

Academic CV, Prof. Dr.-Ing. Friedel Gerfers

Dec/2023

Personal Data

Title	Einstein-Professor
First name	Friedel
Name	Gerfers
Current position 1	Full Professor
Current institution 1	Head of Chair Mixed Signal Circuit Design, Institute of Computer Engineering and Microelectronics, TU Berlin, Germany
Current position 2	Executive Director
Current institution 2	IC4X GmbH, Berlin, Germany
Identifiers/ORCID	0000-0002-0520-1923

Qualifications and Career

Stages	Periods and Details
Degree Programme	<p>2001 – 2003 Research assistant Chair of Microelectronics, Albert-Ludwigs-Universität (University of Freiburg), Germany</p> <p>1997 – 2001 Research assistant Chair of Microelectronics, Saarland University, Germany</p>
Doctorate Degree	<p>24th January 2005 Supervisor: Prof.-Dr.-Ing. Yiannos Manoli Title of PhD: "Design Strategy, Limits and Implementation of Low- Voltage Low-Power Continuous-Time Sigma-Delta Modulators"</p>
Academic / Professional Career	<p>since 2015 Full University Professor Chair Mixed Signal Circuit Design TU Berlin, Germany</p> <p>2014 Director, Design Manager Inphi Corp. Santa Clara, USA</p>

2014
Design Manager & Architect
Apple Inc.
Cupertino, USA

2012 – 2014
Director High-Speed Data Converters
IDT Inc.
San Jose, USA

2011 – 2012
Technical Director
Alvand Technologies
Santa Clara, USA

2007 – 2012
Technical Director
Aquantia Inc.
Milpitas, USA

2006 – 2007
Senior Researcher, Research Fellowship
Intel Research
Santa Clara, USA

2003 – 2006
Senior Design Engineer
Philips Semiconductors
Munich, Germany

Activities in the Research System

Committee Involvement

2009 – today
Member TPC Data Converters
IEEE ESSCIRC Conference

2017 – today
Member TPC
EuMW Conference

2018 – 2023
Member TPC Wireline
IEEE ISSCC Conference

2020 – 2022
Member TPC
OFC Conference

Activities in the field of scientific community

2018 – today
VDE ITG Spokesperson,
Department 8 for Micro- and Nanoelectronics

2018 – today
Co-Founder IC4X GmbH
Berlin, Germany

2009 – today
Founder NiederRhein Technologies
Mountain View, USA

Activities in the field of academic self-governance

2020 – today
Deputy Member of Academic Senate
TU Berlin

2018 – today
Chairman of Examination Board
Computer Engineering
TU Berlin

2018 – today
Member of Examination Board
Automotive Systems
TU Berlin

Organisation of academic events

2023
EuMIC Conference
Chairman
Berlin, Germany

2017
EuMIC Conference,
Co-Chair
Nürnberg, Germany

Activities in teaching and mentoring

Tutorial Speaker
IEEE ISSCC Conference, 2021
Tutorial Speaker
IEEE ISCAS Conference, 2006

Scientific Results

Category A

Data Converters

1. M. Runge; J. Edler; T. Kaiser; K. Misselwitz; **F. Gerfers**, "An 18-MS/s 76-dB SNDR Continuous-Time $\Delta \Sigma$ Modulator Incorporating an Input Voltage Tracking GmC Loop Filter", Journal Solid-State-Circuits (JSSC), 2023 - <https://doi.org/10.1109/JSSC.2023.3244718>
2. N. Lotfi, P.Scholz, **F. Gerfers**, "The Fastest CMOS Single-Channel 5-bit Flash ADC Operating at 18.5GS/s in 22 nm FD-SOI", 2023 18th European Microwave Integrated Circuits Conference (EuMIC), 2023 - <https://doi.org/10.23919/EuMIC58042.2023.10289098>
3. H. Ordouei, C. Alija, P. Kurth, **F. Gerfers**, "A Digital Pre-Distortion Technique Canceling Code- and Voltage-Dependent Output Impedance Errors in Current-Steering DACs" IEEE International Symposium on Circuits and Systems (ISCAS), 2023, **WiCAS Best Paper Award** - <https://doi.org/10.1109/ISCAS46773.2023.10181739>
4. N. Lotfi, P.Scholz, **F. Gerfers**, "A 44 GHz-BW 18.5 GS/s Sampling Front-End Robust to Power Supply and Common-Mode Variations in 22 nm FDSOI ", 2022 17th European Microwave Integrated Circuits Conference (EuMIC), 2022 - <https://doi.org/10.23919/EuMIC54520.2022.9923467>
5. M. Runge, D. Schmock, T. Kaiser, **F. Gerfers**, "A 0.9V 45MS/s CT $\Delta \Sigma$ Modulator with 94dB SFDR and 25.6fJ/conv. enabled by a Digital Static and ISI Calibration in 22 FDSOI CMOS", IEEE Custom Integrated Circuits Conference (CICC), 2021 - <https://doi.org/10.1109/CICC51472.2021.9431576>

Optical / Photonics

6. U. Hecht, Helia Ordouei, N. Ledentsov, L. Chorchos, P. Kurth, N. N. Ledentsov, **F. Gerfers**, "A 0.4 pJ/bit NRZ Voltage Mode VCSEL Driver for up to 224 Gbit/s SWDM Links", 2023 Optical Fiber Communications Conference and Exhibition (OFC), 2023 - <https://doi.org/10.1109/ESSCIRC59616.2023.10268797>
7. U. Hecht, N. Ledentsov, L. Chorchos, P. Kurth, N. N. Ledentsov, **F. Gerfers**, "Up to 30-Fold BER Improvement using a Data-Dependent FFE Switching Technique for 112Gbit/s PAM-4 VCSEL Based Links", 2020 Optical Fiber Communications Conference and Exhibition (OFC), 2020 - <https://ieeexplore.ieee.org/document/9083568>
8. U. Hecht, N. Ledentsov Jr, P. Scholz, P. Schulz, N. N. Ledentsov and **F. Gerfers**, "120Gbit/s multi-mode fiber transmission realized with feed forward equalization using 28GHz 850nm VCSELs", 45nd European Conference and Exposition on Optical Communications (ECOC), 2019 - <https://doi.org/10.1049/cp.2019.0819>

DNNs / CNNs / RISC

9. T. Kaiser; **F. Gerfers**, "A 2.41- μ W/MHz, 437-PE/mm² CGRA in 22 nm FD-SOI With RISC-Like Code Generation", 2023 IEEE Symposium in Low-Power and High-Speed Chips (COOL CHIPS), 2023 - <https://doi.org/10.1109/COOLCHIPS57690.2023.10121985>
10. S. Wiedemann; S. Shivapakash; D. Becking; P. Wiedemann; W. Samek; **F. Gerfers**; T. Wiegand, FantastIC4: A Hardware-Software Co-Design Approach for Efficiently Running 4Bit-Compact Multilayer Perceptrons IEEE Open Journal of Circuits and Systems, 2021 - <https://doi.org/10.1109/OJCAS.2021.3083332>

Category B

Books/Book Chapters

1. A. Koellmann, **F. Gerfers**, "CMOS Nanoelectronics, Analog VLSI Circuits; Chapter 4: Equalization Techniques for High-Speed Serial Links", McGraw Hill, 2011
<https://www.accessengineeringlibrary.com/content/book/9780071755658/chapter/chapter11>
2. M. Ortmanns, **F. Gerfers**, "Continuous-Time Sigma-Delta A/D Conversion: Fundamentals, Performance Limits and Robust Implementations", Springer Pub., First Edition, Sep. 2005
<https://link.springer.com/content/pdf/10.1007/3-540-28473-7.pdf>
3. **F. Gerfers**, M. Manoli, M. Ortmanns, "CMOS Telecom Data Converters, Chapter 10: Continuous-Time Sigma-Delta for IF". Kluwer Academic Pub., First Edition, Jan. 2004
<https://link.springer.com/book/10.1007/978-1-4757-3724-0>

Academic Distinctions

2019 Awarded **Einstein-Professorship**, Einstein-Foundation, Berlin