

Preface

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Publication date

2023

Document Version

Final published version

Published in

Biomedical Electronics, Noise Shaping ADCs, and Frequency References

Citation (APA)

Harpe, P., Baschiroto, A., & Makinwa, K. A. A. (2023). Preface. In *Biomedical Electronics, Noise Shaping ADCs, and Frequency References: Advances in Analog Circuit Design 2022* (pp. v-vi). Springer.

Important note

To cite this publication, please use the final published version (if applicable). Please check the document version above.

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Biomedical Electronics, Noise Shaping ADCs, and Frequency References

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Editors

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Advances in Analog Circuit Design 2022

 Springer

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ISBN 978-3-031-28911-8 ISBN 978-3-031-28912-5 (eBook)
<https://doi.org/10.1007/978-3-031-28912-5>

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Preface

This book is part of the Analog Circuit Design series and contains contributions of all 18 speakers of the 30th workshop on Advances in Analog Circuit Design (AACD). The event was organized by John Morrissey, Ivan O’Connell, Nicola Cooney, Paul Hyland, Kapil Bhate and Mary Kent and some students from MCCI – Microelectronic Circuits Centre Ireland, Tyndall National Institute, Cork, Ireland. The sponsors for this workshop were: Qualcomm, Analog Devices, AMD, Qorvo, Macom, Boston Scientific, Bosch, Renesas, Onsemi, u-blox, Infineon, Cadence, IDA Ireland, OTC Ireland, Vishay. The workshop was held in Cork, Ireland, from October 4 to 6, 2022.

ABOUT AACD

The aim of the AACD workshop is to bring together a group of expert designers to discuss new developments and future options. Each workshop is followed by the publication of a book by Springer in their successful series of Analog Circuit Design. This book is the 30th in this series. The book series can be seen as a reference for all people involved in analog and mixed-signal design. The full list of the previous books and topics in the series is included in this book.

ABOUT MCCI

Funded by Enterprise Ireland and the IDA, MCCI’s mission is to deliver high impact research for the semiconductor industry and to generate innovative technology. MCCI is a national technology centre that works collaboratively in microelectronics circuit design to improve the performance of mixed-signal circuits required by their industry partners. MCCI’s research focus is on mixed-signal, analog and RF circuits. The centre has established itself as a single point of contact in Ireland for access to high-calibre academic research in the field of microelectronics. MCCI is committed to the development of an engineering talent pipeline for the global semiconductor industry. For more information, visit www.mcci.ie

This book comprises three parts, each with six chapters from experts in the field, covering advanced analog and mixed-signal circuit design topics that are considered highly important by the circuit design community:

- Biomedical Electronics
- Noise Shaping ADCs
- Frequency References

We are confident that this book, like its predecessors, proves to be a valuable contribution to our analog and mixed-signal circuit design community.

Eindhoven, The Netherlands
Milan, Italy
Delft, The Netherlands

Pieter Harpe
Andrea Baschiroto
Kofi A. A. Makinwa

The Topics Covered Before in This Series

2021	Online	Analog Circuits for Machine Learning Current, Voltage and Temperature Sensors
2019	Milan (Italy)	High-Speed Communication Next-Generation ADCs High-Performance Power Management Technology Considerations for Advanced Integrated Circuits
2018	Edinburgh (Scotland)	Analog Techniques for Power Constrained Applications Sensors for Mobile Devices Energy Efficient Amplifiers and Drivers
2017	Eindhoven (The Netherlands)	Hybrid ADCs Smart Sensors for the IoT Sub-1V & Advanced Node Analog Circuit Design
2016	Villach (Austria)	Continuous-time $\Sigma\Delta$ Modulators for Transceivers Automotive Electronics Power Management
2015	Neuchâtel (Switzerland)	Efficient Sensor Interfaces Advanced Amplifiers Low Power RF Systems
2014	Lisbon (Portugal)	High-Performance AD and DA Converters IC Design in Scaled Technologies Time-Domain Signal Processing

2013	Grenoble (France)	Frequency References Power Management for SoC Smart Wireless Interfaces
2012	Valkenburg (The Netherlands)	Nyquist A/D Converters Capacitive Sensor Interfaces Beyond Analog Circuit Design
2011	Leuven (Belgium)	Low-Voltage Low-Power Data Converters Short-Range Wireless Front-Ends Power Management and DC-DC
2010	Graz (Austria)	Robust Design Sigma Delta Converters RFID
2009	Lund (Sweden)	Smart Data Converters Filters on Chip Multimode Transmitters
2008	Pavia (Italy)	High-Speed Clock and Data Recovery High-Performance Amplifiers Power Management
2007	Oostende (Belgium)	Sensors, Actuators and Power Drivers for the Automotive and Industrial Environment Integrated PAs from Wireline to RF Very High Frequency Front Ends
2006	Maastricht (The Netherlands)	High-Speed AD Converters Automotive Electronics: EMC issues Ultra Low Power Wireless
2005	Limerick (Ireland)	RF Circuits: Wide Band, Front-Ends, DACs Design Methodology and Verification of RF and Mixed-Signal Systems
2004	Montreux (Swiss)	Low Power and Low Voltage Sensor and Actuator Interface Electronics Integrated High-Voltage Electronics and Power Management Low-Power and High-Resolution ADCs
2003	Graz (Austria)	Fractional-N Synthesizers Design for Robustness Line and Bus Drivers

2002	Spa (Belgium)	Structured Mixed-Mode Design Multi-bit Sigma-Delta Converters Short-Range RF Circuits
2001	Noordwijk (The Netherlands)	Scalable Analog Circuits High-Speed D/A Converters RF Power Amplifiers
2000	Munich (Germany)	High-Speed A/D Converters Mixed-Signal Design PLLs and Synthesizers
1999	Nice (France)	XDSL and Other Communication Systems RF-MOST Models and Behavioural Modelling Integrated Filters and Oscillators
1998	Copenhagen (Denmark)	1-Volt Electronics Mixed-Mode Systems LNAs and RF Power Amps for Telecom
1997	Como (Italy)	RF A/D Converters Sensor and Actuator Interfaces Low-Noise Oscillators, PLLs and Synthesizers
1996	Lausanne (Swiss)	RF CMOS Circuit Design Bandpass Sigma Delta and Other Data Converters Translinear Circuits
1995	Villach (Austria)	Low-Noise/Power/Voltage Mixed-Mode with CAD Tools Voltage, Current and Time References
1994	Eindhoven (The Netherlands)	Low-Power Low-Voltage Integrated Filters Smart Power
1993	Leuven (Belgium)	Mixed-Mode A/D Design Sensor Interfaces Communication Circuits
1992	Scheveningen (The Netherlands)	OpAmps ADC Analog CAD

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