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¹Harvard University, United States; ²Columbia University, United States; ³IBM Research, United States

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¹University of Bologna, Italy; ²ETH Zürich, Switzerland

Power Conversion

Date: Tuesday, September 20, 2022
Time: 16:50 - 18:30
Room: Aula 1A
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¹National Yang Ming Chiao Tung University, Taiwan; ²Chip-GaN Power Semiconductor Corporation, Taiwan;
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³Realtek Semiconductor Corp., Taiwan

RF Circuits Techniques

Date: Tuesday, September 20, 2022

Time: 16:50 - 18:30

Room: Aula 1B

Chair(s): Danilo Manstretta, Uni Pavia
Eric Klumperink, Uni Twente

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Valentyn Solomko¹, Semen Syroiezhin^{2,3}, Danial Tayari¹, Jochen Essel², Robert Weigel³

¹Infineon Technologies AG, Germany; ²eesy-ic GmbH, Germany; ³University of Erlangen-Nuremberg, Germany

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¹eesy-ic GmbH, Germany; ²Infineon Technologies AG, Germany; ³University of Erlangen-Nuremberg, Germany

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¹Korea Advanced Institute of Science & Technology, Korea; ²Samsung Electronics Co., Ltd., Korea

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¹NXP Semiconductors, The Netherlands; ²NXP Semiconductors, Germany

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¹*Silicon Austria Labs, Austria*; ²*Eindhoven University of Technology, The Netherlands*; ³*Infineon Technologies AG, Austria*

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¹*Pusan National University, Korea*; ²*Qualcomm Inc., United States*

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¹Nanyang Technological University, Singapore; ²A*STAR, Singapore; ³University of California-Santa Barbara, United States

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³*Realtek Semiconductor Corp., Taiwan*

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¹STMicroelectronics, Italy; ²STMicroelectronics, India; ³University of Pavia, Italy

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¹National University of Singapore, Singapore; ²University of Genova, Italy

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Chair(s): Akshay Visweswaran, Nokia Bell Labs
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¹University of Padova, Italy; ²Infineon Technologies AG, Austria

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¹Analog Devices, Inc., Spain; ²Analog Devices, Inc., Ireland; ³Analog Devices, Inc., Italy

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Room: Aula 1A

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imec, The Netherlands

A 260mW, 6-8dB Noise Figure 1-80GHz Frequency Interleaving Receiver for Spectrum Sensing in 65nm CMOS N/A

Shunli Ma¹, Dong Wei¹, Jincheng Zhang¹, Tianxiang Wu¹, Yong Chen², Junyan Ren¹

¹Fudan University, China; ²University of Macau, China

A 58 GHz Bandwidth, and Less Than 1.8% THD, Mach-Zehnder Driver, in 28 nm CMOS Technology 429

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Chair(s): Jens Anders, University of Stuttgart
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A Chopper Biopotential Instrumentation Amplifier with DSL-Embedded Input Stage Achieving 109 dB CMRR and 400 mV DC Offset Tolerance 437

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¹Mahidol University, Thailand; ²imec, Belgium

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¹University of Erlangen-Nuremberg, Germany; ²imec, Belgium; ³Infineon Technologies AG, Germany

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¹Georgia Institute of Technology, United States; ²ETH Zürich, Switzerland

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Time: 11:20 - 12:40
Room: Aula 1A
Chair(s): Stefano D'Amico, University of Salento
Paras Garg, ST Microelectronics

A 956pW Switched-Capacitor Sub-Bandgap Reference with 0.44-to-3.3V Supply Range, -67dB PSRR, and 0.2% Within-Wafer Inaccuracy for Nanowatt IoT Systems N/A

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A 0.9-nA Temperature-Independent 565-ppm/°C Self-Biased Current Reference in 22-nm FDSOI 469

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A Compact 2.5-nJ Energy/Conversion NPN-Based Temperature-to-Digital Converter with a Fully Current-Mode Processing Architecture 473

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¹*University of Pavia, Italy;* ²*TDK InvenSense, Italy*

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¹University of Washington, United States; ²Apple, Inc., United States; ³Boeing, United States

Wireline Transceivers

Date: Thursday, September 22, 2022
Time: 14:20 - 15:40
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¹Southern University of Science and Technology, China; ²University of Macau, China

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A 64Gb/s Downlink and 32Gb/s Uplink NRZ Wireline Transceiver with Supply Regulation, Background Clock Correction and Eom-Based Channel Adaptation for Mid-Reach Cellular Mobile Interface in 8nm FinFET 509

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¹Samsung Electronics Co., Ltd., Korea; ²Samsung Electronics Co., Ltd., United States

Security

Date: Thursday, September 22, 2022
Time: 14:20 - 16:00
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Chair(s): Makoto Ikeda, Tokyo University
Mark Anders, Intel

A 2.17-pJ/b 5b-Response Attack-Resistant Strong PUF with Enhanced Statistical Performance 513

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A 183F² Gate Leakage-Based Physically Unclonable Function with Area Efficient Current Tilting-Based Masking Scheme 517

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¹*University of Florida, United States*; ²*Qualcomm Inc., United States*

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Meizhi Wang¹, Sirish Oruganti¹, Shanshan Xie¹, Raghavan Kumar², Sanu Mathew², Jaydeep P. Kulkarni¹
¹*The University of Texas at Austin, United States*; ²*Intel Research Labs, United States*

Hot Research Topics in North America

Date: Tuesday, September 20, 2022
Time: 16:50 - 18:30
Room: Aula 1E
Chair(s): Chris Rudell, University of Washington

A Review on the State-of-the-Art THz FMCW Radars Implemented on Silicon N/A

Morteza Tavakoli Taba, S.M. Hossein Naghavi, Ehsan Afshari
University of Michigan, United States

Integrated Optical Phased Arrays on Silicon 538

Farshid Ashtiani, Firooz Aflatouni
University of Pennsylvania, United States

Full-Duplex Wireless for (Joint-) Communication and Sensing 542

Hany Abolmagd¹, Raghav Subbaraman², Dinesh Bharadia², Sudip Shekhar¹
¹University of British Columbia, Canada; ²University of California-San Diego, United States

Reconfigurable Intelligent Surfaces Enabled by Silicon Chips for Secure and Robust mmWave and THz Wireless Communication 546

Kaushik Sengupta¹, Suresh Venkatesh¹, Hooman Saeidi¹, Xuyang Lu²
¹Princeton University, United States; ²University of Michigan - Shanghai Jiaotong Joint Institute, China

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Date: Thursday, September 22, 2022

Time: 14:20 - 16:00

Room: Aula 1B

Chair(s): Qiang Li, University of Electronic Science and Technology of China

A 7b 3.8GS/s 4b/Cycle SAR ADC with 16× Time-Domain Interpolation N/A

Dengquan Li, Yi Shen, Xin Zhao, Shubin Liu, Zhangming Zhu

Xidian University, China

A 130μW Three-Step DT Incremental ΔΣ ADC Achieving 107.6dB DR and 99.3dB SNDR with Zoom and Extended-Range Counting 554

Lairong Fang, Yijie Li, Yao Zhang, Shuwen Zhang, Xiaoyang Zeng, Zhiliang Hong, Jiawei Xu

Fudan University, China

A 0.45V 450μW 2.4GHz Flicker-Noise-Free RF Receiver Front-End Based on Switched-Capacitor TIA with 4.5dB NF and 11.5dBm OIP3 N/A

Chao Chen¹, Dan Huang², Yan Zhao¹, Yuemin Jin¹, Jun Yang¹

¹Southeast University, China; ²Electronic Devices Institute, China

A 65nm 8b-Activation 8b-Weight SRAM-Based Charge-Domain Computing-in-Memory Macro Using a Fully-Parallel Analog Adder Network and a Single-ADC Interface N/A

Guodong Yin¹, Mufeng Zhou¹, Yiming Chen¹, Wenjun Tang¹, Zekun Yang¹, Mingyen Lee¹, Xirui Du¹, Jinshan Yue², Jiaxin Liu³, Huazhong Yang¹, Yongpan Liu¹, Xueqing Li¹

¹Tsinghua University, China; ²Institute of Microelectronics of the Chinese Academy of Sciences, China; ³University of Electronic Science and Technology of China, China

A 0.016mm² Active Area 4GHz Fully Ring-Oscillator-Based Cascaded Fractional-N PLL with Burst-Mode Sampling N/A

Junlin Zhong¹, Xiaofeng Yang¹, Yan Zhu¹, Chi-Hang Chan¹, R.P. Martins^{1,2}

¹University of Macau, China; ²Universidade de Lisboa, Portugal

A-SSCC Invited Papers

Date: Tuesday, September 20, 2022
Time: 16:50 - 18:30
Room: Aula 1F
Chair(s): Woogeun Rhee, Tsinghua University

FlashMAC: an Energy-Efficient Analog-Digital Hybrid Mac with Variable Latency-Aware Scheduling available on Xplore

Surin Gweon, Sanghoon Kang, Donghyeon Han, Kyoung-Rog Lee, Kwantae Kim, Hoi-Jun Yoo
Korea Advanced Institute of Science & Technology, Korea

A 33.5-37.5 GHz 4-Element Phased-Array Transceiver Front-End with High-Accuracy Low-Variation 6-Bit Resolution 360° Phase Shift and 0~31.5 dB Gain Control in 65 nm CMOS available on Xplore

Pingda Guan, Haikun Jia, Wei Deng, Zhihua Wang, Baoyong Chi
Tsinghua University, China

A 5-GHz 0.15-mm² Collision Avoidable RFID Employing Complementary Pass-Transistor Adiabatic Logic with an Inductively Connected External Antenna available on Xplore

Saito Shibata, Reiji Miura, Yoshiki Sawabe, Kota Shiba, Atsutake Kosuge, Mototsugu Hamada, Tadahiro Kuroda
The University of Tokyo, Japan

Correlated Dual-Loop Sturdy Mash CT $\Delta\Sigma$ ADC with Indirect Signal Feedforward available on Xplore

Beomsoo Park^{1,3}, Changsok Han², Nima Maghari¹
¹*University of Florida, United States*; ²*Marvell Semiconductor, Inc., United States*; ³*Qualcomm Inc., United States*

A 1.68-23.2 Gb/S Reference-Less Half-Rate Receiver with an ISI-Tolerant Unlimited Range Frequency Detector available on Xplore

Yu-Ping Huang, Yi-Wei Chang, Wei-Zen Chen
National Yang Ming Chiao Tung University, Taiwan