.474766	65.98809	0.394313	0.069361523	0.361197	151.4707	0.071913	78.86264	13.8723	-30	-0.33851	1.179467	-0.5046	0.546923	0.564254	400	381.8803	0.928105	-0.087158334	4449.153	-1819.24		
100000	1900	-0.01022	0.37554	66.35764	0.313501	0.051815353	0.283434	151.8496	0.057026	62.70016	10.36307	-30	-0.31212	1.223817	-0.50504	0.530979	0.564254	400	388.7629	0.976804	-0.065110316	4449.153	-1819.24		
100000	1700	-0.00937	0.277231	66.78228	0.232688	0.035168248	0.207674	152.2951	0.042221	46.53768	7.03365	-30	-0.28624	1.271187	-0.51383	0.513825	0.564254	400	400	1.029141	-0.044192001	4449.153	-1819.24		
100000	1500	-0.00864	0.180565	67.08288	0.151876	0.020052602	0.135719	152.6172	0.027557	30.3752	4.01052	-30	-0.26375	1.309464	-0.49825	0.498249	0.564254	400	400	1.070916	-0.025198469	4449.153	-1819.24		
100000	1300	-0.00793	0.084762	67.39161	0.071064	0.005768947	0.065791	152.9538	0.012965	14.21272	1.153789	-30	-0.24222	1.347723	-0.48232	0.482323	0.564254	400	400	1.11275	-0.007249914	4449.153	-1819.24		
100000	1100	-0.02476	0.016817	36.92985	-0.00975	0.0018084	0.039935	0	0	-1.94976	0.36168	-30	-0.75297	0.42184	0	0	0.564254	0	0	-0.32886	-0.002273008	4449.153	-1819.24		
133333	900	-0.09437	0.004471	11.32226	-0.09056	0.000660908	0.038055	0	0	-18.1122	0.132182	-30	-2.81894	0.112145	0	0	0.564254	0	0	-2.70597	-0.000832371	4449.153	-1819.24		
200000	700	-0.17352	0.002484	6.343517	-0.17137	0.000335275	0.038655	0	0	-34.2747	0.067055	-30	-5.07603	0.062308	0	0	0.564254	0	0	-5.01329	-0.000420004	4449.153	-1819.24		
266667	500	-0.25372	0.001737	4.44236	-0.25219	0.00020486	0.039454	0	0	-50.4372	0.040972	-30	-7.26315	0.043583	0	0	0.564254	0	0	-7.21934	-0.000253542	4449.153	-1819.24		
75000	300	-0.33421	0.00135	3.450776	-0.333	0.000133834	0.040323	0	0	-66.5997	0.026767	-30	-9.35746	0.033853	0	0	0.564254	0	0	-9.32354	-0.000171626	4449.153	-1819.24		
0	100	-0.41484	0.001114	2.845141	-0.41381	8.87547E-05	0.041242	0	0	-82.7622	0.017751	-30	-11.3536	0.027933	0	0	0.564254	0	0	-11.3257	-0.000109019	4449.153	-1819.24		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.06569	1.631002	51.22346	0.965506	0.599809855	1.656809	142.2597	0.232026	193.1011	119.962	-27.8482	-1.83502	0.921745	-0.38175	0.558756	1.34598	400	342.2986	-0.15954	-0.753720877	625.1451	-370.511	0	0.632756
210375	3175	-0.06308	1.487502	50.69774	0.865393	0.559029356	1.520014	142.1235	0.211409	173.0786	111.8059	-28.4934	-1.80423	0.941859	-0.32651	0.556868	1.34598	400	325.1982	-0.1599	-0.702474887	625.1451	-370.511		
162500	2925	-0.06013	1.32451	50.07338	0.754157	0.51022548	1.362981	141.9776	0.188051	150.8314	102.0451	-29.2635	-1.76763	0.967106	-0.27049	0.556814	1.34598	400	307.409	-0.15937	-0.641148997	625.1451	-370.511		
100000	2700	-0.05743	1.174025	49.47289	0.654045	0.462554295	1.216472	141.8534	0.166539	130.8089	92.51086	-30	-1.73193	0.993183	-0.22568	0.558968	1.34598	400	292.6006	-0.15749	-0.581247991	625.1451	-370.511		
100000	2500	-0.05627	1.037831	48.90164	0.565056	0.416507386	1.083967	141.7499	0.147112	113.0112	83.30148	-30	-1.69749	1.019629	-0.19084	0.563065	1.34598	400	280.4053	-0.15448	-0.523385782	625.1451	-370.511		
100000	2300	-0.05499	0.897505	48.30431	0.476067	0.366447486	0.946167	141.6569	0.127138	95.21338	73.2895	-30	-1.65953	1.050445	-0.16207	0.569517	1.34598	400	269.4335	-0.1486	-0.460478569	625.1451	-370.511		
100000	2100	-0.05355	0.752125	47.69133	0.387078	0.311500475	0.802119	141.5775	0.106484	77.41561	62.30009	-30	-1.61655	1.087332	-0.14102	0.578831	1.34598	400	260.0176	-0.13779	-0.391430606	625.1451	-370.511		
100000	1900	-0.05185	0.60045	47.0913	0.298089	0.250513547	0.650561	141.5156	0.084973	59.61784	50.10271	-30	-1.56594	1.13321	-0.13052	0.591678	1.34598	400	252.8117	-0.11793	-0.314796338	625.1451	-370.511		
100000	1700	-0.04972	0.440843	46.58185	0.2091	0.182026991	0.489811	141.4753	0.062368	41.82007	36.4054	-30	-1.50237	1.193697	-0.13622	0.608904	1.34598	400	249.3062	-0.07994	-0.228733439	625.1451	-370.511		
100000	1500	-0.04673	0.271435	46.3979	0.120112	0.10459242	0.317788	141.4635	0.038398	24.0223	20.91848	-30	-1.41328	1.281883	-0.17239	0.631279	1.34598	400	253.7526	2.97E-05	-0.131431401	625.1451	-370.511		
100000	1300	-0.04154	0.092159	47.49502	0.031123	0.019492891	0.133196	141.5555	0.013046	6.224531	3.898578	-30	-1.25807	1.444128	-0.29843	0.656547	1.34598	400	285.5722	0.21055	-0.024494244	625.1451	-370.511		
100000	1100	-0.08323	0.028844	28.4044	-0.05787	0.003484326	0.093785	0	0	-11.5732	0.696865	-30	-2.49326	0.723525	0	0	1.34598	0	0	-1.76536	-0.004377361	625.1451	-370.511		
133333	900	-0.16016	0.01527	15.98298	-0.14686	0.001969594	0.092873	0	0	-29.371	0.393919	-30	-4.70173	0.383042	0	0	1.34598	0	0	-4.31621	-0.002478959	625.1451	-370.511		
200000	700	-0.24488	0.010221	10.8457	-0.23584	0.001188575	0.094286	0	0	-47.1688	0.237715	-30	-7.02692	0.256375	0	0	1.34598	0	0	-6.76905	-0.001496871	625.1451	-370.511		
266667	500	-0.33181	0.007732	8.239254	-0.32483	0.000758912	0.096312	0	0	-64.9665	0.151782	-30	-9.29627	0.193952	0	0	1.34598	0	0	-9.10139	-0.000948436	625.1451	-370.511		
75000	300	-0.41961	0.006273	6.694049	-0.41382	0.000486407	0.098611	0	0	-82.7643	0.097281	-30	-11.4686	0.157362	0	0	1.34598	0	0	-11.3107	-0.000612943	625.1451	-370.511		
0	100	-0.50784	0.005323	5.681136	-0.50281	0.000294256	0.101099	0	0	-100.562	0.058851	-30	-13.5303	0.133523	0	0	1.34598	0	0	-13.3965	-0.000375947	625.1451	-370.511		
0	3400	-0.01957	1.27032	63.69713	1.017047	0.23370156	1.024786	149.3005	0.189659	203.4094	46.74031	-29.5289	-0.58667	0.905481	-0.64953	0.649526	0.592732	400	400	0.612497	-0.293670994	5236.809	-2612.63	0	0.364938
210375	3175	-0.01802	1.144768	63.94302	0.920403	0.206341273	0.917714	149.519	0.171165	184.0807	41.26825	-30	-0.54912	0.952931	-0.63613	0.636133	0.592732	400	400	0.663106	-0.259289199	5236.809	-2612.63		
162500	2925	-0.01668	1.006459	64.22653	0.813021	0.176759397	0.801238	149.7752	0.150743	162.6043	35.35188	-30	-0.50832	1.005462	-0.62076	0.62076	0.592732	400	400	0.719263	-0.222113715	5236.809	-2612.63		
100000	2700	-0.0155	0.882978	64.4938	0.716378	0.15109601	0.698374	150.0209	0.132465	143.2755	30.2192	-30	-0.47266	1.052478	-0.60634	0.606335	0.592732	400	400	0.769681	-0.189865035	5236.809	-2612.63		
100000	2500	-0.01466	0.776509	64.55583	0.630472	0.131374613	0.613884	150.0785	0.116537	126.0944	26.27492	-30	-0.4471	1.080726	-0.56005	0.59507	0.592732	400	385.632	0.798716	-0.165086331	5236.809	-2612.63		
100000	2300	-0.0138	0.669873	64.65188	0.544567	0.111506073	0.529026	150.1682	0.100594	108.9133	22.30121	-30	-0.42091	1.111095	-0.51877	0.583343	0.592732	400	373.4345	0.830302	-0.14011923	5236.809	-2612.63		
100000	2100	-0.0129	0.562873	64.82166	0.458661	0.091316902	0.44336	150.3279	0.084616	91.7322	18.26338	-30	-0.3934	1.146109	-0.4886	0.570606	0.592732	400	366.0987	0.867464	-0.114748238	5236.809	-2612.63		
100000	1900	-0.01194	0.455692	65.09382	0.372755	0.070994028	0.357243	150.5874	0.068621	74.55109	14.19881	-30	-0.36442	1.187361	-0.47353	0.556334	0.592732	400	365.4964	0.912146	-0.089211102	5236.809	-2612.63		
100000	1700	-0.01094	0.348628	65.51204	0.28685	0.050839406	0.271269	150.9946	0.052641	57.36998	10.16788	-30	-0.33386	1.237471	-0.4806	0.539701	0.592732	400	375.0642	0.967498	-0.063885972	5236.809	-2612.63		
100000	1500	-0.00989	0.242249	66.12476	0.200944	0.031418329	0.186637	151.6099	0.036727	40.18886	6.283666	-30	-0.30184	1.299661	-0.51966	0.519664	0.592732	400	400	1.037305	-0.039477235	5236.809	-2612.63		
100000	1300	-0.00907	0.138657	66.43103	0.115039	0.014551846	0.10828	151.9258	0.021066	23.00775	2.910369	-30	-0.27686	1.340431	-0.50364	0.503637	0.592732	400	400	1.081855	-0.018284988	5236.809	-2612.63		
100000	1100	-0.01101	0.041867	60.61055	0.029133	0.001725096	0.045219	0	0	5.826635	0.345019	-30	-0.33602	1.050217	0	0	0.592732	0	0	0.716373	-0.002166415	5236.809	-2612.63		
133333	900	-0.06303	0.00733	17.35283	-0.05677	0.001070988	0.040061	0	0	-11.3545	0.214198	-30	-1.89822	0.183871	0	0	0.592732	0	0	-1.71301	-0.001344744	5236.809	-2612.63		
200000	700	-0.14547	0.003245	7.872586	-0.14268	0.000454603	0.040355	0	0	-28.5356	0.090921	-30	-4.28722	0.081389	0	0	0.592732	0	0	-4.20527	-0.0005708	5236.809	-2612.63		
266667	500	-0.23042	0.002097	5.102754	-0.22858	0.000257884	0.041198	0	0	-45.7167	0.051577	-30	-6.63818	0.052609	0	0	0.592732	0	0	-6.58522	-0.000319587	5236.809	-2612.63		
75000	300	-0.31589	0.001567	3.814678	-0.31449	0.000162194	0.042148	0	0	-62.8978	0.032439	-30	-8.88971	0.039316	0	0	0.592732	0	0	-8.85026	-0.000206133	5236.809	-2612.63		
0	100	-0.40155	0.001264	3.075536	-0.40039	0.000104611	0.043162	0	0	-80.0789	0.020922	-30	-11.0318	0.031711	0	0	0.592732	0	0	-11	-0.000136769	5236.809	-2612.63		
0	3400	-0.02843	1.413997	60.51652	1.064592	0.320974118	1.235974	146.7707	0.207533	212.9184	64.19482	-28.8356	-0.83036	0.932517	-0.66566	0.665663	0.75528	400	400	0.505487	-0.403334831	4218.491	-1833.97	0	0.458128
210375	3175	-0.02641	1.277606	60.55218	0.962425	0.288773068	1.116533	146.796	0.187548	192.4849	57.75461	-29.4929	-0.78928	0.97492	-0.63414	0.656481	0.75528	400	391.6957	0.548511	-0.362873898	4218.491	-1833.97		
162500	2925	-0.02483	1.132389	60.33396	0.848905	0.25865137	0.99537	146.6417	0.166055	169.781	51.73027	-30	-0.75524	1.000952	-0.55575	0.646731	0.75528	400	366.3293	0.570741	-0.325020862	4218.491	-1833.97		
100000	2700	-0.02374	1.000384	60.15433	0.746738	0.229904935	0.884147	146.5164	0.146573	149.3475	45.98099	-30	-0.72225	1.027462	-0.49205	0.638494	0.75528	400	346.0047	0.594109	-0.288897158	4218.491	-1833.97		
100000	2500	-0.0227	0.881715	60.02277	0.655922	0.203090302	0.78289	146.4258	0.129106	131.1844	40.61806	-30	-0.69086	1.054181	-0.44216	0.631416	0.75528	400	330.4041	0.61852	-0.255204251	4218.491	-1833.97		
100000	2300	-0.02159	0.761731	59.93297	0.565106	0.175034131	0.679291	146.3644	0.11149	113.0213	35.00683	-30	-0.65719	1.084707	-0.40002	0.624432	0.75528	400	317.6262	0.647467	-0.219949198	4218.491	-1833.97		
100000	2100	-0.02039	0.640409	59.90811	0.474291	0.145729297	0.573324	146.3475	0.093722	94.85818	29.14586	-30	-0.6208	1.120228	-0.36774	0.617294	0.75528	400	308.4425	0.68255	-0.183124074	4218.491	-1833.97		
100000	1900	-0.01908	0.517818	59.9854	0.383475	0.11526303	0.465105	146.4002	0.075809	76.69506	23.05261	-30	-0.58116	1.162573	-0.34872	0.609532	0.75528	400	304.1635	0.726255	-0.144840678	4218.491	-1833.97		
100000	1700	-0.01764	0.394213	60.22711	0.29266	0.083911731	0.355032	146.567	0.057779	58.53194	16.78235	-30	-0.53752	1.214797	-0.34905	0.600252	0.75528	400	307.2384	0.782719	-0.10544434	4218.491	-1833.97		
100000	1500	-0.01604	0.270202	60.74575	0.201844	0.052322003	0.244079	146.935	0.039702	40.36882	10.4644	-30	-0.4888	1.282669	-0.38127	0.587668	0.75528	400	322.9507	0.859618	-0.065746397	4218.491	-1833.97		
100000	1300	-0.01419	0.147092	61.77961	0.111029	0.02187109	0.1344	147.7105	0.021727	22.20571	4.374218	-30	-0.43281	1.379906	-0.47852	0.567742	0.75528	400	365.9176	0.974582	-0.027483174	4218.491	-1833.97		
100000	1100	-0.01829	0.040927	53.73942	0.020213	0.0024284	0.056478	0	0	4.042589	0.48568	-30	-0.55706	1.026621	0	0	0.75528	0	0	0.472612	-0.003052417	4218.491	-1833.97		
133333	900	-0.0788	0.009561	17.73428	-0.0706	0.001362323	0.051273	0	0	-14.1205	0.272465	-30	-2.36343	0.239827	0	0	0.75528	0	0	-2.1219	-0.001711638	4218.491	-1833.97		
200000	700	-0.16545	0.004658	8.852469	-0.16142	0.000629571	0.051731	0	0	-32.2836	0.125914	-30	-4.85023	0.116844	0	0	0.75528	0	0	-4.73259	-0.000787455	4218.491	-1833.97		
266667	500	-0.25497	0.003099	5.910145	-0.25223	0.000362532	0.052863	0	0	-50.4468	0.072506	-30	-7.29649	0.077729	0	0	0.75528	0	0	-7.21833	-0.000456357	4218.491	-1833.97		
75000	300	-0.34517	0.002349	4.482448	-0.34305	0.000226292	0.054154	0	0	-68.6099	0.045258	-30	-9.63474	0.058922	0	0	0.75528	0	0	-9.57555	-0.000287061	4218.491	-1833.97		
0	100	-0.43563	0.001912	3.646296	-0.43386	0.00014214	0.055541	0	0	-86.773	0.028428	-30	-11.8521	0.047957	0	0	0.75528	0	0	-11.8041	-0.00017393	4218.491	-1833.97		
0	3400	-0.0179	1.358227	65.00409	1.112517	0.227807176	1.054051	150.5014	0.204415	222.5035	45.56144	-29.1008	-0.52912	0.83107	-0.65078	0.650782	0.520924	400	400	0.588204	-0.286263618	4031.909	-1121.2	0	0.362866
210375	3175	-0.01621	1.221522	65.31723	1.005681	0.199633314	0.939288	150.8037	0.18421	201.1362	39.92666	-29.772	-0.49028	0.882607	-0.6341	0.634104	0.520924	400	400	0.643198	-0.250861333	4031.909	-1121.2		
162500	2925	-0.0147	1.071148	65.67956	0.886974	0.169468525	0.815022	151.1606	0.161915	177.3949	33.8937	-30	-0.44839	0.939667	-0.61491	0.614909	0.520924	400	400	0.704237	-0.212955736	4031.909	-1121.2		
100000	2700	-0.01351	0.937159	66.02051	0.780138	0.143511444	0.706029	151.5036	0.141983	156.0277	28.70229	-30	-0.41206	0.990803	-0.59695	0.596948	0.520924	400	400	0.759096	-0.180339771	4031.909	-1121.2		
100000	2500	-0.01249	0.819146	66.33625	0.685173	0.121487531	0.611449	151.8274	0.124369	137.0346	24.29751	-30	-0.38093	1.036082	-0.5804	0.580397	0.520924	400	400	0.807805	-0.152658872	4031.909	-1121.2		
100000	2300	-0.0115	0.702195	66.66412	0.590208	0.100485495	0.519168	152.17	0.106853	118.0415	20.0971	-30	-0.35101	1.081219	-0.5633	0.563298	0.520924	400	400	0.856487	-0.126271508	4031.909	-1121.2		
100000	2100	-0.01056	0.586342	67.00389	0.495242	0.080542062	0.429318	152.532	0.089436	99.04845	16.10841	-30	-0.32229	1.126245	-0.54566	0.545663	0.520924	400	400	0.905168	-0.101206605	4031.909	-1121.2		
100000	1900	-0.00966	0.471618	67.35553	0.400277	0.061685347	0.342024	152.9141	0.072117	80.05537	12.33707	-30	-0.29481	1.171193	-0.52751	0.52751	0.520924	400	400	0.953879	-0.07751395	4031.909	-1121.2		
100000	1700	-0.0088	0.358049	67.71858	0.305311	0.043939953	0.257413	153.3168	0.054895	61.06229	8.787991	-30	-0.26867	1.216101	-0.50886	0.508863	0.520924	400	400	1.002652	-0.055216924	4031.909	-1121.2		
100000	1500	-0.00798	0.245655	68.0925	0.210346	0.027326627	0.175601	153.7401	0.037767	42.06921	5.465325	-30	-0.24382	1.261012	-0.48976	0.489757	0.520924	400	400	1.051523	-0.034337531	4031.909	-1121.2		
100000	1300	-0.00721	0.134448	68.47672	0.115381	0.01185553	0.096696	154.1844	0.02073	23.07613	2.371106	-30	-0.22034	1.305969	-0.47023	0.470232	0.520924	400	400	1.100527	-0.014899387	4031.909	-1121.2		
100000	1100	-0.01083	0.032845	57.7593	0.020415	0.00159979	0.039415	0	0	4.083056	0.319958	-30	-0.33057	0.823901	0	0	0.520924	0	0	0.495341	-0.002010401	4031.909	-1121.2		
133333	900	-0.07843	0.004566	12.48977	-0.07455	0.00068387	0.035049	0	0	-14.91	0.136774	-30	-2.35259	0.114529	0	0	0.520924	0	0	-2.23719	-0.000859968	4031.909	-1121.2		
200000	700	-0.17137	0.002142	5.929647	-0.16952	0.000290673	0.035658	0	0	-33.9031	0.058135	-30	-5.01587	0.053742	0	0	0.520924	0	0	-4.96175	-0.000363043	4031.909	-1121.2		
266667	500	-0.26574	0.001419	3.930322	-0.26448	0.000163569	0.036537	0	0	-52.8962	0.032714	-30	-7.58224	0.035587	0	0	0.520924	0	0	-7.54647	-0.000202541	4031.909	-1121.2		
75000	300	-0.36042	0.001075	2.97682	-0.35945	0.000100158	0.037496	0	0	-71.8893	0.020032	-30	-10.0175	0.026968	0	0	0.520924	0	0	-9.9904	-0.000121267	4031.909	-1121.2		
0	100	-0.45523	0.000875	2.422031	-0.45441	6.05889E-05	0.038515	0	0	-90.8823	0.012118	-30	-12.3155	0.021952	0	0	0.520924	0	0	-12.2937	-8.15713E-05	4031.909	-1121.2		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.02229	1.462282	63.31484	1.162874	0.277119196	1.19138	148.9674	0.217832	232.5749	55.42384	-28.6099	-0.64688	0.833972	-0.66899	0.668991	0.5942	400	400	0.535313	-0.348225798	5994.159	-3341.02	0	0.435354
210375	3175	-0.02034	1.323021	63.5681	1.056842	0.245838556	1.070931	149.1872	0.197378	211.3683	49.16771	-29.2708	-0.60429	0.886417	-0.65511	0.655107	0.5942	400	400	0.591041	-0.308918842	5994.159	-3341.02		
162500	2925	-0.01832	1.169527	63.86366	0.939027	0.21217714	0.939508	149.4481	0.174784	187.8055	42.43543	-30	-0.55819	0.944348	-0.63898	0.63898	0.5942	400	400	0.652785	-0.266620258	5994.159	-3341.02		
100000	2700	-0.01698	1.03269	64.14017	0.832995	0.182710916	0.823983	149.6967	0.15459	166.5989	36.54218	-30	-0.51761	0.996297	-0.62397	0.623968	0.5942	400	400	0.708284	-0.22959542	5994.159	-3341.02		
100000	2500	-0.01583	0.912	64.39738	0.738743	0.157427714	0.723146	149.9318	0.136738	147.7486	31.48554	-30	-0.48254	1.042221	-0.61007	0.610065	0.5942	400	400	0.757495	-0.197823794	5994.159	-3341.02		
100000	2300	-0.01486	0.794494	64.50036	0.644492	0.1351383	0.628983	150.027	0.119196	128.8984	27.02766	-30	-0.45323	1.07597	-0.56616	0.597407	0.5942	400	387.1998	0.792555	-0.169815965	5994.159	-3341.02		
100000	2100	-0.01392	0.67748	64.59661	0.55024	0.11331818	0.535849	150.1165	0.101701	110.0481	22.66364	-30	-0.42458	1.108794	-0.51973	0.584688	0.5942	400	373.3211	0.826604	-0.142397192	5994.159	-3341.02		
100000	1900	-0.01293	0.56001	64.77993	0.455989	0.09109509	0.441711	150.2885	0.084163	91.19782	18.21902	-30	-0.39433	1.147122	-0.48645	0.570789	0.5942	400	365.1779	0.867258	-0.114469638	5994.159	-3341.02		
100000	1700	-0.01187	0.442326	65.08817	0.361738	0.068714746	0.347036	150.582	0.066606	72.34755	13.74295	-30	-0.36231	1.193057	-0.47157	0.555018	0.5942	400	365.2323	0.917089	-0.086345538	5994.159	-3341.02		
100000	1500	-0.01076	0.324837	65.58193	0.267486	0.046593998	0.252645	151.0637	0.049071	53.49728	9.3188	-30	-0.32832	1.250258	-0.48497	0.536228	0.5942	400	378.325	0.980491	-0.05855078	5994.159	-3341.02		
100000	1300	-0.00966	0.20887	66.18302	0.173235	0.025975569	0.161462	151.6695	0.031679	34.64701	5.195114	-30	-0.29493	1.313509	-0.51514	0.515144	0.5942	400	400	1.051225	-0.032641371	5994.159	-3341.02		
100000	1100	-0.00877	0.09554	66.52195	0.078984	0.007784892	0.076234	152.0207	0.014524	15.79673	1.556978	-30	-0.26787	1.358219	-0.49742	0.497425	0.5942	400	400	1.100125	-0.009779871	5994.159	-3341.02		
133333	900	-0.02924	0.015795	33.84832	-0.01527	0.001823514	0.041666	0	0	-3.05354	0.364703	-30	-0.88828	0.396217	0	0	0.5942	0	0	-0.48977	-0.002291388	5994.159	-3341.02		
200000	700	-0.11307	0.004158	10.0278	-0.10952	0.000603979	0.040203	0	0	-21.9038	0.120796	-30	-3.36109	0.104312	0	0	0.5942	0	0	-3.25603	-0.000758949	5994.159	-3341.02		
266667	500	-0.20581	0.002343	5.685488	-0.20377	0.000300287	0.04104	0	0	-40.7541	0.060057	-30	-5.96875	0.058778	0	0	0.5942	0	0	-5.90963	-0.00037875	5994.159	-3341.02		
75000	300	-0.2995	0.001654	4.014594	-0.29802	0.000177446	0.042064	0	0	-59.6044	0.035489	-30	-8.46663	0.041478	0	0	0.5942	0	0	-8.42498	-0.000224714	5994.159	-3341.02		
0	100	-0.39346	0.001293	3.139243	-0.39227	0.000109605	0.04317	0	0	-78.4546	0.021921	-30	-10.8342	0.032445	0	0	0.5942	0	0	-10.8017	-0.000143652	5994.159	-3341.02		
0	3400	-0.02294	1.522117	63.30277	1.210248	0.288924331	1.240312	148.9571	0.22673	242.0496	57.78487	-28.335	-0.65941	0.808778	-0.67455	0.674552	0.589303	400	400	0.512426	-0.363061139	4478.291	-1423.93	0	0.445231
210375	3175	-0.02086	1.374855	63.56826	1.098306	0.255692932	1.11266	149.1873	0.205111	219.6612	51.13859	-29.0212	-0.61424	0.864192	-0.66	0.659995	0.589303	400	400	0.571252	-0.321301628	4478.291	-1423.93		
162500	2925	-0.01867	1.212588	63.8791	0.973926	0.219986645	0.973439	149.4619	0.181236	194.7853	43.99733	-29.8169	-0.5654	0.925374	-0.64304	0.643037	0.589303	400	400	0.636411	-0.27643288	4478.291	-1423.93		
100000	2700	-0.01715	1.067958	64.17131	0.861984	0.188826347	0.851064	149.725	0.1599	172.3969	37.76527	-30	-0.52253	0.980196	-0.62718	0.627179	0.589303	400	400	0.694952	-0.237278808	4478.291	-1423.93		
100000	2500	-0.01593	0.940481	64.44299	0.762481	0.162074465	0.744464	149.9739	0.141048	152.4961	32.41489	-30	-0.48547	1.028677	-0.6125	0.612504	0.589303	400	400	0.746874	-0.203664771	4478.291	-1423.93		
100000	2300	-0.01482	0.815248	64.64008	0.662977	0.13744691	0.642526	150.1571	0.122415	132.5953	27.48938	-30	-0.45203	1.070598	-0.58158	0.598171	0.589303	400	393.1786	0.791282	-0.172713952	4478.291	-1423.93		
100000	2100	-0.01385	0.692067	64.73469	0.563473	0.1147477	0.54494	150.2459	0.10398	112.6946	22.94954	-30	-0.42232	1.104443	-0.53043	0.584727	0.589303	400	377.6113	0.826317	-0.144192749	4478.291	-1423.93		
100000	1900	-0.01281	0.568382	64.92189	0.463969	0.091600057	0.446237	150.423	0.085498	92.7938	18.32001	-30	-0.39088	1.144173	-0.49343	0.570023	0.589303	400	368.2463	0.868398	-0.11510534	4478.291	-1423.93		
100000	1700	-0.01172	0.444459	65.24384	0.364465	0.068277397	0.346942	150.7323	0.066994	72.89302	13.65548	-30	-0.35754	1.192138	-0.47646	0.553289	0.589303	400	367.8454	0.920389	-0.085796931	4478.291	-1423.93		
100000	1500	-0.01055	0.320768	65.76938	0.264961	0.045254834	0.247995	151.2503	0.048516	52.99225	9.050967	-30	-0.32209	1.252519	-0.4909	0.533217	0.589303	400	382.0033	0.987297	-0.056866988	4478.291	-1423.93		
100000	1300	-0.00945	0.199024	66.34288	0.165457	0.024118782	0.153244	151.8343	0.030219	33.09147	4.823756	-30	-0.28847	1.314897	-0.51167	0.511672	0.589303	400	400	1.056737	-0.030306639	4478.291	-1423.93		
100000	1100	-0.00853	0.07976	66.70552	0.065953	0.005281539	0.064134	152.2138	0.012141	13.1907	1.056308	-30	-0.26036	1.362069	-0.49277	0.492766	0.589303	400	400	1.108343	-0.006639813	4478.291	-1423.93		
133333	900	-0.04274	0.010642	24.51606	-0.03355	0.001449906	0.040309	0	0	-6.71008	0.289981	-30	-1.29397	0.266939	0	0	0.589303	0	0	-1.02521	-0.001821413	4478.291	-1423.93		
200000	700	-0.13599	0.003422	8.345125	-0.13305	0.000485164	0.040039	0	0	-26.6109	0.097033	-30	-4.01797	0.085834	0	0	0.589303	0	0	-3.93154	-0.000610374	4478.291	-1423.93		
266667	500	-0.23435	0.00204	4.994084	-0.23256	0.000248937	0.041001	0	0	-46.5116	0.049787	-30	-6.74412	0.051181	0	0	0.589303	0	0	-6.6926	-0.000315122	4478.291	-1423.93		
75000	300	-0.33339	0.001476	3.61164	-0.33206	0.000146718	0.042105	0	0	-66.4124	0.029344	-30	-9.33655	0.037012	0	0	0.589303	0	0	-9.29942	-0.000183504	4478.291	-1423.93		
0	100	-0.43238	0.001109	2.482419	-0.43157	0.000296034	0.037516	0	0	-86.3132	0.059207	-30	-11.7746	0.027825	0	0	0.589303	0	0	-13.5651	0.002276718	4478.291	-1423.93		
0	3400	-0.08702	2.141912	50.9028	1.255457	0.799436968	2.181782	142.1752	0.304527	251.0915	159.8874	-25.7704	-2.23711	0.862034	-0.51607	0.521702	1.516799	400	398.1691	-0.37051	-1.004573756	317.9951	-154.379	0	0.88552
210375	3175	-0.08359	1.970334	50.31287	1.132737	0.754007867	2.018705	142.0315	0.27985	226.5474	150.8016	-26.4327	-2.20619	0.88034	-0.43948	0.516034	1.516799	400	375.2076	-0.37836	-0.947488703	317.9951	-154.379		
162500	2925	-0.07974	1.77577	49.60113	0.99638	0.699646212	1.831633	141.8786	0.251944	199.2761	139.9292	-27.2262	-2.17002	0.903129	-0.36005	0.511981	1.516799	400	351.008	-0.38772	-0.879175439	317.9951	-154.379		
100000	2700	-0.07624	1.596428	48.90207	0.87366	0.646533674	1.657171	141.75	0.226294	174.7319	129.3067	-28.0009	-2.13554	0.926429	-0.29434	0.51077	1.516799	400	330.4629	-0.39666	-0.812437479	317.9951	-154.379		
100000	2500	-0.07306	1.432934	48.22694	0.764575	0.595295317	1.496454	141.6459	0.202969	152.9149	119.0591	-28.7467	-2.10295	0.950003	-0.24122	0.512043	1.516799	400	313.2409	-0.40489	-0.748051168	317.9951	-154.379		
100000	2300	-0.06982	1.26475	47.49431	0.65549	0.53943782	1.329518	141.5555	0.179032	131.0979	107.8876	-29.5564	-2.06802	0.97711	-0.19391	0.516013	1.516799	400	297.0772	-0.41306	-0.677856658	317.9951	-154.379		
100000	2100	-0.06749	1.091765	46.6946	0.546405	0.477871388	1.157227	141.4832	0.154466	109.2809	95.57428	-30	-2.03012	1.008792	-0.15336	0.523312	1.516799	400	282.0296	-0.42084	-0.600492476	317.9951	-154.379		
100000	1900	-0.06606	0.912543	45.82441	0.437319	0.409161743	0.978199	141.436	0.129066	87.46389	81.83235	-30	-1.98791	1.046941	-0.12127	0.534749	1.516799	400	268.3286	-0.42683	-0.514148381	317.9951	-154.379		
100000	1700	-0.06439	0.723709	44.89627	0.328234	0.331087932	0.78809	141.4216	0.102348	65.64688	66.21759	-30	-1.93835	1.095273	-0.10094	0.551591	1.516799	400	256.5486	-0.42703	-0.416044505	317.9951	-154.379		
100000	1500	-0.06223	0.521599	43.9658	0.219149	0.240221088	0.583447	141.4444	0.073777	43.82987	48.04422	-30	-1.87443	1.161146	-0.0987	0.575882	1.516799	400	248.0031	-0.41142	-0.301861222	317.9951	-154.379		
100000	1300	-0.05887	0.300305	43.29931	0.110064	0.131374075	0.358539	141.4837	0.042488	22.01285	26.27482	-30	-1.77471	1.26424	-0.13245	0.611139	1.516799	400	247.3563	-0.34539	-0.165084921	317.9951	-154.379		
100000	1100	-0.05668	0.069929	42.44289	0.000979	0.012265711	0.126109	141.5623	0.009899	0.19584	2.453142	-30	-1.70988	1.477797	-0.26453	0.652018	1.516799	400	276.161	-0.18082	0.090685021	317.9951	-154.379		
133333	900	-0.12898	0.023895	21.68664	-0.10811	0.003019696	0.104988	0	0	-21.6212	0.603939	-30	-3.81794	0.599402	0	0	1.516799	0	0	-3.21473	-0.003795699	317.9951	-154.379		
200000	700	-0.22936	0.013799	12.92864	-0.21719	0.001626996	0.106051	0	0	-43.4382	0.325399	-30	-6.60955	0.346148	0	0	1.516799	0	0	-6.26137	-0.002043839	317.9951	-154.379		
266667	500	-0.33507	0.009733	9.187543	-0.32628	0.00094271	0.108693	0	0	-65.2552	0.188542	-30	-9.37908	0.244142	0	0	1.516799	0	0	-9.13378	-0.001187885	317.9951	-154.379		
75000	300	-0.44242	0.007607	7.19643	-0.43536	0.000545146	0.111864	0	0	-87.0722	0.109029	-30	-12.0134	0.190828	0	0	1.516799	0	0	-11.8219	-0.000692163	317.9951	-154.379		
0	100	-0.55049	0.006319	5.978759	-0.54445	0.000277723	0.115363	0	0	-108.889	0.055545	-30	-14.4833	0.158499	0	0	1.516799	0	0	-14.3245	-0.000354054	317.9951	-154.379		
0	3400	-0.09156	2.236199	50.73128	1.303615	0.841025367	2.281331	142.1318	0.317835	260.723	168.2051	-25.4204	-2.31915	0.831636	-0.51077	0.510768	1.543972	400	400	-0.43068	-1.056832209	95.00779	54.43846	3007.465	0.925497
210375	3175	-0.08708	2.049043	50.28075	1.176748	0.785216938	2.099932	142.0242	0.291014	235.3497	157.0434	-26.1247	-2.26941	0.871752	-0.46014	0.509728	1.543972	400	383.9442	-0.41096	-0.986701275	95.00779	54.43846		
162500	2925	-0.08306	1.848655	49.55686	1.035785	0.729813149	1.907325	141.8698	0.262268	207.1571	145.9626	-26.9234	-2.23312	0.894315	-0.37664	0.504961	1.543972	400	358.6295	-0.42171	-0.91708123	95.00779	54.43846		
100000	2700	-0.07939	1.663987	48.84427	0.908919	0.675675752	1.727707	141.7403	0.235854	181.7838	135.1352	-27.704	-2.1986	0.917365	-0.30736	0.503152	1.543972	400	337.1093	-0.43218	-0.84905255	95.00779	54.43846		
100000	2500	-0.07609	1.495671	48.15435	0.796149	0.62343575	1.562239	141.6359	0.211841	159.2297	124.6871	-28.4559	-2.16609	0.940664	-0.25114	0.503944	1.543972	400	319.0362	-0.44202	-0.783408303	95.00779	54.43846		
100000	2300	-0.07272	1.322559	47.40329	0.683378	0.566465079	1.390367	141.5459	0.187203	136.6756	113.293	-29.273	-2.13142	0.967425	-0.20079	0.507494	1.543972	400	302.0258	-0.45217	-0.71182544	95.00779	54.43846		
100000	2100	-0.06965	1.143899	46.58161	0.570608	0.50364353	1.211698	141.4753	0.161833	114.1216	100.7287	-30	-2.09387	0.998778	-0.15738	0.514446	1.543972	400	286.1642	-0.46222	-0.632878187	95.00779	54.43846		
100000	1900	-0.06825	0.959557	45.67919	0.457838	0.433472515	1.027514	141.4313	0.135711	91.56752	86.6945	-30	-2.05249	1.036314	-0.12227	0.525647	1.543972	400	271.5613	-0.47148	-0.544704545	95.00779	54.43846		
100000	1700	-0.06662	0.765336	44.70444	0.345067	0.353650413	0.83191	141.4232	0.108236	69.01346	70.73008	-30	-2.00438	1.08373	-0.09875	0.542394	1.543972	400	258.7717	-0.47625	-0.44439512	95.00779	54.43846		
100000	1500	-0.06455	0.557361	43.69956	0.232297	0.260518047	0.621266	141.4578	0.078843	46.4594	52.10361	-30	-1.94306	1.148063	-0.09275	0.566829	1.543972	400	248.9353	-0.46764	-0.327367004	95.00779	54.43846		
100000	1300	-0.06135	0.329152	42.8892	0.119527	0.148273351	0.389445	141.5174	0.046581	23.90534	29.65467	-30	-1.84846	1.247885	-0.1206	0.602773	1.543972	400	246.0977	-0.41426	-0.186320723	95.00779	54.43846		
100000	1100	-0.05349	0.071499	43.96833	0.006756	0.011256425	0.124904	141.4443	0.010113	1.351285	2.251285	-30	-1.61475	1.475203	-0.27984	0.65655	1.543972	400	280.0069	-0.1254	-0.014145888	95.00779	54.43846		
133333	900	-0.12785	0.024973	22.20947	-0.10601	0.003138118	0.10696	0	0	-21.2028	0.627624	-30	-3.78554	0.626439	0	0	1.543972	0	0	-3.15516	-0.003942171	95.00779	54.43846		
200000	700	-0.23131	0.014186	13.05235	-0.21878	0.00166495	0.108019	0	0	-43.7568	0.33299	-30	-6.66201	0.355849	0	0	1.543972	0	0	-6.30406	-0.002091788	95.00779	54.43846		
266667	500	-0.34054	0.009938	9.215309	-0.33155	0.000949765	0.110807	0	0	-66.3109	0.189953	-30	-9.51783	0.249297	0	0	1.543972	0	0	-9.26736	-0.001194879	95.00779	54.43846		
75000	300	-0.45153	0.007745	7.196397	-0.44432	0.000537535	0.114162	0	0	-88.865	0.107507	-30	-12.2286	0.194275	0	0	1.543972	0	0	-12.0337	-0.000675126	95.00779	54.43846		
0	100	-0.56326	0.006424	5.970552	-0.5571	0.000260488	0.117871	0	0	-111.419	0.052098	-30	-14.7632	0.161148	0	0	1.543972	0	0	-14.6018	-0.000327877	95.00779	54.43846		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.02742	1.785757	62.68005	1.403823	0.354511713	1.478704	148.4322	0.265064	280.7646	70.90234	-27.1843	-0.75524	0.715349	-0.69861	0.698607	0.59966	400	400	0.405577	-0.445478631	5121.126	-2212.55	0	0.54034
210375	3175	-0.0248	1.617002	62.94874	1.277425	0.314774995	1.329972	148.6561	0.240377	255.485	62.955	-27.9098	-0.70177	0.778754	-0.68371	0.683713	0.59966	400	400	0.472536	-0.395546178	5121.126	-2212.55		
162500	2925	-0.02207	1.431054	63.26544	1.136983	0.272001659	1.167638	148.925	0.21312	227.3965	54.40033	-28.7555	-0.64384	0.848706	-0.66625	0.666247	0.59966	400	400	0.546656	-0.341795355	5121.126	-2212.55		
100000	2700	-0.01977	1.265197	63.56792	1.010584	0.234839661	1.024386	149.187	0.188751	202.1169	46.96793	-29.5542	-0.5932	0.911213	-0.64966	0.649657	0.59966	400	400	0.613121	-0.29509773	5121.126	-2212.55		
100000	2500	-0.01803	1.119102	63.85007	0.89823	0.202841568	0.899723	149.436	0.167234	179.6461	40.56831	-30	-0.54931	0.966474	-0.63426	0.63426	0.59966	400	400	0.672056	-0.254888869	5121.126	-2212.55		
100000	2300	-0.01662	0.974338	64.14486	0.785877	0.171841114	0.77779	149.701	0.145859	157.1753	34.36822	-30	-0.50654	1.021479	-0.61825	0.618254	0.59966	400	400	0.73088	-0.215936692	5121.126	-2212.55		
100000	2100	-0.01539	0.832834	64.3178	0.673523	0.143921096	0.662576	149.8587	0.124807	134.7045	28.78422	-30	-0.46921	1.066142	-0.577	0.602909	0.59966	400	389.4425	0.777774	-0.180850887	5121.126	-2212.55		
100000	1900	-0.01427	0.693165	64.40836	0.561169	0.117727234	0.5512	149.9419	0.103934	112.2338	23.54545	-30	-0.43514	1.104119	-0.51916	0.588181	0.59966	400	371.8022	0.816917	-0.147937377	5121.126	-2212.55		
100000	1700	-0.01307	0.552784	64.61824	0.448815	0.090898905	0.438278	150.1367	0.082993	89.76298	18.17978	-30	-0.39872	1.149697	-0.47935	0.571884	0.59966	400	361.9696	0.865191	-0.114222748	5121.126	-2212.55		
100000	1500	-0.01179	0.412099	65.01255	0.336461	0.063849953	0.324596	150.5095	0.062025	67.2922	12.76999	-30	-0.3597	1.206476	-0.46649	0.552839	0.59966	400	364.1041	0.92701	-0.080235323	5121.126	-2212.55		
100000	1300	-0.0104	0.271884	65.70742	0.224107	0.037371573	0.211699	151.1884	0.041106	44.82142	7.474315	-30	-0.31762	1.281598	-0.50009	0.528844	0.59966	400	387.7968	1.010935	-0.046960136	5121.126	-2212.55		
100000	1100	-0.00922	0.135166	66.25405	0.111753	0.014190135	0.106441	151.7425	0.02051	22.35064	2.838027	-30	-0.28163	1.345262	-0.50596	0.505962	0.59966	400	400	1.081456	-0.01783073	5121.126	-2212.55		
133333	900	-0.021	0.022409	43.27738	-0.0006	0.002008051	0.043333	0	0	-0.12014	0.40161	-30	-0.63937	0.562121	0	0	0.59966	0	0	-0.07473	-0.002523567	5121.126	-2212.55		
200000	700	-0.11647	0.004115	9.837007	-0.11295	0.000595548	0.040599	0	0	-22.5909	0.11911	-30	-3.45909	0.103231	0	0	0.59966	0	0	-3.35511	-0.000746803	5121.126	-2212.55		
266667	500	-0.22721	0.002175	5.230016	-0.22531	0.000268813	0.041646	0	0	-45.0617	0.053763	-30	-6.55144	0.054554	0	0	0.59966	0	0	-6.49657	-0.000335731	5121.126	-2212.55		
75000	300	-0.33902	0.001505	3.61974	-0.33766	0.00014752	0.042912	0	0	-67.5325	0.029504	-30	-9.47929	0.037748	0	0	0.59966	0	0	-9.44146	-0.000187016	5121.126	-2212.55		
0	100	-0.4511	0.001169	2.809709	-0.45002	8.23064E-05	0.044287	0	0	-90.0033	0.016461	-30	-12.2185	0.029325	0	0	0.59966	0	0	-12.1892	-0.000105094	5121.126	-2212.55		
0	3400	-0.09394	2.436181	51.36705	1.449973	0.892265213	2.467893	142.2991	0.346666	289.9946	178.453	-24.7086	-2.31148	0.742129	-0.51938	0.519381	1.48925	400	400	-0.44813	-1.121223009	1433.466	-1004.9	0	1.017392
210375	3175	-0.08732	2.217961	51.25295	1.314912	0.815724697	2.25059	142.2677	0.315544	262.9823	163.1449	-25.4874	-2.22017	0.830721	-0.52759	0.527595	1.48925	400	400	-0.3644	-1.025041261	1433.466	-1004.9		
162500	2925	-0.08223	1.998493	50.73023	1.164844	0.751422214	2.039234	142.1316	0.284049	232.9687	150.2844	-26.3217	-2.16187	0.877229	-0.4656	0.525515	1.48925	400	380.5394	-0.3404	-0.944238618	1433.466	-1004.9		
100000	2700	-0.07848	1.807444	50.04809	1.029782	0.699177025	1.856725	141.972	0.256607	205.9565	139.8354	-27.0938	-2.12608	0.899256	-0.38488	0.520691	1.48925	400	356.089	-0.34824	-0.878591241	1433.466	-1004.9		
100000	2500	-0.07512	1.6338	49.38869	0.909728	0.648954798	1.688904	141.8372	0.231734	181.9456	129.791	-27.8359	-2.09243	0.92137	-0.31855	0.5186	1.48925	400	335.5648	-0.35558	-0.81547355	1433.466	-1004.9		
100000	2300	-0.07169	1.455788	48.672	0.789674	0.594421176	1.514951	141.7123	0.206303	157.9347	118.8842	-28.6401	-2.05658	0.946556	-0.25807	0.519026	1.48925	400	316.2459	-0.36307	-0.746951409	1433.466	-1004.9		
100000	2100	-0.06819	1.272425	47.88981	0.669619	0.534615652	1.333801	141.6014	0.180177	133.9238	106.9231	-29.5185	-2.01792	0.9758	-0.20446	0.522536	1.48925	400	298.2328	-0.37032	-0.671796404	1433.466	-1004.9		
100000	1900	-0.06564	1.083384	47.03092	0.549565	0.468175645	1.146141	141.5102	0.15331	109.9129	93.63513	-30	-1.97555	1.010443	-0.15896	0.529925	1.48925	400	281.6173	-0.3768	-0.588310173	1433.466	-1004.9		
100000	1700	-0.06403	0.886801	46.09234	0.42951	0.39326407	0.950136	141.4471	0.125435	85.90205	78.65281	-30	-1.92769	1.052971	-0.12386	0.542243	1.48925	400	266.7225	-0.38055	-0.494174444	1433.466	-1004.9		
100000	1500	-0.06208	0.678517	45.09574	0.309456	0.306980852	0.740593	141.4216	0.095957	61.89117	61.39617	-30	-1.87004	1.108482	-0.1037	0.561156	1.48925	400	254.3815	-0.3758	-0.385753296	1433.466	-1004.9		
100000	1300	-0.05943	0.45353	44.14579	0.189401	0.204694417	0.512736	141.4371	0.064146	37.88029	40.93888	-30	-1.79155	1.188273	-0.10848	0.589474	1.48925	400	246.8223	-0.34606	-0.257220217	1433.466	-1004.9		
100000	1100	-0.05472	0.203919	43.83575	0.069347	0.07985512	0.258423	141.4506	0.028845	13.86941	15.97102	-30	-1.65139	1.329578	-0.17445	0.63196	1.48925	400	254.2456	-0.22146	-0.100346231	1433.466	-1004.9		
133333	900	-0.08233	0.035709	31.17077	-0.05071	0.004086578	0.104551	0	0	-10.1415	0.817316	-30	-2.46701	0.895748	0	0	1.48925	0	0	-1.56613	-0.005135528	1433.466	-1004.9		
200000	700	-0.18502	0.016292	15.43636	-0.17076	0.002029694	0.103302	0	0	-34.1524	0.405939	-30	-5.39588	0.408675	0	0	1.48925	0	0	-4.98464	-0.002549771	1433.466	-1004.9		
266667	500	-0.3001	0.010371	9.959524	-0.29082	0.001083796	0.105776	0	0	-58.1632	0.216759	-30	-8.48233	0.260147	0	0	1.48925	0	0	-8.22084	-0.001363409	1433.466	-1004.9		
75000	300	-0.41798	0.007706	7.424296	-0.41087	0.000598584	0.109088	0	0	-82.1741	0.119717	-30	-11.4294	0.193304	0	0	1.48925	0	0	-11.2353	-0.000757885	1433.466	-1004.9		
0	100	-0.53685	0.00622	5.994928	-0.53093	0.000296121	0.112816	0	0	-106.185	0.059224	-30	-14.1816	0.15602	0	0	1.48925	0	0	-14.0253	-0.000373174	1433.466	-1004.9		
0	3400	-0.04277	2.04989	59.07349	1.497151	0.509971453	1.845181	145.7975	0.298869	299.4303	101.9943	-26.1215	-1.12734	0.714559	-0.69366	0.693663	0.812036	400	400	0.228055	-0.640831223	1660.7	1248.424	0	0.676734
210375	3175	-0.03885	1.850361	59.22445	1.355742	0.455768932	1.661074	145.8944	0.269957	271.1483	91.15379	-26.9164	-1.05632	0.790805	-0.68468	0.684679	0.812036	400	400	0.307204	-0.572721111	1660.7	1248.424		
162500	2925	-0.03474	1.62986	59.40376	1.19862	0.396502073	1.458593	146.0109	0.237977	239.724	79.30041	-27.8532	-0.97841	0.875038	-0.67404	0.674044	0.812036	400	400	0.394873	-0.498246568	1660.7	1248.424		
100000	2700	-0.03126	1.432686	59.57294	1.05721	0.344218154	1.278583	146.1224	0.209348	211.442	68.84363	-28.7478	-0.90948	0.950041	-0.66316	0.663819	0.812036	400	399.7603	0.473106	-0.432545534	1660.7	1248.424		
100000	2500	-0.02919	1.271018	59.26981	0.931513	0.310318292	1.142214	145.9237	0.185472	186.3025	62.06366	-29.5254	-0.87267	0.97604	-0.57322	0.653583	0.812036	400	370.8793	0.493309	-0.389945278	1660.7	1248.424		
100000	2300	-0.0274	1.107234	58.97477	0.805815	0.274020213	1.00229	145.7348	0.161362	161.163	54.80404	-30	-0.83274	1.005775	-0.49174	0.644346	0.812036	400	345.0076	0.517368	-0.344332836	1660.7	1248.424		
100000	2100	-0.02595	0.941066	58.70325	0.680118	0.235000263	0.85848	145.5648	0.136986	136.0235	47.00005	-30	-0.78896	1.040436	-0.42058	0.636149	0.812036	400	322.7065	0.546773	-0.295300128	1660.7	1248.424		
100000	1900	-0.02434	0.771911	58.49115	0.55442	0.193146678	0.709581	145.4345	0.112263	110.8841	38.62934	-30	-0.7405	1.081957	-0.36292	0.628708	0.812036	400	305.0594	0.584168	-0.242706402	1660.7	1248.424		
100000	1700	-0.02254	0.599543	58.39794	0.428723	0.148279565	0.555282	145.3779	0.08716	85.74456	29.65591	-30	-0.68593	1.133513	-0.32392	0.621554	0.812036	400	293.8608	0.633905	-0.186326987	1660.7	1248.424		
100000	1500	-0.02047	0.424077	58.54499	0.303025	0.100585457	0.395773	145.4673	0.061689	60.60506	20.11709	-30	-0.62314	1.201065	-0.31405	0.613345	0.812036	400	292.989	0.704325	-0.126396317	1660.7	1248.424		
100000	1300	-0.018	0.246685	59.20979	0.177328	0.051357355	0.232787	145.8849	0.035988	35.46557	10.27147	-30	-0.54841	1.298198	-0.35998	0.600239	0.812036	400	313.0424	0.814315	-0.064535452	1660.7	1248.424		
100000	1100	-0.01485	0.071706	61.20993	0.05163	0.005225934	0.073066	147.2763	0.010561	10.32608	1.045187	-30	-0.4528	1.471127	-0.56904	0.569041	0.812036	400	400	1.024889	-0.006567912	1660.7	1248.424		
133333	900	-0.08308	0.010495	18.0814	-0.07407	0.00148105	0.055218	0	0	-14.8134	0.29621	-30	-2.48902	0.263263	0	0	0.812036	0	0	-2.2239	-0.001860027	1660.7	1248.424		
200000	700	-0.20362	0.004421	7.826085	-0.19976	0.00056374	0.056129	0	0	-39.9529	0.112748	-30	-5.90868	0.110902	0	0	0.812036	0	0	-5.7971	-0.000710211	1660.7	1248.424		
266667	500	-0.32802	0.002843	5.044361	-0.32546	0.000285166	0.057958	0	0	-65.0924	0.057033	-30	-9.1999	0.071318	0	0	0.812036	0	0	-9.12826	-0.000359565	1660.7	1248.424		
75000	300	-0.45315	0.002135	3.787448	-0.45116	0.000148883	0.060016	0	0	-90.2319	0.029777	-30	-12.2666	0.053566	0	0	0.812036	0	0	-12.2129	-0.000191166	1660.7	1248.424		
0	100	-0.57853	0.001738	3.079412	-0.57686	6.37413E-05	0.062254	0	0	-115.371	0.012748	-30	-15.0945	0.043604	0	0	0.812036	0	0	-15.0507	-8.13137E-05	1660.7	1248.424		
0	3400	-0.04561	2.13439	58.73024	1.54703	0.541753144	1.934375	145.5815	0.310728	309.406	108.3506	-25.7988	-1.18647	0.690471	-0.6935	0.693499	0.832737	400	400	0.184761	-0.680770058	3032.101	-308.326	0	0.730943
210375	3175	-0.04152	1.933229	58.86705	1.405347	0.486358068	1.747887	145.6669	0.281607	281.0694	97.27161	-26.5805	-1.11415	0.767491	-0.6853	0.685295	0.832737	400	400	0.264499	-0.611158793	3032.101	-308.326		
162500	2925	-0.03723	1.710825	59.02943	1.247921	0.425674432	1.542596	145.7695	0.249386	249.5843	85.13489	-27.5017	-1.03468	0.852619	-0.67559	0.675589	0.832737	400	400	0.352842	-0.534901431	3032.101	-308.326		
100000	2700	-0.03358	1.511736	59.1859	1.106238	0.371918098	1.359696	145.8695	0.220516	221.2477	74.38362	-28.3823	-0.96404	0.928794	-0.66627	0.66627	0.832737	400	400	0.432106	-0.467353234	3032.101	-308.326		
100000	2500	-0.03123	1.346347	58.97047	0.980298	0.334818265	1.216995	145.7321	0.196206	196.0596	66.96365	-29.1579	-0.92167	0.963556	-0.59392	0.656475	0.832737	400	377.4617	0.462613	-0.420733449	3032.101	-308.326		
100000	2300	-0.02908	1.182159	58.65273	0.854357	0.298720689	1.076275	145.5335	0.172044	170.8715	59.74414	-29.971	-0.88263	0.991695	-0.5098	0.647181	0.832737	400	350.7864	0.484442	-0.375373759	3032.101	-308.326		
100000	2100	-0.02763	1.015823	58.34388	0.728417	0.25977137	0.932295	145.3453	0.147645	145.6834	51.95427	-30	-0.83985	1.024201	-0.43495	0.639159	0.832737	400	327.2441	0.510773	-0.326426996	3032.101	-308.326		
100000	1900	-0.02607	0.846462	58.07561	0.602477	0.217914612	0.783216	145.1857	0.122894	120.4953	43.58292	-30	-0.79267	1.062745	-0.3721	0.632139	0.832737	400	307.7859	0.54392	-0.273833643	3032.101	-308.326		
100000	1700	-0.02432	0.673726	57.8934	0.476536	0.172870141	0.628533	145.0793	0.097744	95.30724	34.57403	-30	-0.73974	1.109927	-0.32534	0.625873	0.832737	400	293.7538	0.587418	-0.21722937	3032.101	-308.326		
100000	1500	-0.02231	0.497464	57.88885	0.350596	0.124553707	0.468055	145.0766	0.07217	70.11916	24.91074	-30	-0.67912	1.170408	-0.30234	0.619543	0.832737	400	287.8694	0.647808	-0.15651382	3032.101	-308.326		
100000	1300	-0.01995	0.318218	58.2645	0.224655	0.073612195	0.302562	145.2977	0.046236	44.93107	14.72244	-30	-0.60753	1.253947	-0.32079	0.610706	0.832737	400	296.8534	0.738925	-0.092501996	3032.101	-308.326		
100000	1100	-0.017	0.138659	59.56452	0.098715	0.022943344	0.135973	146.1168	0.02026	19.74299	4.588669	-30	-0.51809	1.388522	-0.43929	0.591351	0.832737	400	344.5868	0.899265	-0.028831055	3032.101	-308.326		
133333	900	-0.04503	0.020216	31.49143	-0.02723	0.00241237	0.058125	0	0	-5.44509	0.482474	-30	-1.36239	0.5071	0	0	0.832737	0	0	-0.85226	-0.003030068	3032.101	-308.326		
200000	700	-0.15827	0.005908	10.15785	-0.15317	0.000801314	0.057002	0	0	-30.6332	0.160263	-30	-4.64877	0.148194	0	0	0.832737	0	0	-4.49957	-0.001006362	3032.101	-308.326		
266667	500	-0.28216	0.003431	5.932212	-0.27911	0.000380028	0.058716	0	0	-55.8213	0.076006	-30	-8.01461	0.086053	0	0	0.832737	0	0	-7.9281	-0.000474805	3032.101	-308.326		
75000	300	-0.40731	0.002464	4.263035	-0.40505	0.00019992	0.060753	0	0	-81.0093	0.039984	-30	-11.1716	0.061814	0	0	0.832737	0	0	-11.1096	-0.000259689	3032.101	-308.326		
0	100	-0.53285	0.001957	3.381707	-0.53099	9.60771E-05	0.062984	0	0	-106.197	0.019215	-30	-14.0926	0.049089	0	0	0.832737	0	0	-14.0435	-0.000117851	3032.101	-308.326		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.11779	2.792976	50.07158	1.593897	1.081285631	2.865276	141.9772	0.396539	318.7793	216.2571	-23.533	-2.7432	0.617561	-0.44937	0.449367	1.654116	400	400	-0.76689	-1.358746637	-0.00766	0.003666	3222.011	1.177886
210375	3175	-0.10936	2.546672	49.91022	1.445164	0.992148067	2.617114	141.9423	0.36148	289.0328	198.4296	-24.3322	-2.63913	0.718303	-0.46143	0.46143	1.654116	400	400	-0.67409	-1.246734115	-0.00766	0.003666		
162500	2925	-0.1003	2.271448	49.71584	1.279905	0.891243177	2.339686	141.9017	0.322322	255.981	178.2486	-25.292	-2.52195	0.831624	-0.47604	0.476039	1.654116	400	400	-0.57038	-1.11993632	-0.00766	0.003666		
100000	2700	-0.09504	2.051852	49.0909	1.131172	0.825637892	2.125042	141.7826	0.290917	226.2345	165.1276	-26.1139	-2.4708	0.871451	-0.40955	0.474685	1.654116	400	379.0544	-0.56185	-1.037499507	-0.00766	0.003666		
100000	2500	-0.09104	1.860245	48.36573	0.998965	0.770244297	1.93783	141.6657	0.263533	199.7931	154.0489	-26.8759	-2.43825	0.892945	-0.33498	0.471793	1.654116	400	356.1483	-0.57742	-0.967886914	-0.00766	0.003666		
100000	2300	-0.08698	1.663705	47.56924	0.866759	0.709961059	1.743654	141.5637	0.23552	173.3517	141.9922	-27.7052	-2.40419	0.917402	-0.26651	0.471738	1.654116	400	334.4092	-0.59464	-0.892133985	-0.00766	0.003666		
100000	2100	-0.08287	1.461056	46.68793	0.734552	0.643636333	1.541245	141.4827	0.206714	146.9103	128.7273	-28.6156	-2.36821	0.945769	-0.20513	0.475185	1.654116	400	313.8862	-0.61365	-0.808795092	-0.00766	0.003666		
100000	1900	-0.07865	1.250628	45.70509	0.602345	0.569631322	1.328878	141.4321	0.176879	120.4689	113.9263	-29.6265	-2.32969	0.979539	-0.15225	0.483059	1.654116	400	294.6654	-0.63436	-0.715797732	-0.00766	0.003666		
100000	1700	-0.07623	1.032025	44.59871	0.470138	0.485661215	1.108142	141.4248	0.145954	94.02755	97.13224	-30	-2.28772	1.020826	-0.10968	0.496613	1.654116	400	276.8211	-0.65662	-0.610279755	-0.00766	0.003666		
100000	1500	-0.07458	0.800536	43.35918	0.337931	0.388026208	0.873681	141.4794	0.113259	67.58617	77.60524	-30	-2.23927	1.074393	-0.08139	0.517853	1.654116	400	260.8382	-0.67728	-0.487595176	-0.00766	0.003666		
100000	1300	-0.07239	0.548158	42.02531	0.205724	0.270043813	0.617207	141.6122	0.077626	41.14479	54.00876	-30	-2.17479	1.15136	-0.0762	0.550548	1.654116	400	248.1889	-0.68409	-0.33933555	-0.00766	0.003666		
100000	1100	-0.06823	0.260951	41.01073	0.073517	0.119207661	0.325992	141.7648	0.036994	14.7034	23.84153	-30	-2.05191	1.288649	-0.12456	0.603102	1.654116	400	246.1828	-0.61347	-0.149796159	-0.00766	0.003666		
133333	900	-0.09325	0.039002	30.7453	-0.05869	0.004436641	0.116219	0	0	-11.738	0.887328	-30	-2.78642	0.978335	0	0	1.654116	0	0	-1.8025	-0.005576853	-0.00766	0.003666		
200000	700	-0.20682	0.01809	15.42882	-0.1909	0.002172034	0.115356	0	0	-38.1794	0.434407	-30	-5.99619	0.453786	0	0	1.654116	0	0	-5.53967	-0.002729046	-0.00766	0.003666		
266667	500	-0.3336	0.011622	10.04245	-0.3231	0.001124458	0.118554	0	0	-64.6207	0.224892	-30	-9.34189	0.291527	0	0	1.654116	0	0	-9.04896	-0.001401704	-0.00766	0.003666		
75000	300	-0.46343	0.008693	7.53393	-0.45531	0.000576494	0.122733	0	0	-91.0621	0.115299	-30	-12.5077	0.218047	0	0	1.654116	0	0	-12.289	-0.000717684	-0.00766	0.003666		
0	100	-0.59435	0.007056	6.117431	-0.58752	0.000226389	0.127449	0	0	-117.504	0.045278	-30	-15.4338	0.177	0	0	1.654116	0	0	-15.2565	-0.00028278	-0.00766	0.003666		
0	3400	-0.12194	2.882917	50.01966	1.642396	1.118576213	2.958852	141.9658	0.409276	328.4792	223.7152	-23.2541	-2.80316	0.582099	-0.44064	0.440638	1.666716	400	400	-0.81547	-1.405601145	104.9218	-130.874	3246.555	1.220028
210375	3175	-0.11316	2.63089	49.8553	1.490287	1.027442575	2.704735	141.9307	0.373404	298.0573	205.4885	-24.0529	-2.69682	0.685076	-0.45295	0.452946	1.666716	400	400	-0.72065	-1.291082486	104.9218	-130.874		
162500	2925	-0.10373	2.349263	49.65714	1.321276	0.92425998	2.420649	141.8898	0.333337	264.2553	184.852	-25.013	-2.57704	0.800923	-0.46787	0.467865	1.666716	400	400	-0.6147	-1.161424161	104.9218	-130.874		
100000	2700	-0.09727	2.113855	49.18356	1.169167	0.847414065	2.187594	141.7992	0.299743	233.8334	169.4828	-25.8764	-2.50437	0.864924	-0.42949	0.472101	1.666716	400	386.2915	-0.57458	-1.06486516	104.9218	-130.874		
100000	2500	-0.09316	1.918859	48.45719	1.033959	0.791740021	1.997386	141.6792	0.271862	206.7917	158.348	-26.6381	-2.47171	0.886144	-0.35187	0.468532	1.666716	400	362.5911	-0.59066	-0.994901535	104.9218	-130.874		
100000	2300	-0.08901	1.718942	47.65896	0.89875	0.731186069	1.800165	141.5738	0.243357	179.7501	146.2372	-27.467	-2.43759	0.910253	-0.28038	0.467794	1.666716	400	340.0847	-0.60853	-0.918810992	104.9218	-130.874		
100000	2100	-0.08479	1.512948	46.77491	0.763542	0.6646162	1.594672	141.4892	0.214066	152.7084	132.9232	-28.3768	-2.40169	0.938159	-0.21599	0.470543	1.666716	400	318.8165	-0.62837	-0.835156924	104.9218	-130.874		
100000	1900	-0.08048	1.299215	45.78773	0.628334	0.590401546	1.379173	141.4347	0.183754	125.6668	118.0803	-29.3868	-2.3634	0.971287	-0.16009	0.477701	1.666716	400	298.8605	-0.65022	-0.741900588	104.9218	-130.874		
100000	1700	-0.07739	1.076746	44.67464	0.493126	0.506233179	1.154059	141.4236	0.152277	98.62514	101.2466	-30	-2.32189	1.011759	-0.11452	0.490538	1.666716	400	280.2997	-0.67399	-0.636134232	104.9218	-130.874		
100000	1500	-0.07578	0.842258	43.41898	0.357917	0.408556558	0.916644	141.4752	0.119159	71.58349	81.71131	-30	-2.27472	1.063788	-0.08277	0.510966	1.666716	400	263.4897	-0.69755	-0.513393772	104.9218	-130.874		
100000	1300	-0.07371	0.587186	42.04449	0.222709	0.29077035	0.657379	141.6097	0.083151	44.54183	58.15407	-30	-2.21356	1.137682	-0.07303	0.542655	1.666716	400	249.7087	-0.71051	-0.36538085	104.9218	-130.874		
100000	1100	-0.06995	0.297817	40.86736	0.087501	0.14036936	0.363944	141.79	0.042228	17.50018	28.07387	-30	-2.10271	1.265707	-0.11128	0.593628	1.666716	400	244.8476	-0.66062	-0.176386823	104.9218	-130.874		
133333	900	-0.08593	0.042915	33.00049	-0.04771	0.004695377	0.117704	0	0	-9.54147	0.939075	-30	-2.57237	1.076496	0	0	1.666716	0	0	-1.48997	-0.005902533	104.9218	-130.874		
200000	700	-0.19961	0.018993	16.04398	-0.18292	0.002295124	0.116128	0	0	-36.5831	0.459025	-30	-5.79861	0.476428	0	0	1.666716	0	0	-5.31931	-0.002880522	104.9218	-130.874		
266667	500	-0.32891	0.011951	10.24564	-0.31812	0.001167325	0.119323	0	0	-63.6248	0.233465	-30	-9.22251	0.299788	0	0	1.666716	0	0	-8.92128	-0.00147274	104.9218	-130.874		
75000	300	-0.4616	0.008855	7.616424	-0.45333	0.000590544	0.123608	0	0	-90.6664	0.118109	-30	-12.4649	0.222121	0	0	1.666716	0	0	-12.2421	-0.000752444	104.9218	-130.874		
0	100	-0.59547	0.007153	6.154233	-0.58854	0.000227353	0.128463	0	0	-117.708	0.045471	-30	-15.4576	0.179434	0	0	1.666716	0	0	-15.2779	-0.000281914	104.9218	-130.874		
0	3400	-0.12507	2.964598	50.04821	1.69058	1.148944193	3.041826	141.9721	0.42089	338.116	229.7888	-23.0065	-2.84213	0.549089	-0.43588	0.435878	1.669347	400	400	-0.84927	-1.44376405	-54.5393	76.10298	3251.679	1.25193
210375	3175	-0.11595	2.706077	49.88257	1.534386	1.05574216	2.781138	141.9364	0.384091	306.8771	211.1484	-23.8089	-2.73323	0.654546	-0.44827	0.448269	1.669347	400	400	-0.75204	-1.326642933	-54.5393	76.10298		
162500	2925	-0.10616	2.417207	49.68264	1.360836	0.950213586	2.48973	141.895	0.34299	272.1672	190.0427	-24.7744	-2.6106	0.773179	-0.46331	0.463311	1.669347	400	400	-0.6434	-1.194038529	-54.5393	76.10298		
100000	2700	-0.09858	2.165939	49.34217	1.204642	0.862720514	2.238554	141.8285	0.307192	240.9283	172.5441	-25.6803	-2.51782	0.859589	-0.45025	0.472627	1.669347	400	392.7946	-0.57414	-1.084097909	-54.5393	76.10298		
100000	2500	-0.09436	1.966764	48.61218	1.065802	0.806605874	2.044757	141.7029	0.278696	213.1604	161.3212	-26.4469	-2.48468	0.880738	-0.36914	0.468343	1.669347	400	368.1689	-0.59036	-1.013575932	-54.5393	76.10298		
100000	2300	-0.09009	1.762623	47.80935	0.926962	0.745566926	1.843816	141.5915	0.249573	185.3925	149.1134	-27.2815	-2.45005	0.904757	-0.29431	0.466914	1.669347	400	344.7901	-0.60842	-0.93687978	-54.5393	76.10298		
100000	2100	-0.08577	1.552357	46.91922	0.788123	0.678460817	1.634456	141.5007	0.21966	157.6246	135.6922	-28.1981	-2.41364	0.932545	-0.22671	0.469002	1.669347	400	322.7014	-0.62855	-0.852557572	-54.5393	76.10298		
100000	1900	-0.08136	1.334296	45.92362	0.649283	0.603649603	1.414923	141.4397	0.188722	129.8567	120.7299	-29.2161	-2.37493	0.965508	-0.16775	0.475539	1.669347	400	301.9737	-0.65087	-0.758545688	-54.5393	76.10298		
100000	1700	-0.07776	1.106954	44.79922	0.510444	0.518746739	1.184688	141.4222	0.156548	102.0887	103.7493	-30	-2.33294	1.00583	-0.11936	0.487844	1.669347	400	282.7014	-0.67526	-0.651858228	-54.5393	76.10298		
100000	1500	-0.07615	0.867964	43.52462	0.371604	0.420205069	0.942867	141.4683	0.122789	74.32082	84.04101	-30	-2.28563	1.057485	-0.08482	0.507821	1.669347	400	265.172	-0.70013	-0.528030292	-54.5393	76.10298		
100000	1300	-0.0741	0.608169	42.11699	0.232765	0.30130904	0.678813	141.6006	0.086117	46.5529	60.26181	-30	-2.22502	1.130645	-0.07225	0.539182	1.669347	400	250.6122	-0.71576	-0.378624506	-54.5393	76.10298		
100000	1100	-0.07044	0.313574	40.86141	0.093925	0.149208422	0.380014	141.7911	0.044462	18.78499	29.84168	-30	-2.11727	1.256571	-0.10666	0.590004	1.669347	400	244.5216	-0.6732	-0.187495332	-54.5393	76.10298		
133333	900	-0.08412	0.043961	33.59064	-0.04491	0.00475701	0.118056	0	0	-8.98293	0.951402	-30	-2.51943	1.102742	0	0	1.669347	0	0	-1.41072	-0.005976119	-54.5393	76.10298		
200000	700	-0.20044	0.018978	16.00838	-0.18375	0.002290661	0.116329	0	0	-36.7508	0.458132	-30	-5.82138	0.47606	0	0	1.669347	0	0	-5.34243	-0.002881908	-54.5393	76.10298		
266667	500	-0.33329	0.011846	10.14136	-0.32259	0.001145921	0.119644	0	0	-64.5188	0.229184	-30	-9.3341	0.29716	0	0	1.669347	0	0	-9.03548	-0.001439734	-54.5393	76.10298		
75000	300	-0.46962	0.008753	7.516731	-0.46143	0.000566349	0.124082	0	0	-92.2867	0.11327	-30	-12.6522	0.219554	0	0	1.669347	0	0	-12.4318	-0.000715644	-54.5393	76.10298		
0	100	-0.60714	0.007064	6.067451	-0.60027	0.000201829	0.129113	0	0	-120.055	0.040366	-30	-15.7052	0.177192	0	0	1.669347	0	0	-15.5277	-0.000250109	-54.5393	76.10298		
0	3400	-0.12878	3.050499	50.0395	1.739057	1.182665032	3.130211	141.9702	0.43308	347.8115	236.533	-22.7517	-2.89103	0.514809	-0.42923	0.429231	1.676641	400	400	-0.89009	-1.486134117	43.57032	-22.2402	3265.888	1.290769
210375	3175	-0.11931	2.786383	49.87226	1.579436	1.087631653	2.863775	141.9342	0.395483	315.8872	217.5263	-23.5537	-2.77996	0.622403	-0.44175	0.441749	1.676641	400	400	-0.79085	-1.366716754	43.57032	-22.2402		
162500	2925	-0.10917	2.491277	49.67018	1.402079	0.980030058	2.565968	141.8925	0.353493	280.4159	196.006	-24.5195	-2.65491	0.743437	-0.45696	0.456957	1.676641	400	400	-0.67996	-1.23150591	43.57032	-22.2402		
100000	2700	-0.10036	2.223999	49.47091	1.242458	0.881178944	2.296113	141.853	0.315481	248.4916	176.2358	-25.4652	-2.54075	0.853792	-0.47182	0.471947	1.676641	400	399.9594	-0.57967	-1.107286325	43.57032	-22.2402		
100000	2500	-0.09604	2.021464	48.74088	1.100573	0.82485108	2.099476	141.7233	0.286489	220.1145	164.9702	-26.2318	-2.50736	0.874723	-0.38753	0.466955	1.676641	400	374.4989	-0.59612	-1.036506638	43.57032	-22.2402		
100000	2300	-0.09168	1.813986	47.93761	0.958687	0.763618636	1.895656	141.6074	0.256874	191.7375	152.7237	-27.0666	-2.47253	0.898464	-0.30956	0.464803	1.676641	400	350.3228	-0.6145	-0.959562214	43.57032	-22.2402		
100000	2100	-0.08727	1.60041	47.0465	0.816802	0.69634303	1.683371	141.5116	0.226477	163.3604	139.2686	-27.9833	-2.43597	0.925884	-0.23889	0.466155	1.676641	400	327.4709	-0.63507	-0.875021202	43.57032	-22.2402		
100000	1900	-0.08277	1.379082	46.04899	0.674916	0.621400501	1.460867	141.4451	0.195064	134.9833	124.2801	-29.0011	-2.39719	0.958337	-0.17686	0.471937	1.676641	400	306.007	-0.65801	-0.780849095	43.57032	-22.2402		
100000	1700	-0.07852	1.147947	44.92147	0.533031	0.536393007	1.226466	141.4215	0.162344	106.6062	107.2786	-30	-2.35528	0.998018	-0.12547	0.483482	1.676641	400	286.0383	-0.68323	-0.674033465	43.57032	-22.2402		
100000	1500	-0.07694	0.90597	43.6371	0.391145	0.437888601	0.981794	141.4614	0.12816	78.22909	87.57772	-30	-2.30861	1.048466	-0.08763	0.502625	1.676641	400	267.7507	-0.7099	-0.550249849	43.57032	-22.2402		
100000	1300	-0.07495	0.643488	42.2034	0.24926	0.319281922	0.715014	141.59	0.091111	49.852	63.85638	-30	-2.25007	1.119257	-0.07104	0.532985	1.676641	400	252.2504	-0.7296	-0.401210346	43.57032	-22.2402		
100000	1100	-0.07157	0.34683	40.84197	0.107375	0.167888856	0.413998	141.7946	0.049179	21.47491	33.57777	-30	-2.15051	1.238413	-0.0978	0.582288	1.676641	400	244.1389	-0.70112	-0.210969719	43.57032	-22.2402		
133333	900	-0.07758	0.048031	35.84115	-0.03451	0.004965632	0.119243	0	0	-6.90218	0.993126	-30	-2.32744	1.204828	0	0	1.676641	0	0	-1.11638	-0.006235801	43.57032	-22.2402		
200000	700	-0.19377	0.019769	16.57106	-0.1764	0.002399787	0.116743	0	0	-35.2793	0.479957	-30	-5.63758	0.495894	0	0	1.676641	0	0	-5.13868	-0.003012898	43.57032	-22.2402		
266667	500	-0.32919	0.012085	10.29759	-0.31828	0.001179603	0.120047	0	0	-63.6564	0.235921	-30	-9.22964	0.303148	0	0	1.676641	0	0	-8.92502	-0.0014768	43.57032	-22.2402		
75000	300	-0.46844	0.008849	7.565344	-0.46017	0.000575742	0.124583	0	0	-92.0335	0.115148	-30	-12.6247	0.221968	0	0	1.676641	0	0	-12.4021	-0.000711797	43.57032	-22.2402		
0	100	-0.60896	0.007108	6.078919	-0.60205	0.000199592	0.129748	0	0	-120.411	0.039918	-30	-15.7438	0.178312	0	0	1.676641	0	0	-15.5652	-0.000245789	43.57032	-22.2402		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.12957	3.115086	50.2381	1.787741	1.197774527	3.190569	142.0144	0.442387	357.5482	239.5549	-22.5638	-2.88422	0.486964	-0.43359	0.433588	1.657499	400	400	-0.89215	-1.505120737	391.8622	-282.433	0	1.319413
210375	3175	-0.11996	2.847231	50.07646	1.625158	1.102114676	2.920725	141.9783	0.404245	325.0317	220.4229	-23.364	-2.77196	0.595773	-0.44562	0.445619	1.657499	400	400	-0.79127	-1.384919834	391.8622	-282.433		
162500	2925	-0.10966	2.548056	49.88092	1.444511	0.993887619	2.619232	141.9361	0.361661	288.9022	198.7775	-24.3276	-2.6456	0.718094	-0.46024	0.460243	1.657499	400	400	-0.67859	-1.24891967	391.8622	-282.433		
100000	2700	-0.10072	2.277135	49.68874	1.281928	0.894484475	2.34608	141.8962	0.323117	256.3857	178.8969	-25.2714	-2.53022	0.82967	-0.4747	0.474697	1.657499	400	400	-0.57655	-1.124008261	391.8622	-282.433		
100000	2500	-0.09552	2.062846	49.09531	1.13741	0.829914666	2.13635	141.7834	0.292477	227.4821	165.9829	-26.0715	-2.47889	0.87028	-0.41255	0.473851	1.657499	400	380.2847	-0.56573	-1.042873615	391.8622	-282.433		
100000	2300	-0.09113	1.853313	48.30171	0.992893	0.769288029	1.931547	141.6565	0.262534	198.5785	153.8576	-26.9043	-2.44337	0.893763	-0.3311	0.47072	1.657499	400	355.2581	-0.58293	-0.966685099	391.8622	-282.433		
100000	2100	-0.08669	1.637816	47.42204	0.848375	0.70274954	1.718348	141.5478	0.231829	169.6749	140.5499	-27.8183	-2.40604	0.920833	-0.25698	0.471019	1.657499	400	331.6229	-0.60214	-0.883076518	391.8622	-282.433		
100000	1900	-0.08217	1.414771	46.43805	0.703857	0.628745999	1.495054	141.4659	0.200142	140.7714	125.7492	-28.832	-2.3664	0.95278	-0.19153	0.475642	1.657499	400	309.4463	-0.62354	-0.790081983	391.8622	-282.433		
100000	1700	-0.07751	1.181801	45.32733	0.559339	0.544950378	1.259231	141.4237	0.167135	111.8678	108.9901	-29.9728	-2.32345	0.99176	-0.13675	0.485896	1.657499	400	288.8542	-0.64691	-0.684786677	391.8622	-282.433		
100000	1500	-0.07582	0.938723	44.06065	0.414821	0.44808155	1.013999	141.4404	0.132773	82.96419	89.61631	-30	-2.27581	1.040963	-0.0953	0.503558	1.657499	400	269.9745	-0.6718	-0.563059283	391.8622	-282.433		
100000	1300	-0.07383	0.676101	42.64149	0.270303	0.331973005	0.747386	141.5413	0.095696	54.06061	66.3946	-30	-2.21706	1.109209	-0.07441	0.532009	1.657499	400	253.8417	-0.69069	-0.417156105	391.8622	-282.433		
100000	1100	-0.07062	0.381264	41.24443	0.125785	0.184855492	0.44801	141.7257	0.054035	25.15703	36.9711	-30	-2.12267	1.221015	-0.09354	0.578284	1.657499	400	244.3608	-0.66937	-0.232288222	391.8622	-282.433		
133333	900	-0.06747	0.053878	39.3271	-0.01873	0.00514019	0.118977	0	0	-3.74655	1.028038	-30	-2.02957	1.351499	0	0	1.657499	0	0	-0.67162	-0.006458093	391.8622	-282.433		
200000	700	-0.1813	0.020579	17.39898	-0.16325	0.002527988	0.11521	0	0	-32.6501	0.505598	-30	-5.29259	0.516217	0	0	1.657499	0	0	-4.7732	-0.003178886	391.8622	-282.433		
266667	500	-0.31872	0.012162	10.47998	-0.30777	0.001215149	0.11836	0	0	-61.5537	0.24303	-30	-8.96209	0.30508	0	0	1.657499	0	0	-8.65546	-0.001520766	391.8622	-282.433		
75000	300	-0.46047	0.008776	7.590611	-0.45229	0.000588318	0.122884	0	0	-90.4573	0.117664	-30	-12.4387	0.220145	0	0	1.657499	0	0	-12.2178	-0.000736031	391.8622	-282.433		
0	100	-0.60359	0.006996	6.053297	-0.5968	0.000206441	0.12806	0	0	-119.361	0.041288	-30	-15.6303	0.175503	0	0	1.657499	0	0	-15.4547	-0.000266674	391.8622	-282.433		
0	3400	-0.14002	3.249032	49.78432	1.836187	1.27282728	3.341899	141.9158	0.461089	367.2373	254.5655	-22.1838	-3.05587	0.437729	-0.40251	0.402505	1.722496	400	400	-1.0187	-1.599439423	321.5501	-465.647	0	1.389378
210375	3175	-0.12968	2.973105	49.60666	1.670106	1.173316891	3.062758	141.8797	0.421823	334.0212	234.6634	-22.981	-2.94	0.550016	-0.4159	0.415899	1.722496	400	400	-0.9156	-1.474387305	321.5501	-465.647		
162500	2925	-0.1186	2.664723	49.39181	1.485572	1.06055005	2.750682	141.8378	0.377959	297.1145	212.11	-23.9425	-2.80947	0.676404	-0.4322	0.432198	1.722496	400	400	-0.80038	-1.332685229	321.5501	-465.647		
100000	2700	-0.10898	2.38527	49.18059	1.319492	0.956795686	2.467742	141.7987	0.338228	263.8984	191.3591	-24.886	-2.69015	0.791854	-0.44833	0.448327	1.722496	400	400	-0.69598	-1.202311604	321.5501	-465.647		
100000	2500	-0.10222	2.151851	48.74848	1.171865	0.87776848	2.2348	141.7246	0.30497	234.373	175.5537	-25.7331	-2.61367	0.861019	-0.42033	0.454987	1.722496	400	388.8743	-0.64965	-1.103006673	321.5501	-465.647		
100000	2300	-0.0976	1.937543	47.94059	1.024238	0.815705716	2.024431	141.6078	0.274371	204.8476	163.1411	-26.5632	-2.57921	0.88402	-0.33678	0.451628	1.722496	400	363.2482	-0.67016	-1.02502163	321.5501	-465.647		
100000	2100	-0.09293	1.717169	47.04318	0.876611	0.747623586	1.805502	141.5113	0.242999	175.3222	149.5247	-27.4746	-2.54329	0.910479	-0.2605	0.451756	1.722496	400	338.9656	-0.69335	-0.939465292	321.5501	-465.647		
100000	1900	-0.0882	1.489113	46.03646	0.728984	0.67193078	1.576279	141.4445	0.210627	145.7969	134.3862	-28.486	-2.50562	0.941623	-0.19278	0.45628	1.722496	400	316.0677	-0.71966	-0.844347532	321.5501	-465.647		
100000	1700	-0.08335	1.250964	44.89469	0.581357	0.586262043	1.334301	141.4216	0.176913	116.2715	117.2524	-29.6248	-2.46554	0.979481	-0.13551	0.466514	1.722496	400	294.6353	-0.74936	-0.736695536	321.5501	-465.647		
100000	1500	-0.0808	1.001738	43.58414	0.43373	0.487210675	1.081213	141.4645	0.14171	86.74607	97.44214	-30	-2.42203	1.027174	-0.09131	0.484273	1.722496	400	274.7579	-0.78263	-0.61222766	321.5501	-465.647		
100000	1300	-0.07904	0.733773	42.08633	0.286103	0.368629147	0.808613	141.6044	0.103905	57.22068	73.72583	-30	-2.37046	1.09243	-0.0663	0.512819	1.722496	400	257.1273	-0.81481	-0.4632189	321.5501	-465.647		
100000	1100	-0.07633	0.432919	40.50154	0.138476	0.218113337	0.502982	141.8584	0.061413	27.69528	43.62267	-30	-2.29076	1.19715	-0.07718	0.5592	1.722496	400	244.6529	-0.81952	-0.274080287	321.5501	-465.647		
133333	900	-0.06454	0.060822	41.6596	-0.00915	0.005433685	0.12451	0	0	-1.83011	1.086737	-30	-1.94286	1.525685	0	0	1.722496	0	0	-0.41035	-0.006826023	321.5501	-465.647		
200000	700	-0.17676	0.02277	18.45038	-0.15678	0.002784783	0.119806	0	0	-31.3555	0.556957	-30	-5.16636	0.571181	0	0	1.722496	0	0	-4.59167	-0.003499734	321.5501	-465.647		
266667	500	-0.31631	0.013226	10.95519	-0.3044	0.001324474	0.122967	0	0	-60.8809	0.264895	-30	-8.90027	0.331759	0	0	1.722496	0	0	-8.56687	-0.001662544	321.5501	-465.647		
75000	300	-0.46087	0.009471	7.878834	-0.45203	0.000632903	0.12773	0	0	-90.4063	0.126581	-30	-12.4479	0.237571	0	0	1.722496	0	0	-12.2096	-0.000796976	321.5501	-465.647		
0	100	-0.60697	0.007522	6.260483	-0.59966	0.000215136	0.133219	0	0	-119.932	0.043027	-30	-15.7016	0.188695	0	0	1.722496	0	0	-15.5128	-0.00026815	321.5501	-465.647		
0	3400	-0.14288	3.328055	49.84855	1.884908	1.300264534	3.421345	141.9292	0.472348	376.9816	260.0529	-21.9656	-3.08537	0.405568	-0.39964	0.399636	1.720536	400	400	-1.0459	-1.633914462	577.9677	-742.096	0	1.430857
210375	3175	-0.13228	3.047823	49.67229	1.715951	1.199592466	3.137902	141.8929	0.432464	343.1901	239.9185	-22.7595	-2.96796	0.519393	-0.4129	0.412901	1.720536	400	400	-0.94116	-1.507404958	577.9677	-742.096		
162500	2925	-0.12092	2.734682	49.45899	1.52822	1.085543376	2.82108	141.8507	0.387917	305.6441	217.1087	-23.7174	-2.83571	0.647478	-0.42905	0.429052	1.720536	400	400	-0.82413	-1.364093842	577.9677	-742.096		
100000	2700	-0.11106	2.450971	49.24914	1.359263	0.980646489	2.533902	141.8112	0.347575	271.8526	196.1293	-24.6576	-2.71482	0.76444	-0.44504	0.445041	1.720536	400	400	-0.71811	-1.232279657	577.9677	-742.096		
100000	2500	-0.1032	2.20385	48.95525	1.209079	0.89156848	2.2851	141.759	0.312416	241.8157	178.3137	-25.5394	-2.61833	0.855786	-0.44281	0.456913	1.720536	400	395.4674	-0.64221	-1.120344566	577.9677	-742.096		
100000	2300	-0.09852	1.987186	48.15342	1.058894	0.829773739	2.073081	141.6358	0.281457	211.7789	165.9547	-26.3662	-2.58356	0.878473	-0.35612	0.452725	1.720536	400	369.0615	-0.66238	-1.04269625	577.9677	-742.096		
100000	2100	-0.09379	1.764559	47.2631	0.90871	0.762058981	1.852552	141.5317	0.249741	181.742	152.4118	-27.2733	-2.54732	0.904517	-0.27672	0.451966	1.720536	400	344.0412	-0.6852	-0.957602218	577.9677	-742.096		
100000	1900	-0.08899	1.534401	46.26471	0.758526	0.686881619	1.621812	141.4558	0.21705	151.7052	137.3763	-28.2793	-2.50934	0.935086	-0.20585	0.455523	1.720536	400	320.4461	-0.71112	-0.863133741	577.9677	-742.096		
100000	1700	-0.08409	1.294391	45.13259	0.608342	0.601961587	1.378463	141.4217	0.183055	121.6683	120.3923	-29.4104	-2.46901	0.972093	-0.14534	0.46467	1.720536	400	298.3499	-0.7405	-0.756424607	577.9677	-742.096		
100000	1500	-0.08091	1.043009	43.83267	0.458157	0.503941627	1.122986	141.4507	0.147534	91.63148	100.7883	-30	-2.42536	1.018566	-0.09778	0.481215	1.720536	400	277.8442	-0.77355	-0.633252558	577.9677	-742.096		
100000	1300	-0.07918	0.774259	42.33998	0.307973	0.387103143	0.849765	141.5739	0.109615	61.59463	77.42063	-30	-2.37464	1.081328	-0.06863	0.508179	1.720536	400	259.4774	-0.80687	-0.486435673	577.9677	-742.096		
100000	1100	-0.07665	0.474199	40.72087	0.157789	0.239763123	0.544713	141.8167	0.067249	31.55778	47.95262	-30	-2.30012	1.179698	-0.07264	0.552088	1.720536	400	245.665	-0.81914	-0.301287092	577.9677	-742.096		
133333	900	-0.06882	0.113269	40.37943	0.007605	0.036846135	0.179725	141.8825	0.016071	1.520929	7.369227	-30	-2.06939	1.416926	-0.19758	0.632829	1.720536	400	259.6309	-0.60617	-0.046299676	577.9677	-742.096		
200000	700	-0.16399	0.024407	19.69915	-0.14258	0.003001425	0.119574	0	0	-28.5159	0.600285	-30	-4.80926	0.612243	0	0	1.720536	0	0	-4.19325	-0.003769141	577.9677	-742.096		
266667	500	-0.30501	0.01364	11.30379	-0.29276	0.001397736	0.122493	0	0	-58.5528	0.279547	-30	-8.60924	0.342157	0	0	1.720536	0	0	-8.26532	-0.001758186	577.9677	-742.096		
75000	300	-0.4519	0.009611	8.00379	-0.44295	0.000663628	0.127267	0	0	-88.5896	0.132726	-30	-12.2372	0.241087	0	0	1.720536	0	0	-11.9953	-0.000834672	577.9677	-742.096		
0	100	-0.60047	0.007571	6.308224	-0.59313	0.000230239	0.132811	0	0	-118.626	0.046048	-30	-15.5641	0.189917	0	0	1.720536	0	0	-15.374	-0.000281746	577.9677	-742.096		
0	3400	-0.14208	3.380172	50.14021	1.933347	1.304743494	3.465709	141.9924	0.479959	386.6693	260.9487	-21.8241	-3.04896	0.382221	-0.41032	0.41032	1.688048	400	400	-1.02719	-1.639543116	704.7369	-709.165	0	1.44852
210375	3175	-0.13138	3.09582	49.97217	1.760877	1.203567715	3.178711	141.9555	0.439469	352.1753	240.7135	-22.6195	-2.93025	0.497347	-0.42286	0.422862	1.688048	400	400	-0.92049	-1.512407108	704.7369	-709.165		
162500	2925	-0.11992	2.778229	49.76848	1.569243	1.089067422	2.858093	141.9126	0.394266	313.8487	217.8135	-23.5794	-2.79663	0.626784	-0.43814	0.438143	1.688048	400	400	-0.80132	-1.368523371	704.7369	-709.165		
100000	2700	-0.10999	2.490631	49.56783	1.396773	0.983865827	2.567634	141.872	0.353351	279.3547	196.7732	-24.5217	-2.67459	0.74487	-0.45329	0.453286	1.688048	400	400	-0.69341	-1.236324448	704.7369	-709.165		
100000	2500	-0.10147	2.233318	49.37384	1.243467	0.888385194	2.307625	141.8344	0.316761	248.6934	177.677	-25.431	-2.56451	0.851315	-0.46802	0.468017	1.688048	400	400	-0.59686	-1.116345457	704.7369	-709.165		
100000	2300	-0.0967	2.013262	48.59052	1.09016	0.826405055	2.093409	141.6995	0.285278	218.032	165.281	-26.2638	-2.52717	0.875614	-0.37947	0.46323	1.688048	400	373.1269	-0.6131	-1.038461305	704.7369	-709.165		
100000	2100	-0.09196	1.788115	47.70945	0.936853	0.759305938	1.871668	141.5796	0.253161	187.3707	151.8612	-27.1744	-2.48965	0.901612	-0.29628	0.461405	1.688048	400	347.2026	-0.63388	-0.954143345	704.7369	-709.165		
100000	1900	-0.08714	1.555555	46.72202	0.783547	0.684863975	1.639733	141.4853	0.220088	156.7094	136.9728	-28.1837	-2.4501	0.932096	-0.22179	0.463834	1.688048	400	322.8128	-0.65742	-0.860596736	704.7369	-709.165		
100000	1700	-0.08222	1.313318	45.60331	0.63024	0.600852848	1.395233	141.4292	0.185741	126.048	120.1706	-29.3179	-2.4079	0.968946	-0.15783	0.471777	1.688048	400	300.0427	-0.68392	-0.755030681	704.7369	-709.165		
100000	1500	-0.07875	1.059631	44.32005	0.476934	0.503949972	1.138058	141.4313	0.149865	95.3867	100.79	-30	-2.36185	1.015188	-0.10706	0.487054	1.688048	400	279.0071	-0.71341	-0.633262867	704.7369	-709.165		
100000	1300	-0.07693	0.789203	42.84723	0.323627	0.388651456	0.863684	141.5212	0.111689	64.72538	77.73029	-30	-2.30829	1.077359	-0.07481	0.512607	1.688048	400	260.2464	-0.74256	-0.488377451	704.7369	-709.165		
100000	1100	-0.07431	0.488419	41.24894	0.17032	0.24379157	0.55791	141.725	0.069221	34.06405	48.75831	-30	-2.23127	1.173976	-0.07552	0.554709	1.688048	400	246.1491	-0.75095	-0.306346371	704.7369	-709.165		
133333	900	-0.06699	0.129999	40.77038	0.017014	0.045992355	0.194849	141.8076	0.018435	3.402716	9.198471	-30	-2.01546	1.397766	-0.18863	0.631258	1.688048	400	257.5543	-0.5599	-0.057795281	704.7369	-709.165		
200000	700	-0.15767	0.024394	20.03912	-0.13629	0.003016615	0.117219	0	0	-27.2586	0.603323	-30	-4.63183	0.611911	0	0	1.688048	0	0	-4.01613	-0.003793511	704.7369	-709.165		
266667	500	-0.3015	0.013269	11.21091	-0.2896	0.001371365	0.120059	0	0	-57.9199	0.274273	-30	-8.51846	0.332856	0	0	1.688048	0	0	-8.1839	-0.001720897	704.7369	-709.165		
75000	300	-0.45152	0.009258	7.8601	-0.44291	0.000640535	0.124844	0	0	-88.5813	0.128107	-30	-12.2284	0.232232	0	0	1.688048	0	0	-11.9954	-0.000806373	704.7369	-709.165		
0	100	-0.60326	0.00726	6.166827	-0.59621	0.000215118	0.130409	0	0	-119.243	0.043024	-30	-15.6232	0.182123	0	0	1.688048	0	0	-15.4409	-0.000268663	704.7369	-709.165		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.13553	3.389778	50.80134	1.981635	1.272611762	3.453272	142.1494	0.481855	396.3269	254.5224	-21.7982	-2.90997	0.371659	-0.44233	0.442331	1.607285	400	400	-0.93915	-1.599160952	833.5333	-454.013	0	1.434756
210375	3175	-0.12503	3.102759	50.65386	1.805313	1.172412775	3.165136	142.1127	0.440941	361.0626	234.4826	-22.5994	-2.79097	0.487243	-0.45313	0.453126	1.607285	400	400	-0.83047	-1.47325228	833.5333	-454.013		
162500	2925	-0.11382	2.782485	50.47476	1.6094	1.05926356	2.84358	142.0694	0.395306	321.8799	211.8527	-23.566	-2.6572	0.616969	-0.4663	0.466301	1.607285	400	400	-0.70916	-1.331073764	833.5333	-454.013		
100000	2700	-0.10413	2.49277	50.29791	1.433078	0.955560783	2.552621	142.0281	0.354043	286.6156	191.1122	-24.5144	-2.53524	0.73508	-0.47937	0.479371	1.607285	400	400	-0.59941	-1.200759496	833.5333	-454.013		
100000	2500	-0.09583	2.233847	50.12657	1.276347	0.861671004	2.292473	141.9894	0.317182	255.2694	172.3342	-25.429	-2.42542	0.841326	-0.4921	0.492099	1.607285	400	400	-0.50131	-1.082777308	833.5333	-454.013		
100000	2300	-0.09073	2.006883	49.43001	1.119617	0.796540569	2.07258	141.8451	0.284667	223.9233	159.3081	-26.2888	-2.37707	0.87631	-0.41214	0.488514	1.607285	400	375.3941	-0.49984	-1.000930278	833.5333	-454.013		
100000	2100	-0.08608	1.779939	48.56965	0.962886	0.730973588	1.851551	141.6963	0.252211	192.5772	146.1947	-27.2087	-2.33707	0.902616	-0.32404	0.485225	1.607285	400	348.2925	-0.51591	-0.918545153	833.5333	-454.013		
100000	1900	-0.08136	1.545783	47.60734	0.806156	0.6582681	1.620407	141.5679	0.218833	161.2311	131.6536	-28.2278	-2.29447	0.933472	-0.245	0.486084	1.607285	400	322.94	-0.5338	-0.827182368	833.5333	-454.013		
100000	1700	-0.07652	1.302226	46.52052	0.649425	0.576280798	1.376805	141.4712	0.184227	129.885	115.2562	-29.3721	-2.24832	0.970785	-0.17694	0.49233	1.607285	400	299.4631	-0.55338	-0.724154793	833.5333	-454.013		
100000	1500	-0.07315	1.047617	45.27913	0.492694	0.481774401	1.120711	141.423	0.148157	98.5389	96.35488	-30	-2.1971	1.017625	-0.12263	0.505785	1.607285	400	278.0286	-0.57407	-0.605397163	833.5333	-454.013		
100000	1300	-0.07109	0.776505	43.86778	0.335964	0.369453747	0.84693	141.449	0.109836	67.19279	73.89075	-30	-2.13635	1.080727	-0.08782	0.529374	1.607285	400	259.334	-0.59137	-0.464257523	833.5333	-454.013		
100000	1100	-0.06814	0.476353	42.3788	0.179233	0.228983027	0.542211	141.5695	0.067437	35.84668	45.79661	-30	-2.04924	1.178822	-0.08784	0.569062	1.607285	400	246.174	-0.58269	-0.287739996	833.5333	-454.013		
133333	900	-0.06058	0.123778	42.16896	0.022503	0.040692151	0.183462	141.5942	0.017526	4.500565	8.13843	-30	-1.82565	1.404678	-0.20736	0.640025	1.607285	400	261.5997	-0.36984	-0.051132927	833.5333	-454.013		
200000	700	-0.15401	0.022616	19.55404	-0.13423	0.002830097	0.111416	0	0	-26.8455	0.566019	-30	-4.52881	0.56732	0	0	1.607285	0	0	-3.95794	-0.003555429	833.5333	-454.013		
266667	500	-0.30173	0.012021	10.67953	-0.29096	0.001246043	0.114273	0	0	-58.1917	0.249209	-30	-8.52456	0.301538	0	0	1.607285	0	0	-8.22147	-0.001567046	833.5333	-454.013		
75000	300	-0.45545	0.00833	7.432845	-0.44769	0.000568889	0.118985	0	0	-89.5378	0.113778	-30	-12.3208	0.20896	0	0	1.607285	0	0	-12.1111	-0.000726754	833.5333	-454.013		
0	100	-0.61076	0.006517	5.815317	-0.60442	0.000179602	0.124443	0	0	-120.884	0.03592	-30	-15.7816	0.163466	0	0	1.607285	0	0	-15.618	-0.00022995	833.5333	-454.013		
0	3400	-0.15262	3.568137	49.99211	2.030303	1.385208848	3.664413	141.9599	0.506532	400	277.0418	-21.3283	-3.19186	0.319302	-0.38042	0.380423	1.728995	400	400	-1.1319	-1.740656848	734.1587	-912.323	0	1.546335
210375	3175	-0.14172	3.279046	49.75049	1.850985	1.286337294	3.373847	141.9088	0.465326	370.1969	257.2675	-22.1005	-3.08009	0.425992	-0.39855	0.398552	1.728995	400	400	-1.03768	-1.616414143	734.1587	-912.323		
162500	2925	-0.12928	2.947676	49.5353	1.651742	1.166656048	3.038476	141.8656	0.418174	330.3484	233.3312	-23.0573	-2.94089	0.560897	-0.41481	0.414807	1.728995	400	400	-0.91396	-1.466022753	734.1587	-912.323		
100000	2700	-0.1185	2.647531	49.32301	1.472424	1.056607651	2.734597	141.8249	0.375486	294.4847	211.3215	-23.9985	-2.8137	0.684043	-0.43094	0.430942	1.728995	400	400	-0.80192	-1.327732103	734.1587	-912.323		
100000	2500	-0.10925	2.378916	49.11752	1.31303	0.956639619	2.462507	141.7873	0.3373	262.6059	191.3279	-24.9083	-2.6989	0.795121	-0.44667	0.446667	1.728995	400	400	-0.70166	-1.20211824	734.1587	-912.323		
100000	2300	-0.10222	2.129629	48.60176	1.153635	0.873774624	2.214232	141.7012	0.301771	230.7271	174.7549	-25.8167	-2.6222	0.863295	-0.40846	0.452401	1.728995	400	385.9002	-0.66092	-1.097986346	734.1587	-912.323		
100000	2100	-0.09721	1.897096	47.71322	0.994241	0.805644418	1.985368	141.5801	0.268591	198.8483	161.1289	-26.7259	-2.58492	0.888645	-0.31958	0.449399	1.728995	400	358.4904	-0.68389	-1.012376115	734.1587	-912.323		
100000	1900	-0.09214	1.657138	46.71567	0.834847	0.730148649	1.746144	141.4848	0.23446	166.9694	146.0297	-27.7338	-2.54592	0.918267	-0.23944	0.450662	1.728995	400	332.6436	-0.71016	-0.917502945	734.1587	-912.323		
100000	1700	-0.08698	1.407512	45.5823	0.675453	0.645078206	1.494183	141.4287	0.199063	135.0906	129.0156	-28.8662	-2.50481	0.953899	-0.16979	0.457442	1.728995	400	308.4171	-0.7403	-0.810600881	734.1587	-912.323		
100000	1500	-0.08211	1.145187	44.27727	0.516059	0.547018158	1.226907	141.4326	0.161967	103.2118	109.4036	-30	-2.46055	0.998536	-0.11335	0.471612	1.728995	400	285.9211	-0.77464	-0.687380657	734.1587	-912.323		
100000	1300	-0.08042	0.867841	42.75948	0.356665	0.43075199	0.945366	141.5296	0.122825	71.33299	86.1504	-30	-2.41108	1.057514	-0.07439	0.495907	1.728995	400	265.413	-0.81228	-0.541282567	734.1587	-912.323		
100000	1100	-0.07815	0.560634	41.04349	0.197271	0.285212005	0.632702	141.7592	0.079475	39.45417	57.0424	-30	-2.34433	1.146901	-0.06536	0.53633	1.728995	400	248.6392	-0.83903	-0.358397113	734.1587	-912.323		
133333	900	-0.07252	0.196245	39.85956	0.037877	0.085844758	0.264453	141.9924	0.027865	7.575354	17.16895	-30	-2.17869	1.33572	-0.1412	0.60942	1.728995	400	248.5257	-0.7351	-0.107872098	734.1587	-912.323		
200000	700	-0.14573	0.027606	21.94849	-0.12152	0.00338971	0.120188	0	0	-24.3035	0.677942	-30	-4.29476	0.692491	0	0	1.728995	0	0	-3.59802	-0.004260784	734.1587	-912.323		
266667	500	-0.29368	0.01426	11.74845	-0.28091	0.001493311	0.122775	0	0	-56.1823	0.298662	-30	-8.31546	0.357708	0	0	1.728995	0	0	-7.95588	-0.001874551	734.1587	-912.323		
75000	300	-0.44938	0.009753	8.081305	-0.44031	0.000679144	0.127806	0	0	-88.0611	0.135829	-30	-12.1779	0.244638	0	0	1.728995	0	0	-11.9324	-0.000858636	734.1587	-912.323		
0	100	-0.60706	0.007578	6.283117	-0.5997	0.000216451	0.133726	0	0	-119.94	0.04329	-30	-15.7037	0.190096	0	0	1.728995	0	0	-15.5134	-0.000271329	734.1587	-912.323		
0	3400	-0.1489	3.648357	50.73766	2.127453	1.372003461	3.721353	142.1334	0.518554	400	274.4007	-21.1235	-3.08713	0.316072	-0.38668	0.386683	1.667586	400	400	-1.047	-1.72405506	1201.214	-1126.01	0	1.584702
210375	3175	-0.14017	3.376368	50.30311	1.941721	1.294473532	3.456463	142.0293	0.479543	388.3442	258.8947	-21.8343	-3.01093	0.382207	-0.41868	0.41868	1.667586	400	400	-1.0021	-1.62663259	1201.214	-1126.01		
162500	2925	-0.12755	3.037056	50.10732	1.735353	1.174153578	3.114448	141.9851	0.431217	347.0705	234.8307	-22.7912	-2.8694	0.519489	-0.43323	0.433228	1.667586	400	400	-0.87447	-1.475439255	1201.214	-1126.01		
100000	2700	-0.11664	2.730009	49.91379	1.549621	1.063743962	2.804881	141.943	0.387506	309.9242	212.7488	-23.7323	-2.74026	0.644586	-0.44769	0.447694	1.667586	400	400	-0.75897	-1.33670355	1201.214	-1126.01		
100000	2500	-0.1073	2.455494	49.72595	1.384526	0.963664926	2.528004	141.9038	0.348444	276.9053	192.733	-24.642	-2.62387	0.757216	-0.46181	0.461805	1.667586	400	400	-0.6557	-1.210940812	1201.214	-1126.01		
100000	2300	-0.09887	2.185812	49.43045	1.219432	0.867507773	2.257416	141.8452	0.310047	243.8863	173.5016	-25.6063	-2.51788	0.857587	-0.45959	0.473775	1.667586	400	395.43	-0.57017	-1.090113324	1201.214	-1126.01		
100000	2100	-0.09386	1.949057	48.56365	1.054337	0.800863994	2.027128	141.6953	0.276172	210.8674	160.1728	-26.5172	-2.47842	0.882721	-0.36303	0.468641	1.667586	400	366.1216	-0.58934	-1.006367321	1201.214	-1126.01		
100000	1900	-0.08878	1.705165	47.59217	0.889242	0.727140723	1.786609	141.5662	0.241394	177.8485	145.4281	-27.526	-2.43685	0.912015	-0.27546	0.467611	1.667586	400	338.5849	-0.61112	-0.913724167	1201.214	-1126.01		
100000	1700	-0.08361	1.452031	46.49083	0.724148	0.644268931	1.533567	141.4692	0.205418	144.8295	128.8538	-28.6575	-2.39258	0.947119	-0.19862	0.471881	1.667586	400	312.8995	-0.63587	-0.809586986	1201.214	-1126.01		
100000	1500	-0.07829	1.186375	45.22691	0.559053	0.549036096	1.264622	141.4225	0.16778	111.8106	109.8072	-29.9496	-2.34435	0.990928	-0.13527	0.483261	1.667586	400	289.2229	-0.6635	-0.689919637	1201.214	-1126.01		
100000	1300	-0.0763	0.906813	43.75848	0.393958	0.436550415	0.982195	141.4546	0.128273	78.79164	87.31008	-30	-2.29005	1.04827	-0.08942	0.504397	1.667586	400	267.7805	-0.6932	-0.548570184	1201.214	-1126.01		
100000	1100	-0.07389	0.599748	42.09754	0.228863	0.296996263	0.670182	141.603	0.084926	45.7727	59.39925	-30	-2.21892	1.133444	-0.07264	0.540687	1.667586	400	250.2432	-0.71227	-0.373205618	1201.214	-1126.01		
133333	900	-0.06884	0.241897	40.78832	0.063769	0.109287553	0.307385	141.8043	0.034302	12.75376	21.85751	-30	-2.07004	1.301497	-0.12967	0.605726	1.667586	400	246.811	-0.63122	-0.137331938	1201.214	-1126.01		
200000	700	-0.12705	0.029318	23.92819	-0.10133	0.003595274	0.115941	0	0	-20.2652	0.719055	-30	-3.76265	0.735434	0	0	1.667586	0	0	-3.0227	-0.004520194	1201.214	-1126.01		
266667	500	-0.27883	0.013913	11.88214	-0.26642	0.001501886	0.117968	0	0	-53.2841	0.300377	-30	-7.92739	0.348989	0	0	1.667586	0	0	-7.57652	-0.001883406	1201.214	-1126.01		
75000	300	-0.44009	0.009238	7.939416	-0.43152	0.000665409	0.122937	0	0	-86.3031	0.133082	-30	-11.958	0.231729	0	0	1.667586	0	0	-11.7255	-0.000836655	1201.214	-1126.01		
0	100	-0.60348	0.007084	6.090789	-0.59661	0.000209751	0.128836	0	0	-119.322	0.04195	-30	-15.628	0.177687	0	0	1.667586	0	0	-15.4501	-0.000255058	1201.214	-1126.01		
0	3400	-0.14029	3.638204	51.52774	2.175727	1.32218718	3.680826	142.3442	0.517877	400	264.4374	-21.1492	-2.91878	0.329668	-0.41486	0.414862	1.582241	400	400	-0.92765	-1.661458797	1324.296	-853.11	0	1.563269
210375	3175	-0.13289	3.37557	51.0008	1.986114	1.256567982	3.431769	142.2006	0.480008	397.2227	251.3136	-21.8365	-2.86023	0.374957	-0.45285	0.45285	1.582241	400	400	-0.90628	-1.579003856	1324.296	-853.11		
162500	2925	-0.12058	3.033776	50.83148	1.775432	1.13776525	3.089229	142.157	0.431273	355.0863	227.553	-22.8008	-2.71871	0.512482	-0.46518	0.465176	1.582241	400	400	-0.77652	-1.429714965	1324.296	-853.11		
100000	2700	-0.10997	2.724815	50.66366	1.585818	1.029027535	2.779565	142.1151	0.387237	317.1636	205.8055	-23.7489	-2.58979	0.637549	-0.47745	0.477449	1.582241	400	400	-0.65918	-1.293071645	1324.296	-853.11		
100000	2500	-0.1009	2.448882	50.5005	1.417273	0.930706467	2.50293	142.0756	0.347926	283.4545	186.1413	-24.6648	-2.47381	0.749924	-0.48944	0.489441	1.582241	400	400	-0.55435	-1.169522491	1324.296	-853.11		
100000	2300	-0.09237	2.173762	50.28975	1.248727	0.832665904	2.227609	142.0262	0.308731	249.7454	166.5332	-25.6511	-2.3604	0.858799	-0.49622	0.501426	1.582241	400	398.3148	-0.45528	-1.046326468	1324.296	-853.11		
100000	2100	-0.08748	1.935312	49.44403	1.080182	0.767651359	1.998502	141.8478	0.27452	216.0363	153.5303	-26.5721	-2.31867	0.884272	-0.39425	0.494827	1.582241	400	367.5943	-0.46976	-0.964633131	1324.296	-853.11		
100000	1900	-0.08253	1.689918	48.49793	0.911636	0.695756308	1.759248	141.6853	0.239437	182.3272	139.1513	-27.5916	-2.27424	0.913981	-0.30163	0.492215	1.582241	400	338.8794	-0.48597	-0.8742874	1324.296	-853.11		
100000	1700	-0.07747	1.435543	47.42856	0.743091	0.614981926	1.50758	141.5485	0.203199	148.6181	122.9964	-28.7345	-2.22628	0.949607	-0.22022	0.49477	1.582241	400	312.2901	-0.50388	-0.772789574	1324.296	-853.11		
100000	1500	-0.07234	1.169138	46.20696	0.574545	0.522256336	1.240374	141.4527	0.165378	114.909	104.4513	-30	-2.1732	0.994081	-0.15287	0.504259	1.582241	400	288.0471	-0.52286	-0.656265503	1324.296	-853.11		
100000	1300	-0.07027	0.889029	44.79799	0.406	0.41276393	0.959271	141.4222	0.125728	81.19993	82.55279	-30	-2.11211	1.052443	-0.10398	0.523383	1.582241	400	266.4921	-0.54099	-0.518680107	1324.296	-853.11		
100000	1100	-0.06752	0.582344	43.23946	0.237454	0.277366116	0.64864	141.4881	0.082395	47.49083	55.47322	-30	-2.03113	1.139337	-0.08595	0.557307	1.582241	400	249.6731	-0.54325	-0.348538373	1324.296	-853.11		
133333	900	-0.06204	0.228433	42.17724	0.068909	0.097483529	0.289064	141.5932	0.032345	13.78173	19.49671	-30	-1.86886	1.311047	-0.14759	0.618263	1.582241	400	249.4449	-0.43532	-0.122496874	1324.296	-853.11		
200000	700	-0.12341	0.027144	23.41297	-0.09964	0.003372936	0.109794	0	0	-19.9274	0.674587	-30	-3.65831	0.680883	0	0	1.582241	0	0	-2.97319	-0.00423898	1324.296	-853.11		
266667	500	-0.27933	0.012504	11.27161	-0.26818	0.001354298	0.111884	0	0	-53.6365	0.27086	-30	-7.94052	0.31365	0	0	1.582241	0	0	-7.62516	-0.001697776	1324.296	-853.11		
75000	300	-0.44439	0.008246	7.474826	-0.43673	0.000586193	0.116766	0	0	-87.3456	0.117239	-30	-12.0599	0.206855	0	0	1.582241	0	0	-11.8524	-0.000743477	1324.296	-853.11		
0	100	-0.61141	0.00631	5.720339	-0.60527	0.000172901	0.122527	0	0	-121.055	0.03458	-30	-15.7954	0.158277	0	0	1.582241	0	0	-15.637	-0.000219345	1324.296	-853.11		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.15095	3.768333	51.12269	2.224328	1.393051816	3.830115	142.2327	0.53598	400	278.6104	-20.8244	-3.08369	0.300463	-0.37267	0.372669	1.653583	400	400	-1.03273	-1.750506367	1314.827	-1161.97	0	1.644937
210375	3175	-0.14339	3.50354	50.55699	2.031567	1.328578565	3.578539	142.0891	0.497815	400	265.7157	-21.4961	-3.02983	0.340537	-0.41394	0.413942	1.653583	400	400	-1.01981	-1.669489208	1314.827	-1161.97		
162500	2925	-0.13092	3.160558	50.29701	1.817387	1.212254358	3.235369	142.0279	0.448887	363.4775	242.4509	-22.4333	-2.89631	0.468214	-0.43314	0.433142	1.653583	400	400	-0.90476	-1.523324036	1314.827	-1161.97		
100000	2700	-0.11951	2.843305	50.10777	1.624626	1.099165574	2.915851	141.9852	0.403707	324.9252	219.8331	-23.3761	-2.76345	0.596996	-0.4472	0.4472	1.653583	400	400	-0.78523	-1.381210917	1314.827	-1161.97		
100000	2500	-0.10976	2.559758	49.92386	1.453282	0.996714548	2.630185	141.9452	0.363345	290.6565	199.3429	-24.2884	-2.64375	0.712878	-0.46094	0.460943	1.653583	400	400	-0.67839	-1.252474312	1314.827	-1161.97		
100000	2300	-0.10036	2.274485	49.72298	1.281939	0.89218589	2.342643	141.9032	0.322757	256.3878	178.4372	-25.281	-2.52231	0.830306	-0.47603	0.476031	1.653583	400	400	-0.57089	-1.121117671	1314.827	-1161.97		
100000	2100	-0.09438	2.021995	48.98674	1.110595	0.817023807	2.09591	141.7644	0.286647	222.1191	163.4048	-26.2298	-2.46479	0.874665	-0.39768	0.474232	1.653583	400	375.3945	-0.56344	-1.026674786	1314.827	-1161.97		
100000	1900	-0.08917	1.771839	48.0202	0.939252	0.743418763	1.850675	141.6181	0.250924	187.8504	148.6838	-27.2427	-2.42201	0.903615	-0.30334	0.471538	1.653583	400	346.1609	-0.58422	-0.93417705	1314.827	-1161.97		
100000	1700	-0.08387	1.512552	46.924	0.767908	0.660772353	1.592825	141.5011	0.214028	153.5817	132.1545	-28.3786	-2.37641	0.938216	-0.21996	0.474089	1.653583	400	318.9234	-0.60788	-0.83032572	1314.827	-1161.97		
100000	1500	-0.07842	1.240946	45.66463	0.596565	0.565958047	1.319014	141.4309	0.175508	119.313	113.1916	-29.6747	-2.32683	0.981219	-0.15024	0.483665	1.653583	400	293.8353	-0.63444	-0.711178433	1314.827	-1161.97		
100000	1300	-0.07566	0.954956	44.1979	0.425221	0.454073304	1.030214	141.4352	0.135064	85.04425	90.81466	-30	-2.27112	1.037332	-0.09824	0.502958	1.653583	400	271.1205	-0.66321	-0.570588398	1314.827	-1161.97		
100000	1100	-0.07325	0.642937	42.51967	0.253878	0.31580774	0.713507	141.554	0.09101	50.77554	63.16155	-30	-2.20017	1.11943	-0.07451	0.537071	1.653583	400	252.2037	-0.6839	-0.396844004	1314.827	-1161.97		
133333	900	-0.06862	0.281955	41.04367	0.082534	0.13079605	0.347241	141.7592	0.03997	16.50684	26.15921	-30	-2.06366	1.275293	-0.11775	0.598642	1.653583	400	245.4505	-0.62401	-0.164358459	1314.827	-1161.97		
200000	700	-0.11639	0.031388	25.59598	-0.08881	0.003805705	0.115157	0	0	-17.7619	0.761141	-30	-3.45669	0.787341	0	0	1.653583	0	0	-2.66457	-0.004780663	1314.827	-1161.97		
266667	500	-0.2726	0.013968	12.02707	-0.26015	0.001525479	0.116803	0	0	-52.0306	0.305096	-30	-7.76336	0.350377	0	0	1.653583	0	0	-7.41109	-0.00191897	1314.827	-1161.97		
75000	300	-0.43993	0.009086	7.876075	-0.4315	0.000654649	0.121897	0	0	-86.2993	0.13093	-30	-11.9542	0.227917	0	0	1.653583	0	0	-11.7255	-0.000833221	1314.827	-1161.97		
0	100	-0.60956	0.006909	5.991159	-0.60284	0.000193025	0.127984	0	0	-120.568	0.038605	-30	-15.7563	0.173305	0	0	1.653583	0	0	-15.5829	-0.00023559	1314.827	-1161.97		
0	3400	-0.13935	3.735612	52.0899	2.272749	1.323517148	3.756894	142.511	0.532366	400	264.7034	-20.9051	-2.8664	0.320915	-0.41208	0.412084	1.545102	400	400	-0.88235	-1.663133774	1614.337	-990.53	0	1.608883
210375	3175	-0.13223	3.470668	51.53227	2.076434	1.262004066	3.509641	142.3455	0.494034	400	252.4008	-21.5825	-2.81346	0.358868	-0.45168	0.451681	1.545102	400	400	-0.86874	-1.585838168	1614.337	-990.53		
162500	2925	-0.12127	3.137802	51.2022	1.858306	1.158222802	3.182995	142.254	0.446365	371.6611	231.6446	-22.4984	-2.69761	0.466449	-0.4754	0.475403	1.545102	400	400	-0.77575	-1.455420655	1614.337	-990.53		
100000	2700	-0.11037	2.820325	51.04698	1.66199	1.047964694	2.865649	142.2126	0.401086	332.3981	209.5929	-23.4475	-2.56598	0.594376	-0.48663	0.486634	1.545102	400	400	-0.65473	-1.316868156	1614.337	-990.53		
100000	2500	-0.10107	2.53696	50.89577	1.487488	0.948403228	2.58236	142.1734	0.360688	297.4976	189.6806	-24.3648	-2.44763	0.709194	-0.49763	0.497631	1.545102	400	400	-0.54667	-1.191766222	1614.337	-990.53		
100000	2300	-0.09213	2.252287	50.7302	1.312986	0.847172524	2.297673	142.1316	0.320121	262.5971	169.4345	-25.3616	-2.32783	0.825221	-0.50972	0.509717	1.545102	400	400	-0.43807	-1.064555675	1614.337	-990.53		
100000	2100	-0.08608	1.995783	50.08043	1.138483	0.771216051	2.049216	141.9791	0.28336	227.6967	154.2432	-26.3323	-2.26191	0.877526	-0.43659	0.507842	1.545102	400	376.9593	-0.41528	-0.969112711	1614.337	-990.53		
100000	1900	-0.08108	1.745349	49.15058	0.963981	0.700288378	1.807293	141.7932	0.247479	192.7962	140.0577	-27.3546	-2.21601	0.906914	-0.33647	0.503292	1.545102	400	346.3346	-0.42911	-0.879984627	1614.337	-990.53		
100000	1700	-0.07598	1.486195	48.10048	0.789479	0.620739065	1.553032	141.6287	0.210488	157.8957	124.1478	-28.4994	-2.16634	0.94205	-0.24779	0.503761	1.545102	400	318.039	-0.44427	-0.780022574	1614.337	-990.53		
100000	1500	-0.07071	1.215325	46.9024	0.614976	0.529637991	1.283201	141.4993	0.171968	122.9952	105.9276	-29.8031	-2.11131	0.985726	-0.1734	0.51096	1.545102	400	292.3093	-0.46003	-0.665543973	1614.337	-990.53		
100000	1300	-0.06809	0.930893	45.52046	0.440474	0.422325641	0.998822	141.4272	0.131654	88.09476	84.46513	-30	-2.04799	1.042735	-0.11762	0.52755	1.545102	400	269.4902	-0.47455	-0.530695529	1614.337	-990.53		
100000	1100	-0.06532	0.621679	43.98158	0.265971	0.290388856	0.686563	141.4437	0.087933	53.19429	58.07777	-30	-1.96593	1.126224	-0.09191	0.558304	1.545102	400	251.4449	-0.47481	-0.364903699	1614.337	-990.53		
133333	900	-0.06024	0.268467	42.79424	0.091469	0.116753445	0.327738	141.5262	0.037995	18.29381	23.35069	-30	-1.81561	1.283778	-0.13799	0.614051	1.545102	400	248.009	-0.38512	-0.146713446	1614.337	-990.53		
200000	700	-0.10872	0.029277	25.55867	-0.08303	0.003591181	0.107421	0	0	-16.6067	0.718236	-30	-3.23536	0.734406	0	0	1.545102	0	0	-2.49645	-0.004512566	1614.337	-990.53		
266667	500	-0.26853	0.012365	11.41214	-0.25754	0.001367737	0.108962	0	0	-51.5071	0.273547	-30	-7.65619	0.31017	0	0	1.545102	0	0	-7.34431	-0.001717907	1614.337	-990.53		
75000	300	-0.4394	0.007941	7.372724	-0.43204	0.000575	0.113861	0	0	-86.4076	0.115	-30	-11.9418	0.199205	0	0	1.545102	0	0	-11.7419	-0.000720392	1614.337	-990.53		
0	100	-0.61239	0.006009	5.579717	-0.60654	0.000162976	0.119684	0	0	-121.308	0.032595	-30	-15.816	0.150736	0	0	1.545102	0	0	-15.6651	-0.000210307	1614.337	-990.53		
0	3400	-0.13986	3.79124	52.30184	2.321268	1.330114838	3.804096	142.5776	0.540546	400	266.023	-20.7683	-2.85771	0.31477	-0.40729	0.407291	1.534999	400	400	-0.87153	-1.671418065	1745.414	-1082.03	0	1.636559
210375	3175	-0.13269	3.52322	51.74402	2.121621	1.268908522	3.555075	142.4067	0.50173	400	253.7817	-21.4447	-2.80487	0.352206	-0.44668	0.446675	1.534999	400	400	-0.85815	-1.594511959	1745.414	-1082.03		
162500	2925	-0.12253	3.196352	51.31562	1.899791	1.174035176	3.238553	142.2849	0.454793	379.9583	234.807	-22.3317	-2.70438	0.441776	-0.47732	0.477325	1.534999	400	400	-0.7873	-1.475286195	1745.414	-1082.03		
100000	2700	-0.11141	2.874231	51.16413	1.700145	1.062673179	2.916796	142.2438	0.408841	340.0289	212.5346	-23.2807	-2.57111	0.571354	-0.48826	0.488257	1.534999	400	400	-0.6644	-1.335353309	1745.414	-1082.03		
100000	2500	-0.10194	2.586787	51.01633	1.522681	0.962163586	2.629655	142.2046	0.367853	304.5361	192.4327	-24.1984	-2.45135	0.687614	-0.49897	0.498966	1.534999	400	400	-0.55468	-1.209055983	1745.414	-1082.03		
100000	2300	-0.09285	2.298072	50.8544	1.345217	0.860009533	2.341167	142.1628	0.3267	269.0434	172.0019	-25.1959	-2.33018	0.805057	-0.51075	0.510748	1.534999	400	400	-0.44443	-1.080689652	1745.414	-1082.03		
100000	2100	-0.08608	2.030851	50.31817	1.167753	0.777021693	2.080556	142.0328	0.288447	233.5506	155.4043	-26.1953	-2.24996	0.873707	-0.45667	0.512036	1.534999	400	382.0664	-0.39985	-0.97640109	1745.414	-1082.03		
100000	1900	-0.08103	1.77767	49.39346	0.990289	0.706354128	1.836882	141.8381	0.252141	198.0578	141.2708	-27.2182	-2.20357	0.902895	-0.35292	0.506614	1.534999	400	350.4961	-0.41306	-0.887604801	1745.414	-1082.03		
100000	1700	-0.07588	1.515866	48.34921	0.812825	0.627158491	1.580882	141.6633	0.214743	162.5651	125.4317	-28.3635	-2.15336	0.937738	-0.26072	0.506154	1.534999	400	321.3366	-0.42753	-0.788088449	1745.414	-1082.03		
100000	1500	-0.07058	1.242499	47.15763	0.635361	0.536559931	1.309354	141.5217	0.175841	127.0723	107.312	-29.667	-2.09777	0.980949	-0.18287	0.512343	1.534999	400	294.8237	-0.44259	-0.674241659	1745.414	-1082.03		
100000	1300	-0.06762	0.955474	45.78242	0.457898	0.429958601	1.022711	141.4345	0.135137	91.57952	85.99172	-30	-2.03393	1.037217	-0.12368	0.527824	1.534999	400	271.3045	-0.45642	-0.540287699	1745.414	-1082.03		
100000	1100	-0.06485	0.644484	44.24206	0.280434	0.299198587	0.709088	141.4337	0.091152	56.08675	59.83972	-30	-1.95213	1.118943	-0.09404	0.557226	1.534999	400	252.5063	-0.45721	-0.375971441	1745.414	-1082.03		
133333	900	-0.05998	0.290608	42.98055	0.10297	0.127662787	0.349714	141.5092	0.041124	20.59398	25.53256	-30	-1.80763	1.270013	-0.13243	0.610919	1.534999	400	247.3098	-0.37719	-0.160422376	1745.414	-1082.03		
200000	700	-0.10162	0.030864	26.90442	-0.07449	0.003736241	0.106923	0	0	-14.8988	0.747248	-30	-3.02977	0.774202	0	0	1.534999	0	0	-2.25087	-0.004696101	1745.414	-1082.03		
266667	500	-0.26301	0.012441	11.55434	-0.25196	0.001389923	0.108107	0	0	-50.3916	0.277985	-30	-7.51002	0.312066	0	0	1.534999	0	0	-7.19624	-0.00174889	1745.414	-1082.03		
75000	300	-0.43673	0.00788	7.363919	-0.42942	0.000576167	0.113031	0	0	-85.8843	0.115233	-30	-11.8781	0.197667	0	0	1.534999	0	0	-11.6797	-0.000711847	1745.414	-1082.03		
0	100	-0.61265	0.005929	5.541477	-0.60689	0.000160775	0.11891	0	0	-121.377	0.032155	-30	-15.8216	0.148728	0	0	1.534999	0	0	-15.6728	-0.000197476	1745.414	-1082.03		
0	3400	-0.1483	3.905132	52.01641	2.369851	1.386985189	3.932461	142.4884	0.556436	400	277.397	-20.4936	-2.98337	0.291765	-0.37366	0.373663	1.588704	400	400	-0.94873	-1.742885049	1772.655	-1341.97	0	1.707186
210375	3175	-0.14075	3.632135	51.45272	2.167017	1.324371261	3.677578	142.323	0.516936	400	264.8743	-21.1646	-2.93006	0.329689	-0.41377	0.413775	1.588704	400	400	-0.93617	-1.664206903	1772.655	-1341.97		
162500	2925	-0.13098	3.309014	50.91526	1.941645	1.236386278	3.366925	142.1784	0.47047	388.3291	247.2773	-22.0178	-2.84405	0.40232	-0.45261	0.452608	1.588704	400	400	-0.88808	-1.553644861	1772.655	-1341.97		
100000	2700	-0.11918	2.979368	50.74704	1.738811	1.121372512	3.036412	142.1358	0.423475	347.7622	224.2745	-22.9622	-2.70728	0.535157	-0.46488	0.464882	1.588704	400	400	-0.76301	-1.409115732	1772.655	-1341.97		
100000	2500	-0.10912	2.685051	50.58302	1.558514	1.017414385	2.74128	142.0954	0.381533	311.7028	203.4829	-23.8766	-2.58425	0.654466	-0.47691	0.476911	1.588704	400	400	-0.6513	-1.278485868	1772.655	-1341.97		
100000	2300	-0.09945	2.389266	50.40329	1.378217	0.911597041	2.444582	142.0526	0.339401	275.6433	182.3194	-24.872	-2.45965	0.775128	-0.49015	0.49015	1.588704	400	400	-0.53901	-1.145510231	1772.655	-1341.97		
100000	2100	-0.09145	2.10653	49.98786	1.197919	0.817162085	2.164747	141.9589	0.299041	239.5839	163.4324	-25.9043	-2.3605	0.865685	-0.46315	0.497104	1.588704	400	389.0276	-0.46797	-1.026844237	1772.655	-1341.97		
100000	1900	-0.08618	1.848951	49.04717	1.017622	0.745149232	1.915852	141.7749	0.262135	203.5244	149.0298	-26.9222	-2.3151	0.89428	-0.35744	0.491436	1.588704	400	356.9156	-0.48447	-0.936357091	1772.655	-1341.97		
100000	1700	-0.08083	1.582638	47.98196	0.837325	0.664487385	1.65446	141.6131	0.224122	167.465	132.8975	-28.0623	-2.26638	0.928325	-0.2631	0.490792	1.588704	400	327.1265	-0.50306	-0.834993303	1772.655	-1341.97		
100000	1500	-0.07533	1.304612	46.76094	0.657028	0.572258381	1.377332	141.4882	0.184587	131.4055	114.4517	-29.3604	-2.21303	0.970388	-0.18282	0.496871	1.588704	400	299.8412	-0.52354	-0.719100777	1772.655	-1341.97		
100000	1300	-0.07164	1.012168	45.34185	0.476731	0.463797804	1.083731	141.4239	0.143145	95.3461	92.75956	-30	-2.15266	1.024969	-0.12073	0.512322	1.588704	400	275.3385	-0.54489	-0.582807892	1772.655	-1341.97		
100000	1100	-0.06909	0.696336	43.71286	0.296433	0.33081215	0.764655	141.457	0.098502	59.28666	66.16243	-30	-2.07744	1.103184	-0.08634	0.541767	1.588704	400	254.8832	-0.55855	-0.415696806	1772.655	-1341.97		
133333	900	-0.06475	0.336478	42.17792	0.116136	0.155596322	0.399278	141.5931	0.047643	23.22721	31.11926	-30	-1.94897	1.243912	-0.11221	0.595901	1.588704	400	245.2806	-0.50954	-0.195521887	1772.655	-1341.97		
200000	700	-0.09527	0.035225	29.22426	-0.06416	0.004120226	0.111201	0	0	-12.8322	0.824045	-30	-2.84501	0.883601	0	0	1.588704	0	0	-1.95623	-0.005179185	1772.655	-1341.97		
266667	500	-0.25656	0.013637	12.21801	-0.24446	0.00153581	0.111774	0	0	-48.8917	0.307162	-30	-7.3388	0.342087	0	0	1.588704	0	0	-6.9948	-0.001925907	1772.655	-1341.97		
75000	300	-0.43264	0.00851	7.680867	-0.42476	0.000629492	0.116865	0	0	-84.9511	0.125898	-30	-11.7807	0.213468	0	0	1.588704	0	0	-11.5665	-0.000792781	1772.655	-1341.97		
0	100	-0.61124	0.006363	5.744845	-0.60505	0.000174504	0.123021	0	0	-121.011	0.034901	-30	-15.7918	0.159605	0	0	1.588704	0	0	-15.6321	-0.000224793	1772.655	-1341.97		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.17613	4.206073	50.95743	2.46734	1.562598363	4.287796	142.1893	0.598059	400	312.5197	-19.8016	-3.39852	0.218081	-0.2689	0.268899	1.769342	400	400	-1.21688	-1.963558886	1903.434	-2317.52	0	1.905068
210375	3175	-0.1674	3.921864	50.37859	2.258855	1.495604669	4.017407	142.0468	0.557088	400	299.1209	-20.4538	-3.34424	0.257761	-0.31134	0.311343	1.769342	400	400	-1.20708	-1.879380289	1903.434	-2317.52		
162500	2925	-0.15759	3.599625	49.69015	2.027205	1.414828702	3.706976	141.8965	0.510774	400	282.9657	-21.2474	-3.2789	0.307739	-0.36275	0.362747	1.769342	400	400	-1.1933	-1.777871028	1903.434	-2317.52		
100000	2700	-0.14444	3.259463	49.41424	1.81872	1.296298339	3.363579	141.8421	0.462329	363.744	259.2597	-22.1548	-3.14467	0.43644	-0.38364	0.383645	1.769342	400	400	-1.07931	-1.628925756	1903.434	-2317.52		
100000	2500	-0.13263	2.949145	49.20085	1.6334	1.183114007	3.048702	141.8023	0.418196	326.68	236.6228	-23.0529	-3.01392	0.563164	-0.39993	0.399928	1.769342	400	400	-0.96405	-1.486700713	1903.434	-2317.52		
100000	2300	-0.12125	2.636687	48.96737	1.44808	1.067360653	2.731528	141.7611	0.37378	289.616	213.4721	-24.0339	-2.88109	0.691811	-0.41786	0.417863	1.769342	400	400	-0.84803	-1.341245652	1903.434	-2317.52		
100000	2100	-0.11028	2.321664	48.71082	1.26276	0.948625623	2.411568	141.7185	0.329023	252.552	189.7251	-25.1113	-2.74584	0.822728	-0.43771	0.437714	1.769342	400	400	-0.73109	-1.192039329	1903.434	-2317.52		
100000	1900	-0.10335	2.043355	47.87226	1.07744	0.862570571	2.13592	141.5992	0.289338	215.4879	172.5141	-26.1467	-2.68419	0.872361	-0.35806	0.438177	1.769342	400	374.3674	-0.72792	-1.083903906	1903.434	-2317.52		
100000	1700	-0.09738	1.767202	46.75899	0.89212	0.777706051	1.861064	141.488	0.250038	178.4239	155.5412	-27.2622	-2.64117	0.904189	-0.26104	0.43779	1.769342	400	343.6318	-0.75972	-0.977268868	1903.434	-2317.52		
100000	1500	-0.09131	1.479026	45.47215	0.7068	0.680919787	1.570119	141.4262	0.209173	141.3599	136.184	-28.5324	-2.59606	0.943105	-0.17711	0.444275	1.769342	400	314.9461	-0.79731	-0.855641835	1903.434	-2317.52		
100000	1300	-0.08509	1.173865	43.95717	0.52148	0.567297431	1.25812	141.4448	0.166037	104.2959	113.4595	-30	-2.54782	0.993212	-0.11006	0.460327	1.769342	400	288.4298	-0.84174	-0.712868076	1903.434	-2317.52		
100000	1100	-0.08325	0.848276	42.14428	0.33616	0.428864004	0.926904	141.5972	0.120114	67.23192	85.7728	-30	-2.49404	1.062297	-0.0661	0.490073	1.769342	400	264.3687	-0.89283	-0.538912103	1903.434	-2317.52		
133333	900	-0.08051	0.477932	40.06416	0.15084	0.246580438	0.550176	141.9477	0.067841	30.16792	49.31609	-30	-2.41368	1.178182	-0.06623	0.543783	1.769342	400	245.6998	-0.92565	-0.309852085	1903.434	-2317.52		
200000	700	-0.0807	0.051465	36.25457	-0.03448	0.005242937	0.126057	0	0	-6.89609	1.048587	-30	-2.41926	1.290966	0	0	1.769342	0	0	-1.12171	-0.006586755	1903.434	-2317.52		
266667	500	-0.23599	0.018287	14.61442	-0.2198	0.002099209	0.124162	0	0	-43.9601	0.419842	-30	-6.78825	0.458713	0	0	1.769342	0	0	-6.3269	-0.002641478	1903.434	-2317.52		
75000	300	-0.41521	0.010942	8.851544	-0.40512	0.000851553	0.129586	0	0	-81.0241	0.170311	-30	-11.3627	0.274467	0	0	1.769342	0	0	-11.0872	-0.001071465	1903.434	-2317.52		
0	100	-0.59822	0.008031	6.505512	-0.59044	0.000248589	0.136491	0	0	-118.088	0.049718	-30	-15.5163	0.201449	0	0	1.769342	0	0	-15.3146	-0.000314956	1903.434	-2317.52		
0	3400	-0.15444	4.104176	52.35654	2.515665	1.434066053	4.11898	142.5951	0.585236	400	286.8132	-20.0306	-3.03194	0.265267	-0.34392	0.343917	1.594549	400	400	-0.96463	-1.802050881	2297.52	-1924.95	0	1.817373
210375	3175	-0.14656	3.821549	51.79084	2.303413	1.371577133	3.857145	142.4205	0.544267	400	274.3154	-20.6945	-2.97871	0.302118	-0.3838	0.383797	1.594549	400	400	-0.95308	-1.723525711	2297.52	-1924.95		
162500	2925	-0.13771	3.501609	51.11753	2.067576	1.296321498	3.556658	142.2313	0.498038	400	259.2643	-21.5012	-2.9148	0.348426	-0.43208	0.432079	1.594549	400	400	-0.93741	-1.628958041	2297.52	-1924.95		
100000	2700	-0.12655	3.173728	50.79871	1.855324	1.191856227	3.232898	142.1487	0.451141	371.0647	238.3712	-22.3959	-2.79822	0.457336	-0.45526	0.455259	1.594549	400	400	-0.84321	-1.497684268	2297.52	-1924.95		
100000	2500	-0.11572	2.8663	50.63445	1.666654	1.083926741	2.924527	142.1079	0.407324	333.3309	216.7853	-23.3051	-2.67024	0.581557	-0.46729	0.467286	1.594549	400	400	-0.72662	-1.362060514	2297.52	-1924.95		
100000	2300	-0.10532	2.557399	50.45422	1.477985	0.974091211	2.614609	142.0646	0.363316	295.5971	194.8182	-24.2963	-2.54063	0.70715	-0.48055	0.480551	1.594549	400	400	-0.60944	-1.224046875	2297.52	-1924.95		
100000	2100	-0.09535	2.246727	50.25556	1.289316	0.862059073	2.302778	142.0184	0.319077	257.8632	172.4118	-25.3819	-2.40917	0.834353	-0.49524	0.495244	1.594549	400	400	-0.49156	-1.083262413	2297.52	-1924.95		
100000	1900	-0.0891	1.972047	49.44251	1.100647	0.78229861	2.036415	141.8475	0.27973	220.1294	156.4597	-26.4259	-2.34767	0.88015	-0.40363	0.49175	1.594549	400	371.6079	-0.48449	-0.98303825	2297.52	-1924.95		
100000	1700	-0.08353	1.697471	48.38597	0.911978	0.701966827	1.768573	141.6687	0.240479	182.3956	140.3934	-27.5591	-2.2985	0.913005	-0.29958	0.488674	1.594549	400	339.3847	-0.5034	-0.882093521	2297.52	-1924.95		
100000	1500	-0.07782	1.411566	47.17321	0.723309	0.610432855	1.485108	141.5231	0.199769	144.6618	122.0866	-28.8471	-2.24502	0.953273	-0.20952	0.492111	1.594549	400	309.7878	-0.52468	-0.76706865	2297.52	-1924.95		
100000	1300	-0.07274	1.110598	45.76078	0.53464	0.503218166	1.182921	141.4338	0.157076	106.9279	100.6436	-30	-2.1851	1.005124	-0.13748	0.504628	1.594549	400	283.0896	-0.54763	-0.632342365	2297.52	-1924.95		
100000	1100	-0.0703	0.788951	44.10943	0.345971	0.37267763	0.858839	141.4384	0.111588	69.1941	74.53553	-30	-2.11322	1.077425	-0.09113	0.53048	1.594549	400	260.078	-0.56748	-0.468309113	2297.52	-1924.95		
133333	900	-0.06656	0.426343	42.37011	0.157301	0.202486228	0.490824	141.5705	0.060358	31.46028	40.49725	-30	-2.00253	1.200055	-0.09529	0.579132	1.594549	400	245.3312	-0.54803	-0.254443412	2297.52	-1924.95		
200000	700	-0.07282	0.046225	36.16434	-0.03137	0.004769756	0.11343	0	0	-6.27355	0.953951	-30	-2.18752	1.159516	0	0	1.594549	0	0	-1.02201	-0.005994427	2297.52	-1924.95		
266667	500	-0.2333	0.015011	13.36093	-0.22004	0.001750906	0.111654	0	0	-44.0074	0.350181	-30	-6.71573	0.376529	0	0	1.594549	0	0	-6.33699	-0.002196845	2297.52	-1924.95		
75000	300	-0.41687	0.008855	7.961128	-0.40871	0.000688674	0.116791	0	0	-81.7412	0.137735	-30	-11.4028	0.222128	0	0	1.594549	0	0	-11.1798	-0.000867985	2297.52	-1924.95		
0	100	-0.60366	0.006475	5.824491	-0.59738	0.000191245	0.123195	0	0	-119.475	0.038249	-30	-15.6317	0.162414	0	0	1.594549	0	0	-15.4692	-0.000242994	2297.52	-1924.95		
0	3400	-0.1686	4.256227	51.80157	2.564162	1.523461677	4.300706	142.4237	0.606188	400	304.6923	-19.6907	-3.24151	0.228989	-0.29101	0.29101	1.686573	400	400	-1.09814	-1.914384015	2155.183	-2170.54	0	1.914268
210375	3175	-0.16009	3.967167	51.22633	2.348526	1.458553323	4.030159	142.2605	0.564371	400	291.7107	-20.347	-3.18758	0.266835	-0.33219	0.332188	1.686573	400	400	-1.08793	-1.832815131	2155.183	-2170.54		
162500	2925	-0.15053	3.639771	50.54155	2.108931	1.380311363	3.719608	142.0854	0.517158	400	276.0623	-21.1452	-3.12274	0.314505	-0.38209	0.382089	1.686573	400	400	-1.07375	-1.73449836	2155.183	-2170.54		
100000	2700	-0.13939	3.312999	50.11361	1.893295	1.280315448	3.397533	141.9865	0.470401	378.6589	256.0631	-22.0069	-3.01836	0.409246	-0.41378	0.413776	1.686573	400	400	-1.00027	-1.608846826	2155.183	-2170.54		
100000	2500	-0.12762	2.996629	49.92281	1.701618	1.167389801	3.078237	141.945	0.425356	340.3237	233.478	-22.9108	-2.88601	0.537548	-0.42803	0.428028	1.686573	400	400	-0.88153	-1.466941869	2155.183	-2170.54		
100000	2300	-0.11631	2.678438	49.71354	1.509942	1.052183547	2.757008	141.9013	0.380074	301.9884	210.4367	-23.898	-2.7518	0.667519	-0.44375	0.443754	1.686573	400	400	-0.76211	-1.322172792	2155.183	-2170.54		
100000	2100	-0.10545	2.358045	49.48306	1.318266	0.934328959	2.433393	141.8554	0.334501	263.6531	186.8658	-24.9819	-2.61541	0.799461	-0.46119	0.46119	1.686573	400	400	-0.64187	-1.174080465	2155.183	-2170.54		
100000	1900	-0.09769	2.064957	48.79849	1.126589	0.840678204	2.143664	141.7327	0.292672	225.3179	168.1356	-26.0633	-2.53296	0.870055	-0.40065	0.46464	1.686573	400	379.4501	-0.60651	-1.05639952	2155.183	-2170.54		
100000	1700	-0.09177	1.784374	47.71016	0.934913	0.757689513	1.867757	141.5797	0.252631	186.9826	151.5379	-27.1901	-2.48622	0.90207	-0.29553	0.46184	1.686573	400	346.8212	-0.63205	-0.952109954	2155.183	-2170.54		
100000	1500	-0.08575	1.492117	46.45496	0.743237	0.663135164	1.575827	141.467	0.211085	148.6473	132.627	-28.4722	-2.43632	0.941183	-0.20407	0.46574	1.686573	400	316.5983	-0.66184	-0.833298492	2155.183	-2170.54		
100000	1300	-0.07952	1.183417	44.98234	0.55156	0.552338657	1.262935	141.4214	0.16736	110.312	110.4677	-29.9646	-2.38169	0.991466	-0.1302	0.478973	1.686573	400	288.979	-0.69615	-0.694068372	2155.183	-2170.54		
100000	1100	-0.07729	0.854663	43.22795	0.359884	0.417494033	0.930166	141.489	0.120925	71.97678	83.49881	-30	-2.31889	1.060725	-0.08044	0.505746	1.686573	400	264.3579	-0.73354	-0.524621886	2155.183	-2170.54		
133333	900	-0.07414	0.483402	41.24621	0.168208	0.241054417	0.552763	141.7254	0.06851	33.64151	48.21088	-30	-2.22633	1.175979	-0.07617	0.555785	1.686573	400	246.0099	-0.74745	-0.302908868	2155.183	-2170.54		
200000	700	-0.0712	0.052898	38.3301	-0.02347	0.005164464	0.120753	0	0	-4.69376	1.032893	-30	-2.13976	1.326922	0	0	1.686573	0	0	-0.80634	-0.006492475	2155.183	-2170.54		
266667	500	-0.23017	0.017007	14.27463	-0.21515	0.001979648	0.118131	0	0	-43.029	0.39593	-30	-6.63143	0.42662	0	0	1.686573	0	0	-6.20233	-0.002486608	2155.183	-2170.54		
75000	300	-0.41597	0.009926	8.430035	-0.40682	0.00077244	0.123526	0	0	-81.3643	0.154488	-30	-11.3811	0.248985	0	0	1.686573	0	0	-11.1312	-0.000969463	2155.183	-2170.54		
0	100	-0.60551	0.007226	6.142831	-0.5985	0.000209558	0.130382	0	0	-119.7	0.041912	-30	-15.6709	0.181254	0	0	1.686573	0	0	-15.4895	-0.000263694	2155.183	-2170.54		
0	3400	-0.16346	4.270983	52.30245	2.612838	1.494682281	4.291159	142.5778	0.608947	400	298.9365	-19.6584	-3.14181	0.237435	-0.30723	0.307232	1.635018	400	400	-1.02614	-1.878218391	2337.093	-2067.63	0	1.914871
210375	3175	-0.15514	3.980636	51.73199	2.394223	1.431273476	4.02211	142.4032	0.566855	400	286.2547	-20.3155	-3.08832	0.274132	-0.34751	0.34751	1.635018	400	400	-1.01565	-1.798538203	2337.093	-2067.63		
162500	2925	-0.1458	3.652008	51.05261	2.151318	1.354887073	3.713364	142.2141	0.519367	400	270.9774	-21.1142	-3.02407	0.320325	-0.39631	0.396312	1.635018	400	400	-1.0012	-1.702549791	2337.093	-2067.63		
100000	2700	-0.13579	3.333782	50.54532	1.932703	1.265290797	3.404773	142.0863	0.473685	386.5406	253.0582	-21.95	-2.93559	0.396675	-0.43336	0.433364	1.635018	400	400	-0.94896	-1.589960301	2337.093	-2067.63		
100000	2500	-0.12415	3.015765	50.37013	1.738379	1.153232895	3.084913	142.0448	0.428374	347.6757	230.6466	-22.854	-2.80319	0.525146	-0.44629	0.446292	1.635018	400	400	-0.82889	-1.449154777	2337.093	-2067.63		
100000	2300	-0.11299	2.696148	50.17767	1.544054	1.039105802	2.76338	142.0008	0.382855	308.8109	207.8212	-23.8408	-2.66907	0.655116	-0.46056	0.46056	1.635018	400	400	-0.70821	-1.305739269	2337.093	-2067.63		
100000	2100	-0.10228	2.374581	49.96542	1.34973	0.92257244	2.439747	141.9541	0.337081	269.946	184.5145	-24.9236	-2.53292	0.786852	-0.47639	0.476389	1.635018	400	400	-0.58677	-1.159299947	2337.093	-2067.63		
100000	1900	-0.09414	2.074836	49.37716	1.155406	0.825292443	2.143706	141.8351	0.294285	231.0812	165.0585	-26.0254	-2.43957	0.869009	-0.42766	0.481314	1.635018	400	382.7203	-0.5335	-1.03706127	2337.093	-2067.63		
100000	1700	-0.0883	1.793392	48.3122	0.961082	0.744008992	1.869131	141.658	0.254048	192.2163	148.8018	-27.1524	-2.39105	0.900966	-0.31807	0.477083	1.635018	400	349.0422	-0.55516	-0.934925262	2337.093	-2067.63		
100000	1500	-0.08235	1.50066	47.08678	0.766757	0.651548886	1.578816	141.5152	0.212366	153.3515	130.3098	-28.433	-2.3388	0.939938	-0.22233	0.479339	1.635018	400	317.9729	-0.58012	-0.818737317	2337.093	-2067.63		
100000	1300	-0.0762	1.192097	45.65448	0.572433	0.543460463	1.267969	141.4306	0.168599	114.4866	108.6921	-29.9205	-2.281	0.98989	-0.14438	0.490629	1.635018	400	289.7528	-0.60819	-0.682914268	2337.093	-2067.63		
100000	1100	-0.07371	0.864102	43.95596	0.378109	0.412279046	0.937194	141.4448	0.122223	75.62179	82.45581	-30	-2.21379	1.058421	-0.09074	0.515067	1.635018	400	264.8389	-0.6373	-0.518070977	2337.093	-2067.63		
133333	900	-0.07041	0.496147	42.05379	0.183785	0.241948364	0.563567	141.6085	0.070259	36.75694	48.38967	-30	-2.11648	1.170925	-0.08216	0.561676	1.635018	400	246.5501	-0.64152	-0.304033643	2337.093	-2067.63		
200000	700	-0.0622	0.056822	41.20939	-0.01054	0.005162941	0.11798	0	0	-2.10791	1.032588	-30	-1.87354	1.425338	0	0	1.635018	0	0	-0.44171	-0.006485181	2337.093	-2067.63		
266667	500	-0.21959	0.016705	14.45616	-0.20486	0.00197887	0.114241	0	0	-40.9728	0.395774	-30	-6.34466	0.419026	0	0	1.635018	0	0	-5.92314	-0.002483922	2337.093	-2067.63		
75000	300	-0.40792	0.00949	8.316218	-0.39919	0.000757556	0.119476	0	0	-79.8376	0.151511	-30	-11.1864	0.238041	0	0	1.635018	0	0	-10.9474	-0.000954609	2337.093	-2067.63		
0	100	-0.59964	0.006833	5.767911	-0.59351	0.000707823	0.121282	0	0	-118.702	0.141565	-30	-15.5464	0.171407	0	0	1.635018	0	0	-16.0152	0.006253182	2337.093	-2067.63		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V_u	gamma_m
0	3400	-0.1822	4.452657	51.56153	2.661387	1.609074442	4.513812	142.3538	0.633853	400	321.8149	-19.2684	-3.41527	0.189852	-0.2392	0.239204	1.755485	400	400	-1.20345	-2.021965639	2260.41	-2614	0	2.036665
210375	3175	-0.17306	4.155176	50.97973	2.439508	1.542613201	4.234285	142.1951	0.590846	400	308.5226	-19.9153	-3.36104	0.227826	-0.28114	0.281138	1.755485	400	400	-1.19477	-1.938449452	2260.41	-2614		
162500	2925	-0.1628	3.818241	50.28676	2.192975	1.462464898	3.913445	142.0255	0.542288	400	292.493	-20.7025	-3.29586	0.27576	-0.332	0.331999	1.755485	400	400	-1.18236	-1.837737574	2260.41	-2614		
100000	2700	-0.15276	3.501081	49.67695	1.971096	1.377229425	3.605253	141.8938	0.496782	394.2191	275.4459	-21.5025	-3.2206	0.337679	-0.37761	0.377605	1.755485	400	400	-1.15229	-1.730629734	2260.41	-2614		
100000	2500	-0.13992	3.173	49.46853	1.773869	1.259208833	3.272702	141.8525	0.450098	354.7739	251.8418	-22.3979	-3.08331	0.470801	-0.39338	0.393381	1.755485	400	400	-1.03019	-1.582323271	2260.41	-2614		
100000	2300	-0.12758	2.842857	49.2398	1.576643	1.138630043	2.937969	141.8094	0.403144	315.3287	227.726	-23.3775	-2.94397	0.605809	-0.4108	0.410803	1.755485	400	400	-0.90736	-1.430798217	2260.41	-2614		
100000	2100	-0.11573	2.510207	48.98782	1.379417	1.015063206	2.600533	141.7646	0.355858	275.8834	203.0126	-24.4552	-2.8022	0.743056	-0.43015	0.430148	1.755485	400	400	-0.78362	-1.275531688	2260.41	-2614		
100000	1900	-0.10546	2.186844	48.54576	1.182191	0.899196198	2.274765	141.6926	0.30986	236.4382	179.8392	-25.6024	-2.68054	0.857484	-0.42029	0.445086	1.755485	400	392.0476	-0.69314	-1.129926757	2260.41	-2614		
100000	1700	-0.09918	1.898774	47.44539	0.984965	0.814626145	1.990682	141.5503	0.268772	196.993	162.9252	-26.7191	-2.63535	0.888451	-0.31038	0.441408	1.755485	400	358.1377	-0.72323	-1.02366184	2260.41	-2614		
100000	1500	-0.09282	1.599025	46.17332	0.787739	0.718465824	1.690426	141.451	0.226184	157.5478	143.6932	-27.9894	-2.58783	0.926074	-0.2139	0.444434	1.755485	400	326.5543	-0.75894	-0.902823348	2260.41	-2614		
100000	1300	-0.08629	1.282889	44.67419	0.590513	0.606084236	1.369093	141.4236	0.181431	118.1026	121.2168	-29.4669	-2.53717	0.974027	-0.13446	0.456755	1.755485	400	297.4018	-0.80154	-0.761605445	2260.41	-2614		
100000	1100	-0.08282	0.945798	42.87006	0.393287	0.469692747	1.025774	141.5191	0.133848	78.65734	93.93855	-30	-2.48132	1.039374	-0.07806	0.482512	1.755485	400	270.8974	-0.85173	-0.590214326	2260.41	-2614		
133333	900	-0.08026	0.568774	40.72956	0.196061	0.292452109	0.641837	141.8151	0.080661	39.21212	58.49042	-30	-2.4063	1.144036	-0.06155	0.530627	1.755485	400	249.01	-0.89477	-0.367495064	2260.41	-2614		
200000	700	-0.07085	0.097975	39.97628	-0.00117	0.028288656	0.166238	0	0	-0.2331	5.657731	-30	-2.12941	1.436242	-0.2066	0.634044	1.755485	400	261.8184	-0.65762	-0.03554663	2260.41	-2614		
266667	500	-0.21567	0.019588	15.72443	-0.19839	0.002308842	0.122743	0	0	-39.6783	0.461768	-30	-6.23802	0.491349	0	0	1.755485	0	0	-5.74378	-0.002902958	2260.41	-2614		
75000	300	-0.40573	0.010992	8.961465	-0.39562	0.000880398	0.128241	0	0	-79.1235	0.17608	-30	-11.1332	0.275724	0	0	1.755485	0	0	-10.8564	-0.001107233	2260.41	-2614		
0	100	-0.60049	0.007881	6.435207	-0.59284	0.000239248	0.135512	0	0	-118.569	0.04785	-30	-15.5644	0.197701	0	0	1.755485	0	0	-15.3665	-0.000300016	2260.41	-2614		

APPENDIX E

Proposed Model Results - Hooked Rebar Anchorage

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.23399	0.814951	28.63145	0.006856	0.574107	0.882327	147.3955	0.12012	1.371175	114.8214	316.2189	-30	-6.73439	1.070674	0	-0.25518	3.282655	361.5281	285.2296	-4.94228	-0.72143	-3.903382984	-1716.38	0	0.628801
210375	3175	-0.23476	0.796242	28.48673	-0.00022	0.561704	0.864408	0	0	-0.04368	112.3408	461.0423	-30	-6.75508	1.075513	0	-0.25912	3.282655	361.7407	283.519	-4.97373	-0.70584	-3.903382984	-1716.38		
162500	2925	-0.23563	0.77524	28.32384	-0.00808	0.547685	0.844389	0	0	-1.61574	109.5371	605.8657	-30	-6.77871	1.081065	0	-0.26356	3.282655	362.0364	281.599	-5.00942	-0.68822	-3.903382984	-1716.38		
100000	2700	-0.23645	0.756143	28.17527	-0.01515	0.534851	0.826273	0	0	-3.0306	106.9701	721.7244	-30	-6.80056	1.086231	0	-0.26762	3.282655	362.3592	279.8542	-5.04225	-0.67209	-3.903382984	-1716.38		
100000	2500	-0.23718	0.738996	28.04173	-0.02144	0.523252	0.810084	0	0	-4.28825	104.6505	837.5832	-30	-6.82045	1.090968	0	-0.27128	3.282655	362.695	278.2885	-5.07198	-0.65752	-3.903382984	-1716.38		
100000	2300	-0.23794	0.72169	27.9067	-0.02773	0.511478	0.793819	0	0	-5.5459	102.2956	953.4419	-30	-6.84082	1.095847	0	-0.27499	3.282655	363.0787	276.7103	-5.10226	-0.64272	-3.903382984	-1716.38		
100000	2100	-0.09942	0.069929	38.42285	-0.03402	0.004523	0.164909	0	0	-6.80355	0.904528	1069.301	-30	-2.96596	1.754127	0	0	3.282655	0	0	-2.38416	-0.84981	-3.903382984	-1716.38		
100000	1900	-0.23951	0.686557	27.63229	-0.04031	0.487355	0.761033	0	0	-8.0612	97.47099	1185.159	-30	-6.88293	1.106077	0	-0.28258	3.282655	364.0044	273.5138	-5.16445	-0.61241	-3.903382984	-1716.38		
100000	1700	-0.24032	0.668719	27.49289	-0.04659	0.474994	0.744511	0	0	-9.31885	94.99872	1301.018	-30	-6.90472	1.111446	0	-0.28645	3.282655	364.553	271.8961	-5.19639	-0.59688	-3.903382984	-1716.38		
100000	1500	-0.24115	0.650685	27.35201	-0.05288	0.462419	0.727894	0	0	-10.5765	92.48376	1416.877	-30	-6.92697	1.117002	0	-0.29038	3.282655	365.1643	270.2655	-5.22888	-0.58108	-3.903382984	-1716.38		
100000	1300	-0.12872	0.069929	36.27806	-0.05917	0.000379	0.189514	0	0	-11.8342	0.075764	1532.736	-30	-3.81048	1.754127	0	0	3.282655	0	0	-2.71825	-0.65529	-3.903382984	-1716.38		
100000	1100	-0.24286	0.613996	27.06585	-0.06546	0.436594	0.694367	0	0	-13.0918	87.31874	1648.594	-30	-6.97292	1.128728	0	-0.29843	3.282655	366.5934	266.9667	-5.29558	-0.54862	-3.903382984	-1716.38		
133333	900	-0.24374	0.595315	26.92067	-0.07175	0.423318	0.677445	0	0	-14.3495	84.66354	1764.453	-30	-6.99662	1.134931	0	-0.30256	3.282655	367.4223	265.2988	-5.32975	-0.53194	-3.903382984	-1716.38		
200000	700	-0.24465	0.576398	26.77408	-0.07804	0.409786	0.660413	0	0	-15.6071	81.9572	1880.312	-30	-7.0208	1.141384	0	-0.30676	3.282655	368.3354	263.6195	-5.36448	-0.51494	-3.903382984	-1716.38		
266667	500	-0.15416	0.069929	33.93539	-0.08432	9.06E-05	0.207584	0	0	-16.8648	0.018124	1996.17	-30	-4.53299	1.754127	0	0	3.282655	0	0	-3.12447	-0.45467	-3.903382984	-1716.38		
75000	300	-0.2465	0.537783	26.47685	-0.09061	0.381891	0.625979	0	0	-18.1224	76.3781	2112.029	-30	-7.07053	1.155135	0	-0.3154	3.282655	370.4455	260.2289	-5.43552	-0.47988	-3.903382984	-1716.38		
0	100	-0.16596	0.069929	32.75689	-0.0969	0.00087	0.214673	0	0	-19.3801	0.173916	2227.888	-30	-4.8646	1.754127	0	0	3.282655	0	0	-3.34798	-0.35791	-3.903382984	-1716.38		
0	3400	-0.24734	1.025528	29.19113	0.055443	0.722744	1.08393	146.9808	0.150733	11.08851	144.5488	312.3666	-30	-7.09291	1.022174	0	-0.19111	3.455254	354.9306	307.2375	-5.16252	-0.9082	-103.711217	-471.273	0	0.765196
210375	3175	-0.24838	1.000314	29.00385	0.045188	0.70675	1.059037	147.1177	0.147164	9.037657	141.35	438.6114	-30	-7.12055	1.027477	0	-0.19627	3.455254	354.6637	304.8829	-5.20498	-0.88811	-103.711217	-471.273		
162500	2925	-0.24957	0.971996	28.79201	0.033795	0.68863	1.03122	147.2748	0.143151	6.758932	137.7261	565.2993	-30	-7.1525	1.033581	0	-0.20211	3.455254	354.4382	302.2304	-5.25358	-0.86533	-103.711217	-471.273		
100000	2700	-0.25069	0.94622	28.59789	0.02354	0.67199	1.006034	147.4209	0.139493	4.708079	134.398	666.975	-30	-7.18237	1.039279	0	-0.20746	3.455254	354.3042	299.8094	-5.29866	-0.84442	-103.711217	-471.273		
100000	2500	-0.25172	0.923066	28.42255	0.014425	0.656921	0.983524	147.5545	0.136202	2.885099	131.3842	768.9452	-30	-7.20985	1.04452	0	-0.2123	3.455254	354.244	297.6296	-5.33983	-0.82549	-103.711217	-471.273		
100000	2300	-0.25278	0.899674	28.24446	0.005311	0.64158	0.960895	147.6918	0.132875	1.062119	128.3161	871.2149	-30	-7.23823	1.049936	0	-0.21721	3.455254	354.2429	295.4235	-5.3821	-0.80621	-103.711217	-471.273		
100000	2100	-0.25388	0.876039	28.06364	-0.0038	0.625959	0.938151	0	0	-0.76086	125.1918	987.0736	-30	-7.26759	1.055539	0	-0.2222	3.455254	354.3047	293.191	-5.42547	-0.78658	-103.711217	-471.273		
100000	1900	-0.25502	0.852146	27.88001	-0.01292	0.610041	0.915284	0	0	-2.58384	122.0082	1102.932	-30	-7.29792	1.061343	0	-0.22727	3.455254	354.4342	290.9312	-5.47	-0.76658	-103.711217	-471.273		
100000	1700	-0.2562	0.827981	27.69355	-0.02203	0.593813	0.892292	0	0	-4.40682	118.7626	1218.791	-30	-7.32927	1.067363	0	-0.23242	3.455254	354.6362	288.6437	-5.51572	-0.74619	-103.711217	-471.273		
100000	1500	-0.25742	0.803539	27.50415	-0.03115	0.577267	0.869176	0	0	-6.2298	115.4533	1334.65	-30	-7.36171	1.073614	0	-0.23765	3.455254	354.9158	286.3293	-5.56269	-0.7254	-103.711217	-471.273		
100000	1300	-0.25868	0.778801	27.31178	-0.04026	0.560383	0.845929	0	0	-8.05278	112.0765	1450.508	-30	-7.39522	1.080114	0	-0.24296	3.455254	355.2796	283.9871	-5.61094	-0.70418	-103.711217	-471.273		
100000	1100	-0.25999	0.753752	27.11647	-0.04938	0.543143	0.822548	0	0	-9.87576	108.6286	1566.367	-30	-7.42989	1.086885	0	-0.24837	3.455254	355.7343	281.6169	-5.66049	-0.68251	-103.711217	-471.273		
133333	900	-0.12832	0.069929	36.40401	-0.05849	0.000103	0.189391	0	0	-11.6987	0.020685	1682.226	-30	-3.79899	1.754127	0	0	3.455254	0	0	-2.93178	-0.79368	-103.711217	-471.273		
200000	700	-0.26273	0.702637	26.71686	-0.06761	0.507512	0.775354	0	0	-13.5217	101.5025	1798.085	-30	-7.50271	1.10134	0	-0.25948	3.455254	356.9505	276.7913	-5.76363	-0.63775	-103.711217	-471.273		
266667	500	-0.14796	0.069929	34.87437	-0.07672	-0.0013	0.204417	0	0	-15.3447	-0.26096	1913.943	-30	-4.35771	1.754127	0	0	3.455254	0	0	-3.20359	-0.65399	-103.711217	-471.273		
75000	300	-0.15719	0.069929	34.08988	-0.08584	-0.00142	0.210845	0	0	-17.1677	-0.28402	2029.802	-30	-4.61824	1.754127	0	0	3.455254	0	0	-3.3512	-0.58437	-103.711217	-471.273		
0	100	-0.16854	0.069929	33.7459	-0.09495	-0.00366	0.220308	0	0	-18.9907	-0.7324	2145.661	-30	-4.93696	1.754126	0	0	3.455254	0	0	-3.41783	-0.55424	-103.711217	-471.273		
0	3400	-0.21333	0.999305	30.7673	0.103997	0.681974	1.066036	145.8997	0.145798	20.79944	136.3949	312.9737	-30	-6.17431	1.027692	0	-0.2325	3.165657	366.4977	299.9619	-4.28964	-0.85697	-110.5550652	-1670.51	0	0.779061
210375	3175	-0.21429	0.966952	30.52762	0.090491	0.662172	1.033688	146.056	0.141229	18.09818	132.4344	439.8749	-30	-6.20038	1.034685	0	-0.23881	3.165657	366.1489	297.1145	-4.33362	-0.83209	-110.5550652	-1670.51		
162500	2925	-0.21541	0.930459	30.25483	0.075484	0.639567	0.997407	146.2373	0.136068	15.09677	127.9135	567.3527	-30	-6.23086	1.042834	0	-0.24602	3.165657	365.8885	293.8905	-4.38436	-0.80368	-110.5550652	-1670.51		
100000	2700	-0.21647	0.89709	30.00333	0.061978	0.618645	0.964435	146.4079	0.131341	12.39551	123.729	669.761	-30	-6.25974	1.050542	0	-0.2527	3.165657	365.7802	290.9328	-4.4318	-0.7774	-110.5550652	-1670.51		
100000	2500	-0.21746	0.866992	29.77474	0.049972	0.599564	0.934867	146.5657	0.127071	9.994388	119.9127	772.5573	-30	-6.28663	1.05772	0	-0.25878	3.165657	365.7936	288.2591	-4.47549	-0.75342	-110.5550652	-1670.51		
100000	2300	-0.21849	0.836446	29.54133	0.037966	0.579992	0.905037	146.7296	0.122731	7.593266	115.9984	875.7509	-30	-6.31469	1.065237	0	-0.26502	3.165657	365.921	285.5411	-4.52064	-0.72882	-110.5550652	-1670.51		
100000	2100	-0.21957	0.805428	29.30298	0.025961	0.559901	0.87494	146.8999	0.118317	5.192143	111.9803	979.3519	-30	-6.34401	1.073125	0	-0.27142	3.165657	366.1733	282.7784	-4.56732	-0.70358	-110.5550652	-1670.51		
100000	1900	-0.22069	0.77391	29.05954	0.013955	0.539261	0.844565	147.0768	0.113824	2.791021	107.8521	1083.371	-30	-6.37466	1.081421	0	-0.27799	3.165657	366.563	279.9707	-4.61561	-0.67763	-110.5550652	-1670.51		
100000	1700	-0.22187	0.741845	28.81097	0.001949	0.518023	0.81389	147.2607	0.109245	0.389898	103.6046	1187.819	-30	-6.40665	1.090174	0	-0.28473	3.165657	367.1061	277.1163	-4.66553	-0.65095	-110.5550652	-1670.51		
100000	1500	-0.2231	0.709202	28.55707	-0.01006	0.496155	0.782906	0	0	-2.01122	99.23093	1303.678	-30	-6.44005	1.099433	0	-0.29166	3.165657	367.8195	274.2162	-4.71716	-0.62346	-110.5550652	-1670.51		
100000	1300	-0.22439	0.675924	28.29791	-0.02206	0.473598	0.751588	0	0	-4.41235	94.71958	1419.536	-30	-6.4749	1.109263	0	-0.29879	3.165657	368.7249	271.2694	-4.77052	-0.59512	-110.5550652	-1670.51		
100000	1100	-0.09998	0.069929	38.52326	-0.03407	0.004019	0.165583	0	0	-6.81347	0.803775	1535.395	-30	-2.98203	1.754127	0	0	3.165657	0	0	-2.22233	-0.76605	-110.5550652	-1670.51		
133333	900	-0.22712	0.607236	27.76368	-0.04607	0.426185	0.687844	0	0	-9.21459	85.23704	1651.254	-30	-6.54899	1.130954	0	-0.31374	3.165657	371.2193	265.2392	-4.88248	-0.53554	-110.5550652	-1670.51		
200000	700	-0.22857	0.57168	27.48877	-0.05808	0.401185	0.655349	0	0	-11.6157	80.23693	1767.113	-30	-6.5882	1.143022	0	-0.3216	3.165657	372.8776	262.1599	-4.94106	-0.50413	-110.5550652	-1670.51		
266667	500	-0.23007	0.535185	27.20905	-0.07008	0.375194	0.622374	0	0	-14.0168	75.03884	1882.971	-30	-6.62877	1.15609	0	-0.32976	3.165657	374.8723	259.0416	-5.00122	-0.47147	-110.5550652	-1670.51		
75000	300	-0.23162	0.497628	26.92493	-0.08209	0.348097	0.58885	0	0	-16.418	69.61937	1998.83	-30	-6.67054	1.170344	0	-0.33827	3.165657	377.2662	255.8909	-5.06278	-0.43742	-110.5550652	-1670.51		
0	100	-0.2332	0.458844	26.63721	-0.0941	0.319737	0.554681	0	0	-18.8191	63.9473	2114.689	-30	-6.7132	1.186038	0	-0.3472	3.165657	380.1443	252.7167	-5.12539	-0.40178	-110.5550652	-1670.51		
0	3400	-0.20911	1.106219	31.61801	0.152394	0.74471	1.174421	145.3683	0.160809	30.4788	148.942	311.1431	-30	-6.05911	1.005972	0	-0.21379	3.154093	368.8709	309.0522	-4.11732	-0.93581	-91.70546879	-1346.67	0	0.858461
210375	3175	-0.21013	1.066996	31.3362	0.135281	0.721582	1.134597	145.5404	0.155291	27.05611	144.3164	436.4997	-30	-6.08695	1.013706	0	-0.22111	3.154093	368.0499	305.6575	-4.16649	-0.90674	-91.70546879	-1346.67		
162500	2925	-0.21134	1.022684	31.01379	0.116266	0.695079	1.089856	145.742	0.149048	23.25312	139.0159	562.5374	-30	-6.11988	1.022766	0	-0.22952	3.154093	367.2944	301.7989	-4.22366	-0.87344	-91.70546879	-1346.67		
100000	2700	-0.21249	0.982096	30.71487	0.099152	0.670449	1.049127	145.9337	0.143321	19.83043	134.0897	663.8727	-30	-6.15144	1.031385	0	-0.23736	3.154093	366.7712	298.2447	-4.27757	-0.84248	-91.70546879	-1346.67		
100000	2500	-0.21358	0.945413	30.44191	0.08394	0.647888	1.012541	146.1126	0.138137	16.78804	129.5776	765.6696	-30	-6.18118	1.03946	0	-0.24455	3.154093	366.4449	295.0177	-4.32756	-0.81414	-91.70546879	-1346.67		
100000	2300	-0.21474	0.908119	30.16178	0.068728	0.624655	0.975575	146.3001	0.132858	13.74565	124.931	867.9407	-30	-6.21254	1.047966	0	-0.25196	3.154093	366.2639	291.725	-4.37963	-0.78494	-91.70546879	-1346.67		
100000	2100	-0.21595	0.870173	29.8742	0.053516	0.600704	0.938218	146.4967	0.127477	10.70326	120.1408	970.7	-30	-6.2457	1.056951	0	-0.2596	3.154093	366.2438	288.3647	-4.4339	-0.75484	-91.70546879	-1346.67		
100000	1900	-0.21724	0.83152	29.57894	0.038304	0.575976	0.900447	146.703	0.121986	7.660869	115.1952	1073.962	-30	-6.28074	1.066472	0	-0.26748	3.154093	366.4041	284.9345	-4.49049	-0.72377	-91.70546879	-1346.67		
100000	1700	-0.2186	0.792097	29.27575	0.023092	0.550405	0.862235	146.9195	0.116374	4.618478	110.081	1177.743	-30	-6.31774	1.076598	0	-0.27563	3.154093	366.768	281.4319	-4.54951	-0.69164	-91.70546879	-1346.67		
100000	1500	-0.22004	0.751849	28.96431	0.00788	0.523929	0.823566	147.1469	0.110632	1.576086	104.7859	1282.061	-30	-6.35688	1.087408	0	-0.28404	3.154093	367.3619	277.8573	-4.6111	-0.65837	-91.70546879	-1346.67		
100000	1300	-0.22156	0.710683	28.6445	-0.00733	0.496454	0.784396	0	0	-1.46631	99.29082	1397.92	-30	-6.39818	1.099005	0	-0.29276	3.154093	368.2204	274.208	-4.67534	-0.62384	-91.70546879	-1346.67		
100000	1100	-0.22317	0.668508	28.31617	-0.02254	0.467886	0.744689	0	0	-4.5087	93.57717	1513.779	-30	-6.44176	1.11151	0	-0.3018	3.154093	369.3847	270.4847	-4.74232	-0.58794	-91.70546879	-1346.67		
133333	900	-0.22486	0.62521	27.97934	-0.03776	0.438105	0.704397	0	0	-7.55109	87.62107	1629.637	-30	-6.48768	1.125082	0	-0.3112	3.154093	370.9075	266.6887	-4.81207	-0.55052	-91.70546879	-1346.67		
200000	700	-0.22664	0.580638	27.63414	-0.05297	0.406966	0.663443	0	0	-10.5935	81.39323	1745.496	-30	-6.53587	1.139922	0	-0.321	3.154093	372.8573	262.8229	-4.88456	-0.51139	-91.70546879	-1346.67		
266667	500	-0.2285	0.534606	27.28106	-0.06818	0.374285	0.621737	0	0	-13.6359	74.85699	1861.355	-30	-6.58622	1.156303	0	-0.33128	3.154093	375.325	258.8937	-4.9596	-0.47033	-91.70546879	-1346.67		
75000	300	-0.23043	0.486867	26.92099	-0.08339	0.339826	0.579142	0	0	-16.6783	67.96511	1977.214	-30	-6.63844	1.174594	0	-0.34212	3.154093	378.4355	254.9131	-5.03682	-0.42702	-91.70546879	-1346.67		
0	100	-0.23241	0.437059	26.55573	-0.0986	0.303252	0.535444	0	0	-19.7207	60.65046	2093.072	-30	-6.69182	1.19534	0	-0.35367	3.154093	382.3716	250.9003	-5.11541	-0.38107	-91.70546879	-1346.67		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.21177	1.233797	32.2983	0.200946	0.821079	1.305796	144.969	0.178862	40.18928	164.2158	309.0032	-29.7105	-6.07252	0.982468	0	-0.18599	3.18642	370.6751	320.585	-4.05828	-1.03177	-93.20498839	-1160.3	0	0.932849
210375	3175	-0.21107	1.18577	31.97214	0.180576	0.794129	1.254871	145.1576	0.172124	36.11514	158.8258	432.5596	-29.9526	-6.10277	0.991038	0	-0.19474	3.18642	369.4836	316.559	-4.11382	-0.9979	-93.20498839	-1160.3		
162500	2925	-0.21199	1.13443	31.61223	0.157942	0.764499	1.202054	145.3718	0.164914	31.58833	152.8998	556.8807	-30	-6.13765	1.000565	0	-0.20414	3.18642	368.1615	312.1493	-4.17641	-0.96067	-93.20498839	-1160.3		
100000	2700	-0.21322	1.087955	31.28025	0.137571	0.737166	1.154787	145.575	0.158379	27.5142	147.4333	656.8987	-30	-6.17115	1.009541	0	-0.2128	3.18642	367.107	308.1115	-4.23527	-0.92633	-93.20498839	-1160.3		
100000	2500	-0.21438	1.045926	30.9759	0.119464	0.712079	1.11229	145.7661	0.152461	23.89275	142.4158	757.4303	-30	-6.20295	1.01797	0	-0.22077	3.18642	366.3207	304.4355	-4.29018	-0.8948	-93.20498839	-1160.3		
100000	2300	-0.21563	1.00317	30.66246	0.101357	0.686186	1.069317	145.9677	0.14643	20.2713	137.2373	858.4907	-30	-6.23683	1.02687	0	-0.22903	3.18642	365.6932	300.6735	-4.34769	-0.86226	-93.20498839	-1160.3		
100000	2100	-0.21695	0.959629	30.3394	0.083249	0.659427	1.025847	146.1807	0.140279	16.64985	131.8854	960.0963	-30	-6.27293	1.036298	0	-0.23756	3.18642	365.243	296.8221	-4.40801	-0.82864	-93.20498839	-1160.3		
100000	1900	-0.21837	0.915241	30.00631	0.065142	0.63173	0.981859	146.4058	0.133997	13.0284	126.346	1062.265	-30	-6.31145	1.046318	0	-0.24641	3.18642	364.9921	292.8776	-4.47132	-0.79383	-93.20498839	-1160.3		
100000	1700	-0.21988	0.86993	29.66274	0.047035	0.603014	0.937325	146.644	0.12757	9.40695	120.6027	1165.016	-30	-6.3526	1.057009	0	-0.25557	3.18642	364.9671	288.836	-4.53783	-0.75775	-93.20498839	-1160.3		
100000	1500	-0.2215	0.823609	29.30818	0.028928	0.573184	0.892208	146.8961	0.120985	5.7855	114.6367	1268.37	-30	-6.3965	1.068469	0	-0.26508	3.18642	365.2005	284.6939	-4.60777	-0.72027	-93.20498839	-1160.3		
100000	1300	-0.22323	0.776183	28.94217	0.01082	0.542137	0.846477	147.1632	0.114226	2.16405	108.4273	1372.351	-30	-6.4434	1.080813	0	-0.27496	3.18642	365.7314	280.4491	-4.68135	-0.68125	-93.20498839	-1160.3		
100000	1100	-0.22507	0.727527	28.5644	-0.00729	0.50974	0.800083	0	0	-1.4574	101.948	1488.21	-30	-6.49349	1.09419	0	-0.28523	3.18642	366.6098	276.0989	-4.75877	-0.64054	-93.20498839	-1160.3		
133333	900	-0.22705	0.67749	28.17458	-0.02539	0.475837	0.752963	0	0	-5.07885	95.16744	1604.069	-30	-6.54691	1.108791	0	-0.29595	3.18642	367.8997	271.6422	-4.84019	-0.59793	-93.20498839	-1160.3		
200000	700	-0.22915	0.625889	27.77268	-0.0435	0.44024	0.705043	0	0	-8.7003	88.04796	1719.928	-30	-6.60379	1.124863	0	-0.30716	3.18642	369.6846	267.0807	-4.92571	-0.5532	-93.20498839	-1160.3		
266667	500	-0.23138	0.572478	27.35886	-0.06161	0.402705	0.656204	0	0	-12.3217	80.54091	1835.786	-30	-6.66407	1.142744	0	-0.31894	3.18642	372.0782	262.4196	-5.0153	-0.50604	-93.20498839	-1160.3		
75000	300	-0.23374	0.516936	26.93401	-0.07972	0.362916	0.606288	0	0	-15.9432	72.58311	1951.645	-30	-6.72758	1.162908	0	-0.3314	3.18642	375.2394	257.6711	-5.10864	-0.45603	-93.20498839	-1160.3		
0	100	-0.23619	0.458777	26.5001	-0.09782	0.320414	0.555024	0	0	-19.5646	64.08285	2067.504	-30	-6.79359	1.186066	0	-0.34473	3.18642	379.4081	252.8567	-5.20488	-0.40263	-93.20498839	-1160.3		
0	3400	-0.21754	1.362463	32.93586	0.249526	0.8954	1.44196	144.6153	0.197033	49.90519	179.08	306.9146	-29.0805	-6.09609	0.960972	0	-0.15847	3.220253	373.16	332.0279	-4.00996	-1.12516	-102.8028023	-988.413	0	1.00944
210375	3175	-0.21665	1.309124	32.58826	0.225959	0.866516	1.3848	144.8057	0.189569	45.19188	173.3031	428.6591	-29.3384	-6.12651	0.96964	0	-0.16771	3.220253	371.3624	327.6307	-4.068	-1.08887	-102.8028023	-988.413		
162500	2925	-0.2157	1.248608	32.18598	0.199774	0.833129	1.320254	145.0334	0.18109	39.95486	166.6257	551.2775	-29.6366	-6.16336	0.979889	0	-0.1785	3.220253	369.5729	322.5845	-4.13656	-1.04691	-102.8028023	-988.413		
100000	2700	-0.2149	1.192906	31.80827	0.176208	0.801802	1.261166	145.2543	0.173275	35.24154	160.3604	650.0257	-29.9164	-6.1996	0.989744	0	-0.18871	3.220253	368.1748	317.8877	-4.20232	-1.00754	-102.8028023	-988.413		
100000	2500	-0.2155	1.144741	31.47194	0.15526	0.773983	1.211378	145.457	0.166511	31.05193	154.7965	749.3464	-30	-6.23335	0.99862	0	-0.19762	3.220253	366.9708	313.7365	-4.26214	-0.97259	-102.8028023	-988.413		
100000	2300	-0.21681	1.096883	31.13046	0.134312	0.745764	1.162717	145.6685	0.159781	26.86231	149.1527	849.2435	-30	-6.26899	1.00779	0	-0.20658	3.220253	365.8659	309.5522	-4.32407	-0.93713	-102.8028023	-988.413		
100000	2100	-0.21822	1.048123	30.77737	0.113363	0.716544	1.113456	145.8932	0.152914	22.6727	143.3088	949.7356	-30	-6.30728	1.017522	0	-0.21589	3.220253	364.9499	305.2572	-4.38936	-0.90041	-102.8028023	-988.413		
100000	1900	-0.21973	0.998384	30.41201	0.092415	0.686239	1.063568	146.1324	0.145896	18.48308	137.2477	1050.843	-30	-6.34848	1.027888	0	-0.22557	3.220253	364.2473	300.846	-4.45827	-0.86233	-102.8028023	-988.413		
100000	1700	-0.22136	0.94758	30.03364	0.071467	0.65475	1.01302	146.3872	0.138714	14.29347	130.95	1152.588	-30	-6.39283	1.038975	0	-0.23564	3.220253	363.7873	296.3129	-4.53111	-0.82276	-102.8028023	-988.413		
100000	1500	-0.22313	0.895608	29.64159	0.050519	0.621963	0.961778	146.6589	0.131349	10.10385	124.3927	1254.996	-30	-6.44067	1.05089	0	-0.24611	3.220253	363.6057	291.652	-4.60821	-0.78156	-102.8028023	-988.413		
100000	1300	-0.22503	0.842345	29.23511	0.029571	0.587745	0.909795	146.9489	0.123782	5.914237	117.549	1358.093	-30	-6.49225	1.063766	0	-0.25703	3.220253	363.7473	286.8577	-4.68992	-0.73856	-102.8028023	-988.413		
100000	1100	-0.22708	0.787648	28.81347	0.008623	0.551941	0.857023	147.2588	0.115988	1.724622	110.3882	1461.91	-30	-6.54792	1.077769	0	-0.26842	3.220253	364.2679	281.9255	-4.77659	-0.69357	-102.8028023	-988.413		
133333	900	-0.22931	0.731338	28.37615	-0.01232	0.514357	0.803394	0	0	-2.46499	102.8715	1577.769	-30	-6.608	1.093114	0	-0.28033	3.220253	365.2403	276.8511	-4.86855	-0.64634	-102.8028023	-988.413		
200000	700	-0.2317	0.673189	27.9227	-0.03327	0.474759	0.748822	0	0	-6.65461	94.95182	1693.628	-30	-6.67275	1.110089	0	-0.29283	3.220253	366.7607	271.6332	-4.96609	-0.59658	-102.8028023	-988.413		
266667	500	-0.23428	0.612913	27.45299	-0.05422	0.432849	0.693185	0	0	-10.8442	86.56985	1809.486	-30	-6.74236	1.129083	0	-0.30598	3.220253	368.9605	266.2743	-5.06938	-0.54392	-102.8028023	-988.413		
75000	300	-0.23705	0.550111	26.96762	-0.07517	0.388231	0.636302	0	0	-15.0338	77.64625	1925.345	-30	-6.8168	1.150657	0	-0.31992	3.220253	372.0277	260.7843	-5.17829	-0.48785	-102.8028023	-988.413		
0	100	-0.23997	0.484199	26.46827	-0.09612	0.340342	0.577868	0	0	-19.2235	68.06837	2041.204	-30	-6.89546	1.17566	0	-0.33485	3.220253	376.2487	255.1859	-5.29214	-0.42767	-102.8028023	-988.413		
0	3400	-0.2215	1.477868	33.5601	0.297827	0.95854	1.565667	144.2879	0.213238	59.56548	191.7081	305.1046	-28.5378	-6.08479	0.943275	0	-0.13666	3.237559	376.8675	341.8395	-3.93701	-1.20451	-82.06671026	-779.285	0	1.065128
210375	3175	-0.2204	1.418007	33.18474	0.270439	0.927172	1.501021	144.4825	0.204877	54.08781	185.4344	425.3023	-28.8168	-6.11546	0.952283	0	-0.14649	3.237559	374.4197	336.9993	-3.9981	-1.16509	-82.06671026	-779.285		
162500	2925	-0.21922	1.350055	32.7489	0.240008	0.890829	1.427953	144.717	0.195376	48.00151	178.1659	546.4553	-29.1401	-6.15299	0.962959	0	-0.15804	3.237559	371.9248	331.4301	-4.0706	-1.11942	-82.06671026	-779.285		
100000	2700	-0.21821	1.287475	32.33811	0.212619	0.856649	1.360993	144.9464	0.186615	42.52384	171.3298	644.0933	-29.4444	-6.19024	0.973254	0	-0.16904	3.237559	369.9101	326.2325	-4.14052	-1.07646	-82.06671026	-779.285		
100000	2500	-0.21735	1.230584	31.957	0.188274	0.824959	1.300441	145.1665	0.17864	37.6548	164.9919	742.392	-29.7265	-6.22648	0.983032	0	-0.17935	3.237559	368.3301	321.4508	-4.20681	-1.03664	-82.06671026	-779.285		
100000	2300	-0.21669	1.172674	31.56102	0.163929	0.792051	1.239277	145.4028	0.17051	32.78577	158.4101	841.3734	-30	-6.2659	0.993431	0	-0.1901	3.237559	366.9592	316.5242	-4.27718	-0.99529	-82.06671026	-779.285		
100000	2100	-0.2182	1.117419	31.16936	0.139584	0.759636	1.182967	145.6441	0.162745	27.91673	151.9272	941.0158	-30	-6.30686	1.00381	0	-0.2004	3.237559	365.5816	311.6932	-4.34849	-0.95456	-82.06671026	-779.285		
100000	1900	-0.21984	1.060982	30.76233	0.115238	0.725908	1.125868	145.9029	0.1548	23.04769	145.1816	1041.344	-30	-6.35136	1.014915	0	-0.21115	3.237559	364.4481	306.7151	-4.42427	-0.91217	-82.06671026	-779.285		
100000	1700	-0.22162	1.003242	30.33894	0.090893	0.690731	1.067932	146.181	0.146655	18.17865	138.1461	1142.384	-30	-6.39976	1.026855	0	-0.22239	3.237559	363.5954	301.58	-4.50493	-0.86798	-82.06671026	-779.285		
100000	1500	-0.22356	0.944071	29.89802	0.066548	0.65396	1.009115	146.4803	0.138288	13.30961	130.7921	1244.168	-30	-6.45251	1.039761	0	-0.23416	3.237559	363.0677	296.28	-4.59098	-0.82177	-82.06671026	-779.285		
100000	1300	-0.22569	0.883304	29.43847	0.042203	0.615415	0.949361	146.8027	0.129671	8.440571	123.083	1346.727	-30	-6.51006	1.053802	0	-0.24648	3.237559	362.922	290.8058	-4.68293	-0.77333	-82.06671026	-779.285		
100000	1100	-0.22801	0.82075	28.95914	0.017858	0.574884	0.888605	147.1507	0.120774	3.571532	114.9767	1450.101	-30	-6.57294	1.069195	0	-0.2594	3.237559	363.2308	285.1494	-4.78135	-0.7224	-82.06671026	-779.285		
133333	900	-0.23055	0.75616	28.45905	-0.00649	0.532096	0.826756	0	0	-1.29751	106.4192	1565.96	-30	-6.64164	1.086226	0	-0.27298	3.237559	364.0907	279.3025	-4.88679	-0.66863	-82.06671026	-779.285		
200000	700	-0.23333	0.689224	27.93735	-0.03083	0.486725	0.763703	0	0	-6.16655	97.345	1681.819	-30	-6.71667	1.105285	0	-0.2873	3.237559	365.6326	273.2617	-4.99977	-0.61162	-82.06671026	-779.285		
266667	500	-0.23636	0.619527	27.39368	-0.05518	0.43834	0.699278	0	0	-11.0356	87.66797	1797.677	-30	-6.79839	1.126923	0	-0.30248	3.237559	368.0422	267.0286	-5.12065	-0.55082	-82.06671026	-779.285		
75000	300	-0.23965	0.546472	26.8287	-0.07952	0.386343	0.633213	0	0	-15.9046	77.26865	1913.536	-30	-6.88678	1.15197	0	-0.3187	3.237559	371.5986	260.6157	-5.24934	-0.48548	-82.06671026	-779.285		
0	100	-0.24316	0.46914	26.24524	-0.10387	0.329847	0.565035	0	0	-20.7737	65.96949	2029.395	-30	-6.98097	1.181768	0	-0.33627	3.237559	376.7532	254.0592	-5.38473	-0.41449	-82.06671026	-779.285		
0	3400	-0.22705	1.596851	34.1055	0.346392	1.023406	1.693598	144.017	0.229974	69.2784	204.6812	303.2856	-27.9991	-6.11038	0.926371	0	-0.11329	3.267012	380.8941	352.1221	-3.89799	-1.28602	-80.0083027	-629.262	0	1.138686
210375	3175	-0.22575	1.531951	33.71442	0.315774	0.990432	1.623063	144.2098	0.220922	63.15479	198.0864	421.9036	-28.2904	-6.14058	0.935434	0	-0.12339	3.267012	377.8192	346.9698	-3.96057	-1.24458	-80.0083027	-629.262		
162500	2925	-0.22435	1.458297	33.25944	0.281754	0.952197	1.543306	144.4432	0.210641	56.35078	190.4395	541.529	-28.6284	-6.17777	0.946181	0	-0.13532	3.267012	374.6302	341.0333	-4.03505	-1.19654	-80.0083027	-629.262		
100000	2700	-0.22314	1.390475	32.82975	0.251136	0.916201	1.470184	144.6728	0.201164	50.22717	183.2401	637.9844	-28.9469	-6.21492	0.956548	0	-0.14673	3.267012	371.9939	335.484	-4.10708	-1.1513	-80.0083027	-629.262		
100000	2500	-0.22212	1.328837	32.43023	0.22392	0.882802	1.40404	144.8942	0.192541	44.78396	176.5604	735.1372	-29.2425	-6.25133	0.966398	0	-0.15747	3.267012	369.864	330.372	-4.17559	-1.10933	-80.0083027	-629.262		
100000	2300	-0.22114	1.265788	32.0126	0.196704	0.847943	1.33673	145.134	0.183709	39.34075	169.5885	833.0149	-29.5513	-6.29129	0.976932	0	-0.16879	3.267012	367.9643	325.0767	-4.24882	-1.06552	-80.0083027	-629.262		
100000	2100	-0.22022	1.201171	31.57522	0.169488	0.81146	1.268161	145.3942	0.174643	33.89754	162.292	931.648	-29.8746	-6.33528	0.988255	0	-0.18075	3.267012	366.3298	319.5822	-4.32735	-1.01968	-80.0083027	-629.262		
100000	1900	-0.22097	1.137896	31.13281	0.142272	0.774652	1.202753	145.667	0.165754	28.45433	154.9304	1031.033	-30	-6.38221	0.999909	0	-0.19262	3.267012	364.807	314.0756	-4.40887	-0.97343	-80.0083027	-629.262		
100000	1700	-0.22283	1.074956	30.68062	0.115056	0.737067	1.139016	145.9559	0.156896	23.01113	147.4135	1131.179	-30	-6.43273	1.012116	0	-0.20462	3.267012	363.4698	308.5014	-4.4944	-0.9262	-80.0083027	-629.262		
100000	1500	-0.22488	1.010419	30.20811	0.08784	0.697701	1.074257	146.2688	0.147793	17.56792	139.5401	1232.12	-30	-6.48819	1.025337	0	-0.21722	3.267012	362.4741	302.7324	-4.58612	-0.87673	-80.0083027	-629.262		
100000	1300	-0.22713	0.944099	29.71383	0.060624	0.656342	1.008416	146.6082	0.138413	12.12471	131.2684	1333.892	-30	-6.54923	1.039755	0	-0.23047	3.267012	361.8807	296.7554	-4.68472	-0.82476	-80.0083027	-629.262		
100000	1100	-0.22962	0.875781	29.19611	0.033408	0.612751	0.941423	146.9772	0.12872	6.681501	122.5502	1436.538	-30	-6.61655	1.055601	0	-0.24441	3.267012	361.7679	290.5593	-4.79096	-0.76998	-80.0083027	-629.262		
133333	900	-0.23237	0.805174	28.6535	0.006191	0.566609	0.873175	147.3788	0.118666	1.238293	113.3218	1540.107	-30	-6.69082	1.07319	0	-0.2591	3.267012	362.2416	284.1305	-4.90564	-0.712	-80.0083027	-629.262		
200000	700	-0.23542	0.731936	28.08457	-0.02102	0.517543	0.803566	0	0	-4.20492	103.5086	1655.966	-30	-6.77289	1.092946	0	-0.27464	3.267012	363.4438	277.4615	-5.02959	-0.65035	-80.0083027	-629.262		
266667	500	-0.23878	0.655585	27.48833	-0.04824	0.465045	0.732412	0	0	-9.64812	93.00895	1771.824	-30	-6.86337	1.11548	0	-0.29113	3.267012	365.5805	270.5483	-5.16351	-0.58437	-80.0083027	-629.262		
75000	300	-0.24248	0.575436	26.86491	-0.07546	0.408416	0.659431	0	0	-15.0913	81.68314	1887.683	-30	-6.96263	1.141717	0	-0.30879	3.267012	368.9631	263.3984	-5.3077	-0.51322	-80.0083027	-629.262		
0	100	-0.24649	0.490449	26.21658	-0.10267	0.34663	0.584131	0	0	-20.5345	69.32607	2003.542	-30	-7.07018	1.173171	0	-0.32794	3.267012	374.1004	256.0475	-5.46143	-0.43557	-80.0083027	-629.262		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.23169	1.708143	34.63241	0.394829	1.081625	1.814182	143.7686	0.245577	78.9659	216.3249	301.6336	-27.5132	-6.11926	0.911633	0	-0.09336	3.28774	385.6238	361.4201	-3.84845	-1.35917	-60.51652306	-467.151	0	1.201664
210375	3175	-0.23016	1.637722	34.2238	0.360696	1.046866	1.737284	143.9601	0.235767	72.13916	209.3733	418.8267	-27.8187	-6.14893	0.920845	0	-0.10372	3.28774	381.896	355.9346	-3.9126	-1.3155	-60.51652306	-467.151		
162500	2925	-0.22852	1.557809	33.74736	0.322769	1.00652	1.65029	144.1933	0.224626	64.5539	201.304	537.0861	-28.1736	-6.18574	0.93178	0	-0.11603	3.28774	377.9889	349.6057	-3.98916	-1.2648	-60.51652306	-467.151		
100000	2700	-0.2271	1.484221	33.29633	0.288636	0.968485	1.570487	144.424	0.214357	57.72716	193.697	632.4935	-28.5085	-6.2228	0.94234	0	-0.12788	3.28774	374.7145	343.6795	-4.06346	-1.217	-60.51652306	-467.151		
100000	2500	-0.22589	1.41733	32.87602	0.258295	0.933144	1.498251	144.6477	0.205013	51.65895	186.6287	728.6408	-28.8199	-6.25934	0.952387	0	-0.13907	3.28774	372.0258	338.2102	-4.13435	-1.1726	-60.51652306	-467.151		
100000	2300	-0.22474	1.348906	32.43552	0.227954	0.896213	1.424706	144.8912	0.195445	45.59074	179.2426	825.5576	-29.1456	-6.29974	0.963144	0	-0.15094	3.28774	369.5762	332.5363	-4.21041	-1.12618	-60.51652306	-467.151		
100000	2100	-0.22365	1.278755	31.97303	0.197613	0.857494	1.349731	145.1571	0.18562	39.52253	171.4989	923.2775	-29.4873	-6.34452	0.974726	0	-0.16353	3.28774	367.4039	326.6358	-4.29227	-1.07753	-60.51652306	-467.151		
100000	1900	-0.22263	1.206682	31.48617	0.167272	0.81678	1.273213	145.4483	0.17551	33.45432	163.3561	1021.838	-29.8467	-6.39438	0.987267	0	-0.1769	3.28774	365.5544	320.4891	-4.38075	-1.02637	-60.51652306	-467.151		
100000	1700	-0.2234	1.135763	30.99027	0.136931	0.775429	1.199857	145.757	0.165545	27.38611	155.0857	1121.241	-30	-6.44822	1.000312	0	-0.19028	3.28774	363.8744	314.2951	-4.47351	-0.9744	-60.51652306	-467.151		
100000	1500	-0.22556	1.065226	30.48218	0.10659	0.733077	1.128557	146.0859	0.155615	21.3179	146.6154	1221.498	-30	-6.50664	1.014061	0	-0.20383	3.28774	362.4311	308.013	-4.57139	-0.92119	-60.51652306	-467.151		
100000	1300	-0.22796	0.992667	29.94844	0.076248	0.688462	1.05599	146.4455	0.145372	15.24969	137.6923	1322.652	-30	-6.57152	1.02911	0	-0.21814	3.28774	361.4249	301.485	-4.67728	-0.86513	-60.51652306	-467.151		
100000	1100	-0.23063	0.91782	29.38692	0.045907	0.641283	0.98207	146.8396	0.134772	9.181482	128.2566	1424.751	-30	-6.64375	1.045724	0	-0.23325	3.28774	360.9453	294.6936	-4.79219	-0.80583	-60.51652306	-467.151		
133333	900	-0.23362	0.840346	28.79557	0.015566	0.591164	0.906687	147.2722	0.12376	3.113272	118.2328	1527.85	-30	-6.72433	1.064263	0	-0.24925	3.28774	361.1136	287.6206	-4.91721	-0.74286	-60.51652306	-467.151		
200000	700	-0.23696	0.759822	28.17225	-0.01477	0.537639	0.829704	0	0	-2.95494	107.5277	1643.709	-30	-6.81435	1.085227	0	-0.26624	3.28774	362.0971	280.252	-5.05352	-0.67559	-60.51652306	-467.151		
266667	500	-0.2407	0.675662	27.51538	-0.04512	0.480082	0.750918	0	0	-9.02315	96.01642	1759.567	-30	-6.91481	1.109342	0	-0.28435	3.28774	364.1408	272.5788	-5.20221	-0.60327	-60.51652306	-467.151		
75000	300	-0.24486	0.58703	26.82458	-0.07546	0.417627	0.670006	0	0	-15.0914	83.52544	1875.426	-30	-7.02648	1.137736	0	-0.30381	3.28774	367.6238	264.607	-5.36395	-0.52479	-60.51652306	-467.151		
0	100	-0.24944	0.492585	26.10229	-0.1058	0.348946	0.586349	0	0	-21.1596	69.78912	1991.285	-30	-7.14892	1.172326	0	-0.32505	3.28774	373.1914	256.3762	-5.53811	-0.43848	-60.51652306	-467.151		
0	3400	-0.23655	1.817617	35.12103	0.443328	1.137735	1.93324	143.5499	0.260919	88.66564	227.547	300.0492	-27.0515	-6.13482	0.898026	0	-0.07434	3.309408	390.7465	370.4764	-3.80711	-1.42968	-37.28542171	-326.376	0	1.267388
210375	3175	-0.23481	1.742085	34.69857	0.405817	1.101462	1.850453	143.7383	0.250404	81.16334	220.2924	415.8704	-27.3684	-6.16375	0.907324	0	-0.08484	3.309408	386.372	364.7018	-3.87232	-1.3841	-37.28542171	-326.376		
162500	2925	-0.23292	1.656379	34.20518	0.364137	1.059318	1.756754	143.969	0.238467	72.82745	211.8636	532.808	-27.7371	-6.19986	0.918367	0	-0.09737	3.309408	381.7508	358.0307	-3.95033	-1.33114	-37.28542171	-326.376		
100000	2700	-0.23129	1.577466	33.73723	0.326626	1.019551	1.670763	144.1984	0.227468	65.32514	203.9103	627.1964	-28.0854	-6.23643	0.92904	0	-0.10951	3.309408	377.8387	351.776	-4.02623	-1.28117	-37.28542171	-326.376		
100000	2500	-0.22989	1.50575	33.30027	0.293282	0.982574	1.592902	144.4219	0.217463	58.65643	196.5148	722.3605	-28.4097	-6.27275	0.939199	0	-0.12103	3.309408	374.5872	345.9974	-4.09884	-1.2347	-37.28542171	-326.376		
100000	2300	-0.22856	1.432377	32.84159	0.259939	0.943881	1.51358	144.6664	0.207217	51.98772	188.7763	818.3322	-28.7493	-6.31311	0.950088	0	-0.1333	3.309408	371.5812	339.9919	-4.17693	-1.18608	-37.28542171	-326.376		
100000	2100	-0.22729	1.357166	32.35884	0.226595	0.903282	1.432687	144.9346	0.1967	45.319	180.6565	915.1474	-29.1059	-6.35814	0.961818	0	-0.14637	3.309408	368.8585	333.7391	-4.26127	-1.13506	-37.28542171	-326.376		
100000	1900	-0.2261	1.279884	31.84948	0.193251	0.860533	1.350081	145.2299	0.185877	38.65029	172.1067	1012.846	-29.4817	-6.40858	0.974535	0	-0.16031	3.309408	366.4674	327.2133	-4.35272	-1.08134	-37.28542171	-326.376		
100000	1700	-0.225	1.200252	31.31052	0.159908	0.815344	1.265601	145.5562	0.174704	31.98158	163.0688	1111.474	-29.8792	-6.46534	0.98842	0	-0.1752	3.309408	364.4694	320.3853	-4.45235	-1.02456	-37.28542171	-326.376		
100000	1500	-0.2263	1.122463	30.76316	0.126564	0.769595	1.185615	145.9024	0.16377	25.31286	153.9191	1211.029	-30	-6.52678	1.002843	0	-0.18998	3.309408	362.6524	313.5312	-4.55687	-0.96708	-37.28542171	-326.376		
100000	1300	-0.22881	1.0442	30.19591	0.093221	0.722171	1.106784	146.277	0.152742	18.64415	144.4342	1311.536	-30	-6.59455	1.018323	0	-0.2052	3.309408	361.1908	306.51	-4.66874	-0.90748	-37.28542171	-326.376		
100000	1100	-0.23163	0.963393	29.59685	0.059877	0.671891	1.026406	146.6904	0.14132	11.97543	134.3782	1413.049	-30	-6.67064	1.035467	0	-0.22133	3.309408	360.2893	299.1828	-4.79089	-0.8443	-37.28542171	-326.376		
133333	900	-0.23481	0.879666	28.96319	0.026534	0.618327	0.944365	147.1477	0.129441	5.306721	123.6654	1515.629	-30	-6.75639	1.05467	0	-0.23848	3.309408	360.0802	291.5264	-4.92472	-0.77699	-37.28542171	-326.376		
200000	700	-0.2384	0.792515	28.2921	-0.00681	0.560925	0.8605	0	0	-1.36199	112.1851	1631.488	-30	-6.85312	1.076488	0	-0.25674	3.309408	360.7507	283.5186	-5.07178	-0.70486	-37.28542171	-326.376		
266667	500	-0.24247	0.701281	27.58117	-0.04015	0.498966	0.774605	0	0	-8.03071	99.79324	1747.347	-30	-6.96239	1.101735	0	-0.27627	3.309408	362.5746	275.145	-5.23365	-0.627	-37.28542171	-326.376		
75000	300	-0.24706	0.604986	26.82918	-0.0735	0.431424	0.686321	0	0	-14.6994	86.28478	1863.205	-30	-7.08537	1.131699	0	-0.29733	3.309408	365.9853	266.4056	-5.41153	-0.54212	-37.28542171	-326.376		
0	100	-0.25217	0.502029	26.03842	-0.10684	0.356695	0.594942	0	0	-21.3681	71.33909	1979.064	-30	-7.22198	1.168628	0	-0.3204	3.309408	371.7388	257.3376	-5.60513	-0.44823	-37.28542171	-326.376		
0	3400	-0.241	1.922439	35.58843	0.491704	1.189734	2.047737	143.351	0.275584	98.3409	237.9468	298.5703	-26.6237	-6.14387	0.885736	0	-0.05746	3.32683	396.2875	378.9202	-3.76311	-1.49502	-24.63210414	-168.214	0	1.324877
210375	3175	-0.23902	1.841338	35.15048	0.45054	1.151784	1.958603	143.537	0.2643	90.10791	230.3567	413.1185	-26.9535	-6.17206	0.895184	0	-0.06808	3.32683	391.2328	372.8339	-3.82956	-1.44733	-24.63210414	-168.214		
162500	2925	-0.23687	1.749323	34.63801	0.404801	1.107649	1.857681	143.766	0.251493	80.96015	221.5298	528.839	-27.3377	-6.20755	0.906416	0	-0.08085	3.32683	385.8634	365.7947	-3.90926	-1.39187	-24.63210414	-168.214		
100000	2700	-0.23501	1.66459	34.15099	0.363636	1.065945	1.765004	143.995	0.239693	72.72717	213.1891	622.2966	-27.7013	-6.24378	0.917285	0	-0.09329	3.32683	381.2866	359.1839	-3.98701	-1.33947	-24.63210414	-168.214		
100000	2500	-0.23341	1.587578	33.69526	0.327045	1.027121	1.681041	144.2194	0.22896	65.40896	205.4242	716.5705	-28.0403	-6.27995	0.927644	0	-0.10517	3.32683	377.4528	353.0677	-4.06162	-1.29068	-24.63210414	-168.214		
100000	2300	-0.23188	1.508779	33.21579	0.290454	0.986445	1.595458	144.4662	0.217967	58.09076	197.289	811.6951	-28.3959	-6.32045	0.938761	0	-0.11787	3.32683	373.8741	346.7019	-4.14211	-1.23957	-24.63210414	-168.214		
100000	2100	-0.23042	1.427982	32.71	0.253863	0.943698	1.508121	144.7384	0.206684	50.77255	188.7396	907.7093	-28.7699	-6.36595	0.950757	0	-0.13148	3.32683	370.5911	340.0617	-4.22932	-1.18585	-24.63210414	-168.214		
100000	1900	-0.22905	1.344932	32.17484	0.217272	0.898613	1.418869	145.0398	0.195069	43.45434	179.7225	1004.657	-29.1648	-6.41726	0.963785	0	-0.14606	3.32683	367.6553	333.1181	-4.32428	-1.12919	-24.63210414	-168.214		
100000	1700	-0.22778	1.259314	31.60687	0.180681	0.850858	1.327516	145.375	0.183073	36.13614	170.1715	1102.587	-29.5834	-6.47542	0.978042	0	-0.16172	3.32683	365.133	325.8363	-4.42819	-1.06919	-24.63210414	-168.214		
100000	1500	-0.22684	1.171178	31.00414	0.14409	0.800243	1.234476	145.7482	0.170697	28.81793	160.0487	1201.553	-30	-6.54144	0.993706	0	-0.17844	3.32683	363.0838	318.2065	-4.54216	-1.00558	-24.63210414	-168.214		
100000	1300	-0.22948	1.086565	30.39883	0.107499	0.749589	1.148777	146.1411	0.158792	21.49972	149.9179	1301.535	-30	-6.61263	1.009815	0	-0.19468	3.32683	361.1846	310.6397	-4.66089	-0.94193	-24.63210414	-168.214		
100000	1100	-0.23247	0.999085	29.75691	0.070908	0.695711	1.061291	146.5781	0.146444	14.18152	139.1422	1402.594	-30	-6.69334	1.027739	0	-0.21199	3.32683	359.8955	302.7167	-4.79138	-0.87423	-24.63210414	-168.214		
133333	900	-0.23587	0.908294	29.07467	0.034317	0.638103	0.971887	147.0657	0.133579	6.863309	127.6205	1504.8	-30	-6.7852	1.047925	0	-0.23047	3.32683	359.3678	294.4079	-4.93543	-0.80184	-24.63210414	-168.214		
200000	700	-0.23977	0.813592	28.34843	-0.00227	0.576095	0.880378	0	0	-0.4549	115.219	1620.659	-30	-6.89001	1.071023	0	-0.25023	3.32683	359.8191	285.6825	-5.09508	-0.72392	-24.63210414	-168.214		
266667	500	-0.24424	0.714183	27.5748	-0.03887	0.508811	0.786525	0	0	-7.77311	101.7621	1736.518	-30	-7.00983	1.097996	0	-0.27147	3.32683	361.5743	276.5188	-5.27247	-0.63937	-24.63210414	-168.214		
75000	300	-0.24934	0.608854	26.75193	-0.07546	0.43497	0.6899	0	0	-15.0913	86.99406	1852.376	-30	-7.14634	1.130419	0	-0.29448	3.32683	365.1627	266.9112	-5.46934	-0.54658	-24.63210414	-168.214		
0	100	-0.25509	0.495589	25.88226	-0.11205	0.352545	0.58964	0	0	-22.4095	70.50896	1968.235	-30	-7.29973	1.171144	0	-0.31987	3.32683	371.5436	256.9078	-5.68559	-0.44301	-24.63210414	-168.214		
0	3400	-0.24607	2.027992	36.01663	0.540224	1.241694	2.163173	143.1776	0.290363	108.0448	248.3387	297.1138	-26.2064	-6.16636	0.874016	-0.00443	0.04041	3.348528	400	387.9592	-3.73203	-1.56032	-6.686861892	-45.7746	0	1.390583
210375	3175	-0.24386	1.942046	35.56836	0.495729	1.202457	2.068508	143.3593	0.27841	99.14576	240.4914	410.3978	-26.5452	-6.19363	0.883511	0	-0.05101	3.348528	396.344	381.1106	-3.79913	-1.511	-6.686861892	-45.7746		
162500	2925	-0.24147	1.844546	35.0432	0.446289	1.156791	1.961283	143.584	0.264847	89.25788	231.3582	524.8965	-26.9403	-6.22814	0.894803	0	-0.06384	3.348528	390.2545	373.7746	-3.87973	-1.45363	-6.686861892	-45.7746		
100000	2700	-0.23938	1.754793	34.54338	0.401794	1.113621	1.862799	143.8097	0.252356	80.35879	222.7242	617.4091	-27.3146	-6.26362	0.905732	0	-0.07641	3.348528	385.032	366.8802	-3.95851	-1.39938	-6.686861892	-45.7746		
100000	2500	-0.23758	1.673233	34.07502	0.362242	1.073406	1.773548	144.0318	0.240999	72.44849	214.6812	710.7684	-27.6638	-6.29926	0.916152	0	-0.08846	3.348528	380.6267	360.4956	-4.03425	-1.34884	-6.686861892	-45.7746		
100000	2300	-0.23586	1.58979	33.58155	0.322691	1.031242	1.682542	144.277	0.22937	64.53819	206.2483	805.0107	-28.0305	-6.33932	0.92734	0	-0.10141	3.348528	376.4797	353.8434	-4.11612	-1.29586	-6.686861892	-45.7746		
100000	2100	-0.23421	1.50425	33.06012	0.283139	0.9869	1.589643	144.5486	0.217437	56.62789	197.3801	900.1768	-28.4166	-6.38459	0.939417	0	-0.11534	3.348528	372.6319	346.8973	-4.20504	-1.24014	-6.686861892	-45.7746		
100000	1900	-0.23265	1.416334	32.50744	0.243588	0.940093	1.494672	144.8508	0.205157	48.71759	188.0185	996.3126	-28.8246	-6.43596	0.952539	0	-0.13034	3.348528	369.1359	339.6243	-4.30209	-1.18132	-6.686861892	-45.7746		
100000	1700	-0.2312	1.3257	31.91963	0.204036	0.890461	1.397414	145.1885	0.192476	40.80728	178.0921	1093.471	-29.2578	-6.49448	0.966911	0	-0.1465	3.348528	366.0598	331.9853	-4.40862	-1.11896	-6.686861892	-45.7746		
100000	1500	-0.22988	1.231944	31.29194	0.164485	0.83758	1.297639	145.5677	0.179331	32.89698	167.5161	1191.712	-29.7197	-6.5616	0.982793	0	-0.16394	3.348528	363.492	323.937	-4.52631	-1.0525	-6.686861892	-45.7746		
100000	1300	-0.23038	1.137838	30.63708	0.124933	0.782525	1.19983	145.9843	0.166106	24.98668	156.505	1291.067	-30	-6.63701	0.99992	0	-0.18198	3.348528	361.343	315.6519	-4.65378	-0.98332	-6.686861892	-45.7746		
100000	1100	-0.23348	1.0448	29.96327	0.085382	0.72594	1.106201	146.4353	0.152996	17.07638	145.188	1391.552	-30	-6.72063	1.0182	0	-0.20018	3.348528	359.5818	307.2443	-4.79022	-0.91221	-6.686861892	-45.7746		
133333	900	-0.23704	0.94816	29.24453	0.04583	0.665289	1.010431	146.9421	0.139325	9.166076	133.0577	1493.243	-30	-6.81658	1.038846	0	-0.21967	3.348528	358.6163	298.4001	-4.94172	-0.836	-6.686861892	-45.7746		
200000	700	-0.24115	0.847265	28.47616	0.006279	0.599833	0.91233	147.5134	0.124983	1.255774	119.9666	1596.23	-30	-6.9271	1.062547	0	-0.24059	3.348528	358.6786	289.0811	-5.1108	-0.75375	-6.686861892	-45.7746		
266667	500	-0.24592	0.741228	27.65368	-0.03327	0.528585	0.811647	0	0	-6.65453	105.7169	1712.088	-30	-7.05478	1.090345	0	-0.26314	3.348528	360.1194	279.2559	-5.30021	-0.66422	-6.686861892	-45.7746		
75000	300	-0.25143	0.628709	26.77403	-0.07282	0.450107	0.707942	0	0	-14.5648	90.02139	1827.947	-30	-7.20204	1.123955	0	-0.28763	3.348528	363.5148	268.9097	-5.51248	-0.5656	-6.686861892	-45.7746		
0	100	-0.25773	0.507449	25.83881	-0.11238	0.362098	0.600306	0	0	-22.4751	72.41967	1943.806	-30	-7.36982	1.166532	0	-0.3147	3.348528	369.9267	258.0845	-5.74827	-0.45501	-6.686861892	-45.7746		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.25051	2.128481	36.43485	0.588625	1.289346	2.273452	143.0164	0.304408	117.725	257.8693	295.7604	-25.8211	-6.17775	0.863413	-0.01791	0.025735	3.364389	400	397.3944	-3.69413	-1.62019	12.31144235	93.62408	0	1.447304
210375	3175	-0.24805	2.037247	35.9745	0.540531	1.248662	2.17282	143.1943	0.291722	108.1063	249.7325	407.8769	-26.1704	-6.20409	0.873018	-0.00383	0.036315	3.364389	400	389.1241	-3.762	-1.56907	12.31144235	93.62408		
162500	2925	-0.24539	1.933768	35.4343	0.487094	1.201283	2.058804	143.4154	0.277332	97.41883	240.2566	521.2565	-26.5783	-6.23768	0.884447	0	-0.0492	3.364389	394.9321	381.0249	-3.84371	-1.50953	12.31144235	93.62408		
100000	2700	-0.24307	1.838518	34.91931	0.439001	1.156451	1.954037	143.6388	0.264083	87.80012	231.2903	612.9109	-26.9651	-6.27248	0.89552	0	-0.06191	3.364389	389.038	373.8209	-3.92376	-1.4532	12.31144235	93.62408		
100000	2500	-0.24106	1.751959	34.43595	0.396251	1.114644	1.859045	143.8597	0.252036	79.25015	222.9289	705.4471	-27.3266	-6.30761	0.906086	0	-0.07416	3.364389	384.0424	367.1413	-4.00087	-1.40066	12.31144235	93.62408		
100000	2300	-0.23913	1.663407	33.92578	0.353501	1.070773	1.762153	144.1047	0.239705	70.70018	214.1546	798.9038	-27.7065	-6.34742	0.917441	0	-0.0874	3.364389	379.3119	360.1742	-4.08443	-1.34553	12.31144235	93.62408		
100000	2100	-0.23728	1.572609	33.3857	0.310751	1.024574	1.66318	144.3775	0.227049	62.15021	204.9148	893.3244	-28.1072	-6.39263	0.929714	0	-0.10171	3.364389	374.8904	352.8878	-4.17542	-1.28749	12.31144235	93.62408		
100000	1900	-0.23553	1.479282	32.81192	0.268001	0.975748	1.561947	144.6825	0.214026	53.60023	195.1497	988.7579	-28.5313	-6.44424	0.943067	0	-0.11718	3.364389	370.8321	345.2479	-4.27506	-1.22612	12.31144235	93.62408		
100000	1700	-0.23389	1.383042	32.20022	0.225251	0.923895	1.458211	145.0252	0.200576	45.05026	184.7791	1085.26	-28.9822	-6.50348	0.957714	0	-0.13394	3.364389	367.2091	337.2085	-4.3848	-1.16097	12.31144235	93.62408		
100000	1500	-0.23239	1.283442	31.54518	0.182501	0.868546	1.351704	145.4124	0.186628	36.50029	173.7092	1182.897	-29.4642	-6.57189	0.973933	0	-0.15212	3.364389	364.1151	328.7201	-4.50655	-1.09142	12.31144235	93.62408		
100000	1300	-0.23106	1.179887	30.84044	0.139752	0.809078	1.242082	145.8526	0.17209	27.95032	161.8157	1281.745	-29.9826	-6.65145	0.99211	0	-0.17187	3.364389	361.6793	319.7195	-4.64266	-1.01669	12.31144235	93.62408		
100000	1100	-0.23415	1.080309	30.12764	0.097002	0.749154	1.141274	146.3232	0.158074	19.40035	149.8308	1381.79	-30	-6.73882	1.011052	0	-0.19117	3.364389	359.5013	310.7495	-4.78637	-0.94138	12.31144235	93.62408		
133333	900	-0.2379	0.977012	29.36565	0.054252	0.684857	1.03844	146.8548	0.143479	10.85038	136.9713	1483.111	-30	-6.83979	1.032488	0	-0.21187	3.364389	358.162	301.3017	-4.94672	-0.86059	12.31144235	93.62408		
200000	700	-0.24228	0.868983	28.54724	0.011502	0.615201	0.93298	147.4593	0.12814	2.300411	123.0403	1585.81	-30	-6.95733	1.057238	0	-0.23418	3.364389	357.9375	291.3099	-5.12703	-0.77307	12.31144235	93.62408		
266667	500	-0.24741	0.755191	27.66659	-0.03125	0.539033	0.82461	0	0	-6.24956	107.8065	1701.669	-30	-7.09464	1.086491	0	-0.25832	3.364389	359.2278	280.7321	-5.33081	-0.67735	12.31144235	93.62408		
75000	300	-0.25341	0.634061	26.71961	-0.074	0.454648	0.71284	0	0	-14.7995	90.92952	1817.527	-30	-7.25496	1.122243	0	-0.28465	3.364389	362.7041	269.5453	-5.5614	-0.57131	12.31144235	93.62408		
0	100	-0.26036	0.502847	25.70776	-0.11675	0.359238	0.596588	0	0	-23.3495	71.84754	1933.386	-30	-7.43968	1.168311	0	-0.31395	3.364389	369.6507	257.7955	-5.81995	-0.45142	12.31144235	93.62408		
0	3400	-0.26132	2.268886	36.58291	0.637404	1.37016	2.42178	142.9612	0.324363	127.4808	274.032	293.8867	-25.3013	-6.29606	0.798095	0.008943	0.008943	3.395076	400	400	-3.77623	-1.72174	12.87373066	116.5826	0	1.529976
210375	3175	-0.25424	2.141514	36.3286	0.586563	1.30071	2.286841	143.0566	0.306358	117.3127	260.1419	404.7472	-25.7719	-6.25148	0.862075	-0.01596	0.018306	3.395076	400	399.2171	-3.75493	-1.63447	12.87373066	116.5826		
162500	2925	-0.25134	2.033943	35.78543	0.530074	1.252525	2.168087	143.2702	0.291403	106.0148	250.505	516.8914	-26.1833	-6.28384	0.873373	0	-0.03098	3.395076	399.8029	389.5108	-3.83654	-1.57392	12.87373066	116.5826		
100000	2700	-0.24881	1.934978	35.26748	0.479233	1.206939	2.058969	143.4865	0.277643	95.84662	241.3878	607.573	-26.5735	-6.31744	0.88431	0	-0.04355	3.395076	393.3138	382.1343	-3.9165	-1.51665	12.87373066	116.5826		
100000	2500	-0.24662	1.845109	34.78112	0.434041	1.164451	1.960056	143.7009	0.265144	86.80828	232.8902	699.1505	-26.938	-6.35156	0.894736	0	-0.05571	3.395076	387.7824	375.296	-3.99358	-1.46324	12.87373066	116.5826		
100000	2300	-0.2445	1.753219	34.26765	0.38885	1.119871	1.859162	143.9392	0.252357	77.76994	223.9741	791.663	-27.3212	-6.39027	0.905929	0	-0.06889	3.395076	382.5092	368.1614	-4.07711	-1.40723	12.87373066	116.5826		
100000	2100	-0.24246	1.659069	33.72383	0.343658	1.072948	1.756121	144.2051	0.239246	68.73159	214.5895	885.1543	-27.7254	-6.43437	0.918012	0	-0.08318	3.395076	377.5356	360.7	-4.16811	-1.34826	12.87373066	116.5826		
100000	1900	-0.24053	1.562358	33.14595	0.298466	1.023365	1.650731	144.503	0.225765	59.69325	204.673	979.6738	-28.1531	-6.48486	0.931143	0	-0.09869	3.395076	372.914	352.8733	-4.26777	-1.28596	12.87373066	116.5826		
100000	1700	-0.23871	1.462731	32.52944	0.253275	0.970749	1.542766	144.8385	0.21186	50.6549	194.1497	1075.278	-28.6078	-6.54302	0.945519	0	-0.11553	3.395076	368.7118	344.6382	-4.37764	-1.21984	12.87373066	116.5826		
100000	1500	-0.23703	1.359712	31.869	0.208083	0.914602	1.431924	145.2184	0.197455	41.61656	182.9204	1172.032	-29.0937	-6.6103	0.961411	0	-0.13385	3.395076	365.0191	335.9383	-4.49959	-1.14929	12.87373066	116.5826		
100000	1300	-0.23552	1.252736	31.1579	0.162891	0.85433	1.317879	145.6513	0.182463	32.57821	170.8659	1270.013	-29.616	-6.6888	0.979175	0	-0.15381	3.395076	361.9561	326.711	-4.63607	-1.07355	12.87373066	116.5826		
100000	1100	-0.23565	1.143924	30.40404	0.117699	0.79057	1.204359	146.1377	0.16717	23.53987	158.114	1369.278	-30	-6.77927	0.998773	0	-0.17487	3.395076	359.5104	317.0784	-4.78706	-0.99343	12.87373066	116.5826		
133333	900	-0.23943	1.036927	29.62772	0.072508	0.724994	1.096968	146.6686	0.152085	14.50153	144.9988	1469.842	-30	-6.88071	1.019815	0	-0.19603	3.395076	357.5502	307.3122	-4.94987	-0.91103	12.87373066	116.5826		
200000	700	-0.24385	0.92514	28.79188	0.027316	0.653973	0.986835	147.2749	0.13625	5.463183	130.7945	1571.808	-30	-6.99948	1.044045	0	-0.21887	3.395076	356.6625	296.9644	-5.13365	-0.82179	12.87373066	116.5826		
266667	500	-0.24907	0.807542	27.88969	-0.01788	0.576345	0.873692	0	0	-3.57516	115.269	1687.667	-30	-7.13921	1.072578	0	-0.24361	3.395076	357.2222	285.9802	-5.3424	-0.72424	12.87373066	116.5826		
75000	300	-0.25525	0.682637	26.91519	-0.06307	0.490453	0.757132	0	0	-12.6135	98.09069	1803.525	-30	-7.30398	1.107246	0	-0.27055	3.395076	359.8455	274.3196	-5.58042	-0.61631	12.87373066	116.5826		
0	100	-0.26251	0.547915	25.86661	-0.10826	0.393659	0.636298	0	0	-21.6518	78.73189	1919.384	-30	-7.49694	1.151448	0	-0.30033	3.395076	365.6759	261.9959	-5.85082	-0.49467	12.87373066	116.5826		
0	3400	-0.27171	2.407996	36.71276	0.685936	1.450353	2.568361	142.9137	0.344136	137.1873	290.0705	290.4073	-24.8065	-6.40004	0.723066	0.043419	0.043419	3.413568	400	400	-3.85446	-1.82251	-4.085198757	138.9344	0	1.596982
210375	3175	-0.26364	2.270639	36.47083	0.631794	1.375211	2.422783	143.0029	0.324708	126.3587	275.0421	399.7321	-25.2949	-6.34618	0.795134	0.013561	0.013561	3.413568	400	400	-3.82295	-1.72808	-4.085198757	138.9344		
162500	2925	-0.25579	2.123492	36.13672	0.571635	1.296066	2.266315	143.1305	0.303936	114.327	259.2132	510.7984	-25.8399	-6.30351	0.863927	-0.01072	0.016819	3.413568	400	397.9612	-3.81095	-1.62864	-4.085198757	138.9344		
100000	2700	-0.25302	2.019755	35.60915	0.517492	1.249242	2.151756	143.3424	0.289517	103.4984	249.8485	600.645	-26.2385	-6.33621	0.874908	0	-0.02933	3.413568	397.8028	389.0985	-3.8915	-1.56979	-4.085198757	138.9344		
100000	2500	-0.25062	1.925551	35.11338	0.469365	1.205561	2.047865	143.5532	0.276419	93.87296	241.1123	691.4136	-26.6112	-6.36952	0.885381	0	-0.04152	3.413568	391.7003	382.0292	-3.96922	-1.51491	-4.085198757	138.9344		
100000	2300	-0.2483	1.829254	34.58933	0.421238	1.159715	1.941877	143.7884	0.263026	84.24755	231.9431	783.1447	-27.0034	-6.40751	0.896627	0	-0.05479	3.413568	385.8579	374.65	-4.05359	-1.4573	-4.085198757	138.9344		
100000	2100	-0.24606	1.730609	34.03363	0.373111	1.111434	1.833608	144.0519	0.249298	74.62215	222.2867	875.8838	-27.4172	-6.45104	0.908772	0	-0.06924	3.413568	380.3177	366.9265	-4.14565	-1.39663	-4.085198757	138.9344		
100000	1900	-0.24393	1.629296	33.4423	0.324984	1.060382	1.722835	144.3482	0.235186	64.99674	212.0765	969.6824	-27.8557	-6.50111	0.921974	0	-0.08499	3.413568	375.1331	358.8174	-4.24667	-1.33248	-4.085198757	138.9344		
100000	1700	-0.24192	1.52493	32.81052	0.276857	1.006158	1.609306	144.6833	0.220632	55.37133	201.2315	1064.599	-28.3222	-6.55903	0.936437	0	-0.10217	3.413568	370.373	350.2745	-4.35825	-1.26434	-4.085198757	138.9344		
100000	1500	-0.24005	1.417039	32.13236	0.22873	0.94826	1.492722	145.0643	0.205562	45.74592	189.6521	1160.703	-28.8213	-6.62647	0.952431	0	-0.12093	3.413568	366.1278	341.2407	-4.48244	-1.19158	-4.085198757	138.9344		
100000	1300	-0.23836	1.304992	31.40074	0.180603	0.88603	1.372701	145.5006	0.189877	36.12051	177.206	1258.073	-29.3586	-6.70555	0.970325	0	-0.14145	3.413568	362.5216	331.6426	-4.62183	-1.11339	-4.085198757	138.9344		
100000	1100	-0.23689	1.187988	30.60667	0.132476	0.818624	1.248788	146.0041	0.173451	26.49511	163.7248	1356.807	-29.9414	-6.79917	0.990635	0	-0.16396	3.413568	359.728	321.3939	-4.77986	-1.02868	-4.085198757	138.9344		
133333	900	-0.2403	1.07457	29.79468	0.084348	0.749925	1.133966	146.5518	0.15748	16.8697	149.9851	1456.902	-30	-6.90408	1.012193	0	-0.18623	3.413568	357.3543	311.0853	-4.94952	-0.94235	-4.085198757	138.9344		
200000	700	-0.24488	0.95695	28.92272	0.036221	0.675844	1.017492	147.1776	0.140842	7.244291	135.1688	1558.458	-30	-7.02715	1.03689	0	-0.21011	3.413568	356.0368	300.1999	-5.14099	-0.84927	-4.085198757	138.9344		
266667	500	-0.25035	0.833092	27.9776	-0.01191	0.594649	0.897739	0	0	-2.38112	118.9298	1674.316	-30	-7.17327	1.066077	0	-0.23605	3.413568	356.2292	288.6062	-5.35997	-0.74724	-4.085198757	138.9344		
75000	300	-0.25688	0.701368	26.95185	-0.06003	0.504516	0.774295	0	0	-12.0065	100.9032	1790.175	-30	-7.34744	1.10171	0	-0.26439	3.413568	358.5902	276.251	-5.61173	-0.63398	-4.085198757	138.9344		
0	100	-0.26466	0.559032	25.84218	-0.10816	0.402527	0.646278	0	0	-21.6319	80.50534	1906.034	-30	-7.55389	1.147469	0	-0.29578	3.413568	364.3573	263.136	-5.90059	-0.50582	-4.085198757	138.9344		
0	3400	-0.28128	2.600532	36.41741	0.734374	1.584877	2.753452	143.023	0.371936	146.8749	285.6046	285.6046	-24.1528	-6.43404	0.730639	0.016121	0.016121	3.422773	400	400	-3.90895	-1.79445	0.454395259	161.0238	0	1.658505
210375	3175	-0.27195	2.393005	36.62951	0.676717	1.444343	2.552001	142.9441	0.342066	135.3433	288.8687	393.5154	-24.8589	-6.41876	0.729754	0.04239	0.04239	3.422773	400	400	-3.87406	-1.81496	0.454395259	161.0238		
162500	2925	-0.26233	2.229427	36.34036	0.612653	1.35444	2.378786	143.0521	0.318924	122.5305	270.888	503.3196	-25.4452	-6.35465	0.816004	0.006516	0.006516	3.422773	400	400	-3.83666	-1.70199	0.454395259	161.0238		
100000	2700	-0.25609	2.096909	35.95246	0.554995	1.285824	2.236625	143.2031	0.300284	110.999	257.1648	592.4223	-25.9409	-6.33503	0.866689	-0.00547	0.018199	3.422773	400	395.7385	-3.85258	-1.61576	0.454395259	161.0238		
100000	2500	-0.25348	1.998063	35.44532	0.503743	1.240837	2.127474	143.4108	0.286544	100.7487	248.1674	682.4765	-26.3234	-6.3675	0.877276	0	-0.0304	3.422773	395.8496	387.7944	-3.93097	-1.55924	0.454395259	161.0238		
100000	2300	-0.25095	1.897025	34.90851	0.452492	1.193584	2.016078	143.6436	0.272496	90.49844	238.7169	773.525	-26.7262	-6.40473	0.888653	0	-0.04376	3.422773	389.4265	380.1546	-4.01622	-1.49986	0.454395259	161.0238		
100000	2100	-0.2485	1.793521	34.33844	0.401241	1.143776	1.902237	143.9056	0.258098	80.24818	228.7553	865.6154	-27.1518	-6.44764	0.90095	0	-0.0584	3.422773	383.3127	372.1502	-4.10942	-1.43727	0.454395259	161.0238		
100000	1900	-0.24617	1.687219	33.73074	0.34999	1.091064	1.785716	144.2016	0.2433	69.99792	218.2128	958.8019	-27.6033	-6.4973	0.914331	0	-0.07442	3.422773	377.5634	363.7374	-4.21194	-1.37103	0.454395259	161.0238		
100000	1700	-0.24395	1.577699	33.08023	0.298738	1.035007	1.66623	144.5379	0.228037	59.74766	207.0014	1053.146	-28.0844	-6.55508	0.929008	0	-0.09197	3.422773	372.2504	354.862	-4.32548	-1.30059	0.454395259	161.0238		
100000	1500	-0.24189	1.464441	32.38048	0.247487	0.97506	1.543442	144.9223	0.21223	49.4974	195.0121	1148.721	-28.5999	-6.62275	0.945265	0	-0.11124	3.422773	367.4686	345.4601	-4.45222	-1.22526	0.454395259	161.0238		
100000	1300	-0.24002	1.346779	31.62361	0.196236	0.910521	1.416945	145.3649	0.195774	39.24714	182.1042	1245.611	-29.1559	-6.70267	0.963487	0	-0.13242	3.422773	363.3479	335.4524	-4.59502	-1.14416	0.454395259	161.0238		
100000	1100	-0.23838	1.223835	30.79964	0.144984	0.840467	1.28623	145.8789	0.178532	28.99688	168.0934	1343.919	-29.7604	-6.79796	0.98422	0	-0.15576	3.422773	360.0718	324.7415	-4.75762	-1.05613	0.454395259	161.0238		
133333	900	-0.24044	1.10143	29.93602	0.093733	0.76726	1.16059	146.4541	0.161309	18.74662	153.452	1443.685	-30	-6.90787	1.006903	0	-0.17976	3.422773	357.4518	313.7103	-4.93683	-0.96414	0.454395259	161.0238		
200000	700	-0.24522	0.977217	29.02079	0.042482	0.68952	1.037151	147.1053	0.143754	8.496359	137.9039	1544.982	-30	-7.03602	1.032443	0	-0.20485	3.422773	355.793	302.2272	-5.13712	-0.86645	0.454395259	161.0238		
266667	500	-0.25096	0.846167	28.02415	-0.00877	0.603972	0.91008	0	0	-1.7539	120.7943	1660.84	-30	-7.18971	1.062818	0	-0.23223	3.422773	355.7603	289.9521	-5.36794	-0.75895	0.454395259	161.0238		
75000	300	-0.25792	0.706414	26.93686	-0.06002	0.508518	0.77891	0	0	-12.0042	101.7035	1776.699	-30	-7.3749	1.10024	0	-0.26226	3.422773	358.0982	276.8174	-5.63567	-0.639	0.454395259	161.0238		
0	100	-0.26629	0.554753	25.75476	-0.11127	0.399733	0.642641	0	0	-22.2544	79.9467	1892.558	-30	-7.59695	1.148992	0	-0.29572	3.422773	364.2473	262.8199	-5.94564	-0.50231	0.454395259	161.0238		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.29009	2.789635	36.17062	0.782656	1.716884	2.934613	143.1173	0.399245	156.5312	281.0726	281.0726	-23.5435	-6.45257	0.739057	-0.01117	0.011166	3.426381	400	400	-3.94754	-1.76598	-4.949781194	211.9587	0	1.710453
210375	3175	-0.27924	2.507713	36.80706	0.721132	1.507344	2.673754	142.8796	0.358301	144.2265	301.4689	387.6936	-24.4636	-6.47309	0.669788	0.067777	0.067777	3.426381	400	400	-3.90917	-1.89413	-4.949781194	211.9587		
162500	2925	-0.26899	2.335475	36.50605	0.652773	1.413718	2.490819	142.9897	0.333949	130.5545	282.7435	496.261	-25.062	-6.40596	0.759474	0.03074	0.03074	3.426381	400	400	-3.86999	-1.77647	-4.949781194	211.9587		
100000	2700	-0.25972	2.177054	36.22432	0.591249	1.326084	2.323336	143.0966	0.311529	118.2498	265.2168	584.5997	-25.6389	-6.34374	0.84361	-0.00441	0.004412	3.426381	400	400	-3.83378	-1.66636	-4.949781194	211.9587		
100000	2500	-0.2556	2.063573	35.76344	0.536561	1.271413	2.19967	143.2791	0.295667	107.3122	254.2826	674.0199	-26.0687	-6.35486	0.870202	-7.2E-05	0.021549	3.426381	400	392.792	-3.88699	-1.59766	-4.949781194	211.9587		
100000	2300	-0.25284	1.9572	35.21036	0.481873	1.222483	2.082256	143.5111	0.28088	96.37467	244.4965	764.4723	-26.4848	-6.39153	0.881807	0	-0.03505	3.426381	392.9996	384.8445	-3.97353	-1.53617	-4.949781194	211.9587		
100000	2100	-0.25018	1.848198	34.62193	0.427186	1.170832	1.962187	143.7734	0.265722	85.43712	234.1665	856.008	-26.9253	-6.43404	0.894369	0	-0.04993	3.426381	386.2879	376.514	-4.06839	-1.47127	-4.949781194	211.9587		
100000	1900	-0.24763	1.736215	33.99328	0.372498	1.11609	1.839212	144.0716	0.250139	74.49957	223.2179	948.6847	-27.3933	-6.4836	0.908063	0	-0.06632	3.426381	379.9569	367.745	-4.17304	-1.40248	-4.949781194	211.9587		
100000	1700	-0.24521	1.620782	33.31868	0.31781	1.057767	1.713002	144.4123	0.234061	63.56201	211.5533	1042.569	-27.8931	-6.54165	0.923119	0	-0.08439	3.426381	374.0838	358.4766	-4.28934	-1.32919	-4.949781194	211.9587		
100000	1500	-0.24295	1.501344	32.59091	0.263122	0.995272	1.583198	144.8042	0.217401	52.62446	199.0544	1137.738	-28.4299	-6.61022	0.939838	0	-0.10432	3.426381	368.7703	348.6388	-4.41972	-1.25066	-4.949781194	211.9587		
100000	1300	-0.24089	1.377142	31.8011	0.208435	0.927814	1.449321	145.2586	0.200042	41.6869	185.5629	1234.283	-29.0103	-6.69184	0.958643	0	-0.12635	3.426381	364.1584	338.1402	-4.56731	-1.16589	-4.949781194	211.9587		
100000	1100	-0.23909	1.247198	30.9379	0.153747	0.85436	1.3108	145.7903	0.181829	30.74935	170.8721	1332.317	-29.6436	-6.79007	0.980133	0	-0.15077	3.426381	360.4496	326.8696	-4.73635	-1.07359	-4.949781194	211.9587		
133333	900	-0.24036	1.115784	30.01864	0.099059	0.776366	1.174896	146.3974	0.163348	19.81179	155.2733	1431.907	-30	-6.90578	1.004124	0	-0.17647	3.426381	357.5824	315.0894	-4.92609	-0.97558	-4.949781194	211.9587		
200000	700	-0.24541	0.983732	29.04834	0.044371	0.693955	1.043465	147.085	0.144692	8.87424	138.791	1533.121	-30	-7.04111	1.031032	0	-0.20308	3.426381	355.696	302.8897	-5.13804	-0.87202	-4.949781194	211.9587		
266667	500	-0.25155	0.843966	27.98594	-0.01032	0.602733	0.907922	0	0	-2.06331	120.5466	1648.98	-30	-7.20531	1.063364	0	-0.23228	3.426381	355.6344	289.7912	-5.38454	-0.7574	-4.949781194	211.9587		
75000	300	-0.25907	0.694232	26.82026	-0.065	0.500163	0.76771	0	0	-13.0009	100.0325	1764.839	-30	-7.40563	1.103804	0	-0.26452	3.426381	358.3002	275.7135	-5.67332	-0.62851	-4.949781194	211.9587		
0	100	-0.26823	0.530466	25.54716	-0.11969	0.381924	0.621534	0	0	-23.9384	76.38484	1880.697	-30	-7.6483	1.157833	0	-0.30076	3.426381	365.5373	260.6652	-6.01053	-0.47993	-4.949781194	211.9587		
0	3400	-0.30169	3.005323	35.82607	0.831315	1.872315	3.138898	143.2537	0.430524	166.263	276.0944	276.0944	-22.885	-6.50202	0.749841	-0.0397	0.039696	3.4416	400	400	-4.01748	-1.7347	-2.145261887	164.8478	0	1.787427
210375	3175	-0.28887	2.63497	36.93239	0.766773	1.579325	2.808668	142.835	0.376366	153.3546	315.8649	381.316	-24.0395	-6.56296	0.602493	0.098273	0.098273	3.4416	400	400	-3.97589	-1.98458	-2.145261887	164.8478		
162500	2925	-0.27804	2.45628	36.62396	0.69506	1.483177	2.618281	142.9461	0.351116	139.0121	296.6353	488.504	-24.6393	-6.49384	0.694433	0.06053	0.06053	3.4416	400	400	-3.93564	-1.86376	-2.145261887	164.8478		
100000	2700	-0.26826	2.291928	36.33489	0.630519	1.393145	2.443969	143.0542	0.32787	126.1037	278.6289	575.7556	-25.218	-6.42982	0.780712	0.02466	0.02466	3.4416	400	400	-3.89848	-1.75062	-2.145261887	164.8478		
100000	2500	-0.25954	2.142729	36.06824	0.573148	1.310045	2.286452	143.1573	0.306747	114.6297	262.009	664.4175	-25.7674	-6.37132	0.860533	-0.00887	0.008875	3.4416	400	400	-3.86458	-1.6462	-2.145261887	164.8478		
100000	2300	-0.25646	2.031766	35.51614	0.515778	1.259532	2.163977	143.3811	0.291317	103.1556	251.9063	754.1389	-26.1917	-6.40479	0.873608	0	-0.0227	3.4416	397.0227	390.9495	-3.94846	-1.58272	-2.145261887	164.8478		
100000	2100	-0.25359	1.91903	34.92221	0.458408	1.207029	2.039572	143.6375	0.275645	91.68154	241.4059	844.9626	-26.6374	-6.44608	0.886125	0	-0.03749	3.4416	389.7591	382.4412	-4.04322	-1.51675	-2.145261887	164.8478		
100000	1900	-0.25084	1.803256	34.28729	0.401037	1.151378	1.912147	143.9298	0.259542	80.20748	230.2756	936.9474	-27.1112	-6.49441	0.899764	0	-0.05385	3.4416	382.873	373.4817	-4.14784	-1.44682	-2.145261887	164.8478		
100000	1700	-0.24822	1.683973	33.60546	0.343667	1.092084	1.781363	144.2648	0.242938	68.73341	218.4167	1030.161	-27.6173	-6.55126	0.914752	0	-0.07196	3.4416	376.4406	364.0083	-4.2642	-1.37231	-2.145261887	164.8478		
100000	1500	-0.24577	1.560609	32.86925	0.286297	1.028541	1.646839	144.6513	0.225744	57.25935	205.7083	1124.682	-28.161	-6.61866	0.931387	0	-0.092	3.4416	370.5624	353.9476	-4.39478	-1.29246	-2.145261887	164.8478		
100000	1300	-0.24352	1.432394	32.06944	0.228926	0.959946	1.508079	145.1008	0.207841	45.78528	191.9892	1220.604	-28.7492	-6.69916	0.950085	0	-0.11425	3.4416	365.3779	343.2044	-4.5428	-1.20627	-2.145261887	164.8478		
100000	1100	-0.24153	1.298333	31.1942	0.171556	0.885245	1.364489	145.6285	0.189074	34.31121	177.049	1318.04	-29.3911	-6.79646	0.971434	0	-0.13898	3.4416	361.0853	331.6621	-4.71262	-1.1124	-2.145261887	164.8478		
133333	900	-0.24068	1.158659	30.23737	0.114186	0.803791	1.217621	146.2491	0.169453	22.83715	160.7583	1417.111	-30	-6.91446	0.99602	0	-0.16616	3.4416	357.8814	319.2844	-4.90838	-1.01005	-2.145261887	164.8478		
200000	700	-0.24577	1.022028	29.24456	0.056815	0.719443	1.080849	146.942	0.150179	11.36308	143.8886	1517.842	-30	-7.05085	1.022903	0	-0.19345	3.4416	355.4503	306.6934	-5.12388	-0.90406	-2.145261887	164.8478		
266667	500	-0.25201	0.877431	28.15398	-0.00055	0.625978	0.939729	0	0	-0.11098	125.1955	1633.701	-30	-7.21756	1.055205	0	-0.22346	3.4416	354.8424	293.1416	-5.37575	-0.78661	-2.145261887	164.8478		
75000	300	-0.25972	0.722554	26.95245	-0.05793	0.520759	0.793717	0	0	-11.585	104.1518	1749.56	-30	-7.42278	1.095601	0	-0.25666	3.4416	356.9569	278.5273	-5.6728	-0.65438	-2.145261887	164.8478		
0	100	-0.26923	0.553296	25.63279	-0.1153	0.399366	0.641612	0	0	-23.0591	79.87322	1865.418	-30	-7.67449	1.149513	0	-0.29396	3.4416	363.6179	262.8293	-6.02312	-0.50185	-2.145261887	164.8478		
0	3400	-0.31643	3.251331	35.39221	0.880331	2.054567	3.368993	143.4332	0.466349	176.0663	270.6536	270.6536	-22.1774	-6.58193	0.763383	-0.06939	0.069393	3.46804	400	400	-4.11803	-1.70052	-0.629952503	22.9262	6755.309	1.889691
210375	3175	-0.30097	2.775052	37.00904	0.813577	1.660509	2.957125	142.808	0.3963	162.7155	332.1019	374.373	-23.5894	-6.68733	0.527621	0.13401	0.13401	3.46804	400	400	-4.07311	-2.08659	-0.629952503	22.9262		
162500	2925	-0.28961	2.591935	36.69702	0.739406	1.562917	2.761364	142.9194	0.370438	147.8812	312.5835	480.0498	-24.1813	-6.6172	0.620752	0.095954	0.095954	3.46804	400	400	-4.03249	-1.96396	-0.629952503	22.9262		
100000	2700	-0.27937	2.423549	36.40437	0.672652	1.471531	2.582158	143.0279	0.346635	134.5304	294.3063	566.0855	-24.7524	-6.55231	0.708141	0.059762	0.059762	3.46804	400	400	-3.99504	-1.84913	-0.629952503	22.9262		
100000	2500	-0.27023	2.270717	36.13425	0.613315	1.387177	2.420234	143.1315	0.325011	122.663	277.4353	653.5253	-25.2946	-6.49303	0.788988	0.025905	0.025905	3.46804	400	400	-3.96092	-1.74313	-0.629952503	22.9262		
100000	2300	-0.26177	2.119903	35.82027	0.553978	1.304153	2.260446	143.2561	0.303689	110.7956	260.8306	742.3952	-25.8535	-6.44378	0.864298	-0.00328	0.006954	3.46804	400	398.7692	-3.94068	-1.6388	-0.629952503	22.9262		
100000	2100	-0.25873	2.00501	35.23189	0.494641	1.251641	2.133415	143.5018	0.287722	98.92819	250.3282	832.367	-26.2961	-6.48326	0.876515	0	-0.02138	3.46804	393.7731	389.834	-4.03394	-1.57281	-0.629952503	22.9262		
100000	1900	-0.25579	1.887134	34.60334	0.435304	1.196038	2.003351	143.782	0.271336	87.06079	239.2076	923.4985	-26.7663	-6.52952	0.889799	0	-0.03737	3.46804	386.3743	380.8277	-4.13678	-1.50294	-0.629952503	22.9262		
100000	1700	-0.25299	1.765833	33.92882	0.375967	1.136879	1.869933	144.1032	0.254462	75.19339	227.3758	1015.856	-27.268	-6.584	0.904359	0	-0.05512	3.46804	379.4045	371.3132	-4.25103	-1.4286	-0.629952503	22.9262		
100000	1500	-0.25034	1.640541	33.20117	0.31663	1.073572	1.732764	144.4739	0.237015	63.32599	214.7144	1109.516	-27.8063	-6.64852	0.920469	0	-0.07482	3.46804	372.9563	361.2159	-4.37902	-1.34905	-0.629952503	22.9262		
100000	1300	-0.24789	1.510558	32.41142	0.257293	1.005371	1.591393	144.9048	0.218887	51.45858	201.0742	1204.569	-28.3877	-6.7257	0.938504	0	-0.0967	3.46804	367.1554	350.4461	-4.52385	-1.26335	-0.629952503	22.9262		
100000	1100	-0.2457	1.374928	31.5482	0.197956	0.931274	1.445225	145.4106	0.199929	39.59118	186.2549	1301.123	-29.0209	-6.81888	0.958993	0	-0.12107	3.46804	362.1803	338.8878	-4.68966	-1.17024	-0.629952503	22.9262		
133333	900	-0.24383	1.232369	30.59683	0.138619	0.849924	1.29352	146.0106	0.179939	27.72378	169.9848	1399.314	-29.7176	-6.9329	0.982718	0	-0.1483	3.46804	358.2938	326.3939	-4.88216	-1.06802	-0.629952503	22.9262		
200000	700	-0.24641	1.089551	29.58718	0.079282	0.763863	1.147228	146.6972	0.159834	15.85638	152.7725	1499.206	-30	-7.0679	1.009227	0	-0.17662	3.46804	355.3435	313.4008	-5.09881	-0.95987	-0.629952503	22.9262		
266667	500	-0.25246	0.943644	28.5044	0.019945	0.671237	1.003239	147.4919	0.13918	3.988979	134.2473	1600.91	-30	-7.22966	1.039857	0	-0.20653	3.46804	353.7793	299.7506	-5.34631	-0.84348	-0.629952503	22.9262		
75000	300	-0.25998	0.787989	27.30905	-0.03939	0.567404	0.854417	0	0	-7.87842	113.4809	1716.769	-30	-7.42959	1.077679	0	-0.23956	3.46804	354.6347	285.0039	-5.63892	-0.713	-0.629952503	22.9262		
0	100	-0.26934	0.619151	25.9894	-0.09873	0.44854	0.699939	0	0	-19.7458	89.708	1832.627	-30	-7.67751	1.127045	0	-0.27641	3.46804	359.3731	269.088	-5.98683	-0.56364	-0.629952503	22.9262		
0	3400	-0.3316	3.522726	34.87796	0.928727	2.2624	3.616232	143.6573	0.506065	185.7453	264.9243	264.9243	-21.446	-6.64183	0.753762	-0.08143	0.099332	3.46937	400	393.9269	-4.22354	-1.66452	-0.022530454	-0.00986	6757.899	1.951398
210375	3175	-0.30807	2.885066	37.18535	0.858362	1.718632	3.075071	142.747	0.411835	171.6723	343.7264	367.5025	-23.2475	-6.73279	0.472363	0.15659	0.15659	3.46937	400	400	-4.10079	-2.15963	-0.022530454	-0.00986		
162500	2925	-0.29611	2.69436	36.86425	0.780178	1.618075	2.870684	142.8592	0.384914	156.0356	323.615	472.0746	-23.8466	-6.66005	0.568223	0.117752	0.117752	3.46937	400	400	-4.05855	-2.03327	-0.022530454	-0.00986		
100000	2700	-0.28532	2.518965	36.5627	0.709813	1.523834	2.683536	142.9687	0.360133	141.9626	304.7669	557.2565	-24.4255	-6.59272	0.65823	0.080739	0.080739	3.46937	400	400	-4.01964	-1.91485	-0.022530454	-0.00986		
100000	2500	-0.2757	2.359736	36.28397	0.647266	1.436775	2.514393	143.0736	0.337616	129.4533	287.355	643.8724	-24.976	-6.53119	0.741556	0.04605	0.04605	3.46937	400	400	-3.98419	-1.80546	-0.022530454	-0.00986		
100000	2300	-0.26604	2.197074	35.99441	0.58472	1.346319	2.342407	143.1864	0.314591	116.9439	269.2638	732.0053	-25.5645	-6.46795	0.828342	0.009535	0.009535	3.46937	400	400	-3.94782	-1.69179	-0.022530454	-0.00986		
100000	2100	-0.2603	2.059397	35.50606	0.522173	1.276927	2.193473	143.3853	0.295287	104.4346	255.3855	821.4516	-26.0847	-6.46737	0.870647	0	-0.01416	3.46937	397.3054	393.9572	-3.99214	-1.60458	-0.022530454	-0.00986		
100000	1900	-0.25715	1.936558	34.86277	0.459626	1.219783	2.057792	143.6641	0.278214	91.92523	243.9567	912.0928	-26.5671	-6.51289	0.884131	0	-0.03029	3.46937	389.3322	384.6747	-4.09599	-1.53279	-0.022530454	-0.00986		
100000	1700	-0.25414	1.810138	34.17113	0.397079	1.158923	1.918546	143.9853	0.260633	79.41588	231.7846	1003.998	-27.0826	-6.56686	0.898929	0	-0.04827	3.46937	381.8006	374.8579	-4.21163	-1.4563	-0.022530454	-0.00986		
100000	1500	-0.25129	1.679519	33.42353	0.334533	1.0937	1.775296	144.3579	0.242452	66.90653	218.7399	1097.248	-27.6366	-6.63121	0.915332	0	-0.06833	3.46937	374.8087	364.4238	-4.34154	-1.37434	-0.022530454	-0.00986		
100000	1300	-0.24865	1.54394	32.61022	0.271986	1.023309	1.627536	144.7935	0.223552	54.39719	204.6617	1191.938	-28.2361	-6.70868	0.933733	0	-0.09075	3.46937	368.4891	353.2743	-4.48904	-1.28589	-0.022530454	-0.00986		
100000	1100	-0.24627	1.40238	31.71866	0.209439	0.946675	1.474625	145.3078	0.203777	41.88784	189.335	1288.184	-28.8905	-6.80288	0.954694	0	-0.11584	3.46937	363.0308	341.2838	-4.6586	-1.18959	-0.022530454	-0.00986		
133333	900	-0.24423	1.253433	30.73268	0.146892	0.862311	1.315739	145.9221	0.182904	29.37849	172.4623	1386.129	-29.6126	-6.91908	0.979054	0	-0.14401	3.46937	358.7159	328.2882	-4.85645	-1.08358	-0.022530454	-0.00986		
200000	700	-0.24608	1.102279	29.67207	0.084346	0.77185	1.159923	146.6374	0.161635	16.86915	154.37	1485.866	-30	-7.05926	1.006737	0	-0.17391	3.46937	355.5187	314.6019	-5.08261	-0.96992	-0.022530454	-0.00986		
266667	500	-0.25239	0.949018	28.53725	0.021799	0.674825	1.00844	147.4669	0.139949	4.359799	134.9649	1587.501	-30	-7.22786	1.038654	0	-0.20525	3.46937	353.7456	300.2767	-5.34124	-0.84798	-0.022530454	-0.00986		
75000	300	-0.26032	0.785009	27.27812	-0.04075	0.56544	0.851611	0	0	-8.14955	113.088	1703.36	-30	-7.43862	1.078466	0	-0.24006	3.46937	354.6283	284.7363	-5.64962	-0.71053	-0.022530454	-0.00986		
0	100	-0.2703	0.606217	25.8809	-0.10329	0.439211	0.688456	0	0	-20.6589	87.84211	1819.219	-30	-7.70286	1.131291	0	-0.27913	3.46937	359.8885	267.898	-6.01966	-0.55192	-0.022530454	-0.00986		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.34908	3.830197	34.28335	0.976971	2.504151	3.890248	143.9317	0.551287	195.3941	258.7581	258.7581	-20.6735	-6.7072	0.735831	-0.08697	0.129932	3.464151	400	385.3098	-4.3456	-1.62578	0.015117596	-0.00787	6747.733	2.003824
210375	3175	-0.31381	2.986106	37.3839	0.902654	1.769645	3.183984	142.68	0.426058	180.5308	353.929	360.3132	-22.9421	-6.75729	0.423269	0.175111	0.175111	3.464151	400	400	-4.11029	-2.22373	0.015117596	-0.00787		
162500	2925	-0.30121	2.787139	37.05303	0.82008	1.665848	2.970284	142.7927	0.397983	164.0161	333.1696	463.9077	-23.5513	-6.68154	0.52215	0.135435	0.135435	3.464151	400	400	-4.06609	-2.09331	0.015117596	-0.00787		
100000	2700	-0.28986	2.604131	36.74172	0.745764	1.568504	2.774581	142.9032	0.372139	149.1528	313.7008	548.3443	-24.1409	-6.61145	0.615041	0.097552	0.097552	3.464151	400	400	-4.02542	-1.97098	0.015117596	-0.00787		
100000	2500	-0.27975	2.437966	36.45344	0.679705	1.478511	2.59767	143.0094	0.348652	135.941	295.7022	634.2514	-24.7025	-6.54738	0.701089	0.061981	0.061981	3.464151	400	400	-3.98841	-1.85789	0.015117596	-0.00787		
100000	2300	-0.2696	2.268146	36.1536	0.613646	1.384901	2.41771	143.1239	0.324626	122.7292	276.9801	721.7166	-25.304	-6.48149	0.790801	0.024454	0.024454	3.464151	400	400	-3.95041	-1.74027	0.015117596	-0.00787		
100000	2100	-0.26094	2.105518	35.76903	0.547587	1.296986	2.244671	143.2768	0.301672	109.5174	259.3972	810.7243	-25.9081	-6.43843	0.865791	-0.00162	0.009419	3.464151	400	397.3815	-3.94285	-1.62979	0.015117596	-0.00787		
100000	1900	-0.25758	1.977111	35.10677	0.481528	1.238005	2.102754	143.5561	0.283826	96.3056	247.6009	900.9691	-26.4059	-6.48342	0.879587	0	-0.02574	3.464151	392.184	387.5957	-4.04816	-1.55567	0.015117596	-0.00787		
100000	1700	-0.25435	1.844885	34.39322	0.415469	1.175067	1.956986	143.8797	0.265442	83.0938	235.0134	992.5251	-26.9389	-6.53713	0.894762	0	-0.04405	3.464151	384.0769	377.4235	-4.16579	-1.47659	0.015117596	-0.00787		
100000	1500	-0.25129	1.708196	33.61981	0.34941	1.107493	1.806905	144.2575	0.24642	69.882	221.4986	1085.478	-27.513	-6.60172	0.911626	0	-0.06462	3.464151	376.5376	366.5926	-4.29843	-1.39168	0.015117596	-0.00787		
100000	1300	-0.24846	1.566198	32.77575	0.283351	1.034391	1.651941	144.7023	0.226632	56.6702	206.8783	1179.931	-28.1359	-6.68013	0.930606	0	-0.08773	3.464151	369.7106	354.9932	-4.4497	-1.29981	0.015117596	-0.00787		
100000	1100	-0.2459	1.417743	31.84712	0.217292	0.954553	1.491357	145.2313	0.205901	43.45841	190.9107	1276.007	-28.818	-6.77634	0.952323	0	-0.11375	3.464151	363.8039	342.4821	-4.62453	-1.19949	0.015117596	-0.00787		
133333	900	-0.24371	1.261251	30.8155	0.151233	0.866311	1.324221	145.8686	0.183977	30.24661	173.2622	1373.863	-29.5738	-6.89621	0.977709	0	-0.14316	3.464151	359.1316	328.874	-4.82988	-1.08861	0.015117596	-0.00787		
200000	700	-0.24547	1.101662	29.6975	0.085174	0.77102	1.159472	146.6196	0.161525	17.03481	154.204	1473.61	-30	-7.04278	1.006857	0	-0.17466	3.464151	355.7248	314.4551	-5.06706	-0.96886	0.015117596	-0.00787		
266667	500	-0.25214	0.939553	28.49591	0.019115	0.668299	0.999344	147.4984	0.138583	3.823007	133.6599	1575.367	-30	-7.22103	1.040776	0	-0.20783	3.464151	353.9227	299.3094	-5.34048	-0.83978	0.015117596	-0.00787		
75000	300	-0.26062	0.765245	27.15445	-0.04694	0.551564	0.833185	0	0	-9.38879	110.3128	1691.226	-30	-7.44681	1.083754	0	-0.2449	3.464151	355.168	282.8028	-5.66996	-0.6931	0.015117596	-0.00787		
0	100	-0.27145	0.573642	25.65821	-0.113	0.415195	0.659687	0	0	-22.6006	83.03908	1807.085	-30	-7.73316	1.142339	0	-0.28694	3.464151	361.6632	264.8534	-6.06909	-0.52173	0.015117596	-0.00787		
0	3400	-0.36826	4.162385	33.68204	1.025198	2.768925	4.181647	144.2261	0.600324	205.0395	252.4654	252.4654	-19.8991	-6.77422	0.718129	-0.09234	0.160311	3.457605	400	376.5574	-4.46985	-1.58624	0.017489128	0.026333	6734.981	2.057719
210375	3175	-0.32013	3.130695	37.29666	0.946892	1.863669	3.326822	142.7093	0.446779	189.3784	352.5659	352.5659	-22.5188	-6.75448	0.418498	0.158158	0.158158	3.457605	400	400	-4.12081	-2.21517	0.017489128	0.026333		
162500	2925	-0.30601	2.87715	37.24337	0.859886	1.711257	3.06719	142.7273	0.410648	171.9772	342.2514	455.2304	-23.2718	-6.69845	0.478221	0.151777	0.151777	3.457605	400	400	-4.06985	-2.15037	0.017489128	0.026333		
100000	2700	-0.2941	2.68658	36.92268	0.781581	1.610898	2.862988	142.8384	0.383747	156.3162	322.1796	538.9587	-23.8717	-6.62556	0.573926	0.11309	0.11309	3.457605	400	400	-4.02738	-2.02426	0.017489128	0.026333		
100000	2500	-0.2835	2.513523	36.62522	0.711976	1.518047	2.678355	142.9457	0.359297	142.3952	303.6093	624.1929	-24.4439	-6.55895	0.662633	0.076695	0.076695	3.457605	400	400	-3.98876	-1.90757	0.017489128	0.026333		
100000	2300	-0.27286	2.336611	36.31537	0.642371	1.421375	2.490485	143.0616	0.334279	128.4742	284.2749	711.0254	-25.058	-6.4904	0.755191	0.03822	0.03822	3.457605	400	400	-3.94912	-1.7861	0.017489128	0.026333		
100000	2100	-0.26218	2.155428	35.99211	0.572766	1.320482	2.299075	143.1873	0.30863	114.5533	264.0963	799.5598	-25.7197	-6.41967	0.85205	-0.00252	0.002523	3.457605	400	400	-3.90831	-1.65932	0.017489128	0.026333		
100000	1900	-0.25784	2.01597	35.34623	0.503162	1.25497	2.145924	143.4528	0.289196	100.6323	250.994	889.4287	-26.2533	-6.452	0.87532	0	-0.02182	3.457605	395.0751	390.3096	-3.99968	-1.57699	0.017489128	0.026333		
100000	1700	-0.25439	1.877953	34.61101	0.433557	1.190002	1.993664	143.7784	0.270009	86.71134	238.0005	980.6554	-26.8036	-6.50537	0.890868	0	-0.04044	3.457605	386.3845	379.7907	-4.11916	-1.49535	0.017489128	0.026333		
100000	1500	-0.25113	1.735188	33.81205	0.363952	1.120107	1.836761	144.161	0.250146	72.79038	224.0213	1073.332	-27.3977	-6.57008	0.908193	0	-0.06147	3.457605	378.2913	368.569	-4.25437	-1.40752	0.017489128	0.026333		
100000	1300	-0.24809	1.586742	32.93741	0.294347	1.044302	1.674571	144.6145	0.229466	58.86942	208.8604	1167.567	-28.044	-6.64925	0.927759	0	-0.08525	3.457605	370.952	356.5222	-4.40924	-1.31227	0.017489128	0.026333		
100000	1100	-0.24535	1.431358	31.97156	0.224742	0.961261	1.506289	145.158	0.207773	44.94846	192.2521	1263.494	-28.7541	-6.74738	0.950243	0	-0.1122	3.457605	364.5941	343.4924	-4.5892	-1.20792	0.017489128	0.026333		
133333	900	-0.24301	1.267262	30.89357	0.155137	0.869116	1.330846	145.8186	0.18479	31.0275	173.8231	1361.282	-29.544	-6.87083	0.97668	0	-0.14284	3.457605	359.5664	329.2712	-4.80203	-1.09213	0.017489128	0.026333		
200000	700	-0.24476	1.099257	29.7179	0.085533	0.768968	1.157275	146.6054	0.161157	17.10654	153.7936	1461.061	-30	-7.02371	1.007326	0	-0.17594	3.457605	355.9542	314.1193	-5.0501	-0.96629	0.017489128	0.026333		
266667	500	-0.2518	0.928101	28.44711	0.015928	0.660373	0.98836	147.5357	0.136928	3.185575	132.0747	1562.966	-30	-7.21199	1.04337	0	-0.21098	3.457605	354.1578	298.1371	-5.33879	-0.82983	0.017489128	0.026333		
75000	300	-0.26088	0.743091	27.0196	-0.05368	0.535887	0.812633	0	0	-10.7354	107.1774	1678.825	-30	-7.4536	1.089828	0	-0.25042	3.457605	355.8644	280.6339	-5.69037	-0.6734	0.017489128	0.026333		
0	100	-0.27259	0.537756	25.41995	-0.12328	0.388445	0.628332	0	0	-24.6563	77.68902	1794.684	-30	-7.7633	1.155145	0	-0.29568	3.457605	363.9149	261.5414	-6.12001	-0.48812	0.017489128	0.026333		
0	3400	-0.39207	4.551616	32.99002	1.073595	3.085948	4.515585	144.5861	0.658101	214.7191	245.5289	245.5289	-19.0624	-6.86269	0.699251	-0.09637	0.191696	3.453553	400	366.7781	-4.62078	-1.54266	13.09266501	-52.7665	0	2.125221
210375	3175	-0.32783	3.31534	37.00042	0.991685	1.995827	3.502053	142.811	0.473467	198.337	343.8164	343.8164	-22.0005	-6.74315	0.442282	0.118477	0.118477	3.453553	400	400	-4.14067	-2.1602	13.09266501	-52.7665		
162500	2925	-0.3114	2.970797	37.4227	0.900673	1.758721	3.168058	142.6671	0.423835	180.1347	351.7441	445.53	-22.9879	-6.72337	0.432599	0.169119	0.169119	3.453553	400	400	-4.08075	-2.21001	13.09266501	-52.7665		
100000	2700	-0.29898	2.773674	37.09475	0.818763	1.655929	2.956412	142.7782	0.39602	163.7526	331.1858	528.5221	-23.5937	-6.64813	0.530562	0.129872	0.129872	3.453553	400	400	-4.03672	-2.08084	13.09266501	-52.7665		
100000	2500	-0.28793	2.594665	36.79016	0.745954	1.56078	2.765035	142.8857	0.370741	149.1908	312.156	613.0448	-24.1722	-6.5794	0.621391	0.092892	0.092892	3.453553	400	400	-3.99672	-1.96127	13.09266501	-52.7665		
100000	2300	-0.27685	2.411658	36.47241	0.673145	1.461664	2.570275	143.0023	0.344873	134.6289	292.3328	699.1933	-24.7938	-6.50863	0.716198	0.053739	0.053739	3.453553	400	400	-3.95571	-1.83672	13.09266501	-52.7665		
100000	2100	-0.26572	2.2242	36.14049	0.600335	1.358141	2.371802	143.129	0.318348	120.0671	271.6283	787.0751	-25.4644	-6.43562	0.815473	0.012205	0.012205	3.453553	400	400	-3.91351	-1.70664	13.09266501	-52.7665		
100000	1900	-0.25857	2.06107	35.60114	0.527526	1.274978	2.195912	143.3457	0.295446	105.5052	254.9956	876.5105	-26.0783	-6.42582	0.870468	0	-0.01685	3.453553	398.3162	393.539	-3.9532	-1.60214	13.09266501	-52.7665		
100000	1700	-0.25491	1.918171	34.85137	0.454717	1.20854	2.038148	143.6692	0.275582	90.9434	241.708	967.3386	-26.6409	-6.47817	0.886223	0	-0.03554	3.453553	389.0539	382.7589	-4.07329	-1.51865	13.09266501	-52.7665		
100000	1500	-0.25145	1.770337	34.0351	0.381908	1.136984	1.875491	144.0512	0.255019	76.38155	227.3968	1059.655	-27.249	-6.54208	0.903801	0	-0.05678	3.453553	380.4049	371.2454	-4.20954	-1.42873	13.09266501	-52.7665		
100000	1300	-0.24821	1.616563	33.13969	0.309099	1.059255	1.707233	144.5063	0.233604	61.81971	211.8509	1153.574	-27.9118	-6.6208	0.923689	0	-0.08093	3.453553	372.5332	358.865	-4.36604	-1.33106	13.09266501	-52.7665		
100000	1100	-0.24528	1.455519	32.14826	0.236289	0.97395	1.532506	145.0552	0.211131	47.25786	194.7899	1249.236	-28.6413	-6.71901	0.946597	0	-0.10844	3.453553	365.6771	345.4499	-4.54855	-1.22387	13.09266501	-52.7665		
133333	900	-0.24276	1.2853	31.03826	0.16348	0.879059	1.350155	145.7266	0.187302	32.69602	175.8118	1346.817	-29.4551	-6.84363	0.97362	0	-0.13989	3.453553	360.2054	330.7728	-4.76537	-1.10462	13.09266501	-52.7665		
200000	700	-0.24388	1.109441	29.81498	0.090671	0.774888	1.167618	146.5377	0.162575	18.13417	154.9775	1446.474	-30	-7.0003	1.005348	0	-0.1744	3.453553	356.3164	314.9883	-5.02124	-0.97372	13.09266501	-52.7665		
266667	500	-0.25114	0.930952	28.49224	0.017862	0.661946	0.991214	147.5012	0.137316	3.572326	132.3892	1548.344	-30	-7.1945	1.042722	0	-0.21085	3.453553	354.3264	298.3484	-5.31999	-0.8318	13.09266501	-52.7665		
75000	300	-0.26062	0.737365	26.99838	-0.05495	0.531697	0.807351	0	0	-10.9895	106.3394	1664.203	-30	-7.44657	1.091423	0	-0.25211	3.453553	356.1469	280.0499	-5.68703	-0.66813	13.09266501	-52.7665		
0	100	-0.27296	0.521122	25.31649	-0.12776	0.375918	0.613904	0	0	-25.5514	75.1836	1780.062	-30	-7.77298	1.161326	0	-0.29986	3.453553	365.0993	260.0199	-6.13928	-0.47238	13.09266501	-52.7665		
0	3400	-0.41365	4.923355	32.43495	1.121607	3.3881	4.831834	144.8916	0.713353	224.3214	239.333	239.333	-18.3265	-6.91825	0.682812	-0.10203	0.220548	3.440796	400	358.3286	-4.73171	-1.50373	-0.004563335	0.016786	6702.241	2.168045
210375	3175	-0.33335	3.478972	36.80942	1.035223	2.110397	3.65757	142.8788	0.497071	207.0445	336.0708	336.0708	-21.5606	-6.70936	0.463395	0.082486	0.082486	3.440796	400	400	-4.13444	-2.11153	-0.004563335	0.016786		
162500	2925	-0.3147	3.049319	37.628	0.93924	1.795383	3.253246	142.6001	0.434833	187.848	359.0767	437.0048	-22.7551	-6.71953	0.396367	0.180632	0.180632	3.440796	400	400	-4.06708	-2.25608	-0.004563335	0.016786		
100000	2700	-0.30169	2.84379	37.28973	0.852856	1.689244	3.032244	142.7116	0.405842	170.5711	337.8488	519.4172	-23.3746	-6.64108	0.497509	0.140527	0.140527	3.440796	400	400	-4.02086	-2.1227	-0.004563335	0.016786		
100000	2500	-0.29012	2.657089	36.97509	0.776069	1.590895	2.832337	142.8199	0.379485	155.2139	318.179	603.4041	-23.9673	-6.56935	0.591361	0.102646	0.102646	3.440796	400	400	-3.97886	-1.99912	-0.004563335	0.016786		
100000	2300	-0.27854	2.466181	36.64616	0.699283	1.48836	2.628847	142.938	0.352511	139.8567	297.672	689.066	-24.6053	-6.49553	0.689392	0.06246	0.06246	3.440796	400	400	-3.93585	-1.87027	-0.004563335	0.016786		
100000	2100	-0.26691	2.270538	36.30192	0.622497	1.381134	2.421384	143.0668	0.324839	124.4994	276.2269	776.5172	-25.2953	-6.41928	0.792157	0.019725	0.019725	3.440796	400	400	-3.89159	-1.73554	-0.004563335	0.016786		
100000	1900	-0.25789	2.089058	35.81364	0.545711	1.285461	2.227311	143.2587	0.299276	109.1422	257.0922	865.689	-25.9709	-6.3837	0.867511	-0.00206	0.015767	3.440796	400	395.4011	-3.90088	-1.61532	-0.004563335	0.016786		
100000	1700	-0.25401	1.939474	35.03615	0.468925	1.216539	2.062146	143.5871	0.278483	93.78501	243.3079	956.311	-26.5555	-6.43608	0.883801	0	-0.03487	3.440796	391.081	383.9734	-4.02357	-1.52871	-0.004563335	0.016786		
100000	1500	-0.25033	1.784566	34.18684	0.392139	1.142102	1.891651	143.9778	0.256938	78.42778	228.4204	1048.486	-27.1893	-6.50065	0.902047	0	-0.05674	3.440796	381.8612	371.9898	-4.16343	-1.43516	-0.004563335	0.016786		
100000	1300	-0.24689	1.623213	33.25142	0.315353	1.060969	1.715034	144.4475	0.234469	63.07056	212.1939	1142.339	-27.8824	-6.58104	0.922792	0	-0.08179	3.440796	373.4821	359.0651	-4.32501	-1.33322	-0.004563335	0.016786		
100000	1100	-0.24378	1.45389	32.2106	0.238567	0.97154	1.531288	145.0192	0.210842	47.71334	194.3081	1238.024	-28.6489	-6.68248	0.946841	0	-0.11053	3.440796	366.2146	345.0069	-4.51481	-1.22083	-0.004563335	0.016786		
133333	900	-0.24112	1.274383	31.03826	0.161781	0.87148	1.339061	145.7265	0.185711	32.35612	174.2959	1335.736	-29.5088	-6.81288	0.975467	0	-0.14365	3.440796	360.4869	329.5509	-4.74233	-1.0951	-0.004563335	0.016786		
200000	700	-0.24306	1.089629	29.74531	0.084994	0.761574	1.148173	146.5862	0.159725	16.9989	152.3148	1435.638	-30	-6.97828	1.009212	0	-0.1799	3.440796	356.4808	312.9406	-5.01208	-0.95699	-0.004563335	0.016786		
266667	500	-0.25088	0.899703	28.32897	0.008208	0.640612	0.961204	147.6264	0.13282	1.641675	128.1225	1537.913	-30	-7.18753	1.049929	0	-0.21886	3.440796	354.8202	295.2288	-5.33259	-0.80499	-0.004563335	0.016786		
75000	300	-0.26125	0.691944	26.7176	-0.06858	0.499271	0.76559	0	0	-13.7155	99.85411	1653.772	-30	-7.46342	1.104479	0	-0.26341	3.440796	357.8127	275.6426	-5.73155	-0.62739	-0.004563335	0.016786		
0	100	-0.27484	0.455531	24.89985	-0.14536	0.326059	0.557848	0	0	-29.0728	65.21185	1769.63	-30	-7.82235	1.187429	0	-0.31618	3.440796	370.3585	254.2026	-6.22518	-0.40972	-0.004563335	0.016786		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.4425	5.38265	31.74277	1.169829	3.770317	5.212474	145.2934	0.782063	233.9659	232.1639	232.1639	-17.4922	-7.0058	0.66431	-0.10562	0.250965	3.431691	400	348.2946	-4.88281	-1.45869	3.373393753	-12.305	6684.506	2.226547
210375	3175	-0.34001	3.6599	36.56339	1.079446	2.240441	3.827714	142.9684	0.52325	215.8892	327.2392	327.2392	-21.0943	-6.68299	0.489155	0.043143	0.043143	3.431691	400	400	-4.1378	-2.05604	3.373393753	-12.305		
162500	2925	-0.31885	3.133243	37.81836	0.97902	1.835377	3.344185	142.5396	0.446611	195.8039	367.0753	427.3513	-22.5115	-6.72752	0.357315	0.19383	0.19383	3.431691	400	400	-4.06387	-2.30634	3.373393753	-12.305		
100000	2700	-0.3053	2.920488	37.47225	0.888636	1.72655	3.115064	142.6508	0.41661	177.7272	345.31	509.1372	-23.1395	-6.64635	0.461004	0.153135	0.153135	3.431691	400	400	-4.01575	-2.16959	3.373393753	-12.305		
100000	2500	-0.29327	2.727233	37.14973	0.808295	1.625671	2.907803	142.7592	0.389338	161.659	325.1342	592.5286	-23.7411	-6.57215	0.557237	0.114636	0.114636	3.431691	400	400	-3.9721	-2.04282	3.373393753	-12.305		
100000	2300	-0.28122	2.529587	36.81216	0.727954	1.520416	2.696781	142.8778	0.361422	145.5908	304.0833	677.6298	-24.3897	-6.49576	0.657815	0.073715	0.073715	3.431691	400	400	-3.92739	-1.91055	3.373393753	-12.305		
100000	2100	-0.26913	2.327013	36.45825	0.647613	1.410269	2.481595	143.0076	0.332781	129.5226	282.0539	764.5599	-25.0922	-6.41688	0.763309	0.03012	0.03012	3.431691	400	400	-3.88143	-1.77214	3.373393753	-12.305		
100000	1900	-0.25785	2.125198	36.04549	0.567272	1.300075	2.26758	143.1662	0.304257	113.4544	260.015	853.3912	-25.8335	-6.34912	0.863751	-0.00867	0.013171	3.431691	400	398.4931	-3.85169	-1.63368	3.373393753	-12.305		
100000	1700	-0.25376	1.97003	35.24873	0.486931	1.22934	2.096204	143.4945	0.282689	97.38619	245.868	943.7161	-26.4339	-6.40075	0.880374	0	-0.03243	3.431691	393.5292	385.988	-3.97559	-1.54479	3.373393753	-12.305		
100000	1500	-0.24987	1.809261	34.37634	0.40659	1.152806	1.919157	143.8877	0.26033	81.31799	230.5612	1035.643	-27.0862	-6.4649	0.899036	0	-0.05462	3.431691	383.7385	373.6514	-4.11727	-1.44861	3.373393753	-12.305		
100000	1300	-0.24623	1.641679	33.41275	0.326249	1.069202	1.735573	144.3635	0.236999	65.24979	213.8404	1129.305	-27.8013	-6.54547	0.920317	0	-0.08021	3.431691	374.8291	360.3178	-4.2816	-1.34356	3.373393753	-12.305		
100000	1100	-0.24293	1.465629	32.33683	0.245908	0.976786	1.544347	144.9471	0.212439	49.18159	195.3571	1224.863	-28.5944	-6.6481	0.945088	0	-0.10976	3.431691	367.0934	345.777	-4.47559	-1.22743	3.373393753	-12.305		
133333	900	-0.24011	1.278665	31.11963	0.165567	0.872984	1.343968	145.6753	0.18627	33.11339	174.5968	1322.529	-29.4877	-6.78138	0.974741	0	-0.14403	3.431691	360.9999	329.7362	-4.70963	-1.09699	3.373393753	-12.305		
200000	700	-0.2421	1.08566	29.76943	0.085226	0.758337	1.144491	146.5694	0.159124	17.04519	151.6674	1422.483	-30	-6.95242	1.009994	0	-0.1818	3.431691	356.7902	312.4177	-4.9895	-0.95292	3.373393753	-12.305		
266667	500	-0.25029	0.886434	28.28092	0.004885	0.631261	0.948573	147.6636	0.130894	0.976984	126.2522	1524.932	-30	-7.17166	1.053058	0	-0.2227	3.431691	355.2081	293.8565	-5.32537	-0.79324	3.373393753	-12.305		
75000	300	-0.2613	0.667141	26.57685	-0.07546	0.4813	0.74298	0	0	-15.0912	96.2601	1640.791	-30	-7.46463	1.111927	0	-0.26985	3.431691	358.9424	273.234	-5.74792	-0.6048	3.373393753	-12.305		
0	100	-0.27576	0.413788	24.65196	-0.1558	0.293822	0.522803	0	0	-31.1594	58.76449	1756.649	-30	-7.84676	1.205705	0	-0.32686	3.431691	374.4194	250.664	-6.27184	-0.36921	3.373393753	-12.305		
0	3400	-0.47621	5.903688	31.01886	1.218002	4.209474	5.635088	145.7388	0.860397	243.6004	224.6368	224.6368	-16.6332	-7.09973	0.645352	-0.10848	0.281256	3.420448	400	337.7328	-5.04299	-1.41139	5.15981111	-18.4523	6662.605	2.283847
210375	3175	-0.34624	3.840919	36.33196	1.123506	2.371177	3.996946	143.0553	0.549464	224.7012	318.1036	318.1036	-20.6476	-6.64958	0.516862	0.003137	0.003137	3.420448	400	400	-4.13407	-1.99865	5.15981111	-18.4523		
162500	2925	-0.32247	3.213241	38.01352	1.018511	1.872257	3.431091	142.4793	0.45782	203.7021	374.4515	417.446	-22.2841	-6.72852	0.320964	0.205258	0.205258	3.420448	400	400	-4.05488	-2.35268	5.15981111	-18.4523		
100000	2700	-0.30839	2.993138	37.6596	0.924015	1.760733	3.193742	142.5899	0.426791	184.8029	352.1466	498.6483	-22.9212	-6.64455	0.427234	0.164003	0.164003	3.420448	400	400	-4.00476	-2.21254	5.15981111	-18.4523		
100000	2500	-0.29589	2.793201	37.32933	0.840018	1.657295	2.979014	142.6983	0.398585	168.0037	331.459	581.4883	-23.5323	-6.56779	0.525895	0.124903	0.124903	3.420448	400	400	-3.95932	-2.08256	5.15981111	-18.4523		
100000	2300	-0.28338	2.588707	36.98306	0.756022	1.549308	2.760356	142.8171	0.369712	151.2044	309.8616	666.0745	-24.192	-6.48875	0.629049	0.08327	0.08327	3.420448	400	400	-3.91283	-1.94686	5.15981111	-18.4523		
100000	2100	-0.27084	2.379067	36.61949	0.672026	1.436206	2.537324	142.9478	0.340082	134.4051	287.2411	752.5309	-24.9078	-6.40709	0.737319	0.038825	0.038825	3.420448	400	400	-3.86505	-1.80474	5.15981111	-18.4523		
100000	1900	-0.25824	2.163601	36.23708	0.588029	1.317332	2.309421	143.0916	0.309593	117.6059	263.4665	841.0002	-25.6891	-6.32246	0.851432	-0.00874	0.008744	3.420448	400	400	-3.81568	-1.65536	5.15981111	-18.4523		
100000	1700	-0.25321	1.997361	35.45452	0.504033	1.240123	2.126786	143.4069	0.286435	100.8066	248.0245	931.062	-26.3262	-6.36169	0.877353	0	-0.03091	3.420448	395.9334	387.6637	-3.926	-1.55834	5.15981111	-18.4523		
100000	1500	-0.2491	1.830535	34.55771	0.420037	1.161398	1.943004	143.803	0.263236	84.00732	232.2797	1022.778	-26.9981	-6.42546	0.896474	0	-0.05344	3.420448	385.5661	374.9621	-4.06959	-1.45941	5.15981111	-18.4523		
100000	1300	-0.24526	1.656501	33.56409	0.33604	1.0752	1.75224	144.2858	0.23901	67.20805	215.04	1116.287	-27.7366	-6.50629	0.918351	0	-0.0796	3.420448	376.126	361.2044	-4.23684	-1.3511	5.15981111	-18.4523		
100000	1100	-0.24178	1.473435	32.45051	0.252044	0.97961	1.553259	144.8828	0.213475	50.40879	195.922	1211.764	-28.5583	-6.61024	0.94393	0	-0.11001	3.420448	367.9311	346.1576	-4.43535	-1.23098	5.15981111	-18.4523		
133333	900	-0.2388	1.278645	31.18464	0.168048	0.871795	1.344389	145.6345	0.186215	33.60952	174.3591	1309.435	-29.4878	-6.74675	0.974744	0	-0.14552	3.420448	361.4972	329.499	-4.6765	-1.0955	5.15981111	-18.4523		
200000	700	-0.24103	1.077275	29.77406	0.084051	0.75219	1.136456	146.5662	0.157892	16.81025	150.438	1409.495	-30	-6.92392	1.011654	0	-0.18485	3.420448	357.1137	311.4525	-4.96706	-0.9452	5.15981111	-18.4523		
266667	500	-0.24964	0.868092	28.2064	5.49E-05	0.618393	0.931125	147.7214	0.128236	0.010982	123.6786	1512.185	-30	-7.15447	1.057454	0	-0.22785	3.420448	355.7206	291.9825	-5.31994	-0.77707	5.15981111	-18.4523		
75000	300	-0.26138	0.636093	26.40031	-0.08394	0.458659	0.714866	0	0	-16.7883	91.73189	1628.044	-30	-7.46672	1.121596	0	-0.27792	3.420448	360.4977	270.2447	-5.76876	-0.57635	5.15981111	-18.4523		
0	100	-0.2767	0.362329	24.36483	-0.16794	0.253571	0.480295	0	0	-33.5876	50.71425	1743.902	-30	-7.87129	1.230418	0	-0.34032	3.420448	380.3046	246.5472	-6.32224	-0.31863	5.15981111	-18.4523		
0	3400	-0.51625	6.503093	30.2586	1.266096	4.720749	6.110361	146.2348	0.950978	253.2191	216.6863	216.6863	-15.7437	-7.20035	0.625758	-0.1105	0.311383	3.406329	400	326.5415	-5.21316	-1.36144	5.478193555	-15.2158	6635.103	2.338603
210375	3175	-0.35177	4.019972	36.11952	1.167311	2.500895	4.16337	143.1372	0.575408	233.4622	308.6139	308.6139	-20.2239	-6.60693	0.546695	-0.03766	0.037663	3.406329	400	400	-4.12121	-1.93902	5.478193555	-15.2158		
162500	2925	-0.32539	3.288196	38.21632	1.05755	1.905256	3.512748	142.4184	0.4683	211.5101	381.0511	407.2473	-22.0752	-6.72028	0.287939	0.214486	0.214486	3.406329	400	400	-4.0382	-2.39415	5.478193555	-15.2158		
100000	2700	-0.31077	3.060492	37.85442	0.958766	1.790959	3.266932	142.5283	0.436207	191.7531	358.1918	487.9173	-22.7224	-6.63333	0.396891	0.172683	0.172683	3.406329	400	400	-3.98592	-2.25052	5.478193555	-15.2158		
100000	2500	-0.2978	2.853637	37.51622	0.870957	1.684884	3.044511	142.6364	0.407032	174.1914	336.9768	570.2599	-23.3442	-6.55385	0.498077	0.132984	0.132984	3.406329	400	400	-3.93854	-2.11722	5.478193555	-15.2158		
100000	2300	-0.28483	2.64205	37.16105	0.783149	1.574076	2.817985	142.7554	0.377167	156.6297	314.8151	654.3882	-24.0164	-6.472	0.603915	0.090635	0.090635	3.406329	400	400	-3.8901	-1.97798	5.478193555	-15.2158		
100000	2100	-0.27183	2.425098	36.78749	0.69534	1.457925	2.586871	142.8866	0.346514	139.068	291.5849	740.4317	-24.747	-6.38743	0.715071	0.045335	0.045335	3.406329	400	400	-3.84034	-1.83203	5.478193555	-15.2158		
100000	1900	-0.25879	2.20205	36.39383	0.607531	1.335728	2.350631	143.0319	0.314963	121.5063	267.1456	828.5396	-25.5461	-6.29974	0.832324	-0.00326	0.003256	3.406329	400	400	-3.78895	-1.67847	5.478193555	-15.2158		
100000	1700	-0.25223	2.020111	35.65135	0.519723	1.248162	2.152416	143.325	0.289532	103.9446	249.6324	918.3851	-26.2371	-6.31735	0.87487	0	-0.03062	3.406329	398.236	388.8763	-3.87404	-1.56844	5.478193555	-15.2158		
100000	1500	-0.24791	1.846903	34.72745	0.431914	1.167078	1.961575	143.7252	0.265446	86.38285	233.4156	1009.941	-26.9306	-6.38088	0.894523	0	-0.05353	3.406329	387.2853	375.7875	-4.01981	-1.46655	5.478193555	-15.2158		
100000	1300	-0.24387	1.666022	33.70036	0.344106	1.078046	1.763241	144.2169	0.240268	68.82113	215.6092	1103.355	-27.6951	-6.46216	0.917097	0	-0.08032	3.406329	377.3173	361.5741	-4.19041	-1.35467	5.478193555	-15.2158		
100000	1100	-0.24021	1.475463	32.54444	0.256297	0.978958	1.556049	144.8301	0.213691	51.25941	195.7916	1198.815	-28.5489	-6.56789	0.94363	0	-0.11169	3.406329	368.6809	345.9795	-4.39409	-1.23016	5.478193555	-15.2158		
133333	900	-0.23708	1.2722	31.22343	0.168488	0.866636	1.338097	145.6103	0.185245	33.6977	173.3272	1296.566	-29.5196	-6.70836	0.975838	0	-0.14861	3.406329	361.9533	328.6413	-4.64349	-1.08901	5.478193555	-15.2158		
200000	700	-0.23987	1.062199	29.74683	0.08068	0.741652	1.121824	146.5851	0.155703	16.13598	148.3305	1396.815	-30	-6.89256	1.01467	0	-0.18958	3.406329	357.454	309.825	-4.94594	-0.93196	5.478193555	-15.2158		
266667	500	-0.24897	0.841949	28.08877	-0.00713	0.600103	0.906303	0	0	-1.42573	120.0205	1512.674	-30	-7.13658	1.063865	0	-0.235	3.406329	356.4404	289.3448	-5.31863	-0.75409	5.478193555	-15.2158		
75000	300	-0.26156	0.595302	26.16599	-0.09494	0.428679	0.678263	0	0	-18.9874	85.73581	1628.533	-30	-7.47163	1.134935	0	-0.28851	3.406329	362.7858	266.3717	-5.79802	-0.53868	5.478193555	-15.2158		
0	100	-0.27749	0.294061	24.02535	-0.18275	0.199319	0.425081	0	0	-36.5492	39.86374	1744.391	-30	-7.8921	1.267941	0	-0.35884	3.406329	389.9649	241.6688	-6.3737	-0.25046	5.478193555	-15.2158		
0	3400	-0.57019	7.265509	29.36645	1.314186	5.381136	6.697615	146.8542	1.066971	262.8373	207.523	207.523	-14.741	-7.32821	0.603627	-0.11022	0.342576	3.389897	400	313.4669	-5.42072	-1.30387	20.55906248	-41.5964	0	2.397685
210375	3175	-0.35681	4.20311	35.90091	1.211106	2.635191	4.331844	143.2236	0.601985	242.2212	297.9255	297.9255	-19.8081	-6.55467	0.582093	-0.08184	0.081836	3.389897	400	400	-4.10071	-1.87187	20.55906248	-41.5964		
162500	2925	-0.32777	3.359688	38.426	1.096572	1.935348	3.590792	142.3574	0.478276	219.3144	387.0695	395.8932	-21.8795	-6.70496	0.257341	0.221974	0.221974	3.389897	400	400	-4.01566	-2.43196	20.55906248	-41.5964		
100000	2700	-0.31263	3.124519	38.05677	0.993491	1.818402	3.336689	142.4661	0.445138	198.6982	363.6803	476.0646	-22.5366	-6.61503	0.368885	0.179706	0.179706	3.389897	400	400	-3.96114	-2.28501	20.55906248	-41.5964		
100000	2500	-0.29921	2.910896	37.71112	0.901864	1.709826	3.106758	142.5735	0.415017	180.3728	341.9653	557.9426	-23.1687	-6.53282	0.472491	0.139498	0.139498	3.389897	400	400	-3.91176	-2.14857	20.55906248	-41.5964		
100000	2300	-0.2858	2.692377	37.34755	0.810237	1.596343	2.872554	142.6922	0.384181	162.0473	319.2685	641.6446	-23.853	-6.44818	0.580895	0.096526	0.096526	3.389897	400	400	-3.86133	-2.00596	20.55906248	-41.5964		
100000	2100	-0.27238	2.468288	36.96452	0.71861	1.477302	2.633558	142.8236	0.35253	143.7219	295.4604	727.3054	-24.598	-6.36073	0.694804	0.050468	0.050468	3.389897	400	400	-3.80954	-1.85638	20.55906248	-41.5964		
100000	1900	-0.25891	2.237835	36.56019	0.626982	1.351942	2.389177	142.9696	0.319942	125.3965	270.3884	815.081	-25.4144	-6.26998	0.815056	0.000953	0.000953	3.389897	400	400	-3.75608	-1.69885	20.55906248	-41.5964		
100000	1700	-0.25096	2.041268	35.85199	0.535355	1.254948	2.176354	143.2433	0.292398	107.071	250.9896	904.7273	-26.1548	-6.2682	0.872585	-0.00128	0.031053	3.389897	400	390.0167	-3.81865	-1.57696	20.55906248	-41.5964		
100000	1500	-0.24644	1.861738	34.90155	0.443728	1.171571	1.978549	143.6467	0.267433	88.74558	234.3141	996.1394	-26.8698	-6.33122	0.892769	0	-0.0543	3.389897	389.0582	376.407	-3.96625	-1.47219	20.55906248	-41.5964		
100000	1300	-0.2422	1.674078	33.84139	0.352101	1.079777	1.77274	144.1464	0.241312	70.42013	215.9554	1089.475	-27.6601	-6.41272	0.916042	0	-0.08168	3.389897	378.5612	361.7523	-4.13982	-1.35684	20.55906248	-41.5964		
100000	1100	-0.23835	1.476066	32.64326	0.260473	0.977239	1.557396	144.7752	0.213698	52.09469	195.4478	1184.934	-28.5461	-6.51983	0.943541	0	-0.11398	3.389897	369.4862	345.6215	-4.34829	-1.228	20.55906248	-41.5964		
133333	900	-0.23507	1.264333	31.26664	0.168846	0.86042	1.330387	145.5834	0.184066	33.76925	172.0839	1282.783	-29.5585	-6.66392	0.977181	0	-0.15229	3.389897	362.4765	327.6117	-4.60554	-1.08121	20.55906248	-41.5964		
200000	700	-0.23847	1.04572	29.72303	0.077219	0.730035	1.105879	146.6018	0.153304	15.44381	146.007	1383.241	-30	-6.85494	1.018012	0	-0.19489	3.389897	357.8859	308.0334	-4.91956	-0.91736	20.55906248	-41.5964		
266667	500	-0.24808	0.814101	27.97136	-0.01441	0.580434	0.879991	0	0	-2.88164	116.0867	1499.099	-30	-7.11255	1.070892	0	-0.2428	3.389897	357.3485	286.5295	-5.31227	-0.72938	20.55906248	-41.5964		
75000	300	-0.26152	0.551812	25.9276	-0.10604	0.396323	0.63965	0	0	-21.2071	79.26456	1614.958	-30	-7.47068	1.150045	0	-0.30004	3.389897	365.6489	262.3054	-5.82262	-0.49802	20.55906248	-41.5964		
0	100	-0.27696	0.212576	23.73223	-0.19766	0.133284	0.360715	0	0	-39.5325	26.65677	1730.817	-30	-7.8781	1.322852	-0.00713	0.382825	3.389897	400	237.7001	-6.38776	-0.16748	20.55906248	-41.5964		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.69023	8.722448	27.83822	1.362368	6.669852	7.773615	148.0115	1.291023	272.4736	192.4501	192.4501	-13.1417	-7.62519	0.567981	-0.09974	0.381932	3.384275	400	291.2332	-5.8405	-1.21923	-40.58641565	-194.816	0	2.502299
210375	3175	-0.36546	4.450252	35.45871	1.255196	2.829598	4.551079	143.4052	0.638189	251.0391	280.8547	280.8547	-19.2735	-6.51643	0.645691	-0.14448	0.144478	3.384275	400	400	-4.10613	-1.76461	-40.58641565	-194.816		
162500	2925	-0.33413	3.52606	38.10832	1.136115	2.055812	3.749032	142.4506	0.502289	227.223	377.2565	377.2565	-21.4373	-6.68514	0.2841	0.180029	0.180029	3.384275	400	400	-4.03074	-2.3703	-40.58641565	-194.816		
100000	2700	-0.3167	3.200262	38.21094	1.028943	1.854623	3.418662	142.42	0.455781	205.7886	370.9246	456.8418	-22.3207	-6.62947	0.333688	0.19182	0.19182	3.384275	400	400	-3.96527	-2.33052	-40.58641565	-194.816		
100000	2500	-0.30278	2.980064	37.85835	0.933679	1.743609	3.181359	142.5271	0.42474	186.7357	348.7218	538.161	-22.9602	-6.54483	0.439622	0.151086	0.151086	3.384275	400	400	-3.9142	-2.19102	-40.58641565	-194.816		
100000	2300	-0.28888	2.754796	37.48705	0.838414	1.627504	2.939606	142.6459	0.39296	167.6829	325.5009	621.3355	-23.6534	-6.45766	0.550506	0.107472	0.107472	3.384275	400	400	-3.86203	-2.04512	-40.58641565	-194.816		
100000	2100	-0.27497	2.52377	37.09518	0.74315	1.505646	2.692874	142.778	0.360339	148.63	301.1292	706.5045	-24.4093	-6.36757	0.667066	0.060649	0.060649	3.384275	400	400	-3.80853	-1.89199	-40.58641565	-194.816		
100000	1900	-0.26104	2.286133	36.68087	0.647886	1.377212	2.440522	142.9253	0.326746	129.5772	275.4424	793.8299	-25.2389	-6.27413	0.790202	0.010212	0.010212	3.384275	400	400	-3.75332	-1.7306	-40.58641565	-194.816		
100000	1700	-0.25114	2.071238	36.03633	0.552622	1.267475	2.209622	143.1698	0.296539	110.5243	253.495	883.1899	-26.0392	-6.24457	0.86939	-0.00643	0.028514	3.384275	400	392.611	-3.78246	-1.59271	-40.58641565	-194.816		
100000	1500	-0.2464	1.885874	35.06462	0.457357	1.182116	2.005322	143.5745	0.270763	91.47147	236.4232	974.3625	-26.7714	-6.30711	0.889946	0	-0.05199	3.384275	390.8343	378.0667	-3.93172	-1.48544	-40.58641565	-194.816		
100000	1300	-0.24195	1.69199	33.97789	0.362093	1.087944	1.792561	144.0791	0.24378	72.41861	217.5889	1067.513	-27.5827	-6.38867	0.913713	0	-0.07983	3.384275	379.7762	363.015	-4.10786	-1.36711	-40.58641565	-194.816		
100000	1100	-0.23791	1.487208	32.74564	0.266829	0.982464	1.569686	144.7188	0.215227	53.36576	196.4929	1162.852	-28.4948	-6.49689	0.941902	0	-0.1129	3.384275	370.2057	346.4056	-4.32042	-1.23457	-40.58641565	-194.816		
133333	900	-0.23447	1.267879	31.32352	0.171565	0.861848	1.334372	145.5482	0.184537	34.31291	172.3696	1260.661	-29.541	-6.64401	0.976575	0	-0.15236	3.384275	362.8163	327.8009	-4.58444	-1.083	-40.58641565	-194.816		
200000	700	-0.23796	1.04071	29.71955	0.0763	0.726447	1.101052	146.6042	0.152573	15.26005	145.2894	1361.183	-30	-6.8414	1.019038	0	-0.19658	3.384275	358.0472	307.479	-4.90953	-0.91285	-40.58641565	-194.816		
266667	500	-0.24803	0.798978	27.88765	-0.01896	0.569914	0.865704	0	0	-3.7928	113.9827	1477.042	-30	-7.11127	1.074799	0	-0.24667	3.384275	357.7515	285.0473	-5.32032	-0.71615	-40.58641565	-194.816		
75000	300	-0.26228	0.52276	25.73882	-0.11423	0.37471	0.614187	0	0	-22.8457	74.94194	1592.901	-30	-7.49068	1.16071	0	-0.3072	3.384275	367.5977	259.6801	-5.85912	-0.47086	-40.58641565	-194.816		
0	100	-0.27503	0.133458	23.61168	-0.20949	0.067925	0.299829	0	0	-41.8985	13.58504	1708.759	-30	-7.82734	1.394024	-0.03512	0.408904	3.384275	400	237.901	-6.34797	-0.08535	-40.58641565	-194.816		
0	3400	-0.69854	8.964289	27.8503	1.410292	6.855461	7.982501	148.0019	1.326732	282.0583	190.3161	190.3161	-12.9092	-7.56095	0.562742	-0.11208	0.39935	3.357075	400	289.307	-5.79099	-1.21101	0.001706249	-0.01672	6539.163	2.524671
210375	3175	-0.36666	4.570163	35.5041	1.298448	2.905053	4.668091	143.3861	0.655298	259.6895	277.8069	277.8069	-19.0243	-6.4512	0.649479	-0.16577	0.165769	3.357075	400	400	-4.05625	-1.74546	0.001706249	-0.01672		
162500	2925	-0.33473	3.620276	38.14626	1.174177	2.111374	3.842357	142.4392	0.515669	234.8354	373.3577	373.3577	-21.1947	-6.62014	0.290856	0.157195	0.157195	3.357075	400	400	-3.98347	-2.34581	0.001706249	-0.01672		
100000	2700	-0.3161	3.248552	38.45116	1.062333	1.870124	3.471913	142.3502	0.462432	212.4666	374.0247	452.581	-22.1852	-6.57781	0.315675	0.19202	0.19202	3.357075	400	400	-3.91214	-2.34999	0.001706249	-0.01672		
100000	2500	-0.30177	3.02124	38.0912	0.962916	1.756556	3.226843	142.4557	0.430393	192.5832	351.3112	533.5789	-22.8378	-6.49008	0.424158	0.150853	0.150853	3.357075	400	400	-3.85863	-2.20729	0.001706249	-0.01672		
100000	2300	-0.28748	2.788719	37.71129	0.863499	1.637741	2.97717	142.5734	0.397597	172.6999	327.5481	616.4774	-23.5464	-6.39977	0.537717	0.106702	0.106702	3.357075	400	400	-3.80406	-2.05798	0.001706249	-0.01672		
100000	2100	-0.2732	2.550207	37.30973	0.764083	1.51293	2.722284	142.7049	0.363927	152.8165	302.5859	701.4223	-24.3203	-6.3064	0.657158	0.059189	0.059189	3.357075	400	400	-3.74808	-1.90115	0.001706249	-0.01672		
100000	1900	-0.25888	2.304818	36.88426	0.664666	1.381269	2.461513	142.852	0.329248	132.9332	276.2537	788.5834	-25.1716	-6.20947	0.78342	0.007892	0.007892	3.357075	400	400	-3.69034	-1.7357	0.001706249	-0.01672		
100000	1700	-0.2484	2.080338	36.23485	0.565249	1.266689	2.220586	143.0925	0.297681	113.0498	253.3377	877.8648	-26.0043	-6.17273	0.868428	-0.01127	0.032628	3.357075	400	392.8713	-3.71258	-1.59172	0.001706249	-0.01672		
100000	1500	-0.24345	1.887966	35.23053	0.465832	1.17868	2.00868	143.5024	0.270928	93.16646	235.736	969.0256	-26.7629	-6.2347	0.889703	0	-0.05651	3.357075	392.4475	377.3407	-3.86388	-1.48113	0.001706249	-0.01672		
100000	1300	-0.23881	1.686478	34.10254	0.366416	1.081248	1.787669	144.0184	0.242884	73.2831	216.2497	1062.243	-27.6065	-6.31661	0.914427	0	-0.08507	3.357075	380.8809	361.7895	-4.04348	-1.3587	0.001706249	-0.01672		
100000	1100	-0.2346	1.473195	32.81665	0.266999	0.971594	1.555673	144.6799	0.213142	53.39975	194.3188	1157.746	-28.5594	-6.42675	0.943966	0	-0.1193	3.357075	370.934	344.56	-4.26187	-1.2209	0.001706249	-0.01672		
133333	900	-0.23102	1.243923	31.32241	0.167582	0.845324	1.310005	145.5489	0.181052	33.5164	169.0649	1255.844	-29.6599	-6.57878	0.980701	0	-0.16053	3.357075	363.4079	325.153	-4.53586	-1.06223	0.001706249	-0.01672		
200000	700	-0.23586	1.007468	29.63637	0.068165	0.703445	1.068775	146.6625	0.147758	13.63304	140.689	1356.788	-30	-6.78475	1.02596	0	-0.20659	3.357075	358.7487	303.9804	-4.87484	-0.88394	0.001706249	-0.01672		
266667	500	-0.2466	0.751315	27.68051	-0.03125	0.535967	0.821034	0	0	-6.25031	107.1933	1472.646	-30	-7.07307	1.087555	0	-0.25999	3.357075	359.5849	280.2882	-5.31202	-0.67349	0.001706249	-0.01672		
75000	300	-0.26191	0.452572	25.37784	-0.13067	0.321332	0.553333	0	0	-26.1337	64.26638	1588.505	-30	-7.48085	1.188678	0	-0.32628	3.357075	373.7178	253.456	-5.88837	-0.40379	0.001706249	-0.01672		
0	100	-0.28082	0.056083	22.83407	-0.23009	0.005348	0.240989	0	0	-46.017	1.069531	1704.364	-30	-7.97958	1.406812	0	0	3.357075	0	0	-6.56608	-0.00672	0.001706249	-0.01672		
0	3400	-0.71919	9.262673	27.84668	1.458746	7.08474	8.245345	148.0048	1.37092	291.7491	187.7642	187.7642	-12.6334	-7.56936	0.556503	-0.12398	0.417836	3.360134	400	286.7618	-5.80399	-1.21859	-2.327314814	6.653931	6545.121	2.59948
210375	3175	-0.37675	4.776142	35.29439	1.343423	3.055966	4.859992	143.4749	0.685257	268.6846	273.6998	273.6998	-18.6111	-6.46633	0.658955	-0.19013	0.190126	3.360134	400	400	-4.08772	-1.71966	-2.327314814	6.653931		
162500	2925	-0.34309	3.793164	37.86533	1.215287	2.234792	4.008638	142.5249	0.540621	243.0573	367.703	367.703	-20.7636	-6.63196	0.30225	0.127752	0.127752	3.360134	400	400	-4.01943	-2.31028	-2.327314814	6.653931		
100000	2700	-0.32216	3.336509	38.56905	1.099964	1.914389	3.566866	142.3169	0.474841	219.9928	382.8778	446.2598	-21.9426	-6.61946	0.273766	0.20841	0.20841	3.360134	400	400	-3.94007	-2.40562	-2.327314814	6.653931		
100000	2500	-0.30734	3.103819	38.20463	0.997455	1.799026	3.31564	142.4219	0.442052	199.491	359.8052	526.6028	-22.5963	-6.52992	0.383947	0.166955	0.166955	3.360134	400	400	-3.88531	-2.26066	-2.327314814	6.653931		
100000	2300	-0.29257	2.865825	37.81965	0.894946	1.678309	3.059707	142.5392	0.408492	178.9892	335.6617	608.86	-23.3066	-6.43776	0.499281	0.122442	0.122442	3.360134	400	400	-3.82951	-2.10895	-2.327314814	6.653931		
100000	2100	-0.27782	2.621707	37.41237	0.792437	1.551453	2.798417	142.6706	0.37404	158.4874	310.2906	693.1798	-24.083	-6.34247	0.620607	0.074472	0.074472	3.360134	400	400	-3.7723	-1.94956	-2.327314814	6.653931		
100000	1900	-0.26305	2.370568	36.98027	0.689928	1.417594	2.531092	142.8181	0.33856	137.9856	283.5188	779.7345	-24.9377	-6.24359	0.748882	0.022616	0.022616	3.360134	400	400	-3.71336	-1.78135	-2.327314814	6.653931		
100000	1700	-0.24992	2.123872	36.43576	0.587419	1.286536	2.268503	143.0161	0.303748	117.4838	257.3072	868.6004	-25.8385	-6.16828	0.863888	-0.01774	0.027081	3.360134	400	396.8871	-3.68774	-1.61666	-2.327314814	6.653931		
100000	1500	-0.24476	1.92718	35.42344	0.48491	1.19751	2.051712	143.42	0.276396	96.98203	239.5021	959.3706	-26.6047	-6.22887	0.885196	0	-0.05082	3.360134	394.747	380.3895	-3.83888	-1.5048	-2.327314814	6.653931		
100000	1300	-0.23991	1.72123	34.28521	0.382401	1.098918	1.825561	143.9308	0.247738	76.48023	219.7837	1052.226	-27.4572	-6.30942	0.909962	0	-0.07937	3.360134	382.576	364.6128	-4.01854	-1.3809	-2.327314814	6.653931		
100000	1100	-0.23549	1.503263	32.98605	0.279892	0.98788	1.588086	144.5883	0.217354	55.97843	197.576	1147.398	-28.4211	-6.41829	0.93956	0	-0.11377	3.360134	372.0306	347.116	-4.23735	-1.24137	-2.327314814	6.653931		
133333	900	-0.23171	1.26902	31.47363	0.177383	0.85993	1.33653	145.456	0.184586	35.47663	171.9859	1245.203	-29.5353	-6.56949	0.97638	0	-0.15539	3.360134	363.9145	327.3862	-4.51253	-1.08059	-2.327314814	6.653931		
200000	700	-0.23558	1.025265	29.74979	0.074874	0.71481	1.086377	146.5831	0.150287	14.97484	142.962	1345.925	-30	-6.77729	1.022228	0	-0.20264	3.360134	358.8352	305.6595	-4.85684	-0.89823	-2.327314814	6.653931		
266667	500	-0.24647	0.762821	27.75177	-0.02763	0.543983	0.83182	0	0	-5.52696	108.7967	1461.784	-30	-7.06965	1.084411	0	-0.25717	3.360134	359.2508	281.3912	-5.30167	-0.68357	-2.327314814	6.653931		
75000	300	-0.26219	0.456229	25.38609	-0.13014	0.324186	0.556511	0	0	-26.0288	64.83723	1577.642	-30	-7.48823	1.187135	0	-0.32509	3.360134	373.3036	253.7813	-5.89373	-0.40737	-2.327314814	6.653931		
0	100	-0.28681	0.080279	22.58715	-0.23265	0.026125	0.260357	0	0	-46.5306	5.224948	1693.501	-30	-8.13627	1.461349	-0.0557	0.408859	3.360134	400	241.5008	-6.61596	0.063544	-2.327314814	6.653931		
0	3400	-0.74121	9.565589	27.8444	1.507282	7.317096	8.513295	148.0066	1.41577	301.4563	185.2696	185.2696	-12.3653	-7.58305	0.550408	-0.136	0.436205	3.365679	400	284.3059	-5.8212	-1.22745	3.728981373	-17.9626	6555.922	2.678003
210375	3175	-0.38793	4.993573	35.06945	1.388666	3.216982	5.061403	143.5724	0.716939	277.7331	269.6193	269.6193	-18.1939	-6.48832	0.668739	-0.2143	0.2143	3.365679	400	400	-4.12557	-1.69402	3.728981373	-17.9626		
162500	2925	-0.3524	3.977027	37.5661	1.25687	2.367756	4.18448	142.6201	0.567204	251.374	362.0281	362.0281	-20.3239	-6.6504	0.314129	0.098227	0.098227	3.365679	400	400	-4.06165	-2.27462	3.728981373	-17.9626		
100000	2700	-0.32886	3.427986	38.67584	1.138254	1.960875	3.665674	142.2872	0.487759	227.6507	392.1751	439.9028	-21.6958	-6.66872	0.23005	0.225978	0.225978	3.365679	400	400	-3.97464	-2.46404	3.728981373	-17.9626		
100000	2500	-0.31354	3.19026	38.30771	1.032817	1.843898	3.408635	142.3916	0.454266	206.5634	368.7797	519.571	-22.349	-6.57755	0.341749	0.1843	0.1843	3.365679	400	400	-3.91876	-2.31704	3.728981373	-17.9626		
100000	2300	-0.29829	2.947143	37.91858	0.92738	1.721469	3.14679	142.5084	0.419993	185.4761	344.2938	601.1621	-23.0589	-6.48371	0.458668	0.139494	0.139494	3.365679	400	400	-3.86184	-2.1632	3.728981373	-17.9626		
100000	2100	-0.28307	2.697828	37.50641	0.821944	1.592813	2.8795	142.6396	0.384817	164.3888	318.5626	684.8256	-23.8354	-6.38675	0.581642	0.091167	0.091167	3.365679	400	400	-3.80358	-2.00153	3.728981373	-17.9626		
100000	1900	-0.26784	2.441368	37.06868	0.716507	1.45702	2.606042	142.7872	0.348596	143.3014	291.4041	770.7362	-24.6907	-6.28617	0.711667	0.038864	0.038864	3.365679	400	400	-3.74362	-1.83089	3.728981373	-17.9626		
100000	1700	-0.25255	2.176547	36.60291	0.611071	1.312922	2.325498	142.9539	0.311146	122.2141	262.5844	859.1007	-25.6407	-6.18124	0.850021	-0.01799	0.017989	3.365679	400	400	-3.68139	-1.64982	3.728981373	-17.9626		
100000	1500	-0.24647	1.970636	35.62175	0.505634	1.218536	2.099359	143.3372	0.282465	101.1268	243.7073	949.4413	-26.4315	-6.22857	0.880307	0	-0.04427	3.365679	397.2471	383.8165	-3.81706	-1.53122	3.728981373	-17.9626		
100000	1300	-0.2414	1.760723	34.47816	0.400197	1.119121	1.8686	143.84	0.253262	80.03947	223.8242	1041.887	-27.2895	-6.30739	0.904993	0	-0.07267	3.365679	384.4641	367.8626	-3.9961	-1.40628	3.728981373	-17.9626		
100000	1100	-0.23677	1.538702	33.17188	0.294761	1.007167	1.626281	144.4893	0.222326	58.95215	201.4335	1136.673	-28.2598	-6.4144	0.934475	0	-0.10704	3.365679	373.2937	350.1641	-4.21434	-1.26561	3.728981373	-17.9626		
133333	900	-0.23278	1.300267	31.64978	0.189324	0.878162	1.369575	145.3491	0.188993	37.86483	175.6324	1234.115	-29.3817	-6.56368	0.971111	0	-0.14881	3.365679	364.5304	330.1942	-4.48909	-1.1035	3.728981373	-17.9626		
200000	700	-0.23538	1.049712	29.89654	0.083888	0.730447	1.110592	146.4813	0.153763	16.77751	146.0894	1334.533	-30	-6.7718	1.017198	0	-0.19707	3.365679	358.9459	307.9863	-4.83672	-0.91788	3.728981373	-17.9626		
266667	500	-0.24631	0.782265	27.86957	-0.02155	0.557501	0.850102	0	0	-4.30981	111.5002	1450.392	-30	-7.0654	1.079193	0	-0.25237	3.365679	358.7127	283.2642	-5.28564	-0.70055	3.728981373	-17.9626		
75000	300	-0.2623	0.470179	25.45537	-0.12699	0.334865	0.568525	0	0	-25.3971	66.97295	1566.251	-30	-7.49124	1.181341	0	-0.32125	3.365679	371.9862	254.9948	-5.88912	-0.42079	3.728981373	-17.9626		
0	100	-0.28306	0.055959	22.73616	-0.23242	0.005318	0.241693	0	0	-46.4845	1.063635	1682.11	-30	-8.03835	1.403696	0	0	3.365679	0	0	-6.62798	-0.00669	3.728981373	-17.9626		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.75909	9.848927	27.84769	1.55562	7.534219	8.76278	148.004	1.45768	311.1241	183.0208	183.0208	-12.1246	-7.57194	0.54491	-0.14829	0.453945	3.360924	400	282.2178	-5.81681	-1.23068	-15.22761932	62.1539	0	2.741891
210375	3175	-0.39785	5.204943	34.86772	1.433267	3.373826	5.256	143.6619	0.747752	286.6533	265.8835	265.8835	-17.8058	-6.49411	0.671252	-0.23293	0.237198	3.360924	400	398.5509	-4.15231	-1.67055	-15.22761932	62.1539		
162500	2925	-0.35907	4.135591	37.37733	1.297318	2.479202	4.336489	142.6822	0.590075	259.4636	356.9631	356.9631	-19.9594	-6.64232	0.324716	0.0711	0.0711	3.360924	400	400	-4.0748	-2.2428	-15.22761932	62.1539		
100000	2700	-0.33321	3.504606	38.82023	1.174964	1.996431	3.74887	142.248	0.498523	234.9928	399.2863	434.2784	-21.4933	-6.68583	0.19549	0.237392	0.237392	3.360924	400	400	-3.98163	-2.50872	-15.22761932	62.1539		
100000	2500	-0.31743	3.261229	38.44766	1.066205	1.877596	3.485459	142.3512	0.46424	213.241	375.5193	513.4039	-22.1499	-6.59259	0.309002	0.195466	0.195466	3.360924	400	400	-3.92419	-2.35939	-15.22761932	62.1539		
100000	2300	-0.30172	3.012379	38.05334	0.957446	1.753211	3.217145	142.4672	0.429165	191.4892	350.6422	594.4713	-22.864	-6.49664	0.427801	0.150342	0.150342	3.360924	400	400	-3.86574	-2.20308	-15.22761932	62.1539		
100000	2100	-0.28606	2.757212	37.63513	0.848687	1.622469	2.943255	142.5978	0.393172	169.7374	324.4937	677.6331	-23.6458	-6.3975	0.552753	0.101607	0.101607	3.360924	400	400	-3.80596	-2.03879	-15.22761932	62.1539		
100000	1900	-0.27039	2.494721	37.19056	0.739928	1.484399	2.663009	142.7453	0.35611	147.9856	296.8799	763.0677	-24.5078	-6.29466	0.684911	0.048772	0.048772	3.360924	400	400	-3.74446	-1.8653	-15.22761932	62.1539		
100000	1700	-0.25469	2.223676	36.71672	0.631169	1.337822	2.375482	142.9122	0.31779	126.2337	267.5643	850.9867	-25.4664	-6.1874	0.825573	-0.00874	0.008742	3.360924	400	400	-3.68071	-1.68111	-15.22761932	62.1539		
100000	1500	-0.24671	2.000533	35.80459	0.52241	1.231409	2.132471	143.2624	0.286601	104.4819	246.2818	941.0369	-26.3137	-6.20663	0.877005	0	-0.04142	3.360924	399.4917	385.8657	-3.78224	-1.54738	-15.22761932	62.1539		
100000	1300	-0.24145	1.785558	34.64524	0.413651	1.130461	1.89603	143.7627	0.256697	82.73014	226.0922	1033.23	-27.1851	-6.28427	0.901925	0	-0.06991	3.360924	386.1226	369.6423	-3.96179	-1.42054	-15.22761932	62.1539		
100000	1100	-0.23662	1.558143	33.3181	0.304892	1.016636	1.647599	144.4126	0.225016	60.97833	203.3271	1127.807	-28.1721	-6.39051	0.931733	0	-0.10458	3.360924	374.3976	351.6214	-4.18126	-1.2775	-15.22761932	62.1539		
133333	900	-0.23243	1.31377	31.76745	0.196133	0.885203	1.384172	145.2786	0.190863	39.22653	177.0406	1225.097	-29.3157	-6.53984	0.968872	0	-0.14697	3.360924	365.1387	331.2458	-4.45863	-1.11235	-15.22761932	62.1539		
200000	700	-0.23459	1.055698	29.96884	0.087374	0.733733	1.116721	146.4315	0.154588	17.47472	146.7467	1325.443	-30	-6.75063	1.015983	0	-0.19647	3.360924	359.2342	308.4501	-4.81263	-0.92201	-15.22761932	62.1539		
266667	500	-0.24577	0.780208	27.88233	-0.02139	0.555823	0.848211	0	0	-4.27708	111.1647	1441.302	-30	-7.05087	1.07974	0	-0.25336	3.360924	358.9292	283.0157	-5.27268	-0.69845	-15.22761932	62.1539		
75000	300	-0.26228	0.456716	25.38488	-0.13014	0.324578	0.556944	0	0	-26.0289	64.91552	1557.161	-30	-7.49078	1.186931	0	-0.32489	3.360924	373.2347	253.827	-5.89598	-0.40787	-15.22761932	62.1539		
0	100	-0.28855	0.054823	22.34814	-0.2389	0.005179	0.241509	0	0	-47.7807	1.035896	1673.02	-30	-8.18173	1.375202	0	0	3.360924	0	0	-6.80001	-0.00651	-15.22761932	62.1539		
0	3400	-0.78005	10.14388	27.85133	1.604166	7.759663	9.024523	148.0011	1.501305	320.8332	180.7601	180.7601	-11.8837	-7.57592	0.539383	-0.16065	0.471774	3.36286	400	280.1183	-5.82502	-1.2375	-6.42871E-05	-0.03667	6550.432	2.826398
210375	3175	-0.41687	5.524879	34.38836	1.47854	3.629472	5.538758	143.882	0.794931	295.7079	261.4448	261.4448	-17.249	-6.55614	0.658936	-0.23879	0.261244	3.36286	400	392.3326	-4.25454	-1.64266	-6.42871E-05	-0.03667		
162500	2925	-0.36796	4.321025	37.10993	1.338955	2.614109	4.512269	142.7729	0.616925	267.791	351.0119	351.0119	-19.5494	-6.6503	0.338821	0.041013	0.041013	3.36286	400	400	-4.10608	-2.20541	-6.42871E-05	-0.03667		
100000	2700	-0.34004	3.629803	38.72132	1.213328	2.076438	3.874876	142.2748	0.516429	242.6657	400	427.4142	-21.1705	-6.70753	0.183016	0.228267	0.228267	3.36286	400	400	-4.01132	-2.5132	-6.42871E-05	-0.03667		
100000	2500	-0.32296	3.343131	38.56284	1.101661	1.918514	3.573926	142.3186	0.47579	220.3321	383.7027	505.9205	-21.9245	-6.62899	0.27016	0.210434	0.210434	3.36286	400	400	-3.94803	-2.41081	-6.42871E-05	-0.03667		
100000	2300	-0.30679	3.089392	38.16504	0.989993	1.792606	3.299982	142.4336	0.440033	197.9985	358.5212	586.3761	-22.6382	-6.53139	0.390397	0.165135	0.165135	3.36286	400	400	-3.88841	-2.25259	-6.42871E-05	-0.03667		
100000	2100	-0.29068	2.829275	37.74274	0.878325	1.660266	3.020384	142.5634	0.403351	175.665	332.0532	668.9347	-23.4196	-6.43063	0.516832	0.116167	0.116167	3.36286	400	400	-3.8275	-2.08629	-6.42871E-05	-0.03667		
100000	1900	-0.27459	2.561741	37.29336	0.766657	1.520495	2.734318	142.7104	0.365587	153.3314	304.0991	753.7764	-24.2817	-6.32609	0.650545	0.063024	0.063024	3.36286	400	400	-3.7649	-1.91065	-6.42871E-05	-0.03667		
100000	1700	-0.25846	2.285509	36.81399	0.654989	1.372064	2.440812	142.8771	0.326547	130.9978	274.4127	841.115	-25.2411	-6.21707	0.79288	0.005097	0.005097	3.36286	400	400	-3.70006	-1.72414	-6.42871E-05	-0.03667		
100000	1500	-0.248	2.041752	36.00617	0.543321	1.250426	2.17784	143.1818	0.292342	108.6642	250.0852	930.7652	-26.153	-6.19881	0.872533	-0.00469	0.036063	3.36286	400	389.4994	-3.755	-1.57128	-6.42871E-05	-0.03667		
100000	1300	-0.24253	1.82295	34.84224	0.431653	1.148767	1.936996	143.6733	0.261909	86.33066	229.7533	1022.577	-27.0294	-6.27447	0.897384	0	-0.06433	3.36286	388.1955	372.5806	-3.93353	-1.44354	-6.42871E-05	-0.03667		
100000	1100	-0.23749	1.591616	33.50906	0.319985	1.034142	1.683926	144.314	0.229692	63.99709	206.8283	1116.795	-28.0223	-6.37849	0.927089	0	-0.09889	3.36286	375.8542	354.3834	-4.15189	-1.2995	-6.42871E-05	-0.03667		
133333	900	-0.2331	1.343214	31.94998	0.208318	0.901799	1.41557	145.1706	0.194995	41.66351	180.3599	1213.748	-29.173	-6.52538	0.964062	0	-0.14132	3.36286	365.9579	333.7997	-4.42811	-1.13321	-6.42871E-05	-0.03667		
200000	700	-0.23402	1.078718	30.12522	0.09665	0.748045	1.139726	146.3248	0.157843	19.32993	149.609	1313.813	-30	-6.73533	1.011368	0	-0.19168	3.36286	359.537	310.5779	-4.78399	-0.93999	-6.42871E-05	-0.03667		
266667	500	-0.2452	0.798362	28.01156	-0.01502	0.568183	0.865385	0	0	-3.00364	113.6367	1429.671	-30	-7.03552	1.074959	0	-0.24926	3.36286	358.5946	284.7268	-5.24658	-0.71398	-6.42871E-05	-0.03667		
75000	300	-0.26191	0.469445	25.467	-0.12669	0.334223	0.567837	0	0	-25.3372	66.84461	1545.53	-30	-7.48083	1.181643	0	-0.32174	3.36286	372.1476	254.9145	-5.8792	-0.41998	-6.42871E-05	-0.03667		
0	100	-0.28812	0.054961	22.38723	-0.23835	0.005195	0.241639	0	0	-47.6708	1.038951	1661.389	-30	-8.17059	1.378673	0	0	3.36286	0	0	-6.7854	-0.00652	-6.42871E-05	-0.03667		
0	3400	-0.79922	10.4295	27.85808	1.652612	7.977668	9.277804	147.9957	1.54352	330.5223	178.6462	178.6462	-11.6595	-7.56912	0.534211	-0.17318	0.489236	3.360398	400	278.2397	-5.82372	-1.24188	-0.017201163	0.004866	6545.635	2.902765
210375	3175	-0.43491	5.836444	33.97404	1.523488	3.878046	5.812568	144.081	0.840921	304.6975	257.3152	257.3152	-16.7392	-6.60358	0.64769	-0.24553	0.284158	3.360398	400	386.7348	-4.33918	-1.61671	-0.017201163	0.004866		
162500	2925	-0.37572	4.495485	36.89562	1.380016	2.739753	4.677575	142.848	0.642171	276.0033	345.5054	345.5054	-19.1787	-6.64715	0.351843	0.012593	0.012593	3.360398	400	400	-4.1245	-2.17081	-0.017201163	0.004866		
100000	2700	-0.34587	3.748474	38.64505	1.250892	2.151709	3.99402	142.2957	0.533392	250.1785	400	421.0626	-20.8733	-6.71591	0.173699	0.217238	0.217238	3.360398	400	400	-4.02902	-2.5132	-0.017201163	0.004866		
100000	2500	-0.32745	3.417712	38.69181	1.136115	1.954143	3.654738	142.2828	0.486282	227.2231	390.8285	499.0146	-21.7232	-6.65127	0.235827	0.222498	0.222498	3.360398	400	400	-3.95986	-2.45557	-0.017201163	0.004866		
100000	2300	-0.31084	3.158752	38.29009	1.021339	1.826576	3.374853	142.3967	0.449796	204.2677	365.3153	578.9285	-22.4385	-6.55179	0.357665	0.177006	0.177006	3.360398	400	400	-3.89885	-2.29527	-0.017201163	0.004866		
100000	2100	-0.29429	2.893331	37.8632	0.906562	1.692478	3.089219	142.5256	0.412374	181.3123	338.4957	660.9597	-23.2222	-6.44912	0.485767	0.127772	0.127772	3.360398	400	400	-3.83658	-2.12677	-0.017201163	0.004866		
100000	1900	-0.27777	2.620378	37.40846	0.791785	1.550822	2.796985	142.6719	0.373854	158.357	310.1644	745.2908	-24.0874	-6.34264	0.621241	0.074273	0.074273	3.360398	400	400	-3.77263	-1.94876	-0.017201163	0.004866		
100000	1700	-0.26123	2.338592	36.92267	0.677008	1.400358	2.497161	142.8384	0.334041	135.4016	280.0716	832.1388	-25.0509	-6.23163	0.765451	0.015891	0.015891	3.360398	400	400	-3.70649	-1.75969	-0.017201163	0.004866		
100000	1500	-0.24866	2.076434	36.19645	0.562231	1.265544	2.21617	143.1073	0.297153	112.4462	253.1088	921.4565	-26.0192	-6.18229	0.86884	-0.01025	0.032444	3.360398	400	392.5864	-3.72316	-1.59028	-0.017201163	0.004866		
100000	1300	-0.24298	1.853266	35.02296	0.447454	1.162833	1.9704	143.5929	0.266116	89.49081	232.5666	1012.964	-26.9045	-6.25627	0.893769	0	-0.06058	3.360398	390.1397	374.8185	-3.90129	-1.46121	-0.017201163	0.004866		
100000	1100	-0.23773	1.617355	33.67718	0.332677	1.046943	1.712069	144.2285	0.233269	66.53543	209.3886	1106.908	-27.9083	-6.35866	0.923582	0	-0.09519	3.360398	377.2129	356.3856	-4.11947	-1.31559	-0.017201163	0.004866		
133333	900	-0.23314	1.364063	32.10061	0.2179	0.913023	1.438007	145.0827	0.197902	43.58005	182.6045	1203.626	-29.0728	-6.5041	0.960717	0	-0.1379	3.360398	366.7491	335.5119	-4.39609	-1.14731	-0.017201163	0.004866		
200000	700	-0.23325	1.09279	30.24209	0.103123	0.756416	1.153947	146.2459	0.159816	20.62467	151.2832	1303.52	-30	-6.7145	1.008591	0	-0.18922	3.360398	359.8978	311.8102	-4.75541	-0.95051	-0.017201163	0.004866		
266667	500	-0.24452	0.80607	28.08626	-0.01165	0.573204	0.872744	0	0	-2.33071	114.6408	1419.379	-30	-7.01739	1.072959	0	-0.24791	3.360398	358.5945	285.4125	-5.22414	-0.72029	-0.017201163	0.004866		
75000	300	-0.26157	0.468781	25.47702	-0.12643	0.333647	0.567217	0	0	-25.2861	66.72932	1535.238	-30	-7.47176	1.181915	0	-0.32217	3.360398	372.2904	254.8426	-5.87058	-0.41926	-0.017201163	0.004866		
0	100	-0.29053	0.054461	22.21773	-0.24121	0.005133	0.241533	0	0	-48.2415	1.026621	1651.096	-30	-8.23358	1.366112	0	0	3.360398	0	0	-6.86101	-0.00645	-0.017201163	0.004866		
0	3400	-0.81834	10.71282	27.86698	1.701012	8.193468	9.529713	147.9886	1.585374	340.2023	176.6186	176.6186	-11.4452	-7.56118	0.529246	-0.18584	0.506495	3.357669	400	276.4921	-5.82113	-1.24607	-0.014495638	-0.00865	6540.319	2.978943
210375	3175	-0.45403	6.160881	33.56758	1.568288	4.138567	6.095133	144.2841	0.888917	313.6575	253.2886	253.2886	-16.2395	-6.65132	0.636679	-0.25216	0.306423	3.357669	400	381.2545	-4.42323	-1.59141	-0.014495638	-0.00865		
162500	2925	-0.38349	4.670622	36.69051	1.420817	2.86632	4.842986	142.9218	0.667534	284.1633	340.1375	340.1375	-18.8205	-6.6433	0.364779	-0.01522	0.015215	3.357669	400	400	-4.14144	-2.13709	-0.014495638	-0.00865		
100000	2700	-0.35165	3.866268	38.57243	1.288093	2.226524	4.112201	142.3159	0.550232	257.6185	400	414.8739	-20.5865	-6.72343	0.16455	0.206331	0.206331	3.357669	400	400	-4.04568	-2.5132	-0.014495638	-0.00865		
100000	2500	-0.33182	3.49044	38.81835	1.170116	1.988499	3.733625	142.2485	0.49651	234.0231	397.6998	492.2932	-21.5305	-6.67211	0.202659	0.233928	0.233928	3.357669	400	400	-3.9707	-2.49875	-0.014495638	-0.00865		
100000	2300	-0.31474	3.226061	38.41249	1.052139	1.859181	3.447602	142.3613	0.459266	210.4278	371.8362	571.6884	-22.2481	-6.57067	0.326198	0.188216	0.188216	3.357669	400	400	-3.90823	-2.33625	-0.014495638	-0.00865		
100000	2100	-0.29774	2.955134	37.98073	0.934162	1.723227	3.155724	142.4893	0.421075	186.8324	344.6455	653.2173	-23.0349	-6.466	0.456071	0.138686	0.138686	3.357669	400	400	-3.84453	-2.16541	-0.014495638	-0.00865		
100000	1900	-0.28079	2.676551	37.52028	0.816185	1.579578	2.857112	142.635	0.38177	163.237	315.9156	737.0654	-23.9041	-6.35749	0.593418	0.084799	0.084799	3.357669	400	400	-3.77918	-1.9849	-0.014495638	-0.00865		
100000	1700	-0.26382	2.38897	37.02778	0.698208	1.426943	2.550732	142.8015	0.341148	139.6416	285.3886	823.4531	-24.873	-6.24437	0.739646	0.025908	0.025908	3.357669	400	400	-3.71164	-1.79309	-0.014495638	-0.00865		
100000	1500	-0.24924	2.10898	36.37541	0.580231	1.279509	2.252157	143.0388	0.301666	116.0463	255.9018	912.4611	-25.895	-6.16616	0.865431	-0.01568	0.029239	3.357669	400	395.4822	-3.69289	-1.60783	-0.014495638	-0.00865		
100000	1300	-0.24335	1.88121	35.19057	0.462254	1.175601	2.001227	143.5196	0.269991	92.45089	235.1203	1003.689	-26.7904	-6.23871	0.890488	0	-0.0573	3.357669	391.9963	376.8501	-3.87097	-1.47726	-0.014495638	-0.00865		
100000	1100	-0.23791	1.64044	33.82972	0.344278	1.058257	1.737359	144.1522	0.236473	68.85552	211.6514	1097.39	-27.8067	-6.33979	0.920483	0	-0.09202	3.357669	378.4904	358.1551	-4.08952	-1.3298	-0.014495638	-0.00865		
133333	900	-0.23312	1.381897	32.23234	0.226301	0.92248	1.457258	145.0068	0.200384	45.26014	184.496	1193.908	-28.9877	-6.48441	0.957894	0	-0.1351	3.357669	367.4796	336.954	-4.36732	-1.15919	-0.014495638	-0.00865		
200000	700	-0.23256	1.103666	30.33702	0.108324	0.762779	1.164988	146.1823	0.161336	21.66477	152.5558	1293.671	-30	-6.69595	1.006468	0	-0.18744	3.357669	360.2236	312.7448	-4.73098	-0.95851	-0.014495638	-0.00865		
266667	500	-0.24398	0.809988	28.13301	-0.00965	0.575657	0.876509	0	0	-1.93061	115.1315	1409.53	-30	-7.00302	1.071948	0	-0.2474	3.357669	358.6548	285.7424	-5.2077	-0.72337	-0.014495638	-0.00865		
75000	300	-0.26145	0.463114	25.45172	-0.12763	0.329298	0.562319	0	0	-25.526	65.85961	1525.389	-30	-7.46858	1.184258	0	-0.32378	3.357669	372.8385	254.3457	-5.87053	-0.4138	-0.014495638	-0.00865		
0	100	-0.29882	0.085242	21.85377	-0.24561	0.032025	0.265381	0	0	-49.1214	6.405094	1641.248	-30	-8.44915	1.453959	-0.04765	0.3931	3.357669	400	240.8583	-6.91802	0.10733	-0.014495638	-0.00865		

APPENDIX F

Proposed Model Results - Straight Rebar Anchorage

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.0594	0.069929	43.27992	0.001385	0.009145	0.129095	0	0	0.276991	0	0	-30	-1.7905	1.754127	0	0	2.477732	0	0	-0.87703	-0.579130684	1366.734	-368.853	0	0.198771
75000	3200	-0.08045	0.069929	40.95302	-0.01585	0.005327	0.148878	0	0	-3.16903	1.065463	115.8587	-30	-2.41176	1.754127	0	0	2.477732	0	0	-1.1009	-0.39616835	1366.734	-368.853		
266667	3000	-0.14737	0.284093	30.97588	-0.03308	0.169803	0.380784	0	0	-6.61504	33.96052	231.7175	-30	-4.34095	1.273977	-0.03913	0.48145	2.477732	400	240.4652	-2.8536	-0.213374856	1366.734	-368.853		
200000	2800	-0.14677	0.222369	30.74327	-0.05031	0.125908	0.324362	0	0	-10.0611	25.18153	347.5762	-30	-4.32402	1.315486	-0.05737	0.499085	2.477732	400	239.9848	-2.85032	-0.158215262	1366.734	-368.853		
133333	2600	-0.145	0.152863	30.66207	-0.06754	0.075396	0.261331	0	0	-13.5071	15.07927	463.4349	-30	-4.27402	1.37421	-0.08593	0.521664	2.477732	400	241.906	-2.80507	-0.094742268	1366.734	-368.853		
100000	2400	-0.14054	0.069929	30.98366	-0.08477	0.014151	0.18578	0	0	-16.9531	2.830249	579.2936	-30	-4.14748	1.477797	-0.14308	0.554278	2.477732	400	251.7101	-2.64851	-0.010013376	1366.734	-368.853		
100000	2200	-0.15096	0.054886	29.19036	-0.102	0.005923	0.175287	0	0	-20.3991	1.184551	695.1524	-30	-4.44256	1.376772	0	0	2.477732	0	0	-3.05836	-0.007439013	1366.734	-368.853		
100000	2000	-0.16861	0.069929	27.06552	-0.11923	0.020543	0.193304	0	0	-23.8451	4.108677	811.0111	-30	-4.93884	1.477796	-0.11128	0.497309	2.477732	400	248.3643	-3.37131	0.211757519	1366.734	-368.853		
100000	1800	-0.17811	0.04683	25.4884	-0.13646	0.005175	0.174754	0	0	-27.2912	1.034964	926.8698	-30	-5.20388	1.1747	0	0	2.477732	0	0	-4.02268	-0.006502094	1366.734	-368.853		
100000	1600	-0.19238	0.043514	23.89225	-0.15369	0.004818	0.17471	0	0	-30.7372	0.963554	1042.729	-30	-5.59941	1.091524	0	0	2.477732	0	0	-4.50184	-0.006054698	1366.734	-368.853		
100000	1400	-0.20703	0.04059	22.45063	-0.17092	0.004478	0.174791	0	0	-34.1832	0.895639	1158.587	-30	-6.00202	1.018184	0	0	2.477732	0	0	-4.9782	-0.005626204	1366.734	-368.853		
100000	1200	-0.22199	0.038004	21.14955	-0.18815	0.004158	0.174978	0	0	-37.6292	0.83165	1274.446	-30	-6.40991	0.953317	0	0	2.477732	0	0	-5.45138	-0.005222836	1366.734	-368.853		
100000	1000	-0.23723	0.03571	19.975	-0.20538	0.003859	0.175258	0	0	-41.0752	0.771706	1390.305	-30	-6.8216	0.895752	0	0	2.477732	0	0	-5.92101	-0.004844421	1366.734	-368.853		
100000	800	-0.25269	0.033665	18.91347	-0.22261	0.003578	0.175617	0	0	-44.5212	0.715691	1506.163	-30	-7.23581	0.844469	0	0	2.477732	0	0	-6.38685	-0.004499272	1366.734	-368.853		
162500	575	-0.27033	0.031622	17.83861	-0.24199	0.003287	0.176102	0	0	-48.398	0.657398	1650.987	-30	-7.70351	0.793231	0	0	2.477732	0	0	-6.90617	-0.004124339	1366.734	-368.853		
210375	325	-0.29016	0.029623	16.774	-0.26353	0.002989	0.176725	0	0	-52.7055	0.59781	1795.81	-30	-8.22386	0.743087	0	0	2.477732	0	0	-7.47703	-0.003757502	1366.734	-368.853		
0	100	-0.3082	0.028032	15.91717	-0.28291	0.002743	0.17735	0	0	-56.5823	0.548597	1911.669	-30	-8.6917	0.703154	0	0	2.477732	0	0	-7.98511	-0.003449888	1366.734	-368.853		
0	3400	-0.17015	1.137498	24.13325	0.048441	0.918902	0.975834	151.3481	0.172158	9.688295	0	0	-30	-4.98198	0.999984	0	-0.50479	2.232017	346.0662	159.1571	-3.98199	5.14185E-08	-7.36238	6.377928	4347.69	0.240546
75000	3200	-0.12113	0.352149	33.79847	0.025324	0.205699	0.437554	144.1678	0.050768	5.064886	41.13971	110.2609	-30	-3.59282	1.235638	-0.04122	0.499547	2.232017	400	242.1949	-2.0987	-0.258480931	-7.36238	6.377928		
266667	3000	-0.12056	0.282964	33.47555	0.002207	0.160195	0.371314	144.3311	0.040841	0.441477	32.03896	221.5736	-30	-3.57664	1.274671	-0.05744	0.517178	2.232017	400	240.9605	-2.10067	-0.2012998	-7.36238	6.377928		
200000	2800	-0.08533	0.069929	40.10064	-0.02091	0.005513	0.15299	0	0	-4.18193	1.102559	337.4323	-30	-2.55478	1.754127	0	0	2.232017	0	0	-0.89642	-0.125448437	-7.36238	6.377928		
133333	2600	-0.1163	0.122773	33.3557	-0.04403	0.050495	0.219598	0	0	-8.80534	10.09909	453.2911	-30	-3.45418	1.405818	-0.12541	0.566937	2.232017	400	246.9881	-1.98492	-0.06345164	-7.36238	6.377928		
100000	2400	-0.1215	0.069929	32.1985	-0.06714	0.015577	0.172629	0	0	-13.4288	3.115426	569.1498	-30	-3.60345	1.477797	-0.15664	0.570208	2.232017	400	254.0199	-2.06679	0.072301851	-7.36238	6.377928		
100000	2200	-0.13975	0.069929	29.0672	-0.09026	0.020436	0.178081	0	0	-18.0522	4.087296	685.0085	-30	-4.12503	1.477797	-0.13063	0.528569	2.232017	400	250.8494	-2.53775	0.237144735	-7.36238	6.377928		
100000	2000	-0.15248	0.04409	26.48734	-0.11338	0.004989	0.156934	0	0	-22.6756	0.997805	800.8672	-30	-4.48548	1.105959	0	0	2.232017	0	0	-3.37325	-0.006268204	-7.36238	6.377928		
100000	1800	-0.17139	0.039408	24.00942	-0.13649	0.004508	0.156704	0	0	-27.299	0.901692	916.726	-30	-5.01664	0.988535	0	0	2.232017	0	0	-4.02244	-0.005662451	-7.36238	6.377928		
100000	1600	-0.19108	0.035528	21.87861	-0.15961	0.004061	0.156722	0	0	-31.9224	0.812161	1032.585	-30	-5.56342	0.891192	0	0	2.232017	0	0	-4.66712	-0.005105141	-7.36238	6.377928		
100000	1400	-0.21137	0.03229	20.0493	-0.18273	0.003653	0.15694	0	0	-36.5458	0.73052	1148.443	-30	-6.12063	0.809971	0	0	2.232017	0	0	-5.30607	-0.0045923	-7.36238	6.377928		
100000	1200	-0.23213	0.029566	18.47602	-0.20585	0.003284	0.157317	0	0	-41.1692	0.656834	1264.302	-30	-6.68421	0.741652	0	0	2.232017	0	0	-5.93843	-0.004132063	-7.36238	6.377928		
100000	1000	-0.25327	0.027256	17.1176	-0.22896	0.002954	0.157819	0	0	-45.7926	0.59076	1380.161	-30	-7.25108	0.683701	0	0	2.232017	0	0	-6.56366	-0.003707284	-7.36238	6.377928		
100000	800	-0.2747	0.025279	15.93876	-0.25208	0.002657	0.158421	0	0	-50.416	0.531383	1496.02	-30	-7.81884	0.634098	0	0	2.232017	0	0	-7.18139	-0.003341582	-7.36238	6.377928		
162500	575	-0.2991	0.023376	14.79063	-0.27809	0.002359	0.159194	0	0	-55.6174	0.471876	1640.843	-30	-8.4564	0.586371	0	0	2.232017	0	0	-7.86708	-0.002963107	-7.36238	6.377928		
210375	325	-0.3265	0.021582	13.69658	-0.30698	0.002067	0.160149	0	0	-61.3966	0.413371	1785.666	-30	-9.16109	0.541369	0	0	2.232017	0	0	-8.61711	-0.002596935	-7.36238	6.377928		
0	100	-0.35136	0.020199	12.84577	-0.33299	0.001833	0.161079	0	0	-66.598	0.366639	1901.525	-30	-9.79037	0.506678	0	0	2.232017	0	0	-9.28138	-0.002299194	-7.36238	6.377928		
0	3400	-0.20224	1.856976	22.39331	0.096621	1.558118	1.450651	153.1918	0.284474	19.32429	0	0	-26.8893	-5.26195	0.893331	0	-0.48662	2.168101	319.8257	142.1822	-4.36862	1.24166E-07	0.019364	0.002213	4223.189	0.296648
75000	3200	-0.11517	0.446439	35.02929	0.069864	0.261406	0.527935	143.5901	0.064104	13.97287	52.28118	108.8791	-30	-3.42149	1.191289	-0.03064	0.487476	2.168101	400	245.3044	-1.90171	-0.328483876	0.019364	0.002213		
266667	3000	-0.11489	0.374706	34.61571	0.043107	0.216714	0.457778	143.7763	0.053874	8.621455	43.34274	218.8152	-30	-3.41332	1.224228	-0.04192	0.50369	2.168101	400	242.7964	-1.91677	-0.272321749	0.019364	0.002213		
200000	2800	-0.11426	0.298139	34.247	0.01635	0.167533	0.383683	143.949	0.042917	3.270037	33.50664	329.9062	-30	-3.39516	1.265517	-0.05863	0.522538	2.168101	400	241.2787	-1.91912	-0.21052384	0.019364	0.002213		
133333	2600	-0.11289	0.214866	33.9987	-0.01041	0.112386	0.303882	0	0	-2.08138	22.47711	445.7649	-30	-3.35572	1.321108	-0.08485	0.545484	2.168101	400	241.8526	-1.89339	-0.141222842	0.019364	0.002213		
100000	2400	-0.1096	0.120664	34.11659	-0.03716	0.048226	0.213848	0	0	-7.4328	9.645109	561.6237	-30	-3.26088	1.40823	-0.13347	0.576437	2.168101	400	248.1702	-1.79204	-0.060600609	0.019364	0.002213		
100000	2200	-0.11767	0.069929	32.36134	-0.06392	0.016183	0.169634	0	0	-12.7842	3.23652	677.4824	-30	-3.49342	1.477797	-0.15884	0.572274	2.168101	400	254.4623	-1.94368	0.103929106	0.019364	0.002213		
100000	2000	-0.13289	0.047505	28.92878	-0.09068	0.005295	0.152743	0	0	-18.1356	1.059022	793.3411	-30	-3.9295	1.191622	0	0	2.168101	0	0	-2.73123	-0.006655261	0.019364	0.002213		
100000	1800	-0.15393	0.041217	25.62303	-0.11744	0.004723	0.152184	0	0	-23.4871	0.944527	909.1998	-30	-4.52644	1.033915	0	0	2.168101	0	0	-3.4866	-0.005936605	0.019364	0.002213		
100000	1600	-0.17622	0.036207	22.84706	-0.14419	0.004183	0.152015	0	0	-28.8385	0.836575	1025.059	-30	-5.15113	0.908227	0	0	2.168101	0	0	-4.23764	-0.005254367	0.019364	0.002213		
100000	1400	-0.19944	0.032185	20.53132	-0.17095	0.003694	0.152151	0	0	-34.1899	0.738753	1140.917	-30	-5.79385	0.807329	0	0	2.168101	0	0	-4.98187	-0.00464106	0.019364	0.002213		
100000	1200	-0.22337	0.028921	18.59797	-0.19771	0.00326	0.152519	0	0	-39.5413	0.651979	1256.776	-30	-6.44723	0.725468	0	0	2.168101	0	0	-5.71767	-0.004092563	0.019364	0.002213		
100000	1000	-0.24783	0.026241	16.9758	-0.22446	0.002878	0.153064	0	0	-44.8927	0.57555	1372.635	-30	-7.10588	0.658231	0	0	2.168101	0	0	-6.44404	-0.003623054	0.019364	0.002213		
100000	800	-0.27269	0.024013	15.60491	-0.25122	0.002543	0.153744	0	0	-50.2441	0.508564	1488.493	-30	-7.76588	0.602351	0	0	2.168101	0	0	-7.16035	-0.003193884	0.019364	0.002213		
162500	575	-0.30103	0.021926	14.3034	-0.28132	0.002213	0.154632	0	0	-56.2645	0.442646	1633.317	-30	-8.50647	0.549995	0	0	2.168101	0	0	-7.95369	-0.002784594	0.019364	0.002213		
210375	325	-0.33288	0.020009	13.09407	-0.31477	0.001897	0.155737	0	0	-62.9538	0.379375	1778.14	-30	-9.3236	0.501914	0	0	2.168101	0	0	-8.81931	-0.002382732	0.019364	0.002213		
0	100	-0.36179	0.018564	12.17453	-0.34487	0.001648	0.156817	0	0	-68.9741	0.329677	1893.999	-30	-10.0516	0.465676	0	0	2.168101	0	0	-9.58382	-0.002075263	0.019364	0.002213		
0	3400	-0.2811	3.326861	20.09409	0.144771	2.900994	2.328214	155.922	0.518731	28.95412	0	0	-21.9689	-5.84871	0.766081	0	-0.45499	2.135997	286.6509	121.9292	-5.07267	-0.015332757	-0.00489	-0.03228	4160.655	0.374623
75000	3200	-0.11232	0.543841	35.99367	0.114312	0.317214	0.623998	143.1867	0.077871	22.86237	63.4427	107.4885	-30	-3.33924	1.152923	-0.02308	0.472372	2.135997	400	249.6093	-1.78771	-0.398608925	-0.00489	-0.03228		
266667	3000	-0.11218	0.46866	35.51703	0.083853	0.272629	0.549306	143.3807	0.067197	16.77061	54.52577	216.0521	-30	-3.33526	1.181965	-0.03048	0.48768	2.135997	400	246.1092	-1.81071	-0.34258481	-0.00489	-0.03228		
200000	2800	-0.11186	0.389132	35.05228	0.053394	0.223883	0.471086	143.58	0.055872	10.67886	44.7765	325.7802	-30	-3.32593	1.217217	-0.04198	0.505182	2.135997	400	243.1963	-1.82739	-0.28133042	-0.00489	-0.03228		
133333	2600	-0.11115	0.303914	34.63654	0.022935	0.169831	0.388197	143.7667	0.043693	4.5871	33.96626	436.7886	-30	-3.30549	1.262129	-0.05985	0.52577	2.135997	400	241.4269	-1.82995	-0.213408599	-0.00489	-0.03228		
100000	2400	-0.10956	0.21064	34.36822	-0.00752	0.108601	0.298404	0	0	-1.50466	21.72021	552.6474	-30	-3.25973	1.324338	-0.08942	0.551297	2.135997	400	242.2344	-1.79892	-0.136469871	-0.00489	-0.03228		
100000	2200	-0.10542	0.103572	34.615	-0.03798	0.036131	0.195413	0	0	-7.59641	7.226245	668.5061	-30	-3.13997	1.428948	-0.14995	0.587232	2.135997	400	251.1305	-1.66562	-0.045403567	-0.00489	-0.03228		
100000	2000	-0.11557	0.052806	31.94245	-0.06844	0.005675	0.151188	0	0	-13.6882	1.135009	784.3648	-30	-3.4331	1.324607	0	0	2.135997	0	0	-2.10136	-0.007130483	-0.00489	-0.03228		
100000	1800	-0.13825	0.044373	27.65705	-0.0989	0.005025	0.150166	0	0	-19.7799	1.00506	900.2235	-30	-4.0822	1.113067	0	0	2.135997	0	0	-2.96283	-0.006315094	-0.00489	-0.03228		
100000	1600	-0.16286	0.037893	24.11249	-0.12936	0.004387	0.149718	0	0	-25.8717	0.877485	1016.082	-30	-4.7778	0.950524	0	0	2.135997	0	0	-3.82176	-0.005512701	-0.00489	-0.03228		
100000	1400	-0.1889	0.032889	21.23	-0.15982	0.003807	0.149724	0	0	-31.9634	0.761368	1131.941	-30	-5.50317	0.824999	0	0	2.135997	0	0	-4.67339	-0.004786163	-0.00489	-0.03228		
100000	1200	-0.21595	0.028976	18.89198	-0.19028	0.003298	0.150065	0	0	-38.0552	0.659659	1247.8	-30	-6.24573	0.726842	0	0	2.135997	0	0	-5.51475	-0.004138722	-0.00489	-0.03228		
100000	1000	-0.24374	0.025867	16.98527	-0.22073	0.002859	0.150649	0	0	-44.1469	0.571783	1363.658	-30	-6.99655	0.64885	0	0	2.135997	0	0	-6.34411	-0.003589074	-0.00489	-0.03228		
100000	800	-0.27207	0.023356	15.41577	-0.25119	0.002481	0.15141	0	0	-50.2387	0.496203	1479.517	-30	-7.74948	0.585871	0	0	2.135997	0	0	-7.16049	-0.003112624	-0.00489	-0.03228		
162500	575	-0.30441	0.021065	13.96226	-0.28546	0.002117	0.152422	0	0	-57.0919	0.423461	1624.341	-30	-8.59376	0.528415	0	0	2.135997	0	0	-8.06271	-0.002654667	-0.00489	-0.03228		
210375	325	-0.34077	0.019014	12.6442	-0.32353	0.001775	0.153692	0	0	-64.7066	0.354954	1769.164	-30	-9.52363	0.476957	0	0	2.135997	0	0	-9.04444	-0.002224985	-0.00489	-0.03228		
0	100	-0.37379	0.017501	11.66282	-0.3578	0.001511	0.154934	0	0	-71.5598	0.302171	1885.023	-30	-10.35	0.439004	0	0	2.135997	0	0	-9.90914	-0.001894178	-0.00489	-0.03228		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.32406	4.151074	19.87073	0.19296	3.634055	2.861061	156.2059	0.648422	38.59208	0	0	-19.9245	-6.04297	0.718706	0	-0.45993	2.168462	280.3528	114.3891	-5.28118	-0.065013062	4.14035	-2.87062	4223.892	0.449182
75000	3200	-0.11528	0.661951	36.43569	0.158881	0.387789	0.742758	143.0161	0.09467	31.77623	77.55787	105.839	-30	-3.42469	1.113516	-0.01392	0.444972	2.168462	400	256.4206	-1.82388	-0.487297637	4.14035	-2.87062		
266667	3000	-0.11533	0.582939	35.90355	0.124802	0.342812	0.663359	143.2226	0.08349	24.96038	68.56244	212.77	-30	-3.426	1.139133	-0.01753	0.45957	2.168462	400	251.8864	-1.85609	-0.430776381	4.14035	-2.87062		
200000	2800	-0.1153	0.499878	35.3593	0.090723	0.293858	0.580669	143.4472	0.071706	18.14453	58.77165	320.8768	-30	-3.42518	1.169466	-0.02433	0.476087	2.168462	400	247.651	-1.88645	-0.369262831	4.14035	-2.87062		
133333	2600	-0.11509	0.411673	34.81879	0.056643	0.239936	0.49385	143.6839	0.059151	11.32868	47.98716	430.2652	-30	-3.41933	1.20667	-0.03563	0.495125	2.168462	400	243.9844	-1.91115	-0.30150496	4.14035	-2.87062		
100000	2400	-0.11448	0.316585	34.32249	0.022564	0.179537	0.401474	143.9131	0.045561	4.512835	35.90732	541.0753	-30	-3.40178	1.254866	-0.05405	0.517775	2.168462	400	241.5041	-1.9213	-0.225605935	4.14035	-2.87062		
100000	2200	-0.11284	0.211382	33.98936	-0.01152	0.110054	0.300572	0	0	-2.30301	22.01074	656.934	-30	-3.35446	1.323768	-0.08617	0.546465	2.168462	400	241.948	-1.8924	-0.138292298	4.14035	-2.87062		
100000	2000	-0.10758	0.086967	34.36527	-0.04559	0.024979	0.181297	0	0	-9.11886	4.995833	772.7927	-30	-3.20247	1.451459	-0.16086	0.589689	2.168462	400	253.5166	-1.71962	-0.031387894	4.14035	-2.87062		
100000	1800	-0.12469	0.050549	30.45366	-0.07967	0.005532	0.153131	0	0	-15.9347	1.106478	888.6515	-30	-3.6951	1.268003	0	0	2.168462	0	0	-2.42013	-0.006957007	4.14035	-2.87062		
100000	1600	-0.15685	0.069929	25.8448	-0.11375	0.026832	0.177945	0	0	-22.7506	5.366438	1004.51	-30	-4.60872	1.477797	-0.10707	0.479716	2.168462	400	248.8265	-2.99895	0.427428986	4.14035	-2.87062		
100000	1400	-0.17934	0.035617	22.5091	-0.14783	0.004114	0.152043	0	0	-29.5664	0.822844	1120.369	-30	-5.23794	0.893443	0	0	2.168462	0	0	-4.33934	-0.005167205	4.14035	-2.87062		
100000	1200	-0.20918	0.030776	19.69965	-0.18191	0.00351	0.152303	0	0	-36.3823	0.702064	1236.228	-30	-6.06081	0.771998	0	0	2.168462	0	0	-5.2844	-0.00440901	4.14035	-2.87062		
100000	1000	-0.24004	0.027043	17.46197	-0.21599	0.002994	0.152902	0	0	-43.1981	0.598815	1352.086	-30	-6.8972	0.678361	0	0	2.168462	0	0	-6.21507	-0.003769733	4.14035	-2.87062		
100000	800	-0.27162	0.024109	15.66158	-0.25007	0.002557	0.153739	0	0	-50.014	0.51142	1467.945	-30	-7.73769	0.604749	0	0	2.168462	0	0	-7.12971	-0.003209141	4.14035	-2.87062		
162500	575	-0.30776	0.021495	14.03032	-0.28841	0.002143	0.154884	0	0	-57.6818	0.428573	1612.769	-30	-8.68037	0.539185	0	0	2.168462	0	0	-8.13848	-0.00269252	4.14035	-2.87062		
210375	325	-0.34846	0.019207	12.58228	-0.33101	0.00176	0.156337	0	0	-66.2016	0.351925	1757.592	-30	-9.71745	0.481795	0	0	2.168462	0	0	-9.23346	-0.00220889	4.14035	-2.87062		
0	100	-0.38543	0.017552	11.524	-0.36935	0.001468	0.157769	0	0	-73.8694	0.29369	1873.451	-30	-10.6373	0.440283	0	0	2.168462	0	0	-10.1952	-0.001841697	4.14035	-2.87062		
0	3400	-0.37197	5.013778	19.71925	0.241177	4.400629	3.421296	156.4004	0.784157	48.23535	0	0	-18.156	-6.23659	0.679021	0	-0.46611	2.20838	276.6468	108.0728	-5.48222	-0.112530058	5.628331	-5.3427	4301.647	0.519178
75000	3200	-0.11869	0.778355	36.82221	0.20353	0.456136	0.860743	142.8742	0.111207	40.70606	91.22713	104.2639	-30	-3.5228	1.080233	-0.00908	0.418313	2.20838	400	264.2384	-1.86938	-0.573181335	5.628331	-5.3427		
266667	3000	-0.11885	0.695357	36.25359	0.165884	0.410623	0.776554	143.0853	0.099495	33.17676	82.12466	209.6383	-30	-3.52744	1.103472	-0.00952	0.432394	2.20838	400	258.8639	-1.90798	-0.515991584	5.628331	-5.3427		
200000	2800	-0.119	0.608507	35.6592	0.128237	0.361266	0.689181	143.3217	0.087212	25.64747	72.25312	316.2033	-30	-3.53187	1.130534	-0.01267	0.448249	2.20838	400	253.6353	-1.94737	-0.453965003	5.628331	-5.3427		
133333	2600	-0.1191	0.516846	35.04506	0.090591	0.307157	0.597934	143.5831	0.07421	18.11818	61.43134	424.0581	-30	-3.53459	1.162942	-0.01942	0.466339	2.20838	400	248.6922	-1.98568	-0.385972327	5.628331	-5.3427		
100000	2400	-0.11901	0.41894	34.42859	0.052944	0.246982	0.501742	143.8631	0.06027	10.58888	49.39631	533.3309	-30	-3.53216	1.20337	-0.03134	0.487421	2.20838	400	244.3437	-2.01844	-0.310358281	5.628331	-5.3427		
100000	2200	-0.11845	0.31239	33.85992	0.015298	0.178644	0.398672	144.1372	0.045027	3.059588	35.72881	644.1976	-30	-3.51587	1.257245	-0.05181	0.512959	2.20838	400	241.3644	-2.03414	-0.224483286	5.628331	-5.3427		
100000	2000	-0.0865	0.069929	39.82072	-0.02235	0.005778	0.153879	0	0	-4.46971	1.155696	760.0563	-30	-2.58911	1.754127	0	0	2.20838	0	0	-0.8945	-0.0871787	5.628331	-5.3427		
100000	1800	-0.11535	0.069929	33.13403	-0.05999	0.014573	0.169613	0	0	-11.999	2.914523	875.9151	-30	-3.42675	1.477797	-0.16515	0.581348	2.20838	400	255.2771	-1.90546	0.036302263	5.628331	-5.3427		
100000	1600	-0.13943	0.04705	28.25432	-0.09764	0.00526	0.155519	0	0	-19.5283	1.052092	991.7738	-30	-4.11586	1.180212	0	0	2.20838	0	0	-2.92904	-0.006607794	5.628331	-5.3427		
100000	1400	-0.16975	0.038933	23.9783	-0.13529	0.004468	0.154979	0	0	-27.0576	0.893607	1107.633	-30	-4.97077	0.976619	0	0	2.20838	0	0	-3.98854	-0.00561347	5.628331	-5.3427		
100000	1200	-0.20214	0.03297	20.63835	-0.17293	0.003761	0.155104	0	0	-34.5869	0.75221	1223.491	-30	-5.86811	0.827035	0	0	2.20838	0	0	-5.03634	-0.004728079	5.628331	-5.3427		
100000	1000	-0.23593	0.028506	18.03489	-0.21058	0.00316	0.15569	0	0	-42.1162	0.632076	1339.35	-30	-6.7866	0.715061	0	0	2.20838	0	0	-6.06758	-0.003972506	5.628331	-5.3427		
100000	800	-0.27066	0.025087	15.98545	-0.24823	0.002657	0.156593	0	0	-49.6455	0.531485	1455.209	-30	-7.71226	0.629295	0	0	2.20838	0	0	-7.07963	-0.003341445	5.628331	-5.3427		
162500	575	-0.31051	0.022114	14.16738	-0.29058	0.002188	0.157868	0	0	-58.1159	0.437666	1600.032	-30	-8.75112	0.554715	0	0	2.20838	0	0	-8.19366	-0.002753482	5.628331	-5.3427		
210375	325	-0.35545	0.019569	12.58637	-0.33764	0.001761	0.159512	0	0	-67.5275	0.352222	1744.856	-30	-9.89298	0.49087	0	0	2.20838	0	0	-9.39991	-0.002209987	5.628331	-5.3427		
0	100	-0.39631	0.017761	11.45111	-0.37999	0.001441	0.16114	0	0	-75.998	0.288129	1860.714	-30	-10.9039	0.445529	0	0	2.20838	0	0	-10.4566	-0.001808562	5.628331	-5.3427		
0	3400	-0.41138	5.798961	19.62967	0.289491	5.098092	3.930099	156.5162	0.907631	57.89828	0	0	-16.799	-6.31088	0.649007	0	-0.47342	2.216739	276.2133	103.2957	-5.56613	-0.141632101	0.005681	-0.00754	4317.93	0.597515
75000	3200	-0.11924	0.877104	37.40921	0.248474	0.509394	0.961568	142.6716	0.125138	49.69483	101.8789	102.9729	-30	-3.53852	1.055284	-0.01063	0.401341	2.216739	400	271.1312	-1.84312	-0.640105909	0.005681	-0.00754		
266667	3000	-0.11941	0.790562	36.82235	0.207457	0.463698	0.873146	142.8741	0.112951	41.49139	92.73961	207.0734	-30	-3.54345	1.077001	-0.00841	0.414875	2.216739	400	265.1564	-1.88377	-0.582679925	0.005681	-0.00754		
200000	2800	-0.1196	0.700312	36.20312	0.16644	0.414272	0.78156	143.1047	0.100218	33.28795	82.85431	312.3786	-30	-3.54901	1.102019	-0.00868	0.430125	2.216739	400	259.2623	-1.92642	-0.520574163	0.005681	-0.00754		
133333	2600	-0.11979	0.605503	35.55278	0.125423	0.360291	0.686211	143.3658	0.086808	25.0845	72.05818	418.9832	-30	-3.55444	1.131528	-0.01213	0.44747	2.216739	400	253.5321	-1.97018	-0.452739215	0.005681	-0.00754		
100000	2400	-0.11991	0.504881	34.87915	0.084405	0.30057	0.586201	143.6568	0.07253	16.88106	60.11395	527.007	-30	-3.55778	1.167523	-0.01993	0.467511	2.216739	400	248.1473	-2.01256	-0.377696128	0.005681	-0.00754		
100000	2200	-0.11978	0.39648	34.20728	0.043388	0.233313	0.480053	143.968	0.05708	8.677614	46.66264	636.6096	-30	-3.55412	1.213726	-0.03426	0.491295	2.216739	400	243.5459	-2.04721	-0.293180084	0.005681	-0.00754		
100000	2000	-0.11892	0.276734	33.61927	0.002371	0.155447	0.364839	144.2578	0.039921	0.47417	31.08932	748.0207	-30	-3.52936	1.278539	-0.06039	0.521071	2.216739	400	240.9718	-2.05549	-0.195333251	0.005681	-0.00754		
100000	1800	-0.11538	0.136809	33.4771	-0.03865	0.060077	0.232061	0	0	-7.72927	12.0153	863.8794	-30	-3.42753	1.390462	-0.11795	0.563899	2.216739	400	245.736	-1.96157	-0.075491417	0.005681	-0.00754		
100000	1600	-0.12621	0.052215	30.71349	-0.07966	0.005672	0.156692	0	0	-15.9327	1.134355	979.7381	-30	-3.73853	1.309782	0	0	2.216739	0	0	-2.42163	-0.007126493	0.005681	-0.00754		
100000	1400	-0.15793	0.042041	25.56892	-0.12068	0.004791	0.15571	0	0	-24.1362	0.9583	1095.597	-30	-4.63915	1.054584	0	0	2.216739	0	0	-3.57855	-0.00602169	0.005681	-0.00754		
100000	1200	-0.19251	0.034795	21.60319	-0.1617	0.003983	0.155619	0	0	-32.3396	0.796546	1211.456	-30	-5.60294	0.872805	0	0	2.216739	0	0	-4.72513	-0.005006449	0.005681	-0.00754		
100000	1000	-0.22896	0.029541	18.58008	-0.20272	0.003297	0.156146	0	0	-40.543	0.659343	1327.314	-30	-6.59864	0.741017	0	0	2.216739	0	0	-5.85347	-0.004140279	0.005681	-0.00754		
100000	800	-0.26663	0.02563	16.25556	-0.24373	0.00273	0.157081	0	0	-48.7465	0.545921	1443.173	-30	-7.60598	0.642921	0	0	2.216739	0	0	-6.95962	-0.003432507	0.005681	-0.00754		
162500	575	-0.30998	0.022316	14.23987	-0.28988	0.00221	0.158456	0	0	-57.9754	0.441947	1587.996	-30	-8.73767	0.559789	0	0	2.216739	0	0	-8.17511	-0.002773802	0.005681	-0.00754		
210375	325	-0.35895	0.019545	12.52496	-0.34115	0.001744	0.160257	0	0	-68.2297	0.348802	1732.82	-30	-9.98068	0.490267	0	0	2.216739	0	0	-9.48822	-0.002185078	0.005681	-0.00754		
0	100	-0.40351	0.017614	11.31606	-0.38729	0.0014	0.162053	0	0	-77.4585	0.279921	1848.679	-30	-11.0793	0.441834	0	0	2.216739	0	0	-10.6357	-0.00176054	0.005681	-0.00754		
0	3400	-0.46201	6.654995	19.58309	0.337522	5.855461	4.4949	156.5766	1.042017	67.50431	0	0	-15.5332	-6.45903	0.621118	0	-0.4815	2.254289	276.4381	98.85697	-5.71558	-0.180848094	-149.094	114.2619	0	0.671584
75000	3200	-0.12581	1.082088	36.05256	0.292565	0.663716	1.149459	143.1635	0.154915	58.51292	100.3179	100.3179	-30	-3.72708	1.0107	0	-0.41288	2.254289	398.4953	261.1805	-2.08608	-0.630298395	-149.094	114.2619		
266667	3000	-0.12248	0.892346	37.14886	0.247608	0.522259	0.976953	142.7595	0.127391	49.52153	104.4517	203.0851	-30	-3.63169	1.051659	-0.00739	0.392306	2.254289	400	272.7247	-1.92377	-0.656270376	-149.094	114.2619		
200000	2800	-0.12275	0.797032	36.49787	0.202651	0.471634	0.87957	142.9928	0.11397	40.53014	94.32674	307.0903	-30	-3.63939	1.075306	-0.00494	0.407335	2.254289	400	266.0536	-1.97143	-0.592650239	-149.094	114.2619		
133333	2600	-0.12306	0.697178	35.80628	0.157694	0.416429	0.778357	143.2617	0.099879	31.53875	83.28579	412.428	-30	-3.64821	1.102937	-0.00546	0.424441	2.254289	400	259.4563	-2.02199	-0.523282989	-149.094	114.2619		
100000	2400	-0.12337	0.591604	35.07552	0.112737	0.3555	0.672496	143.5698	0.084936	22.54736	71.09994	519.2165	-30	-3.65716	1.136183	-0.0099	0.444141	2.254289	400	253.0403	-2.07426	-0.446718709	-149.094	114.2619		
100000	2200	-0.12358	0.47849	34.31713	0.06778	0.287127	0.560695	143.9157	0.068862	13.55598	57.42544	627.611	-30	-3.66335	1.177957	-0.01989	0.467302	2.254289	400	247.0692	-2.12459	-0.360802842	-149.094	114.2619		
100000	2000	-0.12341	0.354726	33.57455	0.022823	0.208498	0.440607	144.2805	0.05118	4.564588	41.69958	737.8287	-30	-3.65825	1.234305	-0.039	0.495616	2.254289	400	242.2712	-2.16194	-0.261997675	-149.094	114.2619		
100000	1800	-0.0867	0.069929	39.9444	-0.02213	0.005364	0.154196	0	0	-4.4268	1.072718	853.6875	-30	-2.59498	1.754127	0	0	2.254289	0	0	-0.93773	-0.133720826	-149.094	114.2619		
100000	1600	-0.11848	0.057429	32.71682	-0.06709	0.006042	0.159984	0	0	-13.4182	1.208366	969.5462	-30	-3.51674	1.440569	0	0	2.254289	0	0	-2.06858	-0.007592896	-149.094	114.2619		
100000	1400	-0.1576	0.069929	26.58023	-0.11205	0.024375	0.182097	0	0	-22.4096	4.874902	1085.405	-30	-4.62991	1.477797	-0.1111	0.490928	2.254289	400	248.9278	-3.0278	0.349905715	-149.094	114.2619		
100000	1200	-0.18939	0.036549	22.24568	-0.157	0.004168	0.158336	0	0	-31.401	0.833587	1201.264	-30	-5.51664	0.916822	0	0	2.254289	0	0	-4.59458	-0.005233603	-149.094	114.2619		
100000	1000	-0.2291	0.030534	18.86293	-0.20196	0.003395	0.158866	0	0	-40.3924	0.679037	1317.122	-30	-6.60244	0.765921	0	0	2.254289	0	0	-5.83225	-0.004265575	-149.094	114.2619		
100000	800	-0.27033	0.026172	16.31812	-0.24692	0.002765	0.159902	0	0	-49.3837	0.552994	1432.981	-30	-7.70351	0.656501	0	0	2.254289	0	0	-7.04353	-0.003472521	-149.094	114.2619		
162500	575	-0.31786	0.022558	14.15661	-0.2975	0.002195	0.161456	0	0	-59.4991	0.439083	1577.804	-30	-8.94009	0.565846	0	0	2.254289	0	0	-8.37147	-0.002760352	-149.094	114.2619		
210375	325	-0.37159	0.019597	12.35285	-0.35369	0.001693	0.163501	0	0	-70.7383	0.338621	1722.628	-30	-10.2956	0.49157	0	0	2.254289	0	0	-9.80191	-0.002123068	-149.094	114.2619		
0	100	-0.42051	0.017567	11.1015	-0.40427	0.001326	0.165545	0	0	-80.8536	0.265186	1838.487	-30	-11.4903	0.440669	0	0	2.254289	0	0	-11.0479	-0.001666107	-149.094	114.2619		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.49094	7.347564	19.54511	0.386367	6.470255	4.942519	156.626	1.150819	77.27345	0	0	-14.6407	-6.41501	0.601406	0	-0.48987	2.231168	279.5762	95.71952	-5.68349	-0.19067006	271.1621	-325.18	0	0.751124
75000	3200	-0.12771	1.250426	35.59161	0.339102	0.783611	1.304485	143.3497	0.179248	67.82035	98.24796	98.24796	-29.6275	-3.73472	0.979574	0	-0.42993	2.231168	397.3325	254.1566	-2.13785	-0.617291955	271.1621	-325.18		
266667	3000	-0.12031	0.971873	37.90075	0.291836	0.559729	1.058817	142.5139	0.138505	58.36725	111.9458	200.0118	-30	-3.56934	1.033608	-0.01401	0.384988	2.231168	400	278.1909	-1.83238	-0.703356142	271.1621	-325.18		
200000	2800	-0.1205	0.875544	37.25816	0.244571	0.510478	0.959891	142.7223	0.12496	48.91415	102.0955	303.0011	-30	-3.57474	1.055658	-0.00909	0.398987	2.231168	400	271.214	-1.87761	-0.641463476	271.1621	-325.18		
133333	2600	-0.12073	0.775049	36.57331	0.197305	0.457013	0.857306	142.9648	0.110805	39.46105	91.40257	407.3027	-30	-3.58148	1.081116	-0.0069	0.414933	2.231168	400	264.288	-1.92608	-0.57428352	271.1621	-325.18		
100000	2400	-0.121	0.66939	35.84466	0.15004	0.398355	0.750365	143.2462	0.095888	30.00795	79.67093	513.024	-30	-3.58908	1.111242	-0.00818	0.433251	2.231168	400	257.4769	-1.97727	-0.500572352	271.1621	-325.18		
100000	2200	-0.12124	0.557089	35.0762	0.102774	0.333079	0.638032	143.5695	0.079981	20.55485	66.61574	620.3025	-30	-3.59599	1.148159	-0.01415	0.45461	2.231168	400	250.9373	-2.02928	-0.418547778	271.1621	-325.18		
100000	2000	-0.12129	0.435787	34.28836	0.055509	0.258985	0.51859	143.9293	0.062723	11.10175	51.79704	729.3232	-30	-3.59764	1.195894	-0.02712	0.480182	2.231168	400	245.0786	-2.0763	-0.325441482	271.1621	-325.18		
100000	1800	-0.12067	0.301144	33.56068	0.008243	0.172235	0.388626	144.2876	0.043451	1.648656	34.44692	840.3573	-30	-3.57962	1.263748	-0.05276	0.512514	2.231168	400	241.1553	-2.09944	-0.216431167	271.1621	-325.18		
100000	1600	-0.11711	0.142017	33.29583	-0.03902	0.063925	0.237803	0	0	-7.80444	12.78507	956.2161	-30	-3.47748	1.385048	-0.11344	0.560048	2.231168	400	245.0871	-2.01212	-0.080323092	271.1621	-325.18		
100000	1400	-0.13153	0.050818	29.87602	-0.08629	0.005571	0.157526	0	0	-17.2575	1.114227	1072.075	-30	-3.89088	1.274738	0	0	2.231168	0	0	-2.60914	-0.006998234	271.1621	-325.18		
100000	1200	-0.16892	0.039931	24.29914	-0.13355	0.004566	0.156656	0	0	-26.7106	0.913136	1187.934	-30	-4.94742	1.001635	0	0	2.231168	0	0	-3.94005	-0.005735347	271.1621	-325.18		
100000	1000	-0.20965	0.032514	20.18472	-0.18082	0.003683	0.156853	0	0	-36.1637	0.73654	1303.792	-30	-6.07375	0.815603	0	0	2.231168	0	0	-5.25353	-0.004631555	271.1621	-325.18		
100000	800	-0.25244	0.027318	17.16063	-0.22808	0.002964	0.157736	0	0	-45.6168	0.592734	1419.651	-30	-7.22903	0.685255	0	0	2.231168	0	0	-6.54006	-0.003727017	271.1621	-325.18		
162500	575	-0.30208	0.023147	14.6572	-0.28126	0.002324	0.159232	0	0	-56.2516	0.464786	1564.474	-30	-8.53357	0.580636	0	0	2.231168	0	0	-7.95003	-0.002919227	271.1621	-325.18		
210375	325	-0.3584	0.019827	12.62084	-0.34034	0.00177	0.161289	0	0	-68.068	0.354027	1709.298	-30	-9.96687	0.497351	0	0	2.231168	0	0	-9.46729	-0.00222668	271.1621	-325.18		
0	100	-0.40974	0.017605	11.23823	-0.39351	0.001373	0.163377	0	0	-78.7027	0.274641	1825.157	-30	-11.2306	0.441602	0	0	2.231168	0	0	-10.7873	-0.00172881	271.1621	-325.18		
0	3400	-0.53669	8.139518	19.55004	0.434845	7.16798	5.471885	156.6196	1.274808	86.96894	0	0	-13.738	-6.49268	0.581344	0	-0.49906	2.252656	282.5233	92.52652	-5.76235	-0.218578002	472.3826	-620.061	0	0.826743
75000	3200	-0.1397	1.511826	34.29158	0.384534	0.98759	1.537488	143.9278	0.217594	76.90683	95.15384	95.15384	-28.3819	-3.90116	0.93832	0	-0.44446	2.252656	392.5421	244.4966	-2.36499	-0.597852391	472.3826	-620.061		
266667	3000	-0.12197	1.065306	38.3065	0.334224	0.609111	1.155017	142.3919	0.151691	66.84471	121.8221	195.7526	-30	-3.61711	1.014045	-0.01868	0.368404	2.252656	400	285.5652	-1.83765	-0.765410134	472.3826	-620.061		
200000	2800	-0.12216	0.965835	37.65654	0.283913	0.559761	1.052447	142.5909	0.137719	56.7826	111.9521	297.5868	-30	-3.62256	1.03493	-0.01128	0.381846	2.252656	400	278.0563	-1.88424	-0.703392135	472.3826	-620.061		
133333	2600	-0.12242	0.862346	36.96102	0.233602	0.506327	0.946243	142.8249	0.123164	46.72049	101.2655	400.7407	-30	-3.62986	1.058848	-0.00649	0.397192	2.252656	400	270.568	-1.93476	-0.636248623	472.3826	-620.061		
100000	2400	-0.12273	0.753917	36.21606	0.183292	0.447895	0.835761	143.0997	0.107885	36.65837	89.57904	505.3171	-30	-3.63889	1.08684	-0.00491	0.414823	2.252656	400	263.1318	-1.98921	-0.562825033	472.3826	-620.061		
100000	2200	-0.12308	0.639224	35.42044	0.132981	0.383164	0.72008	143.4213	0.091678	26.59626	76.63275	611.4461	-30	-3.64889	1.120603	-0.0075	0.435306	2.252656	400	255.8366	-2.0468	-0.481486228	472.3826	-620.061		
100000	2000	-0.12338	0.516223	34.5818	0.082671	0.310177	0.597769	143.7919	0.074229	16.53414	62.03532	719.2991	-30	-3.6574	1.163178	-0.016	0.459573	2.252656	400	248.922	-2.10445	-0.389769242	472.3826	-620.061		
100000	1800	-0.12334	0.381388	33.73904	0.03236	0.225689	0.466232	144.1975	0.054995	6.472028	45.13777	829.1183	-30	-3.65633	1.220954	-0.03411	0.489449	2.252656	400	243.0907	-2.15178	-0.283599216	472.3826	-620.061		
100000	1600	-0.07997	0.069929	40.03354	-0.01795	0.007907	0.147655	0	0	-3.59009	1.581369	944.977	-30	-2.39784	1.754127	0	0	2.252656	0	0	-0.92729	-0.138324496	472.3826	-620.061		
100000	1400	-0.11924	0.05699	32.53633	-0.06826	0.006013	0.15981	0	0	-13.6522	1.202651	1060.836	-30	-3.53857	1.429553	0	0	2.252656	0	0	-2.10147	-0.007556235	472.3826	-620.061		
100000	1200	-0.15724	0.043602	26.02546	-0.11857	0.004937	0.158373	0	0	-23.7143	0.9873	1176.694	-30	-4.61963	1.093727	0	0	2.252656	0	0	-3.5197	-0.006205879	472.3826	-620.061		
100000	1000	-0.19965	0.034713	21.24343	-0.16888	0.003945	0.158294	0	0	-33.7764	0.788954	1292.553	-30	-5.79962	0.870751	0	0	2.252656	0	0	-4.92391	-0.004961427	472.3826	-620.061		
100000	800	-0.24472	0.028664	17.79363	-0.21919	0.003134	0.159096	0	0	-43.8385	0.626846	1408.412	-30	-7.02283	0.719031	0	0	2.252656	0	0	-6.29985	-0.00394121	472.3826	-620.061		
162500	575	-0.29731	0.023942	15.00023	-0.27579	0.002421	0.160629	0	0	-55.1584	0.484211	1553.235	-30	-8.40993	0.600562	0	0	2.252656	0	0	-7.80633	-0.00304513	472.3826	-620.061		
210375	325	-0.35714	0.020275	12.77745	-0.33868	0.001814	0.162808	0	0	-67.7361	0.362761	1698.059	-30	-9.93546	0.508578	0	0	2.252656	0	0	-9.42462	-0.002281222	472.3826	-620.061		
0	100	-0.41176	0.017868	11.29582	-0.39528	0.001385	0.165048	0	0	-79.0559	0.276958	1813.917	-30	-11.2794	0.448218	0	0	2.252656	0	0	-10.8295	-0.001736	472.3826	-620.061		
0	3400	-0.56241	8.790308	19.53522	0.483358	7.744542	5.894786	156.6389	1.376904	96.67156	0	0	-13.0756	-6.42648	0.566494	0	-0.50783	2.225839	287.2306	90.16296	-5.70683	-0.223257231	649.4249	-663.565	0	0.90179
75000	3200	-0.14368	1.69678	33.94109	0.430073	1.123029	1.705022	144.0972	0.244501	86.01467	93.09651	93.09651	-27.5621	-3.8922	0.913094	0	-0.46082	2.225839	393.1641	238.4242	-2.39418	-0.584926237	649.4249	-663.565		
266667	3000	-0.11966	1.134217	38.99341	0.376789	0.637767	1.226418	142.2021	0.161288	75.35778	127.5534	192.8639	-30	-3.55075	1.000605	-0.02875	0.365167	2.225839	400	290.5136	-1.74872	-0.801420181	649.4249	-663.565		
200000	2800	-0.11977	1.031985	38.34362	0.323504	0.588714	1.120801	142.3811	0.146935	64.7009	117.7429	293.8799	-30	-3.55378	1.020835	-0.01903	0.377887	2.225839	400	282.6142	-1.79316	-0.739780483	649.4249	-663.565		
133333	2600	-0.11993	0.925854	37.64706	0.27022	0.5357	1.011529	142.594	0.132021	54.04401	107.1401	396.2267	-30	-3.55857	1.043883	-0.0119	0.392497	2.225839	400	274.745	-1.84152	-0.673159113	649.4249	-663.565		
100000	2400	-0.12016	0.814952	36.89899	0.216936	0.477856	0.897975	142.8468	0.116413	43.38713	95.57112	500.0043	-30	-3.56512	1.070674	-0.00791	0.409363	2.225839	400	266.9244	-1.89397	-0.600472106	649.4249	-663.565		
100000	2200	-0.12044	0.698056	36.09601	0.163651	0.413969	0.779276	143.1464	0.099924	32.73024	82.79379	605.3377	-30	-3.57302	1.102679	-0.00792	0.429004	2.225839	400	259.2147	-1.95015	-0.52019351	649.4249	-663.565		
100000	2000	-0.1207	0.573318	35.24064	0.110367	0.342249	0.654136	143.498	0.08227	22.07335	68.44979	712.3893	-30	-3.58065	1.142452	-0.01339	0.452241	2.225839	400	251.7876	-2.00813	-0.430070367	649.4249	-663.565		
100000	1800	-0.12077	0.437677	34.35622	0.057082	0.259825	0.520343	143.8972	0.06298	11.41647	51.96509	821.3835	-30	-3.58258	1.195071	-0.02727	0.480571	2.225839	400	245.1389	-2.06102	-0.326496402	649.4249	-663.565		
100000	1600	-0.11995	0.285162	33.5519	0.003798	0.161413	0.373195	144.2921	0.041147	0.759582	32.28252	932.6634	-30	-3.5591	1.273322	-0.05734	0.517494	2.225839	400	240.9963	-2.08295	-0.202830147	649.4249	-663.565		
100000	1400	-0.11417	0.097177	33.58745	-0.04949	0.032497	0.194793	0	0	-9.8973	6.499497	1048.522	-30	-3.39259	1.437305	-0.14528	0.577819	2.225839	400	250.6154	-1.91445	-0.040836738	649.4249	-663.565		
100000	1200	-0.14393	0.046355	27.71457	-0.10277	0.005199	0.156682	0	0	-20.5542	1.039852	1164.381	-30	-4.24352	1.162778	0	0	2.225839	0	0	-3.0742	-0.006535682	649.4249	-663.565		
100000	1000	-0.18785	0.035908	22.14577	-0.15606	0.004111	0.156254	0	0	-31.2111	0.822193	1280.24	-30	-5.4742	0.900723	0	0	2.225839	0	0	-4.56832	-0.005168796	649.4249	-663.565		
100000	800	-0.23517	0.029047	18.21957	-0.20934	0.003218	0.156935	0	0	-41.868	0.643615	1396.098	-30	-6.76618	0.728617	0	0	2.225839	0	0	-6.03353	-0.004043883	649.4249	-663.565		
162500	575	-0.2907	0.023862	15.12529	-0.26928	0.002445	0.158472	0	0	-53.857	0.488975	1540.922	-30	-8.23793	0.59856	0	0	2.225839	0	0	-7.63632	-0.00307107	649.4249	-663.565		
210375	325	-0.35404	0.01995	12.72656	-0.33589	0.0018	0.160731	0	0	-67.1781	0.359953	1685.745	-30	-9.85777	0.500435	0	0	2.225839	0	0	-9.35509	-0.002264056	649.4249	-663.565		
0	100	-0.41192	0.017439	11.16101	-0.39584	0.001352	0.163077	0	0	-79.1671	0.270419	1801.604	-30	-11.2833	0.437458	0	0	2.225839	0	0	-10.8441	-0.001695692	649.4249	-663.565		
0	3400	-0.60471	9.526319	19.56958	0.531912	8.389694	6.39477	156.5942	1.491766	106.3825	0	0	-12.3994	-6.47	0.551185	0	-0.51769	2.240336	291.7918	87.72636	-5.75099	-0.245223167	758.623	-935.411	0	0.989085
75000	3200	-0.15726	2.007111	32.73805	0.475737	1.37411	1.969123	144.7229	0.290475	95.14739	89.77991	89.77991	-26.2879	-4.04868	0.876285	0	-0.47438	2.240336	389.915	229.2491	-2.6083	-0.564086678	758.623	-935.411		
266667	3000	-0.12176	1.222086	39.39607	0.419562	0.680764	1.318217	142.1005	0.173659	83.91231	136.1527	188.4957	-29.7692	-3.58326	0.984529	-0.03685	0.352196	2.240336	400	297.6663	-1.74328	-0.85544665	758.623	-935.411		
200000	2800	-0.12087	1.115624	38.74169	0.363386	0.631364	1.207111	142.2692	0.158719	72.67723	126.2727	288.4844	-30	-3.5856	1.004155	-0.02495	0.364508	2.240336	400	289.2793	-1.78808	-0.793369991	758.623	-935.411		
133333	2600	-0.12103	1.006666	38.04183	0.307211	0.578427	1.094594	142.4707	0.14342	61.44216	115.6853	389.8108	-30	-3.59003	1.026129	-0.01539	0.378497	2.240336	400	280.92	-1.83706	-0.726848527	758.623	-935.411		
100000	2400	-0.12126	0.893108	37.28802	0.251035	0.520815	0.977832	142.7122	0.127457	50.20708	104.1631	492.5719	-30	-3.5966	1.051479	-0.00884	0.394693	2.240336	400	272.588	-1.89066	-0.654459086	758.623	-935.411		
100000	2200	-0.12156	0.773823	36.47454	0.19486	0.457405	0.856023	143.0015	0.110658	38.97201	91.48098	596.8873	-30	-3.60523	1.081445	-0.00605	0.413566	2.240336	400	264.3149	-1.94901	-0.574776389	758.623	-935.411		
100000	2000	-0.1219	0.647139	35.59879	0.138685	0.386552	0.728003	143.3467	0.092765	27.73693	77.31032	702.9107	-30	-3.61515	1.11811	-0.00819	0.435829	2.240336	400	256.202	-2.0113	-0.485741063	758.623	-935.411		
100000	1800	-0.12218	0.510393	34.66989	0.082509	0.305699	0.591896	143.7514	0.07337	16.50186	61.13975	810.85	-30	-3.62323	1.165401	-0.01753	0.462696	2.240336	400	248.5539	-2.07369	-0.384139406	758.623	-935.411		
100000	1600	-0.122	0.358722	33.74438	0.026334	0.210386	0.444095	144.1948	0.051726	5.26678	42.0772	921.0106	-30	-3.61798	1.232255	-0.03927	0.496714	2.240336	400	242.3783	-2.12136	-0.264372386	758.623	-935.411		
100000	1400	-0.11945	0.180271	33.14607	-0.02984	0.090667	0.274424	0	0	-5.9683	18.13338	1036.869	-30	-3.54457	1.349094	-0.09288	0.545888	2.240336	400	242.5086	-2.08154	-0.113931403	758.623	-935.411		
100000	1200	-0.13162	0.051205	29.96238	-0.08602	0.005603	0.158211	0	0	-17.2034	1.120649	1152.728	-30	-3.8933	1.284458	0	0	2.240336	0	0	-2.60181	-0.007039923	758.623	-935.411		
100000	1000	-0.1764	0.038626	23.50692	-0.14219	0.004417	0.157295	0	0	-28.4384	0.883441	1268.587	-30	-5.15626	0.968897	0	0	2.240336	0	0	-4.18182	-0.005550093	758.623	-935.411		
100000	800	-0.22555	0.030602	19.01168	-0.19837	0.003419	0.157785	0	0	-39.6735	0.683741	1384.445	-30	-6.50639	0.767623	0	0	2.240336	0	0	-5.73448	-0.004297705	758.623	-935.411		
162500	575	-0.28372	0.02472	15.5475	-0.26156	0.00256	0.159299	0	0	-52.313	0.511968	1529.269	-30	-8.05567	0.620078	0	0	2.240336	0	0	-7.43238	-0.003222271	758.623	-935.411		
210375	325	-0.35033	0.020403	12.9249	-0.33178	0.001855	0.161646	0	0	-66.3568	0.371068	1674.092	-30	-9.76465	0.511802	0	0	2.240336	0	0	-9.25052	-0.002328492	758.623	-935.411		
0	100	-0.4113	0.017691	11.24651	-0.39498	0.001373	0.164119	0	0	-78.9963	0.274691	1789.951	-30	-11.2682	0.443766	0	0	2.240336	0	0	-10.8228	-0.0017231	758.623	-935.411		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.63838	10.19886	19.5968	0.580728	8.979755	6.848516	156.5588	1.596722	116.1456	0	0	-11.8399	-6.45579	0.538374	0	-0.52747	2.235618	297.2457	85.68746	-5.74108	-0.257552585	1156.807	-1414.71	0	1.071277
75000	3200	-0.16834	2.304951	31.89656	0.522184	1.614424	2.219052	145.2021	0.334684	104.4369	86.80613	86.80613	-25.1711	-4.13756	0.84596	0	-0.48859	2.235618	389.0036	221.4488	-2.74619	-0.545403284	1156.807	-1414.71		
266667	3000	-0.12306	1.302246	39.91011	0.46364	0.715546	1.402869	141.9812	0.184895	92.72809	143.1091	184.5859	-29.372	-3.57197	0.970782	-0.04795	0.344779	2.235618	400	304.0014	-1.70203	-0.89915509	1156.807	-1414.71		
200000	2800	-0.12076	1.192252	39.26046	0.405097	0.666399	1.286745	142.1339	0.169459	81.01933	133.2798	283.6562	-29.9197	-3.57264	0.989862	-0.034	0.356492	2.235618	400	295.2486	-1.74538	-0.837394647	1156.807	-1414.71		
133333	2600	-0.12052	1.081202	38.5674	0.346553	0.614126	1.171557	142.3173	0.153874	69.31057	122.8253	384.0647	-30	-3.5755	1.010875	-0.02217	0.369688	2.235618	400	286.5291	-1.79291	-0.771713506	1156.807	-1414.71		
100000	2400	-0.1207	0.966251	37.82119	0.288009	0.557544	1.053001	142.5387	0.137728	57.6018	111.5087	485.8981	-30	-3.58055	1.034839	-0.01316	0.384944	2.235618	400	277.8397	-1.8451	-0.700608652	1156.807	-1414.71		
100000	2200	-0.12095	0.845929	37.01429	0.229465	0.495511	0.92956	142.8062	0.120804	45.89304	99.10214	589.2692	-30	-3.58788	1.062877	-0.00768	0.402755	2.235618	400	269.191	-1.90235	-0.622656105	1156.807	-1414.71		
100000	2000	-0.12128	0.718767	36.14124	0.170921	0.426567	0.8002	143.1287	0.102876	34.18428	85.31349	694.3207	-30	-3.59719	1.096682	-0.00671	0.42374	2.235618	400	260.6406	-1.96449	-0.536024949	1156.807	-1414.71		
100000	1800	-0.12161	0.582498	35.20278	0.112378	0.348508	0.663335	143.5143	0.083597	22.47552	69.70163	801.2412	-30	-3.6068	1.139284	-0.01198	0.448887	2.235618	400	252.3747	-2.02958	-0.437933336	1156.807	-1414.71		
100000	1600	-0.12173	0.433229	34.22578	0.053834	0.257664	0.516173	143.9591	0.062367	10.76675	51.5328	910.2983	-30	-3.61022	1.197014	-0.02714	0.480078	2.235618	400	244.9879	-2.08942	-0.323781077	1156.807	-1414.71		
100000	1400	-0.12068	0.262806	33.36128	-0.00471	0.146837	0.35227	0	0	-0.94201	29.36743	1026.157	-30	-3.58	1.287437	-0.06289	0.522117	2.235618	400	240.8656	-2.10805	-0.18451506	1156.807	-1414.71		
100000	1200	-0.11843	0.069929	32.7667	-0.06325	0.014756	0.171442	0	0	-12.6508	2.951235	1142.016	-30	-3.51527	1.477796	-0.1616	0.577036	2.235618	400	254.7108	-1.99564	0.038877257	1156.807	-1414.71		
100000	1000	-0.15937	0.042392	25.56441	-0.1218	0.004821	0.157082	0	0	-24.3595	0.964195	1257.874	-30	-4.67959	1.063366	0	0	2.235618	0	0	-3.61018	-0.006056277	1156.807	-1414.71		
100000	800	-0.20933	0.032691	20.24854	-0.18034	0.003702	0.157172	0	0	-36.0683	0.740385	1373.733	-30	-6.06502	0.820046	0	0	2.235618	0	0	-5.24034	-0.004652122	1156.807	-1414.71		
162500	575	-0.2693	0.02583	16.24423	-0.2462	0.002737	0.158522	0	0	-49.2407	0.547323	1518.557	-30	-7.67636	0.64794	0	0	2.235618	0	0	-7.02499	-0.003439386	1156.807	-1414.71		
210375	325	-0.33839	0.020962	13.29525	-0.31938	0.001958	0.160849	0	0	-63.8766	0.391519	1663.38	-30	-9.46328	0.525821	0	0	2.235618	0	0	-8.93501	-0.002461093	1156.807	-1414.71		
0	100	-0.40179	0.017983	11.45193	-0.38524	0.001435	0.163371	0	0	-77.049	0.287002	1779.239	-30	-11.0376	0.451086	0	0	2.235618	0	0	-10.5847	-0.001802938	1156.807	-1414.71		
0	3400	-0.66496	10.81835	19.61356	0.62895	9.524438	7.261996	156.5371	1.693472	125.7901	0	0	-11.3674	-6.40395	0.527436	0	-0.53691	2.217759	303.2107	83.94652	-5.6961	-0.262864037	1178.985	-1220.45	0	1.13404
75000	3200	-0.17609	2.563205	31.38488	0.566851	1.820263	2.435714	145.5104	0.372973	113.3702	84.3853	84.3853	-24.2769	-4.16562	0.822731	0	-0.50279	2.217759	390.123	215.3308	-2.8127	-0.530192287	1178.985	-1220.45		
266667	3000	-0.12302	1.368452	40.44931	0.504751	0.740676	1.472699	141.8686	0.19414	100.9503	148.1352	181.408	-29.0518	-3.53205	0.960019	-0.06053	0.342361	2.217759	400	309.1455	-1.6413	-0.930735777	1178.985	-1220.45		
200000	2800	-0.1206	1.254393	39.79407	0.442652	0.691144	1.352351	142.0071	0.178133	88.5304	138.2288	279.749	-29.6078	-3.53088	0.978889	-0.04411	0.353468	2.217759	400	299.8762	-1.68351	-0.868490245	1178.985	-1220.45		
133333	2600	-0.119	1.137509	39.08937	0.380553	0.637959	1.229857	142.1772	0.161728	76.11051	127.5918	379.4786	-30	-3.53166	0.999982	-0.03016	0.366402	2.217759	400	290.648	-1.73	-0.801659073	1178.985	-1220.45		
100000	2400	-0.1191	1.018367	38.33237	0.318453	0.58081	1.106803	142.3844	0.145	63.69062	116.1619	480.6653	-30	-3.53476	1.023667	-0.01889	0.381223	2.217759	400	281.4652	-1.78124	-0.729848549	1178.985	-1220.45		
100000	2200	-0.11929	0.893823	37.51146	0.256354	0.518176	0.978701	142.6379	0.127493	51.27074	103.6352	583.4231	-30	-3.54019	1.051311	-0.01121	0.39866	2.217759	400	272.3315	-1.83773	-0.651141143	1178.985	-1220.45		
100000	2000	-0.11956	0.762406	36.61954	0.194254	0.448594	0.844495	142.9477	0.108984	38.85085	89.71882	687.896	-30	-3.54779	1.084524	-0.0081	0.419331	2.217759	400	263.2895	-1.89957	-0.563703182	1178.985	-1220.45		
100000	1800	-0.11986	0.621871	35.65412	0.132155	0.369861	0.702605	143.3238	0.089129	26.43096	73.97222	794.2734	-30	-3.55633	1.126161	-0.0112	0.444209	2.217759	400	254.4906	-1.9654	-0.464769034	1178.985	-1220.45		
100000	1600	-0.12	0.46842	34.63367	0.070055	0.278362	0.550319	143.768	0.067344	14.01108	55.67238	902.822	-30	-3.56058	1.182064	-0.0239	0.475076	2.217759	400	246.4363	-2.02872	-0.349790333	1178.985	-1220.45		
100000	1400	-0.11923	0.294369	33.67826	0.007956	0.167188	0.381713	144.228	0.042456	1.59119	33.43756	1013.962	-30	-3.53822	1.267757	-0.05555	0.516245	2.217759	400	241.1052	-2.06037	-0.210089471	1178.985	-1220.45		
100000	1200	-0.11143	0.072311	33.94408	-0.05414	0.015021	0.17023	0	0	-10.8287	3.004158	1129.821	-30	-3.31377	1.473876	-0.17	0.589692	2.217759	400	255.7974	-1.82102	-0.018874893	1178.985	-1220.45		
100000	1000	-0.15437	0.043014	26.07173	-0.11624	0.004888	0.155843	0	0	-23.2486	0.977573	1245.68	-30	-4.53881	1.078969	0	0	2.217759	0	0	-3.4537	-0.00614361	1178.985	-1220.45		
100000	800	-0.20714	0.032492	20.28405	-0.17834	0.003692	0.155846	0	0	-35.6685	0.738315	1361.538	-30	-6.00514	0.815031	0	0	2.217759	0	0	-5.18548	-0.004641455	1178.985	-1220.45		
162500	575	-0.27082	0.025287	16.04169	-0.2482	0.002676	0.157276	0	0	-49.6408	0.535252	1506.362	-30	-7.71643	0.634315	0	0	2.217759	0	0	-7.07875	-0.003364405	1178.985	-1220.45		
210375	325	-0.34426	0.02031	12.99562	-0.32583	0.001874	0.159769	0	0	-65.1657	0.374794	1651.185	-30	-9.61185	0.509473	0	0	2.217759	0	0	-9.10005	-0.00235891	1178.985	-1220.45		
0	100	-0.41167	0.017322	11.12741	-0.39569	0.001344	0.16247	0	0	-79.1381	0.268842	1767.044	-30	-11.2771	0.434518	0	0	2.217759	0	0	-10.8409	-0.001690819	1178.985	-1220.45		
0	3400	-0.70803	11.48014	19.69596	0.676406	10.09571	7.734877	156.4305	1.795844	135.2812	0	0	-10.9027	-6.45344	0.516551	0	-0.54776	2.240444	309.0402	82.21407	-5.74216	-0.285465736	453.4012	-412.158	0	1.208844
75000	3200	-0.20045	3.067023	29.85405	0.609217	2.257352	2.821359	146.5106	0.449352	121.8435	79.93832	79.93832	-22.7033	-4.40574	0.78367	0	-0.51119	2.240444	385.4567	204.6669	-3.11982	-0.502252774	453.4012	-412.158		
266667	3000	-0.12658	1.446887	40.68226	0.542029	0.778281	1.555627	141.8239	0.205203	108.4058	155.6562	176.0704	-28.6815	-3.58436	0.947892	-0.06966	0.330392	2.240444	400	316.0532	-1.6585	-0.977986388	453.4012	-412.158		
200000	2800	-0.12394	1.325309	39.99955	0.474841	0.726523	1.427232	141.9617	0.188143	94.96811	145.3046	273.5829	-29.2597	-3.58305	0.966975	-0.05049	0.341458	2.240444	400	305.9513	-1.70312	-0.912950593	453.4012	-412.158		
133333	2600	-0.1213	1.199488	39.25971	0.407652	0.670536	1.294362	142.1341	0.170488	81.53043	134.1072	372.5661	-29.8831	-3.5838	0.988557	-0.03417	0.354688	2.240444	400	295.891	-1.75266	-0.842595319	453.4012	-412.158		
100000	2400	-0.12094	1.071712	38.46155	0.340464	0.610311	1.161721	142.3472	0.152555	68.09275	122.0622	473.0895	-30	-3.58742	1.012763	-0.02071	0.369946	2.240444	400	285.8711	-1.80774	-0.766913633	453.4012	-412.158		
100000	2200	-0.12117	0.938729	37.59259	0.273275	0.544286	1.024662	142.6115	0.133874	54.65507	108.8573	575.2691	-30	-3.59401	1.040962	-0.01103	0.387964	2.240444	400	275.8874	-1.86909	-0.683950197	453.4012	-412.158		
100000	2000	-0.1215	0.798239	36.64136	0.206087	0.47065	0.880869	142.9397	0.1141	41.21739	94.12997	679.2622	-30	-3.60364	1.074991	-0.00625	0.409524	2.240444	400	265.965	-1.93722	-0.591419912	453.4012	-412.158		
100000	1800	-0.12191	0.647686	35.60148	0.138899	0.386876	0.728552	143.3456	0.092843	27.77971	77.37519	785.2781	-30	-3.61539	1.117939	-0.00816	0.43571	2.240444	400	256.2362	-2.01131	-0.486148649	453.4012	-412.158		
100000	1600	-0.12222	0.482655	34.48741	0.07171	0.288726	0.564603	143.8357	0.069423	14.34202	57.74518	893.6157	-30	-3.62421	1.176279	-0.02047	0.468533	2.240444	400	247.1991	-2.08512	-0.362810471	453.4012	-412.158		
100000	1400	-0.12155	0.293857	33.42858	0.004522	0.167786	0.381977	144.3553	0.04242	0.904343	33.55726	1004.76	-30	-3.60497	1.268063	-0.05388	0.513064	2.240444	400	241.0428	-2.12606	-0.210841402	453.4012	-412.158		
100000	1200	-0.11809	0.069929	32.88299	-0.06267	0.014508	0.171448	0	0	-12.5333	2.901535	1120.618	-30	-3.50552	1.477797	-0.16254	0.578399	2.240444	400	254.8325	-1.98766	0.029332244	453.4012	-412.158		
100000	1000	-0.16611	0.040917	24.73693	-0.12986	0.004667	0.15736	0	0	-25.971	0.933373	1236.477	-30	-4.86868	1.026378	0	0	2.240444	0	0	-3.83644	-0.005861494	453.4012	-412.158		
100000	800	-0.22436	0.030757	19.1005	-0.19704	0.00344	0.157771	0	0	-39.4087	0.687999	1352.336	-30	-6.47416	0.771527	0	0	2.240444	0	0	-5.69831	-0.004318272	453.4012	-412.158		
162500	575	-0.29411	0.023919	15.06483	-0.27263	0.002434	0.15964	0	0	-54.5261	0.486818	1497.159	-30	-8.32682	0.599983	0	0	2.240444	0	0	-7.72378	-0.003060265	453.4012	-412.158		
210375	325	-0.3742	0.019236	12.20494	-0.35662	0.001652	0.162592	0	0	-71.3232	0.330444	1641.983	-30	-10.3602	0.482533	0	0	2.240444	0	0	-9.8756	-0.002069984	453.4012	-412.158		
0	100	-0.4475	0.016437	10.4629	-0.4322	0.001137	0.1657	0	0	-86.4406	0.22745	1757.841	-30	-12.1336	0.412315	0	0	2.240444	0	0	-11.7199	-0.001426086	453.4012	-412.158		
0	3400	-0.73979	12.09926	19.74859	0.726073	10.6334	8.166149	156.3626	1.891872	145.2145	0	0	-10.501	-6.43028	0.507032	0	-0.55837	2.236179	315.7715	80.699	-5.72173	-0.295776346	1333.014	-1708.09	0	1.315717
75000	3200	-0.22242	3.587521	28.73585	0.658218	2.706884	3.212259	147.3169	0.528502	131.6435	75.79885	75.79885	-21.2784	-4.55465	0.749847	0	-0.52239	2.236179	383.8794	195.1442	-3.32856	-0.476244688	1333.014	-1708.09		
266667	3000	-0.12807	1.529907	41.16803	0.590363	0.811475	1.643166	141.7382	0.216846	118.0725	162.2949	171.0111	-28.2996	-3.57693	0.935726	-0.08536	0.324766	2.236179	400	323.1044	-1.62152	-1.019698178	1333.014	-1708.09		
200000	2800	-0.12542	1.409789	40.51519	0.522508	0.761863	1.516433	141.8557	0.199987	104.5015	152.3726	267.5612	-28.8555	-3.57418	0.953548	-0.06417	0.334551	2.236179	400	312.8661	-1.66328	-0.95735552	1333.014	-1708.09		
133333	2600	-0.12276	1.285869	39.80992	0.454653	0.708457	1.385574	142.0036	0.182598	90.93056	141.6915	365.5308	-29.4523	-3.57325	0.973524	-0.04561	0.346313	2.236179	400	302.6874	-1.70948	-0.890246199	1333.014	-1708.09		
100000	2400	-0.12049	1.157915	39.04506	0.386798	0.650626	1.250887	142.1886	0.164642	77.35957	130.1253	465.0109	-30	-3.5746	0.996158	-0.03002	0.360312	2.236179	400	292.5487	-1.76086	-0.817578406	1333.014	-1708.09		
100000	2200	-0.12064	1.027847	38.21898	0.318943	0.588261	1.116466	142.4176	0.146384	63.78858	117.6523	566.0755	-30	-3.57895	1.021692	-0.01748	0.376453	2.236179	400	282.4556	-1.81805	-0.739207819	1333.014	-1708.09		
100000	2000	-0.1209	0.891328	37.31612	0.251088	0.519342	0.976034	142.7027	0.127195	50.2176	103.8684	668.8605	-30	-3.5863	1.051899	-0.0092	0.395708	2.236179	400	272.4041	-1.88179	-0.652607489	1333.014	-1708.09		
100000	1800	-0.12126	0.746423	36.32666	0.183233	0.441934	0.828215	143.0573	0.106781	36.64661	88.38674	773.5412	-30	-3.59656	1.088904	-0.00642	0.418885	2.236179	400	262.4473	-1.95232	-0.555335414	1333.014	-1708.09		
100000	1600	-0.12165	0.590002	35.24823	0.115378	0.352974	0.670818	143.4947	0.084662	23.07562	70.59476	880.3567	-30	-3.60788	1.136726	-0.01145	0.447336	2.236179	400	252.8037	-2.0276	-0.443546195	1333.014	-1708.09		
100000	1400	-0.12176	0.416342	34.11731	0.047523	0.247056	0.499744	144.0113	0.059958	9.504637	49.41123	989.6617	-30	-3.61112	1.204544	-0.02959	0.483804	2.236179	400	244.317	-2.09613	-0.310448779	1333.014	-1708.09		
100000	1200	-0.11982	0.211635	33.22114	-0.02033	0.112143	0.303834	0	0	-4.06635	22.42858	1105.52	-30	-3.55541	1.323574	-0.08014	0.536737	2.236179	400	241.4414	-2.09092	-0.14091953	1333.014	-1708.09		
100000	1000	-0.13311	0.050463	29.64784	-0.08819	0.005545	0.157834	0	0	-17.6373	1.108922	1221.379	-30	-3.93571	1.265834	0	0	2.236179	0	0	-2.66291	-0.006963396	1333.014	-1708.09		
100000	800	-0.1881	0.036197	22.21359	-0.15604	0.004138	0.157009	0	0	-31.2083	0.827689	1337.238	-30	-5.48107	0.907985	0	0	2.236179	0	0	-4.56789	-0.005201324	1333.014	-1708.09		
162500	575	-0.2565	0.027037	16.95782	-0.23238	0.002917	0.158205	0	0	-46.4757	0.5833	1482.061	-30	-7.33718	0.678203	0	0	2.236179	0	0	-6.65532	-0.003665495	1333.014	-1708.09		
210375	325	-0.33631	0.02109	13.3703	-0.3172	0.001978	0.160812	0	0	-63.4394	0.39567	1626.885	-30	-9.4106	0.529023	0	0	2.236179	0	0	-8.87911	-0.002485545	1333.014	-1708.09		
0	100	-0.40984	0.01768	11.2607	-0.39353	0.001378	0.163751	0	0	-78.7068	0.275684	1742.743	-30	-11.2328	0.443501	0	0	2.236179	0	0	-10.7876	-0.001737032	1333.014	-1708.09		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.77619	12.67573	19.83503	0.772575	11.12696	8.587242	156.2516	1.980603	154.515	0	0	-10.1527	-6.44828	0.498684	0	-0.56924	2.249503	322.264	79.37038	-5.73759	-0.312740854	-0.01097	-0.00526	4381.752	1.375338
75000	3200	-0.2626	4.388538	27.02572	0.697725	3.428215	3.765302	148.6775	0.652477	139.545	70.11215	70.11215	-19.4043	-4.85052	0.706937	0	-0.52556	2.249503	377.3467	182.628	-3.70307	-0.440514855	-0.01097	-0.00526		
266667	3000	-0.13164	1.62139	40.99966	0.622875	0.866871	1.735971	141.7668	0.229859	124.575	164.317	164.317	-27.8905	-3.62019	0.923037	-0.09063	0.327784	2.249503	400	323.7656	-1.66475	-1.032402829	-0.01097	-0.00526		
200000	2800	-0.12766	1.4622	40.68624	0.548025	0.78652	1.571866	141.8231	0.207374	109.605	157.304	260.2763	-28.6103	-3.60489	0.945599	-0.07077	0.327043	2.249503	400	317.4881	-1.67096	-0.988339642	-0.01097	-0.00526		
133333	2600	-0.12472	1.326779	39.92658	0.473175	0.728887	1.428793	141.9776	0.188373	94.63503	145.7775	357.7699	-29.2525	-3.60375	0.966734	-0.04933	0.339353	2.249503	400	306.2138	-1.72111	-0.915916202	-0.01097	-0.00526		
100000	2400	-0.12176	1.186056	39.0956	0.398325	0.665966	1.280142	142.1756	0.168628	79.66504	133.1932	456.9107	-29.9512	-3.6053	0.990986	-0.03144	0.354366	2.249503	400	294.9842	-1.77746	-0.836849119	-0.01097	-0.00526		
100000	2200	-0.12174	1.042893	38.19128	0.323475	0.597675	1.131897	142.4258	0.148535	64.69505	119.5349	557.7859	-30	-3.61054	1.01859	-0.01715	0.371926	2.249503	400	283.8002	-1.84091	-0.751039886	-0.01097	-0.00526		
100000	2000	-0.12206	0.892282	37.19431	0.248625	0.521596	0.976922	142.744	0.127368	49.72505	104.3192	660.5551	-30	-3.61966	1.051674	-0.00787	0.393172	2.249503	400	272.6544	-1.91255	-0.655439734	-0.01097	-0.00526		
100000	1800	-0.12251	0.731344	36.09072	0.173775	0.435058	0.812896	143.1485	0.104691	34.75506	87.01165	765.434	-30	-3.63258	1.093113	-0.00533	0.419229	2.249503	400	261.6095	-1.99278	-0.546695306	-0.01097	-0.00526		
100000	1600	-0.123	0.555654	34.8788	0.098925	0.333733	0.636735	143.6569	0.079824	19.78507	66.74665	872.7281	-30	-3.6465	1.148671	-0.0128	0.452009	2.249503	400	250.9891	-2.07846	-0.419367573	-0.01097	-0.00526		
100000	1400	-0.12292	0.356244	33.63343	0.024075	0.209245	0.441943	144.2506	0.051388	4.815074	41.84894	982.9241	-30	-3.64443	1.233524	-0.03906	0.495955	2.249503	400	242.3121	-2.14797	-0.262934965	-0.01097	-0.00526		
100000	1200	-0.11703	0.10315	33.26801	-0.05077	0.036895	0.201973	0	0	-10.1549	7.378978	1098.783	-30	-3.47507	1.429488	-0.13789	0.572186	2.249503	400	249.2949	-1.99922	-0.04636226	-0.01097	-0.00526		
100000	1000	-0.16288	0.042033	25.2382	-0.12562	0.004779	0.15806	0	0	-25.1249	0.9559	1214.642	-30	-4.77818	1.054362	0	0	2.249503	0	0	-3.71781	-0.006006428	-0.01097	-0.00526		
100000	800	-0.22765	0.030586	18.9301	-0.20047	0.003407	0.15849	0	0	-40.0949	0.681486	1330.5	-30	-6.5633	0.767222	0	0	2.249503	0	0	-5.79179	-0.004275343	-0.01097	-0.00526		
162500	575	-0.30564	0.023279	14.62149	-0.28468	0.00232	0.160682	0	0	-56.9361	0.46391	1475.324	-30	-8.62561	0.583938	0	0	2.249503	0	0	-8.03878	-0.002914526	-0.01097	-0.00526		
210375	325	-0.39522	0.018474	11.68652	-0.37824	0.0015	0.164118	0	0	-75.6486	0.300083	1620.147	-30	-10.8772	0.463405	0	0	2.249503	0	0	-10.4119	-0.001892697	-0.01097	-0.00526		
0	100	-0.47716	0.01568	9.947774	-0.46245	0.000972	0.167716	0	0	-92.4899	0.194426	1736.006	-30	-12.8272	0.393316	0	0	2.249503	0	0	-12.4326	-0.001218191	-0.01097	-0.00526		
0	3400	-0.80072	13.22584	19.87745	0.820837	11.60428	8.970053	156.1974	2.065841	164.1674	0	0	-9.84125	-6.39772	0.491137	0	-0.57943	2.235363	329.3778	78.16926	-5.69159	-0.317057435	0.0089	-0.00099	4354.207	1.458663
75000	3200	-0.30057	5.214084	25.77959	0.742511	4.171004	4.319356	149.7696	0.780911	148.5021	65.05586	65.05586	-17.7894	-5.03702	0.670888	0	-0.53136	2.235363	374.1777	171.8342	-3.95739	-0.408746016	0.0089	-0.00099		
266667	3000	-0.13545	1.779741	40.25261	0.664184	0.980109	1.888951	141.9082	0.25256	132.8369	157.5534	157.5534	-27.2095	-3.63018	0.90264	-0.09179	0.359541	2.235363	400	313.5862	-1.73763	-0.989909161	0.0089	-0.00099		
200000	2800	-0.12782	1.521616	41.13106	0.585858	0.80794	1.634414	141.7444	0.21568	117.1716	161.588	252.857	-28.3373	-3.57489	0.936912	-0.08394	0.325583	2.235363	400	322.3742	-1.62273	-1.015254446	0.0089	-0.00099		
133333	2600	-0.12476	1.382375	40.36933	0.507532	0.750087	1.487486	141.8845	0.196138	101.5064	150.0173	349.7177	-28.9854	-3.57196	0.957819	-0.0599	0.337186	2.235363	400	310.5682	-1.67157	-0.942561705	0.0089	-0.00099		
100000	2400	-0.12168	1.237863	39.5353	0.429206	0.686975	1.334886	142.067	0.17586	85.84114	137.3949	448.2488	-29.6901	-3.57154	0.981757	-0.03947	0.351514	2.235363	400	298.8365	-1.72655	-0.863248121	0.0089	-0.00099		
100000	2200	-0.12049	1.089394	38.62195	0.350879	0.618024	1.180024	142.3021	0.155023	70.17589	123.6047	548.5574	-30	-3.5746	1.009258	-0.02297	0.368715	2.235363	400	287.1592	-1.78873	-0.776611098	0.0089	-0.00099		
100000	2000	-0.12074	0.93494	37.61602	0.272553	0.541651	1.020803	142.604	0.133326	54.51065	108.3301	650.7863	-30	-3.58164	1.041818	-0.01136	0.389441	2.235363	400	275.539	-1.85918	-0.680639251	0.0089	-0.00099		
100000	1800	-0.12112	0.770215	36.49866	0.194227	0.454868	0.852376	142.9925	0.110135	38.8454	90.9736	755.1509	-30	-3.59266	1.082413	-0.00649	0.415017	2.235363	400	264.0146	-1.93865	-0.571587089	0.0089	-0.00099		
100000	1600	-0.12157	0.590902	35.26272	0.115901	0.353431	0.671712	143.4885	0.084788	23.18015	70.68617	861.954	-30	-3.60559	1.136421	-0.01146	0.447292	2.235363	400	252.8484	-2.02506	-0.444121364	0.0089	-0.00099		
100000	1400	-0.12161	0.38846	33.96247	0.037575	0.229271	0.472681	144.0867	0.055972	7.514906	45.85419	971.6716	-30	-3.60685	1.217539	-0.03419	0.490368	2.235363	400	243.3025	-2.10121	-0.288102488	0.0089	-0.00099		
100000	1200	-0.10055	0.066284	36.77674	-0.04075	0.006483	0.160011	0	0	-8.15034	1.296668	1087.53	-30	-2.99874	1.662706	0	0	2.235363	0	0	-1.3279	-0.008143976	0.0089	-0.00099		
100000	1000	-0.15716	0.042955	25.86256	-0.11908	0.004877	0.157096	0	0	-23.8156	0.975488	1203.389	-30	-4.61733	1.077499	0	0	2.235363	0	0	-3.53371	-0.006130184	0.0089	-0.00099		
100000	800	-0.22457	0.030591	19.04459	-0.1974	0.003422	0.157407	0	0	-39.4808	0.684447	1319.248	-30	-6.47989	0.767344	0	0	2.235363	0	0	-5.70825	-0.004299194	0.0089	-0.00099		
162500	575	-0.30618	0.02295	14.51076	-0.28552	0.002286	0.159676	0	0	-57.1042	0.457277	1464.071	-30	-8.63968	0.575683	0	0	2.235363	0	0	-8.06113	-0.00286888	0.0089	-0.00099		
210375	325	-0.40003	0.018048	11.49424	-0.38343	0.001447	0.163279	0	0	-76.6858	0.28942	1608.895	-30	-10.9947	0.45273	0	0	2.235363	0	0	-10.5401	-0.00182554	0.0089	-0.00099		
0	100	-0.48588	0.015245	9.736552	-0.47155	0.000913	0.167057	0	0	-94.3092	0.18253	1724.753	-30	-13.0285	0.382418	0	0	2.235363	0	0	-12.6449	-0.001147071	0.0089	-0.00099		
0	3400	-0.81986	13.75758	19.90059	0.869153	12.06857	9.331394	156.1678	2.148491	173.8305	0	0	-9.55783	-6.32294	0.484198	0	-0.58919	2.211138	336.7067	77.06483	-5.62381	-0.316248411	23.16584	-14.6611	4307.021	1.548817
75000	3200	-0.35131	6.293378	24.45513	0.787458	5.154613	5.007974	151.027	0.95047	157.4916	59.40041	59.40041	-16.0439	-5.2352	0.632371	0	-0.53476	2.211138	370.2104	160.0483	-4.22962	-0.373212689	23.16584	-14.6611		
266667	3000	-0.13854	1.942087	39.56984	0.705763	1.097785	2.043361	142.0589	0.275891	141.1526	150.2066	150.2066	-26.545	-3.61942	0.883506	-0.09421	0.392812	2.211138	400	303.2165	-1.79217	-0.943746929	23.16584	-14.6611		
200000	2800	-0.12705	1.575219	41.62579	0.624068	0.824102	1.690474	141.6669	0.223156	124.8137	164.8204	244.9277	-28.0955	-3.52377	0.929352	-0.09889	0.327495	2.211138	400	326.7219	-1.55886	-1.035569173	23.16584	-14.6611		
133333	2600	-0.12388	1.432521	40.86454	0.542374	0.766268	1.540213	141.7905	0.203118	108.4747	153.2536	341.2264	-28.7486	-3.51868	0.950066	-0.07217	0.338275	2.211138	400	314.4032	-1.60574	-0.962888458	23.16584	-14.6611		
100000	2400	-0.1207	1.28459	40.03086	0.460679	0.703214	1.3842	141.9549	0.182354	92.1358	140.6427	439.2163	-29.4585	-3.5159	0.97374	-0.04916	0.351802	2.211138	400	302.1951	-1.65851	-0.883656019	23.16584	-14.6611		
100000	2200	-0.11846	1.131445	39.11363	0.378984	0.634002	1.223611	142.171	0.160859	75.79686	126.8005	539.0206	-30	-3.51617	1.001131	-0.03036	0.368444	2.211138	400	290.069	-1.71835	-0.796685734	23.16584	-14.6611		
100000	2000	-0.1186	0.973554	38.10391	0.29729	0.557661	1.060666	142.4519	0.138685	59.45791	111.5322	640.7685	-30	-3.52034	1.033241	-0.01637	0.388506	2.211138	400	278.0259	-1.78633	-0.700756247	23.16584	-14.6611		
100000	1800	-0.11888	0.80549	36.97975	0.215595	0.471014	0.888382	142.8183	0.115039	43.11897	94.20277	744.674	-30	-3.52832	1.073109	-0.00917	0.413445	2.211138	400	266.0969	-1.86333	-0.591878495	23.16584	-14.6611		
100000	1600	-0.11924	0.623063	35.73006	0.1339	0.369925	0.703777	143.2927	0.08928	26.78002	73.98506	851.0367	-30	-3.53857	1.125775	-0.0117	0.44506	2.211138	400	254.5029	-1.94794	-0.464848288	23.16584	-14.6611		
100000	1400	-0.11928	0.418141	34.39427	0.052205	0.246652	0.501015	143.8793	0.060162	10.44108	49.33034	960.3207	-30	-3.53991	1.20373	-0.03125	0.487184	2.211138	400	244.3205	-2.02625	-0.309942631	23.16584	-14.6611		
100000	1200	-0.09287	0.069929	38.60567	-0.02949	0.006547	0.158762	0	0	-5.89787	1.309466	1076.179	-30	-2.77522	1.754127	0	0	2.211138	0	0	-1.01516	-0.011359941	23.16584	-14.6611		
100000	1000	-0.15013	0.043919	26.61421	-0.11118	0.004977	0.155436	0	0	-22.2368	0.995371	1192.038	-30	-4.41905	1.101688	0	0	2.211138	0	0	-3.31112	-0.006253265	23.16584	-14.6611		
100000	800	-0.21996	0.03052	19.19736	-0.19288	0.003436	0.155568	0	0	-38.5758	0.687298	1307.897	-30	-6.35478	0.76557	0	0	2.211138	0	0	-5.5849	-0.004316146	23.16584	-14.6611		
162500	575	-0.30506	0.02253	14.40629	-0.28479	0.002252	0.157882	0	0	-56.9571	0.450423	1452.72	-30	-8.61071	0.565151	0	0	2.211138	0	0	-8.04274	-0.002831301	23.16584	-14.6611		
210375	325	-0.40305	0.017543	11.29924	-0.3869	0.001396	0.161621	0	0	-77.3808	0.279215	1597.544	-30	-11.0682	0.440044	0	0	2.211138	0	0	-10.6264	-0.00175463	23.16584	-14.6611		
0	100	-0.49269	0.014741	9.520688	-0.47881	0.000858	0.165551	0	0	-95.7621	0.171609	1713.402	-30	-13.185	0.369759	0	0	2.211138	0	0	-12.8142	-0.001079235	23.16584	-14.6611		
0	3400	-0.84737	14.28528	19.96848	0.91747	12.52044	9.714315	156.0813	2.229664	183.494	0	0	-9.29225	-6.29712	0.477629	0	-0.60008	2.208051	344.1605	76.01927	-5.59934	-0.324660358	4.711957	-9.22904	4301.007	1.634837
75000	3200	-0.38773	7.051637	23.89005	0.832411	5.831499	5.509379	151.5947	1.068991	166.4821	55.9977	55.9977	-15.0092	-5.35015	0.609555	0	-0.54327	2.208051	371.5263	153.0143	-4.37553	-0.36845935	4.711957	-9.22904		
266667	3000	-0.14419	2.128572	38.77895	0.747351	1.237026	2.219389	142.2591	0.302809	149.4702	144.9277	144.9277	-25.8207	-3.65891	0.863403	-0.09531	0.418849	2.208051	400	294.5338	-1.88492	-0.910579403	4.711957	-9.22904		
200000	2800	-0.12824	1.638827	41.9789	0.662292	0.848295	1.757252	141.6182	0.232088	132.4583	169.659	238.9621	-27.8138	-3.52007	0.920698	-0.11278	0.324132	2.208051	400	332.3475	-1.53341	-1.065968159	4.711957	-9.22904		
133333	2600	-0.12495	1.492394	41.21647	0.577232	0.790214	1.603258	141.7303	0.211517	115.4464	158.0429	334.5932	-28.4709	-3.51376	0.941143	-0.08341	0.334212	2.208051	400	319.4631	-1.57963	-0.992980991	4.711957	-9.22904		
100000	2400	-0.12164	1.340759	40.38096	0.492173	0.726943	1.443435	141.8822	0.19023	98.43451	145.3886	431.9347	-29.1849	-3.50968	0.964459	-0.0578	0.347054	2.208051	400	306.7162	-1.63174	-0.913473885	4.711957	-9.22904		
100000	2200	-0.11832	1.182646	39.45811	0.407113	0.657216	1.276697	142.0855	0.168037	81.4226	131.4432	531.1257	-29.9685	-3.50844	0.991606	-0.03666	0.363234	2.208051	400	294.0696	-1.69097	-0.82586036	4.711957	-9.22904		
100000	2000	-0.11829	1.020923	38.44162	0.322053	0.580582	1.109488	142.3529	0.145331	64.4107	116.1164	632.2831	-30	-3.51127	1.023133	-0.02024	0.382747	2.208051	400	281.5144	-1.75858	-0.729559071	4.711957	-9.22904		
100000	1800	-0.11853	0.849296	37.30715	0.236994	0.493773	0.93314	142.7057	0.121199	47.39879	98.75459	735.6177	-30	-3.51821	1.062045	-0.01054	0.407123	2.208051	400	269.0676	-1.83569	-0.62047439	4.711957	-9.22904		
100000	1600	-0.11888	0.663524	36.03854	0.151934	0.392709	0.744435	143.169	0.094996	30.38688	78.54188	841.4251	-30	-3.5283	1.113033	-0.01037	0.438122	2.208051	400	256.8922	-1.92179	-0.493479754	4.711957	-9.22904		
100000	1400	-0.11905	0.455876	34.65757	0.066875	0.269954	0.537862	143.7571	0.065535	13.37498	53.99073	950.158	-30	-3.5331	1.187284	-0.02622	0.479284	2.208051	400	245.8434	-2.0066	-0.339224729	4.711957	-9.22904		
100000	1200	-0.08044	0.069929	40.04996	-0.01818	0.007669	0.148134	0	0	-3.63693	1.533827	1066.017	-30	-2.41169	1.754126	0	0	2.208051	0	0	-0.87267	-0.101931595	4.711957	-9.22904		
100000	1000	-0.14377	0.045663	27.55005	-0.10324	0.005138	0.155363	0	0	-20.6488	1.027679	1181.875	-30	-4.23905	1.145434	0	0	2.208051	0	0	-3.08716	-0.00645733	4.711957	-9.22904		
100000	800	-0.21579	0.030988	19.4956	-0.1883	0.003503	0.155273	0	0	-37.6607	0.700513	1297.734	-30	-6.24126	0.777324	0	0	2.208051	0	0	-5.45954	-0.004396949	4.711957	-9.22904		
162500	575	-0.30426	0.022521	14.42027	-0.284	0.002255	0.157631	0	0	-56.7991	0.450998	1442.558	-30	-8.58999	0.564929	0	0	2.208051	0	0	-8.02225	-0.002834241	4.711957	-9.22904		
210375	325	-0.40632	0.017369	11.20548	-0.39032	0.001369	0.16153	0	0	-78.064	0.273845	1587.381	-30	-11.1476	0.435696	0	0	2.208051	0	0	-10.7102	-0.001729686	4.711957	-9.22904		
0	100	-0.49972	0.014524	9.395259	-0.48601	0.00082	0.165641	0	0	-97.2024	0.164076	1703.24	-30	-13.3456	0.364331	0	0	2.208051	0	0	-12.9803	-0.001021592	4.711957	-9.22904		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.87432	14.79559	20.04111	0.965943	12.95532	10.08964	155.989	2.30795	193.1886	0	0	-9.04909	-6.27193	0.471554	0	-0.61117	2.205721	351.8113	75.0523	-5.57511	-0.333056138	2.083202	-2.06899	4296.469	1.721088
75000	3200	-0.40242	7.427975	23.85027	0.877829	6.147727	5.791652	151.6354	1.126344	175.5659	54.48729	54.48729	-14.5437	-5.35827	0.599257	0	-0.55608	2.205721	377.1458	149.8648	-4.38992	-0.37589478	2.083202	-2.06899		
266667	3000	-0.14949	2.305497	38.20841	0.789716	1.366287	2.386325	142.4207	0.328351	157.9431	141.7073	141.7073	-25.1692	-3.69247	0.845908	-0.09944	0.439001	2.205721	400	288.7994	-1.95622	-0.890347309	2.083202	-2.06899		
200000	2800	-0.12954	1.703761	42.32375	0.701602	0.872618	1.825309	141.5758	0.241211	140.3204	174.5235	235.0506	-27.532	-3.51855	0.912195	-0.1277	0.320941	2.205721	400	338.217	-1.50984	-1.096528954	2.083202	-2.06899		
133333	2600	-0.12614	1.554168	41.56393	0.613488	0.814543	1.668233	141.676	0.220188	122.6976	162.9087	330.0021	-28.19	-3.51109	0.932291	-0.0957	0.33025	2.205721	400	324.7978	-1.55523	-1.023558584	2.083202	-2.06899		
100000	2400	-0.12272	1.399452	40.73115	0.525374	0.751357	1.505305	141.8148	0.198463	105.0749	150.2713	426.6748	-28.9043	-3.50573	0.955149	-0.0675	0.34231	2.205721	400	311.5439	-1.60642	-0.944157948	2.083202	-2.06899		
100000	2200	-0.11929	1.238381	39.81102	0.437261	0.681832	1.335458	142.0033	0.175854	87.45213	136.3665	525.2064	-29.6875	-3.50315	0.981667	-0.04378	0.357685	2.205721	400	298.4158	-1.66469	-0.856789396	2.083202	-2.06899		
100000	2000	-0.11805	1.072251	38.79242	0.349147	0.605054	1.162466	142.2554	0.152534	69.82939	121.0108	625.7316	-30	-3.50442	1.012655	-0.02502	0.37666	2.205721	400	285.3852	-1.73145	-0.760310082	2.083202	-2.06899		
100000	1800	-0.11825	0.897957	37.6566	0.261033	0.518677	0.983002	142.5909	0.128041	52.20664	103.7353	728.4396	-30	-3.51011	1.050338	-0.01267	0.400236	2.205721	400	272.4629	-1.808	-0.651769296	2.083202	-2.06899		
100000	1600	-0.11858	0.709962	36.38065	0.172919	0.418461	0.791324	143.0368	0.101551	34.58389	83.69221	833.6174	-30	-3.51972	1.099213	-0.00951	0.430288	2.205721	400	259.7573	-1.89467	-0.525835604	2.083202	-2.06899		
100000	1400	-0.11885	0.501095	34.9703	0.084806	0.297442	0.582335	143.6162	0.071965	16.96114	59.4884	941.6981	-30	-3.52735	1.168992	-0.02119	0.470015	2.205721	400	247.9034	-1.98458	-0.37376782	2.083202	-2.06899		
100000	1200	-0.11747	0.254067	33.66364	-0.00331	0.139907	0.342824	0	0	-0.66161	27.98131	1057.557	-30	-3.4877	1.293206	-0.06801	0.528861	2.205721	400	241.0167	-2.01869	-0.175805726	2.083202	-2.06899		
100000	1000	-0.1346	0.048566	29.04682	-0.09142	0.005387	0.155492	0	0	-18.2844	1.077444	1173.416	-30	-3.97834	1.218237	0	0	2.205721	0	0	-2.75333	-0.006771775	2.083202	-2.06899		
100000	800	-0.20792	0.032026	20.11713	-0.17954	0.003641	0.154984	0	0	-35.9071	0.728278	1289.274	-30	-6.02643	0.803347	0	0	2.205721	0	0	-5.21849	-0.004579973	2.083202	-2.06899		
162500	575	-0.29918	0.022823	14.62052	-0.27866	0.002307	0.157293	0	0	-55.7327	0.461324	1434.098	-30	-8.45837	0.572491	0	0	2.205721	0	0	-7.88299	-0.002900201	2.083202	-2.06899		
210375	325	-0.40482	0.017389	11.22976	-0.38881	0.001377	0.161296	0	0	-77.7611	0.275421	1578.921	-30	-11.1111	0.436202	0	0	2.205721	0	0	-10.6732	-0.001732995	2.083202	-2.06899		
0	100	-0.50157	0.014448	9.356353	-0.48793	0.000809	0.165551	0	0	-97.5867	0.161865	1694.78	-30	-13.3879	0.362418	0	0	2.205721	0	0	-13.0245	-0.001010519	2.083202	-2.06899		
0	3400	-0.90363	15.28346	20.13451	1.014392	13.36543	10.46297	155.871	2.382248	202.8784	0	0	-8.82824	-6.26313	0.465982	0	-0.62285	2.211167	359.6268	74.1655	-5.56506	-0.344700859	62.93335	-82.4173	0	1.802454
75000	3200	-0.42064	7.836238	23.79239	0.923175	6.492426	6.095853	151.6948	1.188716	184.6351	52.93455	52.93455	-14.0702	-5.39047	0.588747	0	-0.56861	2.211167	382.6797	146.6393	-4.42644	-0.386142862	62.93335	-82.4173		
266667	3000	-0.15673	2.513715	37.4788	0.831959	1.525029	2.578936	142.6486	0.358578	166.3918	138.214	138.214	-24.4433	-3.75226	0.826991	-0.10161	0.458884	2.211167	400	282.2372	-2.05687	-0.868398169	62.93335	-82.4173		
200000	2800	-0.13157	1.771761	42.60843	0.740743	0.899451	1.896699	141.5446	0.250783	148.1486	179.8902	230.8429	-27.243	-3.53415	0.903625	-0.1425	0.316019	2.211167	400	344.5723	-1.50029	-1.130248197	62.93335	-82.4173		
133333	2600	-0.12804	1.618789	41.84981	0.649526	0.841225	1.736276	141.6354	0.229278	129.9053	168.245	325.0923	-27.9019	-3.52581	0.923388	-0.10788	0.324617	2.211167	400	330.5904	-1.54534	-1.057084772	62.93335	-82.4173		
100000	2400	-0.1245	1.46075	41.01818	0.55831	0.777938	1.569963	141.7636	0.207081	111.662	155.5877	421.0749	-28.617	-3.51958	0.945815	-0.07711	0.335964	2.211167	400	316.7981	-1.59621	-0.977555102	62.93335	-82.4173		
100000	2200	-0.12095	1.296435	40.09908	0.467094	0.708391	1.396695	141.9403	0.184016	93.41874	141.6782	518.9272	-29.4004	-3.51609	0.971751	-0.05081	0.350622	2.211167	400	303.1519	-1.65418	-0.890163845	62.93335	-82.4173		
100000	2000	-0.11846	1.125607	39.07693	0.375877	0.631266	1.217575	142.1804	0.160039	75.17547	126.2531	618.802	-30	-3.51634	1.002242	-0.02972	0.369124	2.211167	400	289.611	-1.72084	-0.793246388	62.93335	-82.4173		
100000	1800	-0.11864	0.948332	37.93783	0.284661	0.545031	1.034715	142.5025	0.13514	56.9322	109.0061	720.8676	-30	-3.52139	1.038807	-0.01476	0.392001	2.211167	400	276.1737	-1.7977	-0.684885389	62.93335	-82.4173		
100000	1600	-0.11898	0.757699	36.6531	0.193445	0.445276	0.839728	142.9354	0.108302	38.68892	89.05521	825.4048	-30	-3.53111	1.085806	-0.00871	0.421245	2.211167	400	262.9027	-1.88578	-0.559533442	62.93335	-82.4173		
100000	1400	-0.11934	0.546985	35.21539	0.102228	0.325412	0.627841	143.5089	0.078497	20.44565	65.08246	932.8309	-30	-3.54165	1.151784	-0.01655	0.459787	2.211167	400	250.259	-1.98096	-0.408912461	62.93335	-82.4173		
100000	1200	-0.11862	0.300753	33.77783	0.011012	0.171122	0.387605	144.178	0.043362	2.202382	34.22443	1043.875	-30	-3.52079	1.263977	-0.05445	0.515545	2.211167	400	241.1952	-2.04179	-0.215032071	62.93335	-82.4173		
100000	1000	-0.12643	0.051865	30.60794	-0.0802	0.005644	0.156261	0	0	-16.0409	1.128836	1159.733	-30	-3.74479	1.301	0	0	2.211167	0	0	-2.4367	-0.007094036	62.93335	-82.4173		
100000	800	-0.20088	0.033251	20.77508	-0.17142	0.003795	0.155291	0	0	-34.2842	0.758921	1275.592	-30	-5.83333	0.834075	0	0	2.211167	0	0	-4.9945	-0.004768161	62.93335	-82.4173		
162500	575	-0.29491	0.023239	14.84123	-0.27404	0.002366	0.157546	0	0	-54.8078	0.473145	1420.415	-30	-8.34757	0.58294	0	0	2.211167	0	0	-7.76168	-0.002977963	62.93335	-82.4173		
210375	325	-0.40417	0.0175	11.27233	-0.38806	0.001388	0.16167	0	0	-77.6119	0.277644	1565.239	-30	-11.0954	0.438979	0	0	2.211167	0	0	-10.6547	-0.001745483	62.93335	-82.4173		
0	100	-0.50433	0.014452	9.336054	-0.49068	0.000799	0.166089	0	0	-98.1356	0.159798	1681.098	-30	-13.4507	0.362513	0	0	2.211167	0	0	-13.0872	-0.00100857	62.93335	-82.4173		
0	3400	-0.93268	15.74529	20.23611	1.062664	13.74994	10.82532	155.7433	2.452222	212.5328	0	0	-8.62887	-6.25765	0.460906	0	-0.63477	2.218673	367.5739	73.35764	-5.55756	-0.356994552	-0.01216	-0.0178	4321.698	1.881474
75000	3200	-0.44021	8.254573	23.73089	0.967992	6.846374	6.406545	151.7581	1.252698	193.5984	51.4311	51.4311	-13.6161	-5.42865	0.578619	0	-0.58079	2.218673	388.2363	143.524	-4.46826	-0.396737141	-0.01216	-0.0178		
266667	3000	-0.16502	2.741016	36.70891	0.87332	1.702675	2.785179	142.9151	0.391733	174.6641	134.6789	134.6789	-23.6972	-3.8218	0.808098	-0.10306	0.477832	2.218673	400	275.5257	-2.16751	-0.846187305	-0.01216	-0.0178		
200000	2800	-0.13375	1.838163	42.86065	0.778648	0.925769	1.966414	141.52	0.260137	155.7297	185.1538	226.6203	-26.9666	-3.55419	0.895562	-0.1572	0.310987	2.218673	400	350.9084	-1.49531	-1.163317908	-0.01216	-0.0178		
133333	2600	-0.13008	1.681109	42.09922	0.683976	0.867057	1.801908	141.6028	0.23805	136.7953	173.4114	320.202	-27.6297	-3.54508	0.915125	-0.11987	0.318958	2.218673	400	336.301	-1.5404	-1.08954566	-0.01216	-0.0178		
100000	2400	-0.1264	1.518974	41.26406	0.589305	0.803268	1.631403	141.7225	0.215273	117.8609	160.6537	415.5375	-28.3493	-3.53808	0.937291	-0.08647	0.329711	2.218673	400	321.9076	-1.59137	-1.009396449	-0.01216	-0.0178		
100000	2200	-0.12271	1.350568	40.34014	0.494633	0.733221	1.453835	141.8904	0.191633	98.92653	146.6443	512.7644	-29.1376	-3.53383	0.962877	-0.05762	0.343803	2.218673	400	307.6836	-1.64958	-0.921368572	-0.01216	-0.0178		
100000	2000	-0.11905	1.174236	39.30826	0.399961	0.655223	1.267847	142.122	0.166885	79.99215	131.0446	612.0533	-30	-3.53325	0.993144	-0.03424	0.362	2.218673	400	293.5752	-1.71675	-0.823353443	-0.01216	-0.0178		
100000	1800	-0.11921	0.992881	38.1579	0.305289	0.568377	1.080528	142.4357	0.141422	61.05777	113.6755	713.5572	-30	-3.53791	1.029064	-0.01686	0.384453	2.218673	400	279.5692	-1.79463	-0.71422167	-0.01216	-0.0178		
100000	1600	-0.11956	0.798219	36.8555	0.210617	0.468039	0.880941	142.8623	0.114035	42.12339	93.60774	817.5564	-30	-3.54793	1.074997	-0.00832	0.4133	2.218673	400	265.6966	-1.88478	-0.588137101	-0.01216	-0.0178		
100000	1400	-0.12001	0.583673	35.38456	0.115945	0.34772	0.664415	143.4365	0.08372	23.18901	69.54408	924.4647	-30	-3.56071	1.138882	-0.01328	0.451361	2.218673	400	252.3093	-1.98488	-0.436947496	-0.01216	-0.0178		
100000	1200	-0.11967	0.334518	33.85254	0.021273	0.193579	0.420231	144.1409	0.048218	4.254634	38.7158	1034.994	-30	-3.55089	1.244968	-0.04595	0.505866	2.218673	400	241.7696	-2.06268	-0.243252227	-0.01216	-0.0178		
100000	1000	-0.12175	0.054165	31.62003	-0.0734	0.00581	0.157079	0	0	-14.6797	1.161958	1150.853	-30	-3.61088	1.358708	0	0	2.218673	0	0	-2.24487	-0.007298468	-0.01216	-0.0178		
100000	800	-0.19812	0.033919	21.09079	-0.16807	0.003873	0.155808	0	0	-33.6141	0.774543	1266.711	-30	-5.75745	0.850837	0	0	2.218673	0	0	-4.90174	-0.004868219	-0.01216	-0.0178		
162500	575	-0.29555	0.023351	14.86103	-0.27458	0.002373	0.158111	0	0	-54.9153	0.474692	1411.535	-30	-8.36424	0.585743	0	0	2.218673	0	0	-7.77553	-0.002984264	-0.01216	-0.0178		
210375	325	-0.40899	0.017436	11.19468	-0.39292	0.001363	0.162425	0	0	-78.5833	0.272684	1556.358	-30	-11.2123	0.437373	0	0	2.218673	0	0	-10.7732	-0.001721906	-0.01216	-0.0178		
0	100	-0.513	0.014342	9.234613	-0.49942	0.000761	0.16706	0	0	-99.8845	0.152262	1672.217	-30	-13.6472	0.359761	0	0	2.218673	0	0	-13.2865	-0.00096096	-0.01216	-0.0178		
0	3400	-0.96015	16.18611	20.33784	1.111024	14.11494	11.17553	155.616	2.518818	222.2049	0	0	-8.4468	-6.24805	0.45623	0	-0.64677	2.224867	375.673	72.61341	-5.54618	-0.3684441	-0.00555	-0.00746	4333.762	1.961585
75000	3200	-0.46002	8.677475	23.67293	1.013073	7.204378	6.720239	151.8179	1.317396	202.6146	49.99522	49.99522	-13.1858	-5.46249	0.568974	0	-0.59289	2.224867	394.008	140.553	-4.50593	-0.406420491	-0.00555	-0.00746		
266667	3000	-0.17399	2.985916	35.95024	0.915122	1.896805	3.003549	143.2039	0.427595	183.0244	131.1518	131.1518	-22.9427	-3.89189	0.789483	-0.10476	0.496241	2.224867	400	268.898	-2.27838	-0.824026522	-0.00555	-0.00746		
200000	2800	-0.13583	1.904244	43.11594	0.817171	0.951242	2.035666	141.4978	0.269446	163.4341	190.2484	222.4189	-26.697	-3.57156	0.887821	-0.1728	0.306639	2.224867	400	357.3049	-1.4884	-1.195333912	-0.00555	-0.00746		
133333	2600	-0.13203	1.743453	42.35385	0.719219	0.892208	1.867484	141.5723	0.246825	143.8439	178.4415	315.3419	-27.3626	-3.56162	0.907152	-0.13278	0.313931	2.224867	400	342.0901	-1.53333	-1.121145991	-0.00555	-0.00746		
100000	2400	-0.12822	1.577594	41.51773	0.621268	0.828107	1.693227	141.683	0.223518	124.2537	165.6214	410.035	-28.0849	-3.55379	0.929023	-0.09675	0.324022	2.224867	400	327.1159	-1.58416	-1.040600593	-0.00555	-0.00746		
100000	2200	-0.1244	1.405493	40.59238	0.523317	0.757772	1.511825	141.8408	0.199356	104.6634	151.5544	506.6358	-28.8758	-3.54872	0.954212	-0.06532	0.33747	2.224867	400	312.3352	-1.64228	-0.952216272	-0.00555	-0.00746		
100000	2000	-0.12057	1.225462	39.55798	0.425366	0.679526	1.321818	142.0617	0.174091	85.07316	135.9052	605.3153	-29.7522	-3.54731	0.983933	-0.03942	0.355043	2.224867	400	297.6898	-1.70949	-0.853889995	-0.00555	-0.00746		
100000	1800	-0.11968	1.039162	38.39909	0.327415	0.592072	1.128212	142.3651	0.14794	65.48292	118.4144	706.2428	-30	-3.55117	1.019355	-0.01974	0.377137	2.224867	400	283.1444	-1.78782	-0.743994759	-0.00555	-0.00746		
100000	1600	-0.12002	0.841072	37.08632	0.229463	0.491591	0.924653	142.7811	0.120089	45.89267	98.31817	809.6798	-30	-3.561	1.064083	-0.00861	0.405413	2.224867	400	268.7133	-1.87918	-0.6177357	-0.00555	-0.00746		
100000	1400	-0.12052	0.623487	35.59261	0.131512	0.37146	0.704248	143.3492	0.089376	26.30243	74.29204	916.0331	-30	-3.57529	1.125638	-0.01053	0.442754	2.224867	400	254.6475	-1.98287	-0.466776181	-0.00555	-0.00746		
100000	1200	-0.1205	0.372565	33.98526	0.033561	0.218502	0.457068	144.0755	0.053677	6.712183	43.70041	1025.99	-30	-3.5749	1.225288	-0.03783	0.495692	2.224867	400	242.7761	-2.07504	-0.274571074	-0.00555	-0.00746		
100000	1000	-0.11565	0.05727	32.98696	-0.06439	0.006013	0.157935	0	0	-12.8781	1.2026	1141.848	-30	-3.43526	1.436571	0	0	2.224867	0	0	-1.99113	-0.007554622	-0.00555	-0.00746		
100000	800	-0.19327	0.03492	21.60171	-0.16234	0.003992	0.156216	0	0	-32.4683	0.79842	1257.707	-30	-5.6239	0.875947	0	0	2.224867	0	0	-4.74293	-0.005016509	-0.00555	-0.00746		
162500	575	-0.29374	0.023614	14.98132	-0.27254	0.002407	0.1585	0	0	-54.5073	0.481414	1402.53	-30	-8.31717	0.592352	0	0	2.224867	0	0	-7.7218	-0.003022352	-0.00555	-0.00746		
210375	325	-0.41107	0.017455	11.17609	-0.39498	0.001356	0.162969	0	0	-78.9951	0.27124	1547.354	-30	-11.2628	0.437855	0	0	2.224867	0	0	-10.8232	-0.001715764	-0.00555	-0.00746		
0	100	-0.51872	0.014288	9.17473	-0.50517	0.000738	0.167798	0	0	-101.034	0.147521	1663.213	-30	-13.7762	0.358413	0	0	2.224867	0	0	-13.4168	-0.000929706	-0.00555	-0.00746		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-0.98769	16.6024	20.44939	1.159468	14.45524	11.51666	155.4773	2.581297	231.8936	0	0	-8.28179	-6.24306	0.451957	0	-0.65913	2.233722	383.9244	71.93333	-5.53853	-0.380949419	19.04306	-68.7681	4351.012	2.046747
75000	3200	-0.48186	9.119219	23.61146	1.058405	7.578955	7.047207	151.8816	1.385042	211.6809	48.57723	48.57723	-12.7645	-5.504	0.559472	0	-0.60487	2.233722	399.878	137.6226	-4.55053	-0.41694926	19.04306	-68.7681		
266667	3000	-0.18485	3.267282	35.11425	0.957341	2.125092	3.248624	143.5528	0.469028	191.4682	127.4449	127.4449	-22.1331	-3.97732	0.769982	-0.10552	0.514067	2.233722	400	261.8045	-2.4066	-0.800734642	19.04306	-68.7681		
200000	2800	-0.1382	1.972174	43.35091	0.856277	0.977692	2.106882	141.48	0.279023	171.2555	195.5385	218.0286	-26.4254	-3.59471	0.880136	-0.18892	0.301809	2.233722	400	364.0066	-1.48602	-1.228568353	19.04306	-68.7681		
133333	2600	-0.13427	1.807895	42.58985	0.755214	0.918416	1.935292	141.5466	0.255901	151.0428	183.6831	310.2801	-27.0919	-3.58409	0.899201	-0.14625	0.308415	2.233722	400	348.1962	-1.53082	-1.154081663	19.04306	-68.7681		
100000	2400	-0.13033	1.638586	41.75472	0.65415	0.854107	1.757576	141.6485	0.232103	130.83	170.8215	404.3134	-27.8149	-3.57554	0.92073	-0.10761	0.31782	2.233722	400	332.653	-1.58153	-1.073274211	19.04306	-68.7681		
100000	2200	-0.12639	1.463092	40.8303	0.553087	0.783619	1.572671	141.7967	0.207462	110.6173	156.7239	500.2657	-28.6061	-3.56972	0.945466	-0.07361	0.330581	2.233722	400	317.3277	-1.63956	-0.98469387	19.04306	-68.7681		
100000	2000	-0.12243	1.279761	39.7966	0.452023	0.705309	1.379125	142.0066	0.181735	90.4046	141.0618	598.3069	-29.4823	-3.56761	0.974555	-0.04514	0.347461	2.233722	400	302.1573	-1.70676	-0.886287783	19.04306	-68.7681		
100000	1800	-0.12036	1.088785	38.63336	0.350959	0.617469	1.179403	142.299	0.154933	70.19188	123.4939	698.6233	-30	-3.57071	1.009378	-0.02312	0.369111	2.233722	400	287.0869	-1.78542	-0.775909526	19.04306	-68.7681		
100000	1600	-0.12069	0.887749	37.3157	0.249896	0.51716	0.97238	142.7028	0.126684	49.97917	103.4321	801.4549	-30	-3.58038	1.052746	-0.0093	0.396686	2.233722	400	272.1154	-1.87777	-0.649861944	19.04306	-68.7681		
100000	1400	-0.12124	0.667741	35.80761	0.148832	0.397673	0.748707	143.2612	0.095661	29.76645	79.53462	907.1981	-30	-3.59598	1.111744	-0.00802	0.433131	2.233722	400	257.4	-1.98452	-0.499718225	19.04306	-68.7681		
100000	1200	-0.12152	0.415934	34.14088	0.047769	0.246648	0.4993	143.9999	0.059894	9.553726	49.32969	1016.51	-30	-3.60406	1.204729	-0.02984	0.484269	2.233722	400	244.2948	-2.0894	-0.309940232	19.04306	-68.7681		
100000	1000	-0.11406	0.084205	33.61512	-0.05329	0.02344	0.182815	0	0	-10.659	4.687931	1132.368	-30	-3.38955	1.455478	-0.156	0.582257	2.233722	400	252.8476	-1.90462	-0.02945328	19.04306	-68.7681		
100000	800	-0.18659	0.036396	22.34565	-0.15436	0.004164	0.156823	0	0	-30.8717	0.832723	1248.227	-30	-5.43928	0.91296	0	0	2.233722	0	0	-4.52108	-0.005236142	19.04306	-68.7681		
162500	575	-0.28969	0.024108	15.22299	-0.26806	0.002473	0.15901	0	0	-53.611	0.494618	1393.051	-30	-8.21156	0.604743	0	0	2.233722	0	0	-7.6037	-0.00310791	19.04306	-68.7681		
210375	325	-0.41063	0.017612	11.22998	-0.39438	0.00137	0.163603	0	0	-78.8769	0.274024	1537.874	-30	-11.2519	0.44178	0	0	2.233722	0	0	-10.8084	-0.001723748	19.04306	-68.7681		
0	100	-0.52169	0.014333	9.166983	-0.50808	0.000729	0.168608	0	0	-101.616	0.145807	1653.733	-30	-13.8428	0.359545	0	0	2.233722	0	0	-13.4824	-0.000918288	19.04306	-68.7681		
0	3400	-1.0114	17.01147	20.54366	1.208039	14.79203	11.84478	155.3608	2.642915	241.6078	0	0	-8.12579	-6.2218	0.447886	0	-0.67112	2.235189	392.2691	71.28536	-5.51654	-0.389758976	123.4052	-209.808	0	2.131406
75000	3200	-0.50105	9.541592	23.56527	1.104117	7.936429	7.360306	151.9297	1.449651	220.8234	47.29602	47.29602	-12.3861	-5.52251	0.550882	-0.00795	0.61688	2.235189	400	135.5261	-4.57373	-0.424034897	123.4052	-209.808		
266667	3000	-0.1949	3.54555	34.41953	1.000195	2.350456	3.488231	143.8674	0.510089	200.0391	124.0191	124.0191	-21.3867	-4.04124	0.752374	-0.10822	0.531352	2.235189	400	255.5686	-2.50965	-0.779210906	123.4052	-209.808		
200000	2800	-0.13991	2.036816	43.62594	0.896274	1.000637	2.174218	141.462	0.288132	179.2547	200.1275	213.9623	-26.1721	-3.60246	0.873064	-0.20667	0.299439	2.235189	400	370.4371	-1.47199	-1.257408092	123.4052	-209.808		
133333	2600	-0.13585	1.869604	42.8689	0.792352	0.941399	1.999911	141.5192	0.264585	158.4703	188.2798	305.5803	-26.8376	-3.59093	0.891845	-0.16135	0.305263	2.235189	400	354.0638	-1.51612	-1.182960583	123.4052	-209.808		
100000	2400	-0.1318	1.697426	42.03846	0.68843	0.877194	1.819464	141.6105	0.240373	137.686	175.4387	398.9866	-27.5593	-3.58137	0.91301	-0.1201	0.313871	2.235189	400	337.9875	-1.56607	-1.102281429	123.4052	-209.808		
100000	2200	-0.12775	1.519164	41.11954	0.584508	0.806907	1.631827	141.7463	0.215336	116.9016	161.3814	494.3173	-28.3485	-3.57444	0.937264	-0.08351	0.325811	2.235189	400	322.1595	-1.62322	-1.013958068	123.4052	-209.808		
100000	2000	-0.12368	1.333225	40.09225	0.480586	0.728954	1.435584	141.9418	0.18924	96.11723	145.7909	591.7397	-29.2213	-3.5711	0.965682	-0.05245	0.341829	2.235189	400	306.5158	-1.68942	-0.916004936	123.4052	-209.808		
100000	1800	-0.12043	1.138379	38.93243	0.376664	0.641288	1.230677	142.2181	0.161898	75.33286	128.2576	691.4548	-30	-3.57275	0.999818	-0.02799	0.362801	2.235189	400	290.987	-1.76708	-0.805841983	123.4052	-209.808		
100000	1600	-0.12072	0.935247	37.61969	0.272742	0.541783	1.021119	142.6028	0.133369	54.54849	108.3566	793.6799	-30	-3.5812	1.041748	-0.0114	0.389428	2.235189	400	275.559	-1.85864	-0.680802554	123.4052	-209.808		
100000	1400	-0.12125	0.71386	36.11162	0.168821	0.423788	0.795238	143.1403	0.102182	33.76412	84.75754	898.7975	-30	-3.59644	1.098089	-0.00682	0.424668	2.235189	400	260.3204	-1.96581	-0.53253325	123.4052	-209.808		
100000	1200	-0.12171	0.462526	34.41324	0.064899	0.27592	0.544792	143.8703	0.066544	12.97976	55.18401	1007.428	-30	-3.60951	1.184502	-0.02327	0.47368	2.235189	400	246.2462	-2.07829	-0.34672209	123.4052	-209.808		
100000	1000	-0.11761	0.143879	33.24519	-0.03902	0.065287	0.239787	0	0	-7.80461	13.05747	1123.286	-30	-3.4919	1.383146	-0.11198	0.558833	2.235189	400	244.8811	-2.02671	-0.082039249	123.4052	-209.808		
100000	800	-0.1769	0.038344	23.40216	-0.14294	0.004388	0.156918	0	0	-28.589	0.877696	1239.145	-30	-5.17019	0.961841	0	0	2.235189	0	0	-4.20284	-0.005511665	123.4052	-209.808		
162500	575	-0.28203	0.024742	15.59539	-0.25986	0.00257	0.158874	0	0	-51.9714	0.51403	1383.968	-30	-8.01127	0.620649	0	0	2.235189	0	0	-7.38739	-0.003233103	123.4052	-209.808		
210375	325	-0.40616	0.017805	11.34349	-0.38976	0.001403	0.163522	0	0	-77.9519	0.280649	1528.792	-30	-11.1437	0.446635	0	0	2.235189	0	0	-10.6954	-0.001764605	123.4052	-209.808		
0	100	-0.52032	0.014384	9.192957	-0.50667	0.000737	0.168654	0	0	-101.334	0.147343	1644.651	-30	-13.8121	0.360815	0	0	2.235189	0	0	-13.4504	-0.000924641	123.4052	-209.808		
0	3400	-1.03688	17.38251	20.65986	1.255994	15.08964	12.16159	155.2179	2.698078	251.1988	0	0	-7.98929	-6.21648	0.444297	-0.00073	0.683648	2.244509	400	70.7581	-5.50823	-0.402035301	-36.0765	41.1644	4372.022	2.204206
75000	3200	-0.52387	9.982366	23.51009	1.147981	8.310511	7.6863	151.9872	1.517192	229.5963	46.02698	46.02698	-12.0144	-5.56344	0.542386	-0.01558	0.628233	2.244509	400	133.4315	-4.61715	-0.434024598	-36.0765	41.1644		
266667	3000	-0.20829	3.874426	33.56887	1.039969	2.626172	3.761979	144.2834	0.559015	207.9938	120.3423	120.3423	-20.5669	-4.13835	0.73338	-0.10789	0.54655	2.244509	400	248.4627	-2.64886	-0.756110596	-36.0765	41.1644		
200000	2800	-0.14221	2.098548	43.818	0.931957	1.024383	2.238848	141.4515	0.296843	186.3913	204.8766	209.6814	-25.9347	-3.62632	0.866518	-0.22214	0.295221	2.244509	400	376.7178	-1.47256	-1.287242597	-36.0765	41.1644		
133333	2600	-0.13798	1.926084	43.05243	0.823944	0.964158	2.059297	141.5031	0.272547	164.7889	192.8316	300.7261	-26.6091	-3.61408	0.88532	-0.17385	0.300506	2.244509	400	359.5882	-1.51721	-1.211560587	-36.0765	41.1644		
100000	2400	-0.13376	1.748551	42.21151	0.715932	0.89886	1.873399	141.589	0.247576	143.1864	179.7721	393.5932	-27.341	-3.60385	0.906513	-0.12977	0.30865	2.244509	400	342.7878	-1.56784	-1.129504839	-36.0765	41.1644		
100000	2200	-0.12953	1.56479	41.27963	0.60792	0.827336	1.680057	141.72	0.221762	121.5839	165.4672	488.4225	-28.1422	-3.59633	0.930803	-0.09053	0.320228	2.244509	400	326.2634	-1.6259	-1.039632473	-36.0765	41.1644		
100000	2000	-0.1253	1.373172	40.23578	0.499907	0.747961	1.477802	141.9117	0.194869	99.98143	149.5921	585.386	-29.0293	-3.59255	0.959271	-0.05701	0.336008	2.244509	400	309.9467	-1.69338	-0.939890158	-36.0765	41.1644		
100000	1800	-0.12116	1.171399	39.05193	0.391895	0.658341	1.264801	142.1869	0.166557	78.37895	131.6682	684.7028	-30	-3.59388	0.993665	-0.03046	0.35707	2.244509	400	293.7532	-1.77294	-0.827272801	-36.0765	41.1644		
100000	1600	-0.12147	0.962036	37.70864	0.283882	0.556684	1.0486	142.5743	0.137162	56.77648	111.3369	786.5869	-30	-3.60268	1.035766	-0.01193	0.383889	2.244509	400	277.6572	-1.86738	-0.699527585	-36.0765	41.1644		
100000	1400	-0.12205	0.733794	36.15697	0.17587	0.435876	0.815391	143.1226	0.105023	35.174	87.1752	891.4343	-30	-3.6193	1.092424	-0.00575	0.419643	2.244509	400	261.7137	-1.97915	-0.547720748	-36.0765	41.1644		
100000	1200	-0.12262	0.474388	34.39194	0.067858	0.283908	0.556546	143.8804	0.068255	13.57153	56.78154	999.8903	-30	-3.63578	1.179621	-0.02111	0.469685	2.244509	400	246.83	-2.09939	-0.356761767	-36.0765	41.1644		
100000	1000	-0.1005	0.066864	36.90353	-0.04015	0.006519	0.160725	0	0	-8.03095	1.303733	1115.749	-30	-2.99722	1.677249	0	0	2.244509	0	0	-1.31177	-0.008192445	-36.0765	41.1644		
100000	800	-0.18829	0.079618	22.76731	-0.14817	0.039496	0.191198	0	0	-29.6334	7.899178	1231.608	-30	-5.4863	1.462355	-0.0777	0.423335	2.244509	400	245.8374	-3.88566	0.520356956	-36.0765	41.1644		
162500	575	-0.29142	0.02421	15.21358	-0.26968	0.002475	0.159846	0	0	-53.9362	0.49492	1376.431	-30	-8.25655	0.607282	0	0	2.244509	0	0	-7.64615	-0.00310847	-36.0765	41.1644		
210375	325	-0.42079	0.017406	11.04823	-0.4047	0.001313	0.164834	0	0	-80.9393	0.262651	1521.255	-30	-11.497	0.436607	0	0	2.244509	0	0	-11.0587	-0.001642174	-36.0765	41.1644		
0	100	-0.53963	0.014069	8.955718	-0.52621	0.000651	0.170288	0	0	-105.242	0.130175	1637.113	-30	-14.2434	0.352909	0	0	2.244509	0	0	-13.8896	-0.000807756	-36.0765	41.1644		
0	3400	-1.05841	17.75836	20.7541	1.304406	15.39555	12.47039	155.1027	2.754371	260.8813	0	0	-7.85562	-6.1928	0.440758	-0.0103	0.69574	2.245129	400	70.77224	-5.48388	-0.410028929	-36.6491	53.72109	4373.231	2.282556
75000	3200	-0.54347	10.40487	23.47062	1.193219	8.66818	7.999449	152.0285	1.581836	238.6438	44.87454	44.87454	-11.6785	-5.57784	0.534651	-0.02387	0.639897	2.245129	400	131.6188	-4.63604	-0.440190554	-36.6491	53.72109		
266667	3000	-0.22064	4.201301	32.87199	1.082032	2.898629	4.031567	144.6498	0.607717	216.4063	116.9386	116.9386	-19.8122	-4.20889	0.716157	-0.1101	0.561932	2.245129	400	242.2461	-2.75801	-0.734726111	-36.6491	53.72109		
200000	2800	-0.14465	2.189867	43.7292	0.970844	1.074368	2.332225	141.4561	0.30977	194.1689	205.3959	205.3959	-25.5912	-3.6375	0.857181	-0.23464	0.305101	2.245129	400	377.5488	-1.48982	-1.290500972	-36.6491	53.72109		
133333	2600	-0.13944	1.983969	43.30967	0.859657	0.984873	2.119713	141.4829	0.280698	171.9314	196.9747	295.8613	-26.3789	-3.61926	0.878828	-0.18931	0.298283	2.245129	400	365.2522	-1.50284	-1.237589705	-36.6491	53.72109		
100000	2400	-0.13509	1.802962	42.47001	0.74847	0.919403	1.930498	141.5593	0.255226	149.6939	183.8806	388.1623	-27.1124	-3.60802	0.8998	-0.14251	0.305688	2.245129	400	347.8552	-1.5529	-1.155321163	-36.6491	53.72109		
100000	2200	-0.13074	1.615768	41.53939	0.637282	0.847745	1.733782	141.6797	0.228922	127.4565	169.549	482.4391	-27.9153	-3.59942	0.923797	-0.10063	0.31653	2.245129	400	330.7691	-1.61035	-1.065278769	-36.6491	53.72109		
100000	2000	-0.12639	1.420784	40.49675	0.526095	0.7683	1.528097	141.8593	0.201551	105.219	153.6599	578.8634	-28.8037	-3.59446	0.951857	-0.0645	0.331576	2.245129	400	313.9243	-1.67715	-0.965444126	-36.6491	53.72109		
100000	1800	-0.12202	1.215603	39.31355	0.414908	0.678678	1.311356	142.1207	0.172762	82.98152	135.7356	677.6547	-29.8017	-3.59452	0.985677	-0.03541	0.351922	2.245129	400	297.231	-1.75601	-0.85282675	-36.6491	53.72109		
100000	1600	-0.12144	1.001963	37.9658	0.30372	0.576798	1.089713	142.4939	0.142774	60.74405	115.3596	779.0385	-30	-3.60198	1.027126	-0.0145	0.378232	2.245129	400	280.638	-1.85005	-0.724803711	-36.6491	53.72109		
100000	1400	-0.122	0.770881	36.4072	0.192533	0.45635	0.853015	143.0268	0.110257	38.50658	91.27006	883.3916	-30	-3.61787	1.082234	-0.00559	0.413239	2.245129	400	264.1747	-1.96218	-0.573452986	-36.6491	53.72109		
100000	1200	-0.12265	0.509531	34.61479	0.081346	0.305533	0.591097	143.7767	0.073259	16.26911	61.10661	991.342	-30	-3.63664	1.165732	-0.01724	0.462134	2.245129	400	248.538	-2.08697	-0.383934151	-36.6491	53.72109		
100000	1000	-0.09375	0.069929	38.67217	-0.02984	0.006019	0.159704	0	0	-5.96835	1.203846	1107.201	-30	-2.80089	1.754127	0	0	2.245129	0	0	-1.05104	-0.042770627	-36.6491	53.72109		
100000	800	-0.17555	0.038971	23.64921	-0.14103	0.004453	0.157649	0	0	-28.2058	0.890628	1223.059	-30	-5.13249	0.977572	0	0	2.245129	0	0	-4.14932	-0.005597594	-36.6491	53.72109		
162500	575	-0.28808	0.02448	15.37224	-0.26611	0.002516	0.159784	0	0	-53.223	0.50324	1367.883	-30	-8.16951	0.614077	0	0	2.245129	0	0	-7.55226	-0.003164429	-36.6491	53.72109		
210375	325	-0.42119	0.0174	11.0422	-0.4051	0.001311	0.164897	0	0	-81.0198	0.262189	1512.706	-30	-11.5066	0.436477	0	0	2.245129	0	0	-11.0685	-0.001648	-36.6491	53.72109		
0	100	-0.54354	0.013992	8.904792	-0.53018	0.000633	0.170525	0	0	-106.037	0.12655	1628.565	-30	-14.3301	0.350976	0	0	2.245129	0	0	-13.9783	-0.00079464	-36.6491	53.72109		

A_vxy	y_ci	eps_2	eps_1	heta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-1.07881	18.1226	20.84649	1.352861	15.69093	12.7716	154.9904	2.808829	270.5721	0	0	-7.73028	-6.16718	0.437416	-0.02005	0.707853	2.244858	400	70.8342	-5.4578	-0.41740999	13.67871	-18.0889	4372.703	2.365666
75000	3200	-0.56304	10.82745	23.43476	1.238582	9.025826	8.312765	152.066	1.646487	247.7163	43.77831	43.77831	-11.3608	-5.5889	0.527281	-0.03232	0.651503	2.244858	400	129.9301	-4.65166	-0.445773596	13.67871	-18.0889		
266667	3000	-0.23424	4.556231	32.17686	1.124303	3.197686	4.31853	145.0386	0.66083	224.8605	113.5379	113.5379	-19.053	-4.28133	0.699038	-0.11223	0.576583	2.244858	400	236.0355	-2.86893	-0.713358421	13.67871	-18.0889		
200000	2800	-0.14842	2.327849	43.1548	1.010024	1.169409	2.471131	141.4947	0.329378	202.0048	200.6904	200.6904	-25.0892	-3.65525	0.843795	-0.23927	0.331143	2.244858	400	370.6929	-1.55052	-1.260936727	13.67871	-18.0889		
133333	2600	-0.14082	2.041436	43.5669	0.895745	1.004866	2.179531	141.4656	0.288793	179.149	200.9732	290.5875	-26.1542	-3.62277	0.872567	-0.20548	0.296598	2.244858	400	370.9578	-1.48749	-1.262710975	13.67871	-18.0889		
100000	2400	-0.13635	1.857118	42.72945	0.781466	0.939297	1.987214	141.5325	0.262842	156.2932	187.8595	382.3319	-26.8887	-3.61055	0.893314	-0.15595	0.303239	2.244858	400	352.9661	-1.53691	-1.180319065	13.67871	-18.0889		
100000	2200	-0.13189	1.666662	41.80128	0.667187	0.86759	1.787348	141.642	0.236069	133.4374	173.5179	476.0635	-27.6923	-3.60083	0.917013	-0.11139	0.313312	2.244858	400	335.3213	-1.59361	-1.090211617	13.67871	-18.0889		
100000	2000	-0.12741	1.468492	40.76142	0.552908	0.788169	1.57847	141.8092	0.208246	110.5816	157.6338	571.9535	-28.5811	-3.59465	0.944663	-0.07265	0.327583	2.244858	400	317.9532	-1.65957	-0.990410237	13.67871	-18.0889		
100000	1800	-0.12293	1.26026	39.58124	0.438629	0.698703	1.358518	142.0562	0.179028	87.72584	139.7405	670.2198	-29.5787	-3.59337	0.977879	-0.04096	0.347137	2.244858	400	300.7696	-1.7375	-0.877990965	13.67871	-18.0889		
100000	1600	-0.12135	1.04245	38.23192	0.32435	0.596749	1.131474	142.4138	0.148459	64.87006	119.3497	771.1017	-30	-3.5993	1.018681	-0.01765	0.372872	2.244858	400	283.696	-1.83076	-0.749874065	13.67871	-18.0889		
100000	1400	-0.12187	0.808806	36.67071	0.210071	0.476866	0.891615	142.929	0.115602	42.01427	95.37323	874.9548	-30	-3.61416	1.072253	-0.00598	0.407043	2.244858	400	266.7413	-1.94267	-0.599228676	13.67871	-18.0889		
100000	1200	-0.12257	0.545827	34.85988	0.095792	0.327466	0.626961	143.6654	0.078416	19.15849	65.49329	982.389	-30	-3.63423	1.152203	-0.01396	0.454718	2.244858	400	250.4249	-2.07053	-0.411496104	13.67871	-18.0889		
100000	1000	-0.08077	0.069929	40.00754	-0.01849	0.007643	0.148418	0	0	-3.69729	1.528689	1098.248	-30	-2.4213	1.754126	0	0	2.244858	0	0	-0.92048	-0.130036488	13.67871	-18.0889		
100000	800	-0.16863	0.040488	24.4659	-0.13277	0.004619	0.157663	0	0	-26.5531	0.923838	1214.106	-30	-4.93948	1.015622	0	0	2.244858	0	0	-3.91805	-0.005805329	13.67871	-18.0889		
162500	575	-0.28359	0.024831	15.58393	-0.26133	0.002572	0.159622	0	0	-52.2658	0.514309	1358.93	-30	-8.05211	0.62287	0	0	2.244858	0	0	-7.42603	-0.003226588	13.67871	-18.0889		
210375	325	-0.42029	0.017429	11.06113	-0.40418	0.001317	0.164838	0	0	-80.8356	0.26337	1503.753	-30	-11.485	0.437189	0	0	2.244858	0	0	-11.0462	-0.001653033	13.67871	-18.0889		
0	100	-0.54606	0.013935	8.869873	-0.53274	0.000621	0.170626	0	0	-106.548	0.124213	1619.612	-30	-14.3856	0.349544	0	0	2.244858	0	0	-14.0353	-0.000782045	13.67871	-18.0889		
0	3400	-1.09354	18.51629	20.89783	1.401551	16.0212	13.06948	154.9282	2.868695	280.3103	0	0	-7.59923	-6.11356	0.433898	-0.02981	0.718923	2.230416	400	70.87081	-5.40765	-0.417718813	138.8139	-126.082	0	2.454045
75000	3200	-0.57547	11.19992	23.4189	1.284654	9.339796	8.589203	152.0827	1.703314	256.9308	42.85804	42.85804	-11.0947	-5.55784	0.521065	-0.04147	0.663264	2.230416	400	128.6496	-4.62846	-0.444995432	138.8139	-126.082		
266667	3000	-0.24232	4.83089	31.81683	1.167757	3.420814	4.545458	145.2493	0.701683	233.5514	110.9428	110.9428	-18.5042	-4.29199	0.68677	-0.11909	0.591937	2.230416	400	232.009	-2.90816	-0.697054291	138.8139	-126.082		
200000	2800	-0.15031	2.443981	42.87842	1.05086	1.24281	2.587182	141.5184	0.345868	210.172	197.0276	197.0276	-24.6817	-3.63995	0.833142	-0.24962	0.354503	2.230416	400	366.5203	-1.56889	-1.237924002	138.8139	-126.082		
133333	2600	-0.14091	2.093685	43.91194	0.933963	1.018813	2.232983	141.4469	0.296145	186.7925	203.7626	286.4147	-25.9532	-3.59702	0.867026	-0.22451	0.299352	2.230416	400	376.1591	-1.44975	-1.280247033	138.8139	-126.082		
100000	2400	-0.13636	1.907146	43.0828	0.817066	0.953721	2.038931	141.5006	0.269862	163.4131	190.7442	377.652	-26.6853	-3.58336	0.887487	-0.17223	0.30503	2.230416	400	357.6328	-1.49742	-1.198444285	138.8139	-126.082		
100000	2200	-0.13181	1.714597	42.16456	0.700168	0.882619	1.83737	141.5947	0.242778	140.0337	176.5239	470.8776	-27.4856	-3.57196	0.910807	-0.12496	0.314091	2.230416	400	339.4985	-1.55206	-1.109098238	138.8139	-126.082		
100000	2000	-0.12726	1.514526	41.13677	0.583271	0.803999	1.626877	141.7434	0.214674	116.6542	160.7998	566.2601	-28.3696	-3.56377	0.937931	-0.08351	0.327284	2.230416	400	321.6899	-1.61553	-1.010306964	138.8139	-126.082		
100000	1800	-0.12269	1.304701	39.97145	0.466374	0.715639	1.405457	141.9678	0.185225	93.27481	143.1277	664.0126	-29.36	-3.56008	0.970374	-0.04907	0.345654	2.230416	400	304.119	-1.69042	-0.899274721	138.8139	-126.082		
100000	1600	-0.12009	1.084396	38.63646	0.349477	0.614833	1.174888	142.2981	0.154307	69.89538	122.9666	764.3834	-30	-3.56296	1.010243	-0.02311	0.370305	2.230416	400	286.6964	-1.78011	-0.772599231	138.8139	-126.082		
100000	1400	-0.12049	0.850138	37.09354	0.23258	0.497072	0.933892	142.7786	0.121381	46.51595	99.41439	867.7012	-30	-3.57445	1.061838	-0.00832	0.403019	2.230416	400	269.417	-1.88799	-0.624617662	138.8139	-126.082		
100000	1200	-0.12111	0.5882	35.29477	0.115683	0.351409	0.668993	143.4748	0.084392	23.13651	70.2819	974.5433	-30	-3.59232	1.137337	-0.01203	0.448605	2.230416	400	252.6558	-2.0134	-0.441579484	138.8139	-126.082		
100000	1000	-0.12026	0.271561	33.44948	-0.00121	0.152517	0.360401	0	0	-0.24292	30.50343	1090.402	-30	-3.56791	1.281803	-0.06075	0.520479	2.230416	400	240.9023	-2.09445	-0.191650884	138.8139	-126.082		
100000	800	-0.15623	0.043007	25.93971	-0.11811	0.004884	0.156746	0	0	-23.6224	0.976806	1206.261	-30	-4.59141	1.078808	0	0	2.230416	0	0	-3.50646	-0.006135117	138.8139	-126.082		
162500	575	-0.27238	0.025441	16.04718	-0.24962	0.002684	0.158236	0	0	-49.9242	0.536808	1351.084	-30	-7.75765	0.638179	0	0	2.230416	0	0	-7.1161	-0.003370403	138.8139	-126.082		
210375	325	-0.4119	0.017512	11.18399	-0.39574	0.001357	0.163413	0	0	-79.1485	0.271472	1495.908	-30	-11.2827	0.439277	0	0	2.230416	0	0	-10.8417	-0.001709413	138.8139	-126.082		
0	100	-0.54049	0.013874	8.88862	-0.52725	0.000639	0.169256	0	0	-105.45	0.127776	1611.766	-30	-14.2624	0.348022	0	0	2.230416	0	0	-13.9136	-0.000798146	138.8139	-126.082		
0	3400	-1.1135	18.85045	20.9981	1.449978	16.28697	13.35751	154.8072	2.918186	289.9956	0	0	-7.49143	-6.09352	0.430984	-0.0399	0.731366	2.232835	400	71.03293	-5.38633	-0.426036403	141.992	-173.412	0	2.543701
75000	3200	-0.59694	11.63561	23.38378	1.329935	9.70874	8.912405	152.1196	1.770005	265.9869	41.82618	41.82618	-10.7989	-5.57548	0.514103	-0.05003	0.67467	2.232835	400	127.094	-4.64968	-0.451380567	141.992	-173.412		
266667	3000	-0.26054	5.275703	31.02181	1.209891	3.805275	4.890188	145.737	0.768865	241.9782	107.3251	107.3251	-17.6796	-4.38718	0.668456	-0.11949	0.60467	2.232835	400	225.1531	-3.0444	-0.674323848	141.992	-173.412		
200000	2800	-0.15499	2.602289	42.21525	1.089847	1.35745	2.744264	141.5886	0.368454	217.9694	191.989	191.989	-24.147	-3.66743	0.819426	-0.25247	0.381089	2.232835	400	358.8637	-1.64173	-1.206268081	141.992	-173.412		
133333	2600	-0.14254	2.151247	44.1369	0.969804	1.0389	2.29275	141.4374	0.304267	193.9607	207.78	280.8196	-25.7353	-3.60662	0.861081	-0.24119	0.297467	2.232835	400	382.0774	-1.44006	-1.305477439	141.992	-173.412		
100000	2400	-0.13786	1.961219	43.30895	0.84976	0.973595	2.095428	141.483	0.277479	169.952	194.7189	371.5128	-26.4689	-3.59211	0.881357	-0.18614	0.302419	2.232835	400	362.9229	-1.48733	-1.223419033	141.992	-173.412		
100000	2200	-0.13319	1.765215	42.39188	0.729716	0.90231	1.890543	141.568	0.249898	145.9432	180.4619	464.2074	-27.2706	-3.57982	0.904435	-0.13618	0.310757	2.232835	400	344.1969	-1.54153	-1.133842902	141.992	-173.412		
100000	2000	-0.12851	1.561736	41.36523	0.609673	0.823552	1.67666	141.7064	0.221308	121.9345	164.7104	559.0718	-28.1559	-3.57063	0.93123	-0.0921	0.323227	2.232835	400	325.8323	-1.60453	-1.034872524	141.992	-173.412		
100000	1800	-0.12382	1.348581	40.20099	0.489629	0.73513	1.451793	141.9189	0.191389	97.92579	147.026	656.3186	-29.1472	-3.56588	0.963196	-0.05509	0.340875	2.232835	400	307.7381	-1.67891	-0.923761771	141.992	-173.412		
100000	1600	-0.12025	1.123883	38.86345	0.369585	0.634052	1.215694	142.2364	0.159857	73.91705	126.8104	756.2091	-30	-3.56755	1.002572	-0.02675	0.364999	2.232835	400	289.8099	-1.76823	-0.796748562	141.992	-173.412		
100000	1400	-0.12062	0.886612	37.31665	0.249542	0.516453	0.971221	142.7025	0.126522	49.90832	103.2907	859.0555	-30	-3.57823	1.053016	-0.00935	0.397016	2.232835	400	272.0224	-1.87623	-0.648974169	141.992	-173.412		
100000	1200	-0.12126	0.622246	35.5031	0.129498	0.371485	0.703028	143.3865	0.089222	25.89959	74.29695	965.4239	-30	-3.59677	1.12604	-0.00993	0.4417	2.232835	400	254.6441	-2.00392	-0.466808471	141.992	-173.412		
100000	1000	-0.12088	0.305557	33.56206	0.009454	0.175225	0.392896	144.2869	0.044088	1.890861	35.04502	1076.39	-30	-3.58571	1.261173	-0.05153	0.511125	2.232835	400	241.2144	-2.10435	-0.220188462	141.992	-173.412		
100000	800	-0.15028	0.044743	26.81658	-0.11059	0.005051	0.157041	0	0	-22.1179	1.010174	1192.249	-30	-4.42343	1.122348	0	0	2.232835	0	0	-3.29474	-0.006349099	141.992	-173.412		
162500	575	-0.26872	0.025817	16.25577	-0.24564	0.002738	0.158304	0	0	-49.1277	0.547637	1337.072	-30	-7.66107	0.647616	0	0	2.232835	0	0	-7.01003	-0.003440133	141.992	-173.412		
210375	325	-0.41188	0.017551	11.19613	-0.39569	0.001361	0.163591	0	0	-79.1386	0.272105	1481.896	-30	-11.2823	0.440249	0	0	2.232835	0	0	-10.8404	-0.00170734	141.992	-173.412		
0	100	-0.54395	0.01383	8.851271	-0.53074	0.000624	0.169607	0	0	-106.148	0.12478	1597.755	-30	-14.339	0.346913	0	0	2.232835	0	0	-13.9914	-0.000793999	141.992	-173.412		
0	3400	-1.1309	19.18941	21.08253	1.498401	16.56011	13.64039	154.7059	2.968715	299.6803	0	0	-7.38516	-6.06314	0.428093	-0.05006	0.74342	2.229919	400	71.2071	-5.35613	-0.431579301	169.4635	-201.728	0	2.629349
75000	3200	-0.61566	12.04948	23.35802	1.375204	10.05861	9.219778	152.1467	1.833289	275.0409	40.89195	40.89195	-10.5322	-5.57673	0.507775	-0.05886	0.686033	2.229919	400	125.7552	-4.65564	-0.455257532	169.4635	-201.728		
266667	3000	-0.27806	5.716732	30.34501	1.252007	4.186664	5.227363	146.177	0.835654	250.4015	104.0077	104.0077	-16.9315	-4.46266	0.651929	-0.1213	0.616926	2.229919	400	219.0703	-3.15725	-0.653480972	169.4635	-201.728		
200000	2800	-0.15911	2.755892	41.65928	1.12881	1.467968	2.895207	141.6621	0.390405	225.7621	187.335	187.335	-23.65	-3.68341	0.806918	-0.25707	0.406321	2.229919	400	352.166	-1.69947	-1.177025943	169.4635	-201.728		
133333	2600	-0.14365	2.205252	44.38559	1.005613	1.055986	2.348364	141.4295	0.311888	201.1227	211.1972	275.6495	-25.5342	-3.60522	0.855647	-0.25881	0.297444	2.229919	400	387.7001	-1.42262	-1.326953118	169.4635	-201.728		
100000	2400	-0.13885	2.011813	43.5591	0.882416	0.990543	2.147948	141.4661	0.284603	176.4833	198.1085	365.8398	-26.2695	-3.58971	0.875772	-0.20093	0.301625	2.229919	400	367.907	-1.46922	-1.244717817	169.4635	-201.728		
100000	2200	-0.13406	1.812425	42.6436	0.759219	0.919145	1.939905	141.541	0.256533	151.8439	183.829	458.0449	-27.0731	-3.57631	0.898653	-0.14821	0.309193	2.229919	400	348.5831	-1.52267	-1.154996411	169.4635	-201.728		
100000	2000	-0.12927	1.605603	41.61866	0.636022	0.840315	1.722798	141.668	0.227463	127.2045	168.0631	552.4337	-27.9602	-3.56591	0.925176	-0.10147	0.320898	2.229919	400	329.6614	-1.58479	-1.055937494	169.4635	-201.728		
100000	1800	-0.12446	1.389182	40.45621	0.512825	0.751896	1.494644	141.8672	0.197079	102.5651	150.3792	649.2182	-28.953	-3.55978	0.956751	-0.06186	0.337783	2.229919	400	311.0506	-1.65819	-0.944834758	169.4635	-201.728		
100000	1600	-0.11998	1.160267	39.11763	0.389628	0.650662	1.25335	142.17	0.164955	77.92567	130.1324	748.6716	-30	-3.55982	0.995721	-0.03111	0.361305	2.229919	400	292.6377	-1.74647	-0.817624202	169.4635	-201.728		
100000	1400	-0.1203	0.919996	37.56869	0.266431	0.533269	1.005488	142.6193	0.131209	53.28626	106.6538	851.0918	-30	-3.569	1.045223	-0.01116	0.392602	2.229919	400	274.3779	-1.85366	-0.6701046	169.4635	-201.728		
100000	1200	-0.12092	0.653121	35.74506	0.143234	0.388968	0.733999	143.2866	0.093584	28.64686	77.79355	957.0359	-30	-3.5869	1.116244	-0.00884	0.436424	2.229919	400	256.4675	-1.98187	-0.488775824	169.4635	-201.728		
100000	1000	-0.12082	0.335827	33.73726	0.020037	0.194975	0.421805	144.1983	0.048426	4.007457	38.99492	1067.543	-30	-3.58392	1.244262	-0.04478	0.503878	2.229919	400	241.7915	-2.09465	-0.245005039	169.4635	-201.728		
100000	800	-0.14435	0.046393	27.69093	-0.10316	0.005202	0.156974	0	0	-20.6319	1.040495	1183.402	-30	-4.25554	1.163743	0	0	2.229919	0	0	-3.08526	-0.006540416	169.4635	-201.728		
162500	575	-0.26505	0.026079	16.4326	-0.24176	0.002781	0.157988	0	0	-48.3513	0.55627	1328.225	-30	-7.56421	0.654186	0	0	2.229919	0	0	-6.90654	-0.003494084	169.4635	-201.728		
210375	325	-0.4119	0.017504	11.18148	-0.39575	0.001357	0.163376	0	0	-79.1505	0.271319	1473.049	-30	-11.2827	0.439074	0	0	2.229919	0	0	-10.842	-0.001713327	169.4635	-201.728		
0	100	-0.54746	0.013721	8.793052	-0.53435	0.000607	0.169555	0	0	-106.87	0.121371	1588.908	-30	-14.4167	0.344173	0	0	2.229919	0	0	-14.0718	-0.000759863	169.4635	-201.728		

A_vxy	y_ci	eps_2	eps_1	eta_degre	eps_x	eps_y	gamma_xy	s_theta	w	f_sx	f_sy	sigma_sR	f_c2max	f_c2	f_c1	v_ci	v_cimax	v_xy	f_sxcr	f_sycr	f_cx	f_cy	N	M	V	gamma_m
0	3400	-1.14534	19.54452	21.14477	1.54689	16.85229	13.92173	154.6315	3.022198	309.3781	0	0	-7.27702	-6.01929	0.425134	-0.06023	0.754901	2.219878	400	71.37184	-5.31446	-0.433439304	272.2619	-264.314	0	2.70962
75000	3200	-0.63042	12.43542	23.34139	1.420671	10.38432	9.506269	152.1642	1.892226	284.1343	40.05867	40.05867	-10.2951	-5.55693	0.502107	-0.06803	0.697397	2.219878	400	124.6465	-4.64216	-0.45582522	272.2619	-264.314		
266667	3000	-0.29243	6.112459	29.85164	1.294452	4.525578	5.530137	146.5123	0.89555	258.8905	101.1801	101.1801	-16.3122	-4.50375	0.63828	-0.12556	0.629434	2.219878	400	214.2379	-3.22976	-0.635714052	272.2619	-264.314		
200000	2800	-0.16215	2.895958	41.26721	1.168233	1.565575	3.032185	141.722	0.410421	233.6466	183.3249	183.3249	-23.2142	-3.68158	0.796129	-0.26465	0.429743	2.219878	400	346.9986	-1.73362	-1.151831458	272.2619	-264.314		
133333	2600	-0.14408	2.25557	44.6721	1.042014	1.069479	2.39949	141.4237	0.318991	208.4028	213.8958	271.1638	-25.3497	-3.58933	0.850703	-0.27792	0.299837	2.219878	400	393.0243	-1.39473	-1.343910428	272.2619	-264.314		
100000	2400	-0.13918	2.059072	43.84892	0.915795	1.004097	2.196477	141.4499	0.291255	183.159	200.8195	360.8894	-26.086	-3.57266	0.870681	-0.21715	0.303168	2.219878	400	372.5969	-1.44023	-1.261746447	272.2619	-264.314		
100000	2200	-0.13428	1.856665	42.93729	0.789576	0.932805	1.98579	141.5131	0.262742	157.9152	186.561	452.6411	-26.8906	-3.55791	0.893367	-0.16162	0.309879	2.219878	400	352.684	-1.49239	-1.172163821	272.2619	-264.314		
100000	2000	-0.12939	1.646904	41.91682	0.663357	0.854158	1.766015	141.6264	0.233245	132.6714	170.8317	546.5873	-27.7785	-3.54598	0.919622	-0.11214	0.320709	2.219878	400	333.2221	-1.55301	-1.073336276	272.2619	-264.314		
100000	1800	-0.12448	1.427666	40.75959	0.537138	0.766046	1.535176	141.8095	0.202457	107.4275	153.2092	642.939	-28.7714	-3.53804	0.950805	-0.06986	0.336691	2.219878	400	314.1224	-1.62462	-0.96261158	272.2619	-264.314		
100000	1600	-0.11955	1.19566	39.42622	0.410919	0.665196	1.290391	142.0932	0.169895	82.18372	133.0391	741.9725	-29.9025	-3.5359	0.989247	-0.03654	0.359345	2.219878	400	295.2687	-1.71076	-0.83588348	272.2619	-264.314		
100000	1400	-0.11938	0.952395	37.88054	0.2847	0.548319	1.038845	142.5202	0.135735	56.9399	109.6637	843.9845	-30	-3.54257	1.037902	-0.01404	0.389812	2.219878	400	276.5946	-1.81566	-0.689015466	272.2619	-264.314		
100000	1200	-0.11992	0.683693	36.05707	0.15848	0.405289	0.764779	143.1617	0.097879	31.69608	81.05777	949.5141	-30	-3.55831	1.106931	-0.00876	0.432544	2.219878	400	258.2519	-1.94208	-0.509285523	272.2619	-264.314		
100000	1000	-0.11997	0.366701	34.00683	0.032261	0.214466	0.451281	144.065	0.052829	6.452265	42.89314	1059.559	-30	-3.55975	1.228213	-0.03932	0.497836	2.219878	400	242.5969	-2.06205	-0.269498562	272.2619	-264.314		
100000	800	-0.13696	0.048372	28.7952	-0.09396	0.005373	0.156462	0	0	-18.7916	1.074612	1175.418	-30	-4.04549	1.213394	0	0	2.219878	0	0	-2.82535	-0.006751714	272.2619	-264.314		
162500	575	-0.25948	0.02636	16.67109	-0.23595	0.002836	0.157107	0	0	-47.1909	0.567104	1320.241	-30	-7.41637	0.661214	0	0	2.219878	0	0	-6.75161	-0.00356109	272.2619	-264.314		
210375	325	-0.40979	0.017425	11.18164	-0.39373	0.00136	0.162547	0	0	-78.7456	0.27193	1465.065	-30	-11.2318	0.437101	0	0	2.219878	0	0	-10.793	-0.001707806	272.2619	-264.314		
0	100	-0.5487	0.013572	8.737791	-0.53572	0.000596	0.16885	0	0	-107.145	0.119168	1580.924	-30	-14.444	0.340437	0	0	2.219878	0	0	-14.1028	-0.000750584	272.2619	-264.314		
0	3400	-1.16127	19.87042	21.22554	1.595416	17.11373	14.19556	154.5353	3.070681	319.0832	0	0	-7.18052	-5.98754	0.422476	-0.07066	0.766975	2.215988	400	71.60886	-5.28314	-0.438185953	358.9411	-386.033	0	2.799881
75000	3200	-0.6489	12.84746	23.32078	1.466247	10.73231	9.812837	152.186	1.955203	293.2495	39.20499	39.20499	-10.0534	-5.55416	0.496286	-0.07714	0.708724	2.215988	400	123.4865	-4.64405	-0.459022134	358.9411	-386.033		
266667	3000	-0.31456	6.647661	29.1476	1.337079	4.996023	5.923228	147.0124	0.977289	267.4158	97.79973	97.79973	-15.5432	-4.58805	0.62134	-0.1267	0.640023	2.215988	400	207.938	-3.35223	-0.614476255	358.9411	-386.033		
200000	2800	-0.16679	3.067314	40.69027	1.20791	1.69261	3.197581	141.8224	0.435014	241.5821	178.5367	178.5367	-22.7024	-3.69896	0.783649	-0.26888	0.455056	2.215988	400	340.0581	-1.79356	-1.121746813	358.9411	-386.033		
133333	2600	-0.14512	2.309512	44.91935	1.078742	1.085652	2.454621	141.4215	0.326615	215.7484	217.1303	265.8709	-25.1548	-3.58649	0.845527	-0.29695	0.300612	2.215988	400	398.8332	-1.37671	-1.364231716	358.9411	-386.033		
100000	2400	-0.14011	2.109963	44.09962	0.949573	1.02028	2.248962	141.4388	0.298431	189.9147	204.0559	355.1007	-25.8912	-3.56883	0.865328	-0.23334	0.303138	2.215988	400	377.7696	-1.42142	-1.282085061	358.9411	-386.033		
100000	2200	-0.13511	1.904565	43.1919	0.820405	0.949052	2.035611	141.4918	0.26948	164.081	189.8105	446.3654	-26.6957	-3.55303	0.887784	-0.17503	0.309024	2.215988	400	357.2629	-1.47267	-1.192578467	358.9411	-386.033		
100000	2000	-0.1301	1.691884	42.17611	0.691236	0.870544	1.813144	141.5933	0.239559	138.2473	174.1087	539.833	-27.5832	-3.53986	0.913726	-0.12284	0.319012	2.215988	400	337.2502	-1.53222	-1.093925828	358.9411	-386.033		
100000	1800	-0.12509	1.469852	41.02448	0.562068	0.782691	1.579612	141.7625	0.20837	112.4136	156.5382	635.7132	-28.5748	-3.53053	0.944461	-0.07789	0.334123	2.215988	400	317.644	-1.60254	-0.983531237	358.9411	-386.033		
100000	1600	-0.12005	1.235268	39.6978	0.432899	0.682315	1.332174	142.0291	0.175444	86.57986	136.463	734.2791	-29.7031	-3.52678	0.982211	-0.0419	0.355851	2.215988	400	298.3277	-1.68717	-0.857394338	358.9411	-386.033		
100000	1400	-0.11899	0.988563	38.15542	0.303731	0.565839	1.076096	142.4365	0.140808	60.74616	113.1678	835.8377	-30	-3.53157	1.02999	-0.01686	0.385545	2.215988	400	279.2087	-1.79054	-0.71103041	358.9411	-386.033		
100000	1200	-0.11949	0.718182	36.33357	0.174562	0.424125	0.799637	143.0547	0.102739	34.91246	84.82497	940.9021	-30	-3.54596	1.096849	-0.00847	0.427137	2.215988	400	260.3906	-1.91615	-0.532955881	358.9411	-386.033		
100000	1000	-0.11972	0.401678	34.24544	0.045394	0.236564	0.485087	143.9498	0.057821	9.078764	47.31282	1050.428	-30	-3.55244	1.211288	-0.03346	0.490208	2.215988	400	243.7267	-2.04388	-0.297266724	358.9411	-386.033		
100000	800	-0.1292	0.051006	30.13675	-0.08377	0.005582	0.15649	0	0	-16.7549	1.116346	1166.287	-30	-3.82415	1.279453	0	0	2.215988	0	0	-2.53768	-0.00701073	358.9411	-386.033		
162500	575	-0.25306	0.026886	17.01393	-0.22909	0.002918	0.156655	0	0	-45.8178	0.583594	1311.11	-30	-7.24553	0.674417	0	0	2.215988	0	0	-6.56746	-0.003667883	358.9411	-386.033		
210375	325	-0.40666	0.017482	11.23676	-0.39055	0.001376	0.162129	0	0	-78.11	0.275278	1455.933	-30	-11.1557	0.438516	0	0	2.215988	0	0	-10.7155	-0.00173887	358.9411	-386.033		
0	100	-0.54879	0.013522	8.721486	-0.53586	0.000594	0.168558	0	0	-107.173	0.118708	1571.792	-30	-14.446	0.3392	0	0	2.215988	0	0	-14.1061	-0.000744143	358.9411	-386.033		
0	3400	-1.17467	20.2122	21.28644	1.643935	17.3936	14.46881	154.4631	3.122039	328.7869	0	0	-7.08203	-5.94454	0.419747	-0.08106	0.778513	2.205983	400	71.83313	-5.24226	-0.439728516	471.2561	-481.863	0	2.884186
75000	3200	-0.66368	13.23289	23.30723	1.511804	11.05741	10.09931	152.2003	2.01405	302.3608	38.43955	38.43955	-9.83738	-5.53348	0.491043	-0.0865	0.719998	2.205983	400	122.525	-4.62941	-0.459333287	471.2561	-481.863		
266667	3000	-0.33355	7.136061	28.61456	1.379673	5.422833	6.280765	147.4082	1.051914	275.9346	94.90328	94.90328	-14.9022	-4.63989	0.607191	-0.13004	0.650854	2.205983	400	202.8349	-3.43642	-0.596277554	471.2561	-481.863		
200000	2800	-0.17036	3.223618	40.26704	1.247542	1.805719	3.34776	141.9052	0.457448	249.5084	174.3975	174.3975	-22.2549	-3.69998	0.772889	-0.27573	0.478435	2.205983	400	334.5841	-1.83135	-1.095739082	471.2561	-481.863		
133333	2600	-0.14648	2.368442	45.10094	1.115411	1.10655	2.514907	141.4216	0.334949	223.0823	221.31	261.1864	-24.9452	-3.58872	0.823274	-0.29838	0.298382	2.205983	400	400	-1.37495	-1.390495585	471.2561	-481.863		
100000	2400	-0.14044	2.156794	44.379	0.983281	1.033074	2.296694	141.4297	0.305035	196.6561	206.6147	349.9647	-25.7145	-3.5525	0.860516	-0.25053	0.305198	2.205983	400	382.5926	-1.39381	-1.298158439	471.2561	-481.863		
100000	2200	-0.13534	1.94847	43.4756	0.85115	0.96198	2.08086	141.4714	0.275653	170.2299	192.3961	440.7878	-26.5196	-3.53543	0.882787	-0.18937	0.310218	2.205983	400	361.4778	-1.44382	-1.208827733	471.2561	-481.863		
100000	2000	-0.13024	1.732945	42.4648	0.719019	0.883687	1.855894	141.5599	0.245316	143.8038	176.7374	533.8234	-27.4073	-3.52082	0.908476	-0.1344	0.319315	2.205983	400	340.9077	-1.5019	-1.110442496	471.2561	-481.863		
100000	1800	-0.12513	1.508187	41.31919	0.586888	0.796167	1.619854	141.7137	0.213731	117.3776	159.2335	629.2801	-28.3986	-3.50979	0.938846	-0.08674	0.333506	2.205983	400	320.7965	-1.57048	-1.000466047	471.2561	-481.863		
100000	1600	-0.12	1.271075	39.99982	0.454757	0.696323	1.369935	141.9616	0.180444	90.95145	139.2646	727.4285	-29.5252	-3.50399	0.97603	-0.04807	0.354265	2.205983	400	301.0292	-1.65298	-0.874997404	471.2561	-481.863		
100000	1400	-0.11812	1.021086	38.46247	0.322626	0.580345	1.109667	142.347	0.145349	64.52529	116.069	828.5844	-30	-3.5063	1.023099	-0.02049	0.383123	2.205983	400	281.4962	-1.75393	-0.729260923	471.2561	-481.863		
100000	1200	-0.11853	0.748942	36.64512	0.190496	0.439915	0.830843	142.9384	0.107053	38.09913	87.98299	933.2395	-30	-3.51828	1.088208	-0.00919	0.423596	2.205983	400	262.2695	-1.87727	-0.552795801	471.2561	-481.863		
100000	1000	-0.11881	0.432458	34.53547	0.058365	0.255284	0.514897	143.8133	0.062193	11.67296	51.05682	1042.315	-30	-3.52627	1.197353	-0.02955	0.484754	2.205983	400	244.8634	-2.00812	-0.320789055	471.2561	-481.863		
100000	800	-0.12161	0.053608	31.50279	-0.07377	0.005766	0.156127	0	0	-14.7532	1.153123	1158.173	-30	-3.60669	1.344731	0	0	2.205983	0	0	-2.25471	-0.007244644	471.2561	-481.863		
162500	575	-0.24671	0.027281	17.32391	-0.22241	0.002987	0.155771	0	0	-44.4826	0.597429	1302.997	-30	-7.07595	0.684339	0	0	2.205983	0	0	-6.38786	-0.003758528	471.2561	-481.863		
210375	325	-0.40363	0.017439	11.25958	-0.38758	0.001386	0.161266	0	0	-77.5153	0.277171	1447.82	-30	-11.0822	0.437441	0	0	2.205983	0	0	-10.6431	-0.001739833	471.2561	-481.863		
0	100	-0.54903	0.013396	8.6796	-0.53622	0.000587	0.167807	0	0	-107.245	0.117429	1563.679	-30	-14.4513	0.33602	0	0	2.205983	0	0	-14.1146	-0.000738869	471.2561	-481.863		
0	3400	-1.18221	20.6172	21.29296	1.692436	17.74255	14.75155	154.4554	3.184436	338.4872	0	0	-6.96877	-5.87086	0.416588	-0.09109	0.788463	2.179449	400	71.9545	-5.17544	-0.432835085	673.9185	-493.784	0	2.944333
75000	3200	-0.66791	13.54667	23.307	1.557308	11.32145	10.33034	152.2005	2.06181	311.4616	37.83994	37.83994	-9.66827	-5.46595	0.486911	-0.09637	0.731192	2.179449	400	121.9447	-4.57201	-0.452023601	673.9185	-493.784		
266667	3000	-0.33358	7.301107	28.65626	1.42218	5.545344	6.425574	147.3767	1.076013	284.4361	93.64822	93.64822	-14.6973	-4.57646	0.60266	-0.1416	0.665417	2.179449	400	201.8838	-3.38541	-0.58839179	673.9185	-493.784		
200000	2800	-0.16976	3.306004	40.34627	1.287052	1.849196	3.430001	141.8891	0.469086	257.4105	172.5127	172.5127	-22.0261	-3.64962	0.767438	-0.29183	0.496088	2.179449	400	334.1124	-1.79828	-1.083896338	673.9185	-493.784		
133333	2600	-0.14619	2.416937	45.36996	1.151925	1.118825	2.56291	141.4243	0.341814	230.3849	223.7651	258.8576	-24.7754	-3.55741	0.801864	-0.3015	0.301501	2.179449	400	400	-1.34962	-1.40591315	673.9185	-493.784		
100000	2400	-0.13914	2.193263	44.74784	1.016797	1.037326	2.332314	141.4227	0.310177	203.3593	207.4652	347.2874	-25.5786	-3.50224	0.856841	-0.26988	0.312549	2.179449	400	386.4176	-1.34188	-1.303508043	673.9185	-493.784		
100000	2200	-0.13398	1.982256	43.84982	0.881669	0.966611	2.114527	141.4499	0.28039	176.3337	193.3221	437.7745	-26.3856	-3.4834	0.879017	-0.20567	0.316566	2.179449	400	364.6727	-1.38974	-1.214639211	673.9185	-493.784		
100000	2000	-0.12881	1.764124	42.84539	0.746541	0.888774	1.887582	141.5214	0.249661	149.3082	177.7549	530.4866	-27.2752	-3.46668	0.904571	-0.14776	0.324634	2.179449	400	343.5382	-1.44528	-1.116830393	673.9185	-493.784		
100000	1800	-0.12363	1.536883	41.70743	0.611413	0.80184	1.649557	141.6552	0.217707	122.2826	160.368	625.6315	-28.268	-3.45311	0.934733	-0.09726	0.337762	2.179449	400	322.9355	-1.51079	-1.007591916	673.9185	-493.784		
100000	1600	-0.11842	1.297488	40.39751	0.476285	0.702784	1.397674	141.8789	0.184086	95.25702	140.5567	723.4781	-29.3953	-3.44419	0.971575	-0.05586	0.357408	2.179449	400	302.7575	-1.58949	-0.883117583	673.9185	-493.784		
100000	1400	-0.1159	1.044697	38.86909	0.341157	0.587643	1.134117	142.2349	0.148592	68.23144	117.5286	824.3483	-30	-3.44244	1.018221	-0.02574	0.385249	2.179449	400	282.8908	-1.68578	-0.738431606	673.9185	-493.784		
100000	1200	-0.11614	0.770835	37.0621	0.206029	0.448664	0.853144	142.7895	0.110067	41.20586	89.73284	928.7192	-30	-3.4495	1.082247	-0.0118	0.424557	2.179449	400	263.4012	-1.80347	-0.563792634	673.9185	-493.784		
100000	1000	-0.11628	0.454019	34.95253	0.070901	0.266842	0.535579	143.624	0.065208	14.18028	53.36834	1037.485	-30	-3.45338	1.188066	-0.02873	0.484082	2.179449	400	245.6566	-1.93	-0.335310907	673.9185	-493.784		
100000	800	-0.11812	0.069929	32.36794	-0.06423	0.016033	0.170065	0	0	-12.8453	3.206511	1153.344	-30	-3.50653	1.477797	-0.15877	0.572339	2.179449	400	254.4289	-1.96072	0.096386645	673.9185	-493.784		
162500	575	-0.2405	0.02727	17.51559	-0.21625	0.003015	0.153706	0	0	-43.2491	0.60299	1298.168	-30	-6.90957	0.68404	0	0	2.179449	0	0	-6.22173	-0.003789699	673.9185	-493.784		
210375	325	-0.40091	0.017124	11.19279	-0.38516	0.001373	0.159201	0	0	-77.031	0.27452	1442.991	-30	-11.016	0.429534	0	0	2.179449	0	0	-10.5848	-0.00172348	673.9185	-493.784		
0	100	-0.54967	0.013063	8.568594	-0.53717	0.000571	0.165814	0	0	-107.435	0.114174	1558.85	-30	-14.4652	0.327675	0	0	2.179449	0	0	-14.1369	-0.00071389	673.9185	-493.784		