

LAEDC2021

Latin American Electron Devices Conference
April 19 - 21, 2021



TECHNICAL PROGRAM

Virtual and Online Conference



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SPECIAL MESSAGE FROM THE CONFERENCE CHAIR

Dear authors and participants,

On behalf of the organizing committee of **IEEE 2021 Latin American Electron Devices Conference (LAEDC)** we would like to welcome you to the third edition of LAEDC, which has been planned and organized this year as a virtual event given the challenging circumstances, we all are facing all over the world due to the Covid-19 pandemic.

The LAEDC is the Flagship conference for EDS in Region 9 and offers an enriching opportunity to learn about many of the fields related to Electron Devices and novel technologies with more than 65 technical presentations, including 3 keynote lectures, 30 invited speakers, 30 scientific papers, a free of charge MOS-AK workshop, 12 poster presentations, and 2 panel sessions in topics related to Humanitarian Technology and Women in Engineering WIE.

The Conference is growing with worldwide participation with presentations from 27 countries and with the full financial sponsorship of the IEEE Electron Devices Society (EDS). It is primarily geared for students as well as young researchers, with the main goal of bringing together specialists from all Electron Device related fields.

We are confident that thanks to your active participation and tangible contributions your attendance will significantly add to the value of the conference, and will motivate research groups and young students in the field of Electron devices.

Sincerely,

Mario A. Aleman
General Chair, IEEE 2021 LAEDC

CONFERENCE COMMITTEES

Organizing Committee



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Udayan Patankar	Tallinn university of Technology
Valeriya Kilchytska	University catholique de Louvain
Victor Samuel Balderrama Vazquez	Centro de Ingeniería y Desarrollo Industrial (CIDESI)

KEYNOTE SPEAKERS



Prof. David Atienza

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Energy-Scalable Many-Core Servers: Follow Your Brain!

David Atienza is a Professor of Electrical and Computer Engineering and leads the Embedded Systems Laboratory (ESL) at EPFL, Switzerland. He received his MSc and PhD degrees in Computer Science and Engineering from UCM (Spain) and IMEC (Belgium). His research interests focus on system-level design methodologies for energy-efficient multi-processor system-on-chip architectures (MPSoC) targeting the next-generation of servers and edge AI systems (particularly wearables) for the Internet of Things (IoT) era. In these fields, he is co-author of more than 350 publications, twelve patents, and has received several best paper awards in top conferences. He also was the Technical Program Chair of DATE 2015 and General Chair of DATE 2017. Dr. Atienza has received the DAC Under-40 Innovators Award in 2018, IEEE TCCPS Mid-Career Award in 2018, an ERC Consolidator Grant in 2016, the IEEE CEDA Early Career Award in 2013, the ACM SIGDA Outstanding New Faculty Award in 2012, and a Faculty Award from Sun Labs at Oracle in 2011. He is an IEEE Fellow and an ACM Distinguished Member.

Energy-Scalable Many-Core Servers: Follow Your Brain!

ABSTRACT

Continuous advances in manufacturing technologies are enabling the development of more powerful and compact high-performance servers made of many-core processing architectures and



stacked memories. However, this soaring demand for computing power in the last years has grown faster than semiconductor technology evolution can sustain. Thus, it has produced as collateral undesirable effect a surge in power consumption and heat density in these new many-core servers, which results in significant performance degradation. In this talk, Prof. Atienza will advocate to completely revise the current practices to design high-performance server architectures. In particular, inspired by the mammalian brain, it is proposed a new disruptive three-dimensional (3D) computing server architecture that jointly provides power and cooling using a single microfluidic medium to overcomes the prevailing worst-case provisioning paradigm for servers. Also, this new 3D server design champions a new system-level thermal modeling and machine learning-based task assignment, which can be used by novel proactive energy controllers for detailed heat and energy management in many-core servers, thanks to dynamic adaptation of the micro-scale liquid cooling flow. Then, the positive impact of new memory technologies for efficient computing on many-core servers will be shown. Finally, it will be explained how we can integrate new on-chip microfluidic fuel cell networks to enable energy-scalability in future generations of many-core servers targeting the design of the next generation of Exascale computing, thanks to the new PowerCool and Gem5-X open-source multi-core architectural simulators.



Prof. Martin A. Green

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Can Solar PV save the World?

Martin Green is Scientia Professor at the University of New South Wales, Sydney and Director of the Australian Centre

for Advanced Photovoltaics, involving several other Australian Universities and research groups. His group's contributions to photovoltaics include inventing the PERC cell, now the main commercial solar cell, and holding the record for silicon cell efficiency for 30 of the last 37 years, described as a "Top Ten" Milestones in solar photovoltaics history. Major international awards include the 1999 Australia Prize, the 2002 Right Livelihood Award, also known as the Alternative Nobel Prize, and the 2018 Global Energy Prize presented in Moscow.

Can Solar PV save the World?

ABSTRACT

Recent rapid prices reductions have positioned photovoltaics where it can make a major impact on global CO₂ omissions. An increasing number of studies show there are no technical barriers to a transition to a zero-carbon future driven by these ongoing solar cost reductions, complemented by similar cost reductions in wind and storage. One such recent study outlines one path to a zero-carbon future by 2050 by technology transition across all major energy sectors including not only electricity, but also heat, transport and industrial processes. This transition is driven primarily by solar, with 63TW capacity calculated as required globally by this date, complemented by 8TW of wind, in the process creating 35 million direct energy jobs.

**Ravi Todi, PhD**

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**Semiconductor Industry: A story of
unprecedented growth, and we are just
getting started!**

Ravi M. Todi received his doctoral degree in electrical engineering from university of central Florida (UCF), Orlando – Florida. His graduate research work was focused on gate stack engineering, with emphasis on binary metal alloys as gate electrode and on high mobility germanium channel devices. In his early career as, advisory engineer/scientist at semiconductor research and development center (SRDC) at IBM microelectronics division his work was focused on high performance embedded dynamic random access memory (eDRAM) integration on 45nm silicon on insulator (SOI) logic platform. For his many contributions to the success of eDRAM program at IBM, Ravi was awarded IBM’s prestigious outstanding technical achievement award. In 2012 Ravi Joined Qualcomm for 20nm product development and foundry management, responsible for Qualcomm’s foundry engagement with leading foundries. In 2015, he joined GLOBALFOUNDRIES, as director of 14nm product line management, where he and his team were responsible for driving the technical and business results of the 14nm FinFET product offerings. Currently he is with Western Digital as Sr. Technologist responsible for foundry technology development for global ASICs.

With over 60 US granted patents, over 30 peer reviewed journal publications, over 40 international conference presentations and over 50 invited distinguished lectures, Ravi is well known in semiconductor industry as technical/business leader. He is a distinguish lecturer for IEEE electron



devices society and serves as an editor for IEEE transactions on electron devices. He has served as an IEEE EDS officer-Treasurer for four years, as elected board of governors' member, as vice president for technical activities and conferences. Currently he is the president elect for IEEE EDS.

Semiconductor Industry: A story of unprecedented growth, and we are just getting started!

ABSTRACT

Many have argued that the golden era of semiconductor technology scaling has ended, however in this presentation I will attempt to present the counter arguments. For the semiconductor industry, connectivity (5G), the Internet of Things (IoT) and high bandwidth data processing now promise to be the enablers for the next phase of growth. However, the industry has reached a new level of maturity that demands new innovations in computing, connectivity, system integration and ultra-low power applications. Although traditional Moore's Law scaling remains important, the complexity of this next inflection point requires a new perspective on silicon scaling. Changing market demands are also driving innovation in differentiated technologies and system-level integration approaches that will be combined with silicon technology scaling. This presentation will examine the economic trends reshaping the industry and explore the technology directions that can successfully produce the needed innovations. We will draw lessons from five decades of semiconductor industry, dive deep into technical challenges facing future technology scaling, and attempt to formulate a roadmap for next decade of silicon technology.

SCHEDULE

Glossary

SESSIONS			
D: Devices and Materials	M: Modeling	G5: G5	O: Organic Devices
Keynote: 1 Hour	Invited Speaker: 30 minutes	Paper: 15 minutes	

Sunday, April 18, 2021

Time	Authors	Paper Title
7:00	MOS-AK Morning Session	
T_0	Wladek Grabinski MOS-AK	MOS-AK Intro
T_1	Kannan Moudgalya. IIT Bombay (IN)	FOSSEE eSIM: An open source CAD software for circuit simulation
T_2	Arturo Sarmiento. INAOE (MX)	Memristor modeling
T_3	Roberto Murphy, Jose Valdes and Reydezel Torres. INAOE (MX)	Modeling Issues for CMOS RF ICs
T_4	E. Sangiorgi, A. Tallarico, N. Posthuma, S. Decoutere, C. Fiegna. Universita di Bologna	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate
12:00	MOS-AK Afternoon Session	
T_5	Alan Mantooth. University of Arkansas (US)	SiC and GaN Power Devices

T_6	Antonio Cerdeira. CINVESTAV-IPN, Mexico City (MX)	New analytical model for AOSTFTs
T_7	Adelmo Ortiz-Conde. Solid State Electronics Laboratory, Simon Bolivar University, Caracas (VE)	On the Parameter Extraction of Thin-Film Transistors in Weak-Conduction
T_3	Roberto Murphy, Jose Valdes and Reydezel Torres. INAOE (MX)	Modeling Issues for CMOS RF ICs
T_4	E. Sangiorgi, A. Tallarico, N. Posthuma, S. Decoutere, C. Fiegna. Universita di Bologna	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate

https://www.mos-ak.org/mexico_2021/

Panel Session Humanitarian Technology		
13:00	Fernando Guarin, PhD – Chair EDS Humanitarian Activities Committee	Opening remarks on EDS funding opportunities in Humanitarian projects
13:05	Sampathkumar Veraraghavan, Chair HAC	Social Implications in the deployment of Humanitarian Technology
13:20	Luis Kun, PhD, Chair SSIT DLP	In the Age of COVID-19 Social Implications of Critical Infrastructure Access & Exclusions
13:35	Morgan Kiani, PhD – Industrial Electronics Society	Sustainability and Humanitarian Engineering Education
13:50	Paul Berger, PhD – Ohio State University	Humanitarian Engineering Outreach
14:05	Fernando Guarin, PhD	Questions and answers

This session is open and and FREE of charge. Join follow this [link](#)

Poster Session		
15:00	Fault diagnosis with states estimation in PV systems.	Opening remarks on EDS funding opportunities in Humanitarian projects
15:10	Naveenbalaji Gowthaman. Department of Electronic Engineering, Howard College,	Dual Gate Material (Au and Pt) Based Double-Gate MOSFET for High-Speed Devices.

	University of KwaZulu-Natal, Durban, South Africa.	
15:20	Helmut Antonio Saavedra Garcia. Universidad Nacional de Ingeniería.	Smart Hydrant Monitoring System Prototype.
15:30	Julio Francisco Bello Pavón, Katherine Esperanza García Montoya, Kenneth Antonio Lacayo Arauz. Universidad Centroamericana Managua, Universidad Nacional de Ingeniería. Nicaragua.	Automated and Sustainable Drip Irrigation System in Rural Nicaragua.
15:40	Cristian Alberto Garcia Cruz. Universidad Nacional de Ingeniería. Nicaragua.	Meteorological station for precision agriculture in La Paz, Carazo.
15:50	Jason Leiton Jimenez, Antonio González Torres. Instituto Tecnológico de Costa Rica.	Audio module to capture, store and reproduce sound.
16:00	Danny Xie-Li, Jesus Esteban Jimenez Valverde, Esteban Arias- Mendez. Instituto Tecnológico de Costa Rica.	STEM Education in Semi-virtual Interaction Environment.
16:10	Elliot Machado Cayasso. IEEE Profesional Member EDS Chapter. Nicaragua	Design and construction of printed circuits boards (PCB).

Project Session		
16:20	Ronny Cabrera, Andrea Carrion. IEEE Ecuador Section.	Rehabilitation of an Internet network in 40 schools in the Nabo'n community, Ecuador.
16:30	Luis Rodríguez, Javier Hernández, Javier Peresa, José Viloriaa, Laura Sánchez, Henry Urdanetaa, Douglimar González, Nardiz Mendozaa, Josimar Tello-Maitab, Andry Contrerasb, Manuel Briceño ^b , and Claudia Guevarac. Universidad del Zulia, Chevron. Venezuela.	Humanitarian Projects Development from Universidad del Zulia SIGHT Affinity Group.
16:40	Sebastián-Arturo Zuñiga-Brenes. Instituto Tecnológico de Costa Rica.	Comprehensive Information Platform of COVID-19 in Costa Rica.

Monday, April 19, 2021

Time		Authors	Paper Title
8:00		Opening Ceremony	
8:15			
		Keynote	
8:30		Ravi Todi	Semiconductor Industry: A story of unprecedented growth, and we are just getting started!
9:30	D	Francis Balestra	The endless advances of Nanoelectronics
10:00	D	Andrea Leonardo Lacaita, Alessandro Spinelli and Christian Monzio Compagnoni	High-Density Solid-State Storage: A Long Path to Success
10:15	D	Frank Schwierz and Martin Ziegler	Six Decades of Research on 2D Materials: Progress, Dead Ends, and New Horizons
10:45	D	Montserrat Nafria, Javier Díaz Fortuny, Pablo Saraza-Canflanca, Javier Martin Martinez, Elisenda Roca, Rafael Castro Lopez, Rosana Rodríguez, Pablo Martín Lloret, Antonio Toro-Frias, Diego Mateo, Enrique Barajas, Xavier Aragones and Francisco Fernandez	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock
11:15	D	Lionel Trojman	CMOS scaling and mobility: an unbearable ending?
11:45	D	Nagel Amaguayo, Ariana Musello, Pablo López, Lionel Trojman, Luis Miguel Prócel and José Bustamante	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
12:00	D	Carlos E. Saavedra	Active Circulators in Microwave and Millimeter-Wave Systems

12:30	D	Durgamadhab Misra	What are the Research Opportunities in Electron Devices and Materials?
13:00	D	Roberto Carlos Molina Robles, Ronny García Ramírez, Alfonso Chacón Rodríguez, Renato Rimolo Donadio and Alfredo Arnaud	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
13:15	M	Marcos Vinicius Puydinger dos Santos, Fanny Béron, Jose Alexandre Diniz, Kleber Roberto Pirota and Ivo Utke	A novel bottom-up approach for the fabrication of nanowire-based spintronic devices for room-temperature applications
13:45	M	Atsushi Shimbori, Hiu Yung Wong and Alex Huang	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar+ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode
14:00	M	Pedro Rosario and Fabiano Fruett	Flexible Electrode Capacitive Sensors System for Human Fluid Detection
14:15	M	Joao Antonio Martino	Field Effect Transistor Evolution: From MOSFET to BioFET
14:45	M	Carlos Henrique Santos Coelho, Joao Antonio Martino, Eddy Simoen, Anabela Veloso and Paula Ghedini Der Agopian	Analysis of the ZTC-Point for Vertically Stacked Nanosheet pMOS Devices
15:00	M	Edmundo Gutiérrez	Semiconductor materials and devices for medical and environmental applications
15:30	M	Christian Macambira, Paula Agopian and Joao Antonio Martino	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap
15:45	M	Flávio Enrico Bergamaschi and Marcelo Antonio Pavanello	TCAD Evaluation of the Substrate Bias Influence on the Carrier Transport of Ω -Gate Nanowire MOS Transistors with Ultra-Thin BOX
16:00	M	Élkim Roa	Low-Energy Always-On RISC-V based SoCs
16:30	S	Pritpal Singh	Using Open-Source Hardware for Humanitarian Engineering Applications

17:00	S	Wilfrido Moreno	Opportunities for Remote Laboratories Delivery to Support On-line Education under COVID-19 Conditions and Beyond
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Tuesday, April 20, 2021

Time		Authors	Paper Title
7:00	M	Monika Shree K, M Jayadeep Reddy, K P Pradhan and Tejendra Dixit	Development of Multi-physics Modeling of Plasmonics in the UV Region Using Transition Metals
7:15	M	Priyanka Pandey and Harsupreet Kaur	Improved Device Performance of Polarity Controllable-Ferroelectric-Field Effect Transistor Under the Influence of Fixed Trap Charges
7:30	M	Abhiroop Bhattacharjee and Kavindra Kandpal	A low power, charge-sensitive preamplifier integrated with a silicon nanowire biosensor
7:45	M	Suwendu Nayak, Saurabh Lodha and Swaroop Ganguly	FULLY/PARTIALLY SUSPENDED GATE SiC-BASED FET FOR POWER APPLICATIONS
8:00	M	Suwendu Nayak, Saurabh Lodha and Swaroop Ganguly	Hybrid gate dielectric with Si ₃ N ₄ stressor for LD MOSFET
8:15	M	Mooli Shashank Reddy, Tejendra Dixit and Kp Pradhan	Steep Subthreshold Swing in Double Gate NCFET:A Simulation Study
8:30	M	Rabia Aqeel, Ahsan Raza, Shaheer Ahmed, Muhammad Aashquin and Haider Ali	Effect of Heat Sink Configuration on the Performance of Thermoelectric Refrigerator
8:45	M	Ravi Goel and Yogesh Chauhan	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
9:00	O	Navakanta Bhat	Monoenzymatic Serum Creatinine Biosensor for Early Diagnosis of Kidney Disease
9:30	O	Khoirom Johnson Singh, Anand Bulusu and Sudeb Dasgupta	Ultra-Scaled Multidomain P(VDF-TrFE) Organic Ferroelectric Gate Stack to the Rescue
9:45	O	Alfonsina Abat Amelenan Torimtubun, Josep Pallarès and Lluís F. Marsal	Analysing the Efficiency Enhancement of Indoor Organic Photovoltaic using Impedance Spectroscopy

10:00	O	Magaly Ramírez-Como, Angel Sacramento, José G. Sánchez, Magali Estrada, Victor S. Balderrama and Lluís F. Marsal	Impact of Hole Blocking Layer on the Performance of Solution-Processed Small Molecule Solar Cells
10:15	O	Rodrigo Picos, Mohamad Moner Al Chawa, Stavros Stavrinos and Leon Chua	An Introduction to Memristor Compact Modelling using Thermistors as a case study
10:30	O	Dennis Cabrera García, José Enrique Eirez Izquierdo, Marco Roberto Cavallari and Fernando Josepetti Fonseca	Cross-linked poly(4-vinylphenol) in thin-film transistors for water analysis
10:45	M	Tomislav Suligoj, Josip Zilak, Zeljko Osrecki and Marko Koricic	Versatile BiCMOS Technology Platform for the Low-cost Integration of Multi-purpose Applications
11:30	M	Yiyi Yan, Denis Flandre, Valeriya Kilchytska, Sébastien Faniel, Xiaohui Tang and Jean-Pierre Raskin	Determination of Carrier Lifetime in Silicon Using an Ultra-thin Al ₂ O ₃ /SiO ₂ Dielectric Stack
11:45	M	Andrea Natale Tallarico, Nick Posthuma, Benoit Bakeroot, Steefan Decoutere, Claudio Fiegna and Enrico Sangiorgi	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate
12:00	M	Viswanath G. Akkili, R Thangavel and Viranjay M. Srivastava	Analysis on the Influence of Dielectrics and Channel Defects on the Electrical Performance of p-Channel TFTs for CMOS Applications
12:15	M	Diego Barrettino	A Simple Method for Seamless Integration of CMOS Chips with Microfluidics
12:30	M	Karthi Pradeep, Marina Deng, Benjamin Dormieu, Patrick Scheer, Magali De Matos, Thomas Zimmer and Sebastien Fregonese	Influence of Calibration Methods and RF Probes on the RF Characterization of 28FD-SOI MOSFET

12:45	M	Enas Moustafa, José Guadalupe Sánchez López, Lluís Marsal and Josep Pallares	ZnO Thin Film Deposited by Spray Pyrolysis for Long-Term Stable Organic Solar Cells
13:00	M	Kevin Vicuña	The Dual Mode Logic (DML)
13:30	M	Hieu Nguyen, Ravi Teja Velpula and Barsha Jain	High Efficiency AlInN Nanowire Light-Emitting Diodes Grown by Molecular Beam Epitaxy
14:00	M	Carlos Ascencio-Hurtado, Alfonso Torres, Roberto Ambrosio and Mario Moreno	High conductivity intrinsic a-SiGe films deposited at low-temperature
14:15	M	Marcelo Antonio Pavanello, Antonio Cerdeira, Thales Ribeiro and Fernando Avila-Herrera	Analytical Compact Model for Transcapacitances of Junctionless Nanowire Transistors
14:45	M	Eliana Acurio	Reliability Assessment of AlGaIn/GaN Schottky Barrier Diodes under ON-state stress
15:15	M	Silvestre Salas-Rodríguez, Jaime Martínez-Castillo, Francisco López-Huerta, A. L. Herrera-May and Joel Molina-Reyes	Recent advances of Ion sensing based on Flexible Low Temperature Thin Film Transistors
15:30	M	Paul Berger	Fully Printed Flexible Internet-of-Things Nodes with Energy Scavenging and Non-toxic Energy Storage
16:00	M	Omar Lopez-Lopez, Jairo Mendez-V. and Edmundo Gutierrez	Trapping Induced Barrier Raising (TIBR) in SOI MOSFETs
16:30	M	Toshiro Hiramoto	Recent Progress of Silicon IGBT technologies
17:00	M	Edward Yi Chang	An Enhancement-Mode GaN FEG-HEMT (Hybrid Ferroelectric Charge Trap Gate Stack) Device for Power Switching Applications.
		Keynote	
17:30		Martin Green	Can Solar PV save the World?

Wednesday, April 21, 2021

Time		Authors	Paper Title
		Keynote	
7:00		David Atienza	Energy-Scalable Many-Core Servers: Follow Your Brain!
8:00	5G	Luis Andia	Trends and innovation on engineering substrates for 5G and beyond
8:30	5G	Aarti Rathi, Purushothaman Srinivasan, Fernando Guarin and Abhisek Dixit	Impact of Hot Carrier Degradation on DC and RF Performance of 45-nm Power Amplifier Cell
9:00	5G	Peter Asbeck	Transistor Technologies for Millimeter-Wave 5G Communications: The Struggle for Power
9:30	5G	Fernando Guarín	SOI Reliability considerations for 5G/mmWave/RF Circuits
10:00	M	Daniel Tomaszewski and Wlodek Grabinski	Compact modeling of semiconductor devices for development of micro/nanoelectronic and MEMS technologies
10:30	M	Ahmed Alqurashi and Mohamed Missous	Physical Modeling of Asymmetric Spacers Resonant Tunneling Diodes (RTDs)
10:45	M	Josef Weinbub, Mauro Ballicchia, Mihail Nedjalkov and Siegfried Selberherr	Electromagnetic Coherent Electron Control
11:15	M	Alexander Kloes	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
11:45	5G	Jean-Pierre Raskin	SOI technologies for RF and millimeter-wave integrated circuits
12:15	M	Christian Römer, Ghader Darbandy, Mike Schwarz, Jens Trommer, André Heinzig, Thomas Mikolajick, Walter Weber, Benjamín Iñíguez and Alexander Kloes	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors

12:30	M	Martin Vanbrabant, Lucas Nyssens, Valeriya Kilchytska and Jean-Pierre Raskin	Assessment of RF compact modelling of FD SOI transistors
12:45	M	Isai S. Hernandez, Salvador I. Garduño, Antonio Cerdeira, Benjamin Iñiguez and Magali Estrada	High Mobility Hf-In-ZnO TFTs, with HfO ₂ as Dielectric for Low Voltage Operation Range
13:00	M	Julia Cristina Soares Sousa, Paula Ghedini Der Agopian and Joao Antonio Martino	Simple Analytical Modelling of an Electronically Tunable Potentiometer and Body Factor Influence
13:15	M	Lucas Mota Barbosa da Silva and Michelly de Souza	Strategy for Simulation of Analog Circuits with GCSOI MOSFET using BSIM SOI model
13:30	M	Gilson Wirth, Mauricio Banaszkeski da Silva and Thiago Both	Towards Unifying the Statistical Modeling of Charge Trapping in Time and Frequency Domain
14:00	M	Abhishek Raol, Tom Jiao, Chandana Shashidhara and Hiu Yung Wong	Fully-Coupled Simulation of the Temperature Effect on Negative Capacitance Ferroelectric Devices
14:15	M	Adelmo Ortiz-Conde, Orlando Trejo and Francisco J. García-Sánchez	Direct extraction of solar cell model parameters using optimization methods
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Keyword / Paper	
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2D numerical simulation	Influence of Dielectrics and Channel Defects on the Electrical Performance of p-Channel TFTs for CMOS Applications
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5G	Trends and innovation on engineering substrates for 5G and beyond Transistor Technologies for Millimeter-Wave 5G Communications: The Struggle for Power
5G/mmWave/RF	SOI Reliability considerations for 5G/mmWave/RF Circuits
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A-HIZO tfts	High Mobility Hf-In-ZnO TFTs, with HfO ₂ as Dielectric for Low Voltage Operation Range
Acc	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
Action	2D array microelectrodes for sensing the action potential of the sinoatrial node
Active circulators	Active Circulators in Microwave and Millimeter-Wave Systems
Aging	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock
Al₂O₃/sio₂	Determination of Carrier Lifetime in Silicon Using an Ultra-thin Al ₂ O ₃ /SiO ₂ Dielectric Stack
Algan barrier	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate
Algan/gan Schottky Barrier Diodes	Reliability Assessment of AlGaN/GaN Schottky Barrier Diodes under ON-state stress
Alinn	High Efficiency AlInN Nanowire Light-Emitting Diodes Grown by Molecular Beam Epitaxy
Always-on	Low-Energy Always-On RISC-V based SoCs
AM 1.5G illumination	Analysing the Efficiency Enhancement of Indoor Organic Photovoltaic using Impedance Spectroscopy Technique
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Analytical model	Analysis of the ZTC-Point for Vertically Stacked Nanosheet pMOS Devices
Analytical model	Simple Analytical Modelling of an Electronically Tunable Potentiometer and Body Factor Influence

Ar ion implant edge termination	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar+ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode
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Ballistic	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
Bio-FET	Field Effect Transistor Evolution: From MOSFET to BioFET
Bio-finfet	Field Effect Transistor Evolution: From MOSFET to BioFET
Bio-TFET	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap
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Biosensor	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap Monoenzymatic Serum Creatinine Biosensor for Early Diagnosis of Kidney Disease
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Bsim soi	Strategy for Simulation of Analog Circuits with GCSOI MOSFET using BSIM SOI model
Bti	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock
C	
Calibration	Influence of Calibration Methods and RF Probes on the RF Characterization of 28FD-SOI MOSFET
Capacitive sensor	Flexible Electrode Capacitive Sensors System for Human Fluid Detection
Channel defects	Influence of Dielectrics and Channel Defects on the Electrical Performance of p-Channel TFTs for CMOS Applications
Characterization	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock
Charge sensitivity	A low power, charge-sensitive preamplifier integrated with a silicon nanowire biosensor
Charge trapping	Towards Unifying the Statistical Modeling of Charge Trapping in Time and Frequency Domain
Chemical sensor	Cross-linked poly(4-vinylphenol) in thin-film transistors for water analysis
Circuit theory	An Introduction to Memristor Compact Modelling using Thermistors as a case study
Closed-form	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
Cmos	The endless advances of Nanoelectronics CMOS scaling and mobility: an unbearable ending?

	A Simple Method for Seamless Integration of CMOS Chips with Microfluidics
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	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
Compact model	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
Compact model	Compact modeling of semiconductor devices for development of micro/nanoelectronic and MEMS technologies
Compact modeling	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
Compact modeling	An Introduction to Memristor Compact Modelling using Thermistors as a case study
Controlled dielectric breakdown	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
Cop	Effect of Heat Sink Configuration on the Performance of Thermoelectric Refrigerator
D	
Daq	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
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Demos	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
Dielectrics	Influence of Dielectrics and Channel Defects on the Electrical Performance of p-Channel TFTs for CMOS Applications
Dml	The Dual Mode Logic (DML)
DNA & RNA sensor	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
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Effective carrier lifetime	Determination of Carrier Lifetime in Silicon Using an Ultra-thin Al ₂ O ₃ /SiO ₂ Dielectric Stack
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Electron quantum transport	Electromagnetic Coherent Electron Control
Electron transport layer	Impact of Hole Blocking Layer on the Performance of Solution-Processed Small Molecule Solar Cells
Entangletronics	Electromagnetic Coherent Electron Control

Environmental applications	Semiconductor materials and devices for medical and environmental applications
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Extinction efficiency	Development of Multi-physics Modeling of Plasmonics in the UV Region Using Transition Metals
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Fdsoi	Assessment of RF compact modelling of FD SOI transistors
Ferroelectric	Improved Device Performance of Polarity Controllable-Ferroelectric-Field Effect Transistor Under the Influence of Fixed Trap Charges Ultrascaled Multidomain P(VDF-TrFE) Organic Ferroelectric Gate Stack to the Rescue Fully-Coupled Simulation of the Temperature Effect on Negative Capacitance Ferroelectric Devices
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Flexible substrate	Recent advances of Ion Sensing based on Flexible Low Temperature Thin Film Transistors
Flicker noise	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
Fluid detection	Flexible Electrode Capacitive Sensors System for Human Fluid Detection
Fluidic cell	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
Focused-electron-beam-induced deposition	A novel bottom-up approach for the fabrication of nanowire-based spintronic devices for room-temperature applications
Forward gate stress	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate
Fringing field	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap
Fully Depleted (FD) SOI transistor	SOI technologies for RF and millimeter-wave integrated circuits
Fully Printed Flexible Internet-of-Things Nodes	Fully Printed Flexible Internet-of-Things Nodes with Energy Scavenging and Non-toxic Energy Storage
G	
GAA-nanosheet pmos	Analysis of the ZTC-Point for Vertically Stacked Nanosheet pMOS Devices
Gan FEG-HEMT	An Enhancement-Mode GaN FEG-HEMT(Hybrid Ferroelectric Charge Trap Gate Stack) Device for Power Switching Applications.

Gas sensor	Cross-linked poly(4-vinylphenol) in thin-film transistors for water analysis
Graded-Channel transistors	Strategy for Simulation of Analog Circuits with GCSOI MOSFET using BSIM SOI model
H	
Halo	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
Hands-on based laboratories	Opportunities for Remote Laboratories Delivery to Support On-line Education under COVID-19 Conditions and Beyond
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Heterojunction	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar ⁺ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode
High mobility tfts	High Mobility Hf-In-ZnO TFTs, with HfO ₂ as Dielectric for Low Voltage Operation Range
High voltage	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
High-conductivity	High conductivity intrinsic a-SiGe films deposited at low-temperature
High-k insulator	High Mobility Hf-In-ZnO TFTs, with HfO ₂ as Dielectric for Low Voltage Operation Range
Horizontal current bipolar transistor	Versatile BiCMOS Technology Platform for the Low-cost Integration of Multi-purpose Applications
Hot carrier degradation	Impact of Hot Carrier Degradation on DC and RF Performance of 45-nm Power Amplifier Cell
Humanitarian engineering	Using Open-Source Hardware for Humanitarian Engineering Applications
Humanitarian engineering projects	Humanitarian Engineering Outreach (Haiti, Colombia, Tanzania, and USA)
Hybrid ferroelectric charge trap gate stack	An Enhancement-Mode GaN FEG-HEMT (Hybrid Ferroelectric Charge Trap Gate Stack) Device for Power Switching Applications.
I	
I/O protocols	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
IC footprint compactness (integration)	Trends and innovation on engineering substrates for 5G and beyond
IGBT technologies	Recent Progress of Silicon IGBT technologies
Impedance	2D array microelectrodes for sensing the action potential of the sinoatrial node
Impedance spectroscopy	Analysing the Efficiency Enhancement of Indoor Organic Photovoltaic using Impedance Spectroscopy Technique
Interface	Trapping Induced Barrier Raising (TIBR) in SOI MOSFETs 2D array microelectrodes for sensing the action potential of the sinoatrial node
Interface	FULLY/PARTIALLY SUSPENDED GATE SiC-BASED FET FOR POWER APPLICATIONS
Ion sensor	Recent advances of Ion Sensing based on Flexible Low Temperature Thin Film Transistors
Iot	Fully Printed Flexible Internet-of-Things Nodes with Energy Scavenging and Non-toxic Energy Storage

Isfet	Recent advances of Ion Sensing based on Flexible Low Temperature Thin Film Transistors
Isoborneol	Cross-linked poly(4-vinylphenol) in thin-film transistors for water analysis
Istft	Recent advances of Ion Sensing based on Flexible Low Temperature Thin Film Transistors
J	
Jitter	Towards Unifying the Statistical Modeling of Charge Trapping in Time and Frequency Domain
Junctioless nanowire transistor	Analytical Compact Model for Transcapacitances of Junctionless Nanowire Transistors
Junctionless FET	Fully-Coupled Simulation of the Temperature Effect on Negative Capacitance Ferroelectric Devices
K	
Kidney disease	Monoenzymatic Serum Creatinine Biosensor for Early Diagnosis of Kidney DIsease
Kink	Trapping Induced Barrier Raising (TIBR) in SOI MOSFETs
L	
Lambert W function	Direct extraction of solar cell model parameters using optimization methods
Landau-khalatnikov	Ultrascaled Multidomain P(VDF-TrFE) Organic Ferroelectric Gate Stack to the Rescue
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Ldmos	Compact Modeling of Flicker Noise in High Voltage MOSFETs and Experimental Validation
Ldmosfet	Hybrid gate dielectric with Si ₃ N ₄ stressor for LD MOSFET
Leakage current	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
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Low power digital design	The Dual Mode Logic (DML)
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Low temperature fabrication process	High Mobility Hf-In-ZnO TFTs, with HfO ₂ as Dielectric for Low Voltage Operation Range
Low-energy	Low-Energy Always-On RISC-V based SoCs
Low-frequency noise	Towards Unifying the Statistical Modeling of Charge Trapping in Time and Frequency Domain
Low-temperature	High conductivity intrinsic a-SiGe films deposited at low-temperature
M	
Medical applications	Semiconductor materials and devices for medical and environmental applications
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	An Introduction to Memristor Compact Modelling using Thermistors as a case study
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Microcomputers	Using Open-Source Hardware for Humanitarian Engineering Applications
Microcontroller	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
Microcontrollers	Using Open-Source Hardware for Humanitarian Engineering Applications
Microelectrode array	2D array microelectrodes for sensing the action potential of the sinoatrial node
Microelectronics	Compact modeling of semiconductor devices for development of micro/nanoelectronic and MEMS technologies
Microfluidics	A Simple Method for Seamless Integration of CMOS Chips with Microfluidics
Microsystems	A Simple Method for Seamless Integration of CMOS Chips with Microfluidics
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Millimeter-wave	Transistor Technologies for Millimeter-Wave 5G Communications: The Struggle for Power
Millimeter-wave systems	Active Circulators in Microwave and Millimeter-Wave Systems
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Monoenzymatic serum creatinine	Monoenzymatic Serum Creatinine Biosensor for Early Diagnosis of Kidney DIsease
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Mosfet	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock Trapping Induced Barrier Raising (TIBR) in SOI MOSFETs Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
Multi-scale simulation	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
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Multigate	The endless advances of Nanoelectronics
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Nanocosmos	The endless advances of Nanoelectronics
Nanoelectronics	The endless advances of Nanoelectronics A novel bottom-up approach for the fabrication of nanowire-based spintronic devices for room-temperature applications Compact modeling of semiconductor devices for development of micro/nanoelectronic and MEMS technologies

Nanofabrication	A novel bottom-up approach for the fabrication of nanowire-based spintronic devices for room-temperature applications
Nanoparticles	Development of Multi-physics Modeling of Plasmonics in the UV Region Using Transition Metals
Nanosheet transistor	Six Decades of Research on 2D Materials: Progress, Dead Ends, and New Horizons
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Nanowires	A novel bottom-up approach for the fabrication of nanowire-based spintronic devices for room-temperature applications
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Ncfet	Steep Subthreshold Swing in Double Gate NCFET:A Simulation Study
Negative capacitance	Fully-Coupled Simulation of the Temperature Effect on Negative Capacitance Ferroelectric Devices
Negf	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
Nemfet	FULLY/PARTIALLY SUSPENDED GATE SiC-BASED FET FOR POWER APPLICATIONS
Nio	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar+ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode
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Organic thin-film transistor	Cross-linked poly(4-vinylphenol) in thin-film transistors for water analysis
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Pecvd	High conductivity intrinsic a-SiGe films deposited at low-temperature
Permittivity	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap
Pfn etl	Impact of Hole Blocking Layer on the Performance of Solution-Processed Small Molecule Solar Cells
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Phase-change memory	High-Density Solid-State Storage: A Long Path to Success
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Polarity controllable	Improved Device Performance of Polarity Controllable-Ferroelectric-Field Effect Transistor Under the Influence of Fixed Trap Charges
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Power switching devices	Recent Progress of Silicon IGBT technologies
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Process	Hybrid gate dielectric with Si ₃ N ₄ stressor for LDMOSFET
Pseudo-resistance	A low power, charge-sensitive preamplifier integrated with a silicon nanowire biosensor
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R	
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Radio-frequency power amplifier	Versatile BiCMOS Technology Platform for the Low-cost Integration of Multi-purpose Applications

Random telegraph noise (rtn)	Towards Unifying the Statistical Modeling of Charge Trapping in Time and Frequency Domain
Reliability	Trapping Induced Barrier Raising (TIBR) in SOI MOSFETs
Reliability	Improved Device Performance of Polarity Controllable-Ferroelectric-Field Effect Transistor Under the Influence of Fixed Trap Charges
	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate
	Impact of Hot Carrier Degradation on DC and RF Performance of 45-nm Power Amplifier Cell
Reliability assessment	Reliability Assessment of AlGaN/GaN Schottky Barrier Diodes under ON-state stress
Reram	What are the Research Opportunities in Electron Devices and Materials?
Resistance	2D array microelectrodes for sensing the action potential of the sinoatrial node
Resonant Tunneling Diodes (rtDs)	Physical Modeling of Asymmetric Spacers Resonant Tunneling Diodes (RTDs)
RF and millimeter-wave performance	SOI technologies for RF and millimeter-wave integrated circuits
Rf cmos	SOI technologies for RF and millimeter-wave integrated circuits
RF measurements	Influence of Calibration Methods and RF Probes on the RF Characterization of 28FD-SOI MOSFET
RF switches	SOI technologies for RF and millimeter-wave integrated circuits
Rfet	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
Risc-v	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
RISC-V based	Low-Energy Always-On RISC-V based SoCs
Robustness	A low power, charge-sensitive preamplifier integrated with a silicon nanowire biosensor
Rtn	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock
S	
Sbfet	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
Scaling	CMOS scaling and mobility: an unbearable ending?
Schottky barrier	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
Schottky diode	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar ⁺ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode
Self-heating	What are the Research Opportunities in Electron Devices and Materials?
Self-heating	Assessment of RF compact modelling of FD SOI transistors
Semiconductor	High conductivity intrinsic a-SiGe films deposited at low-temperature
Semiconductor device	Compact modeling of semiconductor devices for development of micro/nanoelectronic and MEMS technologies
Semiconductor materials and devices	Semiconductor materials and devices for medical and environmental applications
Sensitivity	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap

Sensor systems	A Simple Method for Seamless Integration of CMOS Chips with Microfluidics
Short channel	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
Sic	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar+ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode FULLY/PARTIALLY SUSPENDED GATE SiC-BASED FET FOR POWER APPLICATIONS
Silicon	Hybrid gate dielectric with Si ₃ N ₄ stressor for LDMOSFET Recent Progress of Silicon IGBT technologies
Silicon nanowire biosensor	A low power, charge-sensitive preamplifier integrated with a silicon nanowire biosensor
Silicon nitride	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
Silicon on Insulator	SOI Reliability considerations for 5G/mmWave/RF Circuits
Silicon-based substrate	SOI technologies for RF and millimeter-wave integrated circuits
Silicon-germanium	High conductivity intrinsic a-SiGe films deposited at low-temperature
Silicon-germanium heterojunction bipolar transistor	Versatile BiCMOS Technology Platform for the Low-cost Integration of Multi-purpose Applications
Silicon-on-Insulator (SOI) technology	SOI technologies for RF and millimeter-wave integrated circuits
Silvaco atlas	Physical Modeling of Asymmetric Spacers Resonant Tunneling Diodes (RTDs)
Single-electron electronics	Electromagnetic Coherent Electron Control
Sno	Influence of Dielectrics and Channel Defects on the Electrical Performance of p-Channel TFTs for CMOS Applications
Socs	Low-Energy Always-On RISC-V based SoCs
Soi	Strategy for Simulation of Analog Circuits with GCSOI MOSFET using BSIM SOI model
Soi reliability	SOI Reliability considerations for 5G/mmWave/RF Circuits
Solar cell	Direct extraction of solar cell model parameters using optimization methods
Solar power	Humanitarian Engineering Outreach (Haiti, Colombia, Tanzania, and USA)
Solid-state nanopores	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
Solid-state storage	High-Density Solid-State Storage: A Long Path to Success
Solution-processed small molecule	Impact of Hole Blocking Layer on the Performance of Solution-Processed Small Molecule Solar Cells
Source underlap	Impact of Positive Charges in a Fringing Field Bio-Tunnel-FET Device with Source Underlap
Spectre simulations	Assessment of RF compact modelling of FD SOI transistors
Spi	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
Spice simulation	Strategy for Simulation of Analog Circuits with GCSOI MOSFET using BSIM SOI model
Spintronics	A novel bottom-up approach for the fabrication of nanowire-based spintronic devices for room-temperature applications
Spray pyrolysis technique	ZnO Thin Film Deposited by Spray Pyrolysis for Long-Term Stable Organic Solar Cells

Stability of organic solar cells	ZnO Thin Film Deposited by Spray Pyrolysis for Long-Term Stable Organic Solar Cells
Storage-class memory	High-Density Solid-State Storage: A Long Path to Success
Stress	Hybrid gate dielectric with Si ₃ N ₄ stressor for LDMOSFET
Substrate bias	TCAD Evaluation of the Substrate Bias Influence on the Carrier Transport of Ω -Gate Nanowire MOS Transistors with Ultra-Thin BOX
Substrate effect	Assessment of RF compact modelling of FD SOI transistors
Surface recombination velocity	Determination of Carrier Lifetime in Silicon Using an Ultra-thin Al ₂ O ₃ /SiO ₂ Dielectric Stack
Suspended	FULLY/PARTIALLY SUSPENDED GATE SiC-BASED FET FOR POWER APPLICATIONS
Switching applications	An Enhancement-Mode GaN FEG-HEMT(Hybrid Ferroelectric Charge Trap Gate Stack) Device for Power Switching Applications.
System integration	A Simple Method for Seamless Integration of CMOS Chips with Microfluidics
T	
Tcad	Comprehensive Comparison of Fabricated 1.6-kV Punch-Through Design Ni/n-SiC Schottky Barrier Diode with Ar ⁺ Implant Edge Termination and Heterojunction p-NiO/n-SiC Diode
Tcad simulation	Fully-Coupled Simulation of the Temperature Effect on Negative Capacitance Ferroelectric Devices
Technological nodes	Simple Analytical Modelling of an Electronically Tunable Potentiometer and Body Factor Influence
Temperature effect	Fully-Coupled Simulation of the Temperature Effect on Negative Capacitance Ferroelectric Devices
Test generation	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
Testing	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
Testing-platforms	An affordable post-silicon testing framework applied to a RISC-V based microcontroller
Tft	Recent advances of Ion Sensing based on Flexible Low Temperature Thin Film Transistors
The dual mode logic	The Dual Mode Logic (DML)
Thermal impedance	Assessment of RF compact modelling of FD SOI transistors
Thermionic emission	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
Thermoelectric module	Effect of Heat Sink Configuration on the Performance of Thermoelectric Refrigerator
Thin BOX	TCAD Evaluation of the Substrate Bias Influence on the Carrier Transport of Ω -Gate Nanowire MOS Transistors with Ultra-Thin BOX
Thin films	High conductivity intrinsic a-SiGe films deposited at low-temperature
Threshold voltage	Improved Device Performance of Polarity Controllable-Ferroelectric-Field Effect Transistor Under the Influence of Fixed Trap Charges
Time dependent variability	Towards Unifying the Statistical Modeling of Charge Trapping in Time and Frequency Domain
Time-dependent gate breakdown	Improving Time-Dependent Gate Breakdown of GaN HEMTs with p-type Gate

Time-dependent variability	Circuit reliability prediction: challenges and solutions for the device time-dependent variability characterization roadblock
Transcapacitances	Analytical Compact Model for Transcapacitances of Junctionless Nanowire Transistors
Transistor	Transistor Technologies for Millimeter-Wave 5G Communications: The Struggle for Power
Transition metals	Development of Multi-physics Modeling of Plasmonics in the UV Region Using Transition Metals
Transmembrane	Fabrication of Nanopores Using the Controlled Dielectric Breakdown Technique
Traps	FULLY/PARTIALLY SUSPENDED GATE SiC-BASED FET FOR POWER APPLICATIONS
Tunneling	Multiscale simulation: Can compact models be more than a one-way bridge between TCAD and circuit simulation?
Tunneling current	Uniform DC Compact Model for Schottky Barrier and Reconfigurable Field-Effect Transistors
U	
Ultra-thin dielectric stack	Determination of Carrier Lifetime in Silicon Using an Ultra-thin Al ₂ O ₃ /SiO ₂ Dielectric Stack
Ultraviolet	High Efficiency AlInN Nanowire Light-Emitting Diodes Grown by Molecular Beam Epitaxy
Urban garden	Humanitarian Engineering Outreach (Haiti, Colombia, Tanzania, and USA)
Utbb	Assessment of RF compact modelling of FD SOI transistors
Uv plasmonics	Development of Multi-physics Modeling of Plasmonics in the UV Region Using Transition Metals
W	
Waveform integrity (linearity)	Trends and innovation on engineering substrates for 5G and beyond
Wearables	Flexible Electrode Capacitive Sensors System for Human Fluid Detection
Wigner transport equation	Electromagnetic Coherent Electron Control
Z	
Zno electron interfacial layer	ZnO Thin Film Deposited by Spray Pyrolysis for Long-Term Stable Organic Solar Cells
Zno ETL	Impact of Hole Blocking Layer on the Performance of Solution-Processed Small Molecule Solar Cells
Ztc point	Analysis of the ZTC-Point for Vertically Stacked Nanosheet pMOS Devices



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