Your Vote Counts, But Time Is Running Out!

Balloting for the 2020 IEEE Annual Election -- including for IEEE Division I Delegate-Elect/Director-Elect, 2021; Delegate/Director, 2022-2023 -- ends on 1 October, 12:00 p.m. ET USA/16:00 UTC.

The Division I Delegate/Director is your voice on the IEEE Board of Directors, so please cast your vote for this and other positions before the deadline. Division I candidates in alphabetical order of last name are former SSCS President Rakesh Kumar, former Sensors Council and CAS President Franco Maloberti, and former EDS President Samar K. Saha. More information on each candidate can be found on the IEEE Division I election page.

UPCOMING SSCS WEBINAR

New Opportunities in Non-Uniform Sampling

Presenter: Mike Shuo-Wei Chen
Friday, October 23, 2020
11:00 AM EDT

Abstract: Uniform sampling has been
widely adopted in today's circuit designs, ranging from data converters (ADC and DAC), and discrete-time signal processing (such as switched-capacitor filters). It is a well-developed processing technique that leads to many circuit architectures. However, Nyquist theory does not limit us to processing the samples at a uniform time grid so long as the average sample rate is sufficiently high, i.e., no loss of signal information. Why not sample the analog signal in a non-uniform time grid? What is the benefit by doing so? What is the underlying signal processing implication? In this talk, we will provide a background overview and explore new opportunities in non-uniform sampling (NUS) along with several silicon prototypes (from data converter to RF transceiver) that leverage non-uniform sampling. Thanks to the unique properties of NUS, there are interesting possibilities for future circuit- and system-level architectural innovations.

Biography:
Mike Shuo-Wei Chen received the B.S. degree from National Taiwan University, Taipei, Taiwan, in 1998 and the M.S. and Ph.D. degrees from University of California, Berkeley, in 2002 and 2006, all in electrical engineering. He is an associate professor in Electrical Engineering Department at University of Southern California (USC) and holds the Colleen and Roberto Padovani Early Career Chair position.

As a graduate student, he proposed and demonstrated the asynchronous SAR ADC architecture, which has been adopted in industry today for low-power high-speed analog-to-digital conversion products. After joining USC in 2011, he leads an analog mixed-signal circuit group, focusing on high-speed low-power data converters, frequency synthesizers, RF/mm-wave transceiver designs, analog circuit design automation, bio-inspired computing, non-uniformly sampled circuits and systems. From 2006 to 2010, he worked on mixed-signal and RF circuits for various wireless communication products at Atheros Communications (now Qualcomm).

Dr. Chen was the recipient of Qualcomm Faculty Award in 2019, NSF Faculty Early Career Development (CAREER) Award, DARPA Young Faculty Award (YFA) both in 2014, Analog Devices Outstanding Student Award for recognition in IC design in 2006 and UC Regents' Fellowship at Berkeley in 2000. He also achieved an honorable mention in the Asian Pacific Mathematics Olympiad, 1994. Dr. Chen has been serving as an associate editor of the IEEE Solid-State Circuits Letters (SSC-L), IEEE Transactions on Circuits and Systems II: Express Briefs (TCAS-II), as well as a TPC member in IEEE Solid-State Circuits Society conferences, notably the IEEE International Solid-State Circuits Conference (ISSCC), IEEE Symposium on VLSI Circuits, and IEEE Custom Integrated Circuits Conference (CICC).
Honoring James D. Meindl, Microelectronics Pioneer

James D. Meindl, a treasured friend, colleague, and mentor, died on 7th of June at his home in Greensboro, Ga., at the age of 87. Meindl was a giant in the world of semiconductors, a gentleman, and a leader of the highest magnitude. For his contributions to microelectronics, the IEEE Life Fellow received the 2006 IEEE Medal of Honor.

To Learn more about James Meindl Visit the SSCS Memoriam.

2020 IEEE SSC Society AdCom Election Is Now Open

The IEEE Solid-State Circuits Society election of Members-at-Large to the Administrative Committee is now open.

We hope you will take the time to exercise your vote and help choose the future direction of the society. Learn more about the candidates or vote today.

IEEE SSCS 2019 International Student Circuit Contest Announces it's winners!

The IEEE SSCS International Student Circuit Contest's objective is to
engage students in thought-provoking circuit analysis and design problems. Submissions are solicited by both undergraduate and graduate students who are currently enrolled in a college or university. The IEEE Solid-State Circuits Society is pleased to announce the winners of its second annual student circuit contest:

Shuo Li, University of Virginia
Anoop Narayan Bhat, University of Twente

For more information on the contest click [here](#).

**Call for Nominations: IEEE TFAs, Herz Staff Award, and Medals & Recognitions**

Nominations are due January 15th annually for the IEEE Technical Field Awards and the IEEE Eric Herz Outstanding Staff Member Award and 15 June annually for IEEE Medals and Recognitions.

All are encouraged to submit a nomination for a worthy candidate within their technical fields. Nomination guidelines, award-specific criteria, and components of a nomination form can be downloaded from [https://www.ieee.org/about/awards/information.html](https://www.ieee.org/about/awards/information.html) and [http://www.ieee.org/about/awards/recognitions/recognitions_herz.html](http://www.ieee.org/about/awards/recognitions/recognitions_herz.html). All nominations must be submitted through the online nomination portal.

The IEEE Awards Board (AB) administers the highest medals, awards, and recognition's presented by IEEE. The IEEE Technical Field Awards are awarded for contributions or leadership in specific fields of interest of the IEEE. IEEE Medals embrace significant and broad IEEE interests and purposes. For more information visit [www.ieee.org/awards](http://www.ieee.org/awards) or e-mail [awards@ieee.org](mailto:awards@ieee.org).
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Stay up-to-date with Learning with the SSCS Education Program

The SSCS Education Program provides Society members with free access to a wide range of quality educational content related to integrated circuits including tutorials, short courses, webinars, and eBooks.

- **Tutorials and Short Courses**: SSCS members have access to free tutorials and short courses from past years of ISSCC. Renowned experts in the field talk about new and ongoing developments in integrated circuits. [Click here to access.]
- **Webinars**: Monthly webinars are held for free for SSCS members on topics ranging from Analog/RF and future microprocessors to new biomedical applications. [Register for an upcoming webinar or view past webinars.]
- **eBooks**: SSCS has two books available for download - [IC Design Insights](#) - a selection of tutorial and invited presentations given at CICC 2017 and [Low Power Circuit Design Using Advanced CMOS Technology](#) - part of the Tutorials in Circuits and Systems series.
- **CONFedu Series**: The CONFedu series features short 10-minute talks from SSCS sponsored conferences including ISSCC, CICC, ESSCIRC, and VLSI. [Click here to access.]
- **SSC SX Lecture Series**: The first series of lectures is five parts and is presented by Prof. Behzad Razavi on Noise. [Click here to access.]

Educational credits (PDH’s and CEU’s) are available at a low cost for select products.

SSCS Educational content can be accessed via the [SSCS Resource Center](#) and the [SSCS YouTube Channel](#). The material is free for Society members.

EDUCATION

Upcoming 2020 Distinguished Lectures

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<td>SSCS Central Illinois Chapter Virtual DL - Dr. Keith Bowman</td>
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CONFERENCES

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SSCS-Sponsored Conferences: Proceedings

Click the links below to access the latest SSCS-Sponsored conference proceedings.

2019
- 2019 IEEE International Solid-State Circuits Conference (ISSCC)
- 2019 IEEE Custom Integrated Circuits Conference (CICC)
- 2019 IEEE Symposium on VLSI Circuits
- 2019 IEEE 45th European Solid-State Circuits Conference (ESSCIRC)

2020
- 2020 IEEE International Solid-State Circuits Conference (ISSCC)
- 2020 IEEE Custom Integrated Circuits Conference (CICC)

PUBLICATIONS

Radio Frequency Integrated Circuits (RFIC) Call for Papers

The 2021 IEEE Radio Frequency Integrated Circuits Symposium (RFIC 2021) is the premier forum focused exclusively on presenting the latest research results in RF, millimeter-wave, and wireless integrated circuits. The
Symposium is part of Microwave Week 2021, the world’s largest RF & microwave technical convention.

Continuing in 2021: RFIC has expanded its focus to include systems, applications, and interactive demonstrations, including 5G systems, radar systems, terahertz systems, biomedical systems, and optoelectronic systems.

Technical Areas: The symposium solicits papers describing original work in all areas related to RF, millimeter-wave, THz, and wireless ICs and systems. Work must be demonstrated through IC hardware results and measurements.

- Wireless Radios and Systems-on-Chip: innovative circuit and system-on-chip concepts related to software-defined radio, cognitive radio, interference cancellation, full-duplex, advanced SOCs for cellular/WiFi, GPS, low-power radio circuits for sensors, IoT, Zigbee, biomedical applications, radio architectures suitable for energy harvesting, wake-up receivers, etc.
- mmWave Communication Circuits and Systems-on-Chip: >20GHz (i.e., mmWave through THz) circuits and SOCs for wireless communication, including 5G, phase shifters, phased arrays, beamformers, and transceivers.
- Radar, Imager, and Sensor Systems-on-Chip: integrated radar, imaging, spectroscopy, and sensing circuits at microwave through THz frequencies, including vehicular radar SOCs.
- Transmitters and Power Amplifiers: for RF through mmWave frequencies and higher, power amplifiers, drivers, modulators, digital transmitters, advanced TX circuits, linearization and efficiency enhancement techniques, etc.
- Front-End Circuits: LNAs, mixers, VGAs, T/R switches, integrated FEM, amplifiers, filters, demodulators.

For additional details on submitting a paper or the RFIC 2021 Symposium click [here](#).

The latest in SSCS Flagship Publications...

**IEEE Journal of Solid-State Circuits**

*Vol. 55, Issue 8, August 2020*

*Power-Efficient Design Techniques for mm-Wave Hybrid/Digital FDD/Full-Duplex MIMO Transceivers*

Susnata Mondal; Jeyanandh Paramesh

*An Energy-Efficient 10-Gb/s CMOS Millimeter-Wave Transceiver With Direct-
Modulation Digital Transmitter and I/Q Phase-Coupled Frequency Synthesizer
Zheng Song; Ruichang Ma

A Low-Power 70-100-GHz Mixer-First RX Leveraging Frequency-Translational Feedback
Lorenzo Iotti; Greg LaCaille; Ali M. Niknejad; Sashank Krishnamurthy

A Single-Pin Antenna Interface RF Front End Using a Single-MOS DCO-PA and a Push-Pull LNA
Kai Xu; Jun Yin; Pui-In Mak; Robert Bogdan Staszewski; Rui P. Martins

Clockless, Continuous-Time Analog Correlator Using Time-Encoded Signal Processing Demonstrating Asynchronous CDMA for Wake-Up Receivers
Vivek Mangal; Peter R. Kinget

A Time-Interleaved SAR ADC With Bypass-Based Opportunistic Adaptive Calibration
Qingjun Fan; Yi Hong; Jinghong Chen

High-Value Tunable Pseudo-Resistors Design
Emanuele Guglielmi; Fabio Toso; Francesco Zanetto; Giuseppe Sciortino; Alireza Mesri; Marco Sampietro; Giorgio Ferrari

Piezoelectric Energy-Harvesting Interface Using Split-Phase Flipping-Capacitor Rectifier With Capacitor Reuse for Input Power Adaptation
Zhiyuan Chen; Man-Kay Law; Pui-In Mak; Xiaoyang Zeng; Rui P. Martins

A Fully Integrated Multilevel Synchronized-Switch-Harvesting-on-Capacitors Interface for Generic PEHs
Pavel Angelov; Martin Nielsen-Lönn

IEEE Solid-State Circuits Letters
Volume 3 - 2020

A 0.58-to-0.9-V Input 0.53-V Output 2.4-μW Current-Feedback Low-Dropout Regulator With 99.8% Current Efficiency
Ziyu Wang; Shahriar Mirabbasi

A Cryogenic CMOS Parametric Amplifier
Mohammadreza Mehrpoo; Fabio Sebastiano; Edoardo Charbon; Masoud Babaie

A 117-dB In-Band CMRR 98.5-dB SNR Capacitance-to-Digital Converter for Sub-nm Displacement Sensing With an Electrically Floating Target
Hui Jiang; Samira Amani; Johan G. Vogel; Saleh Heidary Shalmany; Stoyan Nihtianov

A 2.6 TOPS/W 16-Bit Fixed-Point Convolutional Neural Network Learning Processor in 65-nm CMOS
Shihui Yin; Jae-Sun Seo

A 1-V 8.1-μW PPG-Recording Front-End With > 92-dB DR Using Light-to-Digital Conversion With Signal-Aware DC Subtraction and Ambient Light Removal
Fatemeh Marefat; Reza Erfani; Pedram Mohseni

Novel Pulse-Based Analog Divider With Digital Output
Kuan-Hung Chen; Tse-An Chen; Chia-Ling Wei
IEEE Journal on Exploratory Solid-State Computational Devices and Circuits

Volume 6: 2020 - June

Hybrid-Phase-Transition FET Devices for Logic Computation
Manuel Jiménez; Juan Núñez; María José Avedillo

Benchmarking and Optimization of Spintronic Memory Arrays
Yu-Ching Liao; Chenyun Pan; Azad Naeemi

Special Topic on Exploratory Devices and Circuits for Compute-in-Memory
Shimeng Yu

Accurate Inference With Inaccurate RRAM Devices: A Joint Algorithm-Design Solution
Gouranga Charan; Abinash Mohanty; Xiaocong Du; Gokul Krishnan; Rajiv V. Joshi; Yu Cao

Early Access Articles
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<td>Analyzing the Effects of Interconnect Parasitics in the STT CRAM In-memory Computational Platform</td>
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<td>Energy-Efficient Moderate Precision Time-Domain Mixed-Signal Vector-by-Matrix Multiplier Exploiting 1T-1R Arrays</td>
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JxCDC papers listed in order of popularity can be found online [HERE](#).

For paper submission details, click [HERE](#).

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For Society news and happenings, check out the Winter 2020 issue of the Solid-State Circuits Magazine.

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