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July 2018

NEWS



Introducing - SSCS Chip Chat

SSCS' educational programming has expanded to include a podcast called SSCS Chip Chat. This interview style podcast focuses on the stories of engineers and scientists behind the integrated circuits that power the world.

The podcast can be listened to by searching SSCS Chip Chat in the Apple Podcast App or whatever podcast app you use for your mobile device.

You can also listen to the podcast online. [Click here to listen!](#)

Episode 1: Dr. Gert Cauwenberghs

Episode 2: Albert Theuwissen

Episode 3: Shanthi Pavan

EDUCATION

August 2018 Distinguished Lectures

CHAPTER	TALK DETAILS	DATE	LOCATION
SSCS San Diego	Agile Hardware Design with a	August 9, 2018	A-Z Auditorium, San Diego

	Generator-Based Methodology - Presented by Elad Alon		Click here for more information
SSCS Indonesia	Talk Title TBD - Presented by Arun Natarajan	August 13, 2018	Institut Teknologi Bandung (ITB), Indonesia Click here for more information
SSCS Singapore	Energy Efficient Computing in Nanoscale CMOS - Presented by Vivek De	August 21, 2018	Singapore University of Technology and Design, Singapore Click here for more information
SSCS Beijing	Talk Title TBD - Presented by Nick Van Helleputte	August 21, 2018	Location TBD Click here for more information
SSCS Japan & SSCS Kansai	Sensor Interface Circuits - Presented by Nick Van Helleputte	August 23, 2018	University of Tokyo Click here for more information
SSCS Thailand	Micro optoelectronic devices for measuring and controlling biological functions- Presented by Jun Ohta	August 24, 2018	Chulalongkorn University Click here for more information
SSCS UK & Ireland	Broadband, Linear, and High-Efficiency Mm-Wave Power Amplifiers - The Unreasonable Quest for "Perfect" 5G Mm-Wave Power Amplifiers and Some Reasonable Solutions - Presented by Hua Wang	August 30, 2018	Location TBD Click here for more information

CONFERENCES

Upcoming Conferences

<u>ESSCIRC/ESSDERC 2018 - 44th European Solid-State Circuits Conference/44th European Solid-State Device Research Conference</u> Dresden, Germany	September 3 - 6, 2018
<u>2018 IEEE BiCMOS and Compound Semiconductor Integrated Circuits and Technology Symposium (BCICTS)</u> San Diego, CA	October 14 - 17, 2018
<u>2018 IEEE Biomedical Circuits and Systems Conference (BioCAS)</u> Cleveland, OH	October 17 - 19, 2018
<u>2018 IEEE Asian Solid-State Circuits</u>	November 5 - 7, 2018

Conference (A-SSCC) Tainan, Taiwan	
2019 IEEE International Solid-State Circuits Conference (ISSCC) San Francisco, CA	February 17 - 19, 2019

CALL FOR PAPERS

ISSCC 2019 - Call for Papers

Theme: Envisioning the Future

ISSCC 2019 is seeking innovations that will inspire the future of solid-state circuits and systems. Innovative and original papers are solicited in subject areas including (but not limited to) the following:

ANALOG: Amplifiers, comparators, oscillators, filters, references; nonlinear analog circuits; digitally-assisted analog circuits; MEMS/sensor interface circuits.

DATA CONVERTERS: Nyquist-rate and oversampling A/D and D/A converters; embedded and application-specific A/D and D/A converters; analog to information conversion; time-to-digital converters.

DIGITAL ARCHITECTURES & SYSTEMS: Microprocessors, micro-controllers, application processors, graphics processors; digital systems for communications, video and multimedia, machine-learning, deep-learning, neuromorphism, cryptography, security and trusted computing, special-function acceleration, processing-in-memory; reconfigurable systems, near- and sub-threshold systems, digital architectures and systems for emerging applications (e.g. virtual reality - AR/VR and autonomous vehicles).

DIGITAL CIRCUITS: Building blocks for 2D/3D SoC such as intra-chip communication circuits, clock distribution techniques, soft-error and variation-tolerant circuits. Circuits for power management in digital applications: including voltage regulators, adaptive digital circuits, digital sensors; Near- and sub-threshold circuits; PLLs for digital clocking applications. Circuits for neuro-computing; Hardware security circuits including PUFs, TRNG, and attack-detection sensors.

IMAGERS, MEMS, MEDICAL, & DISPLAY: Image sensors and SoCs; automotive, LIDAR, and ultrasonic sensors; MEMS sensor systems; wearable, implantable, ingestible electronics, biomedical SoCs, neural interfaces and closed-loop systems; biosensors, microarrays, and lab-on-a-chip; display electronics, displays with sensing functionality; sensing for AR/VR.

MEMORY: Static, dynamic, and non-volatile memories for stand-alone and embedded applications; memory/SSD controllers; high-bandwidth I/O interfaces; memories based on phase-change, magnetic, spin-transfer-torque, ferroelectric, and resistive materials; array architectures and circuits to improve low-voltage operation, power reduction, reliability, and fault tolerance; memory-subsystem enhancements, including in-memory logic functions, machine learning, artificial intelligence, and AR/VR.

POWER MANAGEMENT: Power control and management circuits, regulators; switched-mode power converter ICs using inductive, capacitive, and hybrid techniques; energy-harvesting circuits and systems; wide-bandgap topologies and gate-drivers; power and signal isolators; circuits for lighting, wireless power.

RF CIRCUITS and WIRELESS SYSTEMS: Building blocks and complete solutions at RF, mm-Wave and THz frequencies for receivers, transmitters, frequency synthesizers, transceivers, SoCs, and SiPs. Innovative circuit-level and system-architecture solutions for established wireless standards and future systems or applications such as radar, sensing, and imaging.

TECHNOLOGY DIRECTIONS: Emerging IC and system solutions for: biomedical, sensor

interfaces, analog signal processing, power management, computation, data storage, and communication; analog/mixed-signal techniques for security and machine learning; non-silicon-, carbon-, organic-, metal-oxide-, compound-semiconductor- and new-device-based circuits; nano, flexible, large-area, stretchable, printable, quantum, optical, and 3D-integrated electronics; spintronics.

WIRELINER: Receivers/transmitters/transceivers for wireline systems, including backplane transceivers, optical links, chip-to-chip communications, 2.5/3D interconnect, copper-cable links, and equalizing on-chip links; exploratory I/O circuits for advancing data rates, power efficiency, and equalization; wireline transceiver building blocks (such as AGCs, front ends, equalizers, clock-generation and distribution circuits including PLLs, clock-and-data recovery, line drivers, and hybrids).

INDUSTRY SHOWCASE

SSCC 2019 will host an Industry Showcase Evening Session. The goal of this event is to highlight the role of solid-state circuits and systems-on-chip (SoCs) in the creation of novel products. It will feature short presentations, as well as interactive demonstrations where attendees can have a hands-on experience with each featured innovation. The outstanding demonstration(s) will be recognized at next-year's Conference. To be considered for participation in the Industry Showcase, proposals consisting of a one-page description of the potential demonstration, including a maximum of two illustrative figures, must be uploaded to the ISSCC submission website (<https://submissions.miramsmart.com/ISSCC2019>). Firm deadline for electronic submission is Monday, September 10, 2018, 3:00PM Eastern Daylight Time (19:00 GMT). Only proposals with an industrial affiliation will be considered. Feedback on the proposals will be given by October 31, 2018. Refer to the ISSCC Website for further information (<http://isscc.org>).

The submission website will be available starting July 1, 2018.

Please [click here](#) for details on submission guidelines and requirements.

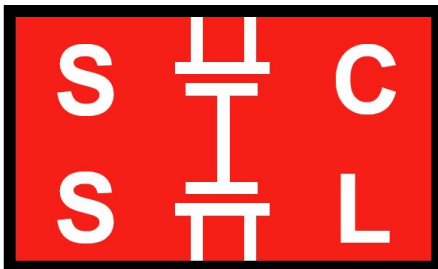
DEADLINES

Paper Submissions: September 10, 2018, 3:00 PM ET

Electronic Submission Proposals for Industry Showcase: September 10, 2018, 3:00 PM ET

PUBLICATIONS

The latest in SSCS Flagship Publications...



IEEE Solid-State Circuits Letters

Volume 1, Issue 4, April 2018

[A Subranging-Based Nonuniform Sampling ADC With Sampling Event Filtering](#)
Tzu-Fan Wu ; Mike Shuo-Wei Chen

[A Wide-Tuning-Range Low-Phase-Noise mm-Wave CMOS VCO With Switchable Transformer-Based Tank](#)

Milad Haghi Kashani ; Amirahmad Tarkeshdouz ; Reza Molavi ; Ehsan Afshari ; Shahriar Mirabbasi

[A 0.083-mm225.2-to-29.5 GHz Multi-LC-Tank Class-F234VCO With a 189.6-dBc/Hz FOM](#)
Hao Guo ; Yong Chen ; Pui-In Mak ; Rui P. Martins



IEEE Journal of Solid-State Circuits

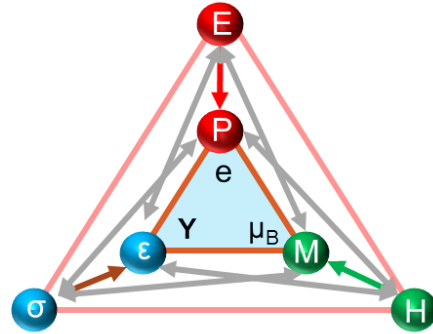
Vol. 53, Issue 8, August 2018

<p><u>High-Efficiency Millimeter-Wave Single-Ended and Differential Fundamental Oscillators in CMOS</u> Hao Wang ; Jingjun Chen ; James T. S. Do ; Hooman Rashtian ; Xiaoguang Liu</p>
<p><u>A High-Fractional-Bandwidth, Millimeter-Wave Bidirectional Image-Selection Architecture With Narrowband LO Tuning Requirements</u> Najme Ebrahimi ; James F. Buckwalter</p>
<p><u>Analysis and Design of Ultra-Wideband mm-Wave Injection-Locked Frequency Dividers Using Transformer-Based High-Order Resonators</u> Jingzhi Zhang ; Yixuan Cheng ; Chenxi Zhao ; Yunqiu Wu ; Kai Kang</p>
<p><u>Analysis and Design of Commutation-Based Circulator-Receivers for Integrated Full-Duplex Wireless</u> Negar Reiskarimian ; Mahmood Baraani Dastjerdi ; Jin Zhou ; Harish Krishnaswamy</p>
<p><u>Design and Analysis of a Low Loss, Wideband Digital Step Attenuator With Minimized Amplitude and Phase Variations</u> Ickhyun Song ; Moon-Kyu Cho ; John D. Cressler</p>
<p><u>An 80-Gb/s 44-mW Wireline PAM4 Transmitter</u> Yikun Chang ; Abishek Manian ; Long Kong ; Behzad Razavi</p>
<p><u>A Wirelessly Powered UWB RFID Sensor Tag With Time-Domain Analog-to-Information Interface</u> Dongxuan Bao ; Zhuo Zou ; Majid Baghaei Nejad ; Yajie Qin ; Li-Rong Zheng</p>
<p><u>Oversampling Successive Approximation Technique for MEMS Differential Capacitive Sensor</u> Longjie Zhong ; Xinquan Lai ; Donglai Xu</p>
<p><u>An Ultra-High Input Impedance Analog Front End Using Self-Calibrated Positive Feedback</u> Jinseok Lee ; Geon-Hwi Lee ; Hyojun Kim ; SeongHwan Cho</p>
<p><u>Toward Temperature Tracking With Unipolar Metal-Oxide Thin-Film SAR C-2C ADC on Plastic</u> Nikolas P. Papadopoulos ; Florian De Roose ; Jan-Laurens P. J. van der Steen ; Edsger C. P. Smits ; Marc Ameys ; Wim Dehaene ; Jan Genoe ; Kris Myny</p>
<p><u>A 19.8-mW Eddy-Current Displacement Sensor Interface With Sub-Nanometer Resolution</u> Vikram Chaturvedi ; Johan G. Vogel ; Kofi A. A. Makinwa ; Stoyan Nihtianov</p>
<p><u>A Front-End ASIC With High-Voltage Transmit Switching and Receive Digitization for 3-D Forward-Looking Intravascular Ultrasound Imaging</u> Mingliang Tan ; Chao Chen ; Zhao Chen ; Jovana Janjic ; Verya Daeichin ; Zu-Yao Chang ; Emile Nouthout ; Gijs van Soest ; Martin D. Verweij ; Nico de Jong ; Michiel A. P. Pertjjs</p>
<p><u>A 22 V Compliant 56$\frac{1}{4}$W Twin-Track Active Charge Balancing Enabling 100%</u></p>

<p><u>Charge Compensation Even in Monophasic and 36% Amplitude Correction in Biphasic Neural Stimulators</u> Natalie Butz ; Armin Taschwer ; Sebastian Nessler ; Yiannos Manoli ; Matthias Kuhl</p>
<p><u>A 1.08-nW/kHz 13.2-ppm/°C Self-Biased Timer Using Temperature-Insensitive Resistive Current</u> Jaehong Jung ; Ik-Hwan Kim ; Seong-Jin Kim ; Yoonmyung Lee ; Jung-Hoon Chun</p>
<p><u>A Time-Resolved Four-Tap Lock-In Pixel CMOS Image Sensor for Real-Time Fluorescence Lifetime Imaging Microscopy</u> Min-Woong Seo ; Yuya Shirakawa ; Yoshimasa Kawata ; Keiichiro Kagawa ; Keita Yasutomi ; Shoji Kawahito</p>
<p><u>A 65-nm CMOS Low Dropout Regulator Featuring >60-dB PSRR Over 10-MHz Frequency Range and 100-mA Load Current Range</u> Jize Jiang ; Wei Shu ; Joseph S. Chang</p>
<p><u>An AC Input Inductor-Less LED Driver for Efficient Lighting and Visible Light Communication</u> Yuan Gao ; Lisong Li ; Philip K. T. Mok</p>
<p><u>A 1.24uA Quiescent Current NMOS Low Dropout Regulator With Integrated Low-Power Oscillator-Driven Charge-Pump and Switched-Capacitor Pole Tracking Compensation</u> Raveesh Magod ; Bertan Bakkaloglu ; Sanjeev Manandhar</p>
<p><u>A Fully Integrated Energy-Efficient H.265/HEVC Decoder With eDRAM for Wearable Devices</u> Mehul Tikekar ; Vivienne Sze ; Anantha P. Chandrakasan</p>
<p><u>A 2.267-Gb/s, 93.7-pJ/bit Non-Binary LDPC Decoder With Logarithmic Quantization and Dual-Decoding Algorithm Scheme for Storage Applications</u> Yuta Toriyama ; Dejan Marković</p>
<p><u>Low-Power Noise-Immune Nanoscale Circuit Design Using Coding-Based Partial MRF Method</u> Yan Li ; Yufeng Li ; I-Chyn Wey ; Jianhao Hu ; Fan Yang ; Xuan Zeng ; Xiaoxue Jiang ; Jie Chen</p>
<p><u>Reducing Power Side-Channel Information Leakage of AES Engines Using Fully Integrated Inductive Voltage Regulator</u> Monodeep Kar ; Arvind Singh ; Sanu K. Mathew ; Anand Rajan ; Vivek De ; Saibal Mukhopadhyay</p>
<p><u>A Double Sensing Scheme With Selective Bitline Voltage Regulation for Ultralow-Voltage Timing Speculative SRAM</u> Jun Yang ; Hao Ji ; Yichen Guo ; Jizhe Zhu ; Yuan Zhuang ; Zhi Li ; Xinning Liu ; Longxing Shi</p>
<p><u>Low-Area TCAM Using A Donâ€™t Care Reduction Scheme</u> Ki-Chan Woo ; Byung-Do Yang</p>

IEEE Journal on Exploratory Solid-State Computational Devices and Circuits

Volume 4



Towards a Strong Spin-Orbit Coupling Magnetoelectric Transistor

Peter A. Dowben ; Christian Binek ; Kai Zhang ; Lu Wang ; Wai-Ning Mei ; Jonathan P. Bird ; Uttam Singiseti ; Xia Hong ; Kang L. Wang ; Dmitri Nikonov

Using Programmable Graphene Channels as Weights in Spin-Diffusive Neuromorphic Computing

Jiaxi Hu ; Gordon Stecklein ; Yoska Anugrah ; Paul A. Crowell ; Steven J. Koester

BCB Evaluation of High-Performance and Low-Leakage Three-Independent-Gate Field Effect Transistors

Jorge Romero-Gonzalez ; Pierre-Emmanuel Gaillardon

Tunnel FET Analog Benchmarking and Circuit Design

Hao Lu ; Paolo Paletti ; Wenjun Li ; Patrick Fay ; Trond Ytterdal ; Alan Seabaugh

Improving Energy Efficiency of Low Voltage Logic by Technology-Driven Design

Kaushik Vaidyanathan ; Daniel H. Morris ; Uygur E. Avcı ; Huichu Liu ; Tanay Karnik ; Hong Wang ; Ian A. Young

JxCDC papers listed in order of popularity can be found online [HERE](#).

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

Seeking News

Please send any chapter news or happenings (Distinguished Lecturer visits, events hosted by your SSCS chapter, awards received by members, etc) to Abira Sengupta, SSCS Magazine News Editor, for inclusion in an upcoming issue of the magazine. Please email - Abira.Sengupta@ieee.org. We look forward to receiving your news articles!

For more chapter news, [check out](#) the Spring 2018 issue of the Solid-State Circuits Magazine.

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