

Chip in the Fields Virtual 2021 Program

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Note: all times are Brasília Times (UTC – 3h)

Summary and Rooms:

Presentations at Chip in the Fields 2021

	Invited	Regular	Zoom Room	Youtube
Keynotes	4	0	1	
SBMicro	4	32	2	
SBCCI	3	34	1	
INSCIT	0	21	3	
WCAS	0	10	1 & 3	
SForum	0	18	3	
Tutorials	10	0	1 & 2	Yes
IoT Contest	0	7	2	
Sponsor talks	7	0	1	Yes
Panels	3	0	1	Yes
WCAS Panel	1	0	3	Yes
Total	32	122		

Technical Program

Keynotes

Room 1

13:00 – 14:00h

Tuesday Aug 24 th	“CMOS device architecture evolution from FinFETs to nanosheet and atomic channel devices” <i>Naoto Horiguchi</i> Session Chair: Michelly de Souza, FEI.
Wednesday Aug 25 th	“Ten Lessons From Three Generations Shaped Google’s TPUv4i”, <i>David Patterson, U.C. Berkeley and Google, USA</i> Session Chair: José Luís Güntzel , UFSC
Thursday Aug 26 th	“Edge Verification: Ensuring Correctness under Resource Constraints” <i>Rolf Drechsler, U. of Bremen, Germany</i> Session Chair: Frank Sill Torres, DLR, Germany
Friday Aug 27 th	“Semiconductor characterization on frequencies above 100GHz for next generation wireless communications application” <i>Suren Singh, Keysight, USA</i> Session Chair: Eduardo Lima, Eldorado

Note: Abstract and Bios at Home tab of the webpage

SBMicro 2021 Technical Program

Tuesday, August 24th (Room 2)

SBMicro Session 1 – Photovoltaics 1

Session Chair: Alain Quivy (IFUSP)

14:10 (1.1)	INVITED: Research Needs for Solar Photovoltaics in the 21st Century <i>Meng Tao, Arizona State University</i>
14:50 (1.2)	Impact of annealing temperature on the performance of PBDB-T:ITIC-M – based organic solar cell <i>Alfonsina Abat Amelenan Torimtubun, José Guadalupe Sánchez, Josep Pallarès and Lluís F. Marsal</i>
15:10 (1.3)	Optical Characterization of InAs/InGaP Intermediate Band Solar Cell <i>Clarissa Dias, Eleonora Weiner, Rudy Kawabata, Roberto Jakomin, Patrícia Souza and Maurício Pires</i>

Wednesday, August 25th (Room 2)

SBMicro Session 2 - Modeling and Simulation 1

Session Chair: Rodrigo Doria (FEI)

09:00 (2.1)	Simulation and Modelling of Resonant Tunneling Diode Peak Voltage Dependence on Spacer Layers <i>Saif Alomari</i>
09:20 (2.2)	Fully Analytical Compact Model for the I–V Characteristics of Resonant Tunneling Diodes <i>Daniel Celino, Adalcio de Souza, Caio Plazas, Regiane Pereira and Murilo Romero</i>
09:40 (2.3)	Implementation and Comparison of Algorithms for the extraction of RTN Parameters <i>Cláudia Theis da Silveira, Pedro Böckmann Alves, Thales Exenberger Becker and Gilson Wirth</i>
10:00 (2.4)	Design of a Gate-All-Around Stacked Nanosheet Differential Amplifier under Different Bias Conditions <i>Júlia Cristina Soares Sousa, Welder Perina, Joao Martino and Paula Agopian</i>

SBMicro Session 3 – Device Characterization 1

Session Chair: João Antonio Martino (EPUSP)

10:30 (3.1)	The conduction mechanisms analysis of AlGaN/GaN MOSHEMTs with different source/drain electrode configurations <i>Genilson Carmo, Bruno Canales and Paula Agopian</i>
10:50 (3.2)	Analysis of Fin Width Influence on the Carrier Mobility of Nanowire MOSFETs <i>Coco Cutipa Coto, Flávio Bergamaschi and Marcelo Pavanello</i>
11:10 (3.3)	Analysis of Capacitances in Asymmetric Self-Cascode SOI nMOSFETs <i>Camila Alves, Lígia Martins d'Oliveira and Michelly de Souza</i>
11:30 (3.4)	Improvement of Schottky Junctions for application in BESOI MOSFET <i>Henrique Zangaro, Ricardo Rangel, Katia Sasaki, Leonardo Yojo and Joao Martino</i>

SBMicro Session 4 - Novel Materials 1

Session Chair: Henri Boudinov (UFRGS)

14:10 (4.1)	INVITED: Status and Outlook for Ferroelectric Hf/Zr Oxides <i>Robert Clark, TEL Technology Center America</i>
14:50 (4.2)	Electrical characterization of Si-based/SiO ₂ /TiO ₂ heterostructures <i>Marcos Paulo da Silva, Adhimar Oliveira, Danilo Huanca and Walison da Silva</i>
15:10 (4.3)	New composite material based on nano graphite particles in glassy matrices for applications in piezoresistive sensors <i>Oswaldo Correa</i>

Thursday, August 26th

(Room 2)

SBMicro Session 5 - Photovoltaics 2

Session Chair: Renan Trevisoli (UFABC)

09:00 (5.1)	Anti-reflection glass coverslips for indoor MOS photovoltaic cells <i>Gabriel Louzada, Marcos Watanabe, Ricardo Rangel and Sebastião dos Santos Filho</i>
09:20 (5.2)	Revealing the Influence of Annealing Treatment on the Performance of Non-Fullerene Organic Photovoltaics <i>Enas Moustafa, Josep Pallarès and Lluís Marsal</i>
09:40 (5.3)	e-mulate: a user-friendly software to calculate optoelectronic properties of quantum well systems <i>Pedro Henrique Pereira, Guilherme Torelly, Matheus Lacerda, David Souza, Jose Ruiz, Vinicius Souza, Luis Chipana, Patricia Souza, Germano Penello and Mauricio Pires</i>
10:00 (5.4)	Quantifying the Effects of Light Trapping on GaAs Solar Cells <i>Thales Borrelly, Marcelo Delmondes de Lima and Alain André Quivy</i>

SBMicro Session 6 – Device Characterization 2

Session Chair: Gilson Wirth (UFRGS)

10:30 (6.1)	INVITED: Advanced MOSFETs electrical characterization for further Analog/RF applications <i>Valeriya Kilchytska, UCLouvain</i>
11:10 (6.2)	Temperature Influence on the Electrical Properties of Vertically Stacked Nanowire MOSFETs <i>Jaime Rodrigues, Genaro Mariniello, Mikael Cassé, Sylvain Barraud, Maud Vinet, Olivier Faynot and Marcelo Pavanello</i>
11:30 (6.3)	Experimental Analysis of Trade-Off Between Transistor Efficiency and Unit Gain Frequency of Nanosheet NMOS Transistors <i>Vanessa Cristina Pereira da Silva, Joao Martino, Eddy Simoen, Anabela Veloso and Paula Agopian</i>

SBMicro Session 7 – Modeling and Simulation 2

Session Chair: Marcelo Antonio Pavanello (FEI)

14:10 (7.1)	Junctionless Nanowire Transistors Based Common-Source Current Mirror <i>André Shibusani, Michelly de Souza, Renan Trevisoli and Rodrigo Doria</i>
14:30 (7.2)	Improved Back Enhanced SOI (BESOI) MOSFET by adding n-doped regions <i>Katia Sasaki, Joao Martino, Ricardo Rangel, Daniel Ramos and Leonardo Yojo</i>
14:50	Gate Delay Variability due to Random Telegraph Noise

(7.3)	<i>Rodolfo Barbosa, Thiago Both and Gilson Wirth</i>
15:10 (7.4)	Influence of the Quantum Effect on the GAA Nanosheet NMOS from 200 C down to -100 C <i>João Vitor da Costa Leal, Paula Agopian and Joao Martino</i>

Friday, August 27th
(Room 2)

SBMicro Session 8 – Novel Materials 2

Session Chair: Giuseppe Cirino (UFSCar)

09:00 (8.1)	High-Frequency Integrated Inductors on Flexible Kapton Substrate <i>Wilson Freitas and Leandro Manera</i>
09:20 (8.2)	Tunable visible emission and white light generation by Ag nanoclusters in Tm ³⁺ /Yb ³⁺ doped GeO ₂ -PbO glasses <i>Marcos Nishimura, Camila Dias da Silva Bordon, Davinson Silva and Luciana Kassab</i>
09:40 (8.3)	The influence of crosslinker concentration on PVA insulating characteristics <i>Taiane Neves, Taiza Neves and Henri Boudinov</i>
10:00 (8.4)	Graphene-silicone nanocomposite films for use in thermal interfaces <i>Larissa Mendes, Silvia Vaz Guerra Nista, Raluca Savu, Lucia Mei and Stanislav Moshkalev</i>

SBMicro Session 9 – Device Characterization 3

Session Chair: Paula Agopian (UNESP)

10:30 (9.1)	The Second Generation of the Layout Styles for MOSFETs to Further Boosting the Electrical Performance of Analog MOSFETs and CMOS ICs <i>Egon Galembeck, Gabriel da Silva and Salvador Gimenez</i>
10:50 (9.2)	NBTI Dependence on Temperature in Junctionless Nanowire Transistors <i>Nilton Graziano Jr, Renan Doria and Rodrigo Doria</i>
11:10 (9.3)	Comparative Study Between Conventional and Wave Planar Power MOSFETs <i>Gabriel Silva and Salvador Gimenez</i>
11:30 (9.4)	Influence of the InAs coverage on the performance of submonolayer-quantum-dot infrared photodetectors grown with a (2×4) surface reconstruction. <i>Ahmad Alzeidan, Tiago Cantalice, Kevin Vallejo, Paul Simmonds and Alain Quivy</i>

SBMicro Session 10 - Flexible Electronics, Packaging and Optoelectronics

Session Chair: Roberto R. Panepucci (CTI)

14:10 (10.1)	INVITED: CMOS Technology Enabled Physically Flexible-Stretchable-Spherical Solar Cells <i>Muhammad Mustafa Hussain, University of California, Berkeley</i>
14:50 (10.2)	Analysis and Optimization of Fine-Pitch Gold Wire Ball Bonding Thermosonic Parameters <i>Arthur Bohn, Cassiano Campes, Rodrigo Figueiredo and Sandro José Rigo</i>
15:10 (10.3)	Electro-optic 2:1 Reversible MUX Based on Ti diffused Lithium Niobate MZI <i>Shashank Awasthi, Sanjeev Metya and Alak Majumder</i>

SBCCI 2021 Technical Program

Wednesday, August 25th
(Room 1)

SBCCI Session 1 – Analog Design and Applications

Session Chair: Dalton Colombo (UFMG)

8:40 (1.1)	A Latching Current Limiter with Telemetries for Space Applications <i>Ronald Hassib Galvis Chacón, Agnaldo Vieira Dias, Ângela Alves dos Santos, Paula Cristiane Secheusk, Silvio Manea, José Alexandre Diniz and Saulo Finco</i>
9:00 (1.2)	Injection-Locked Ring Oscillator based Phase Locked Loop For 1.6 Gbps Clock Recovery <i>Dorian Vert, Michel PIGNOL, Vincent LEBRE, Emmanuel MOUTAYE, Florence Malou and Jean-Baptiste Begueret</i>
(9:20) (1.3)	A 237 ppm/°C L-Band Active Inductance Based Voltage Controlled Oscillator in SOI 0.18 μm <i>João Roberto Raposo de Oliveira Martins, Francisco Alves and Pietro Maris Ferreira</i>
9:40 (1.4)	Modeling of Reconfigurable $\Sigma\Delta$ Modulator for Multi-standard Wireless Receivers in Verilog-A <i>Mateus Castro, Raphael Noal Souza, Agord Junior, Eduardo Lima and Leandro Manera</i>
10:00 (1.5)	Multifunctional auricular vagus nerve stimulator for closed-loop application <i>Babak Dabiri, Klaus Zeiner, Arnaud Nativel and Eugenijus Kaniusas</i>

SBCCI Session 2 – Neural Networks

Session Chair: Leandro Mateus Giacomini Rocha (IFRS)

10:30 (2.inv)	INVITED: Machine Learning Models for EDA Application <i>Youngsoo Shin, KAIST, South Korea.</i>
10:50 (2.1)	FLoPAD-GRU: A Flexible, Low Power, Accelerated DSP for Gated Recurrent Unit Neural Network <i>Ilayda Yaman, Allan Andersen, Lucas Ferreira and Joachim Rodrigues</i>
11:10 (2.2)	Exploring Constant Signal Propagation to Optimize Neural Network Circuits <i>Augusto Berndt, Cristina Meinhardt, Paulo Butzen and Andre Reis</i>
11:30 (2.3)	Artificial Neural Network Based Automatic Modulation Classification System Applied to FPGA <i>Adenilson Castro, Ronny Milléo, Luis Lolis and André Mariano</i>

SBCCI Session 3 – Analog Design for Low Power
 Session Chair: Pietro Ferreira (Université Paris-Saclay)

14:10 (3.1)	A High PSRR Technique Based on 180 degree Phase Shift Biasing for Low Power Temperature Sensors <i>Arpan Jain, Abhishek Pullela, Ashfakh Ali and Zia Abbas</i>
14:30 (3.2)	0.5 V 19 nW Smart Temperature Sensor for Ultra-Low-Power CMOS Applications <i>Daniel Lott and Dalton Colombo</i>
14:50 (3.3)	Exploration of a Low-power CMOS Voltage Squarer <i>Victor Costa, Adilson Cardoso, Cesar Rodrigues, Andre Aita and Jefferson Marques</i>
15:10 (3.4)	A 0.6V, 3.3 nW, Adjustable Gaussian Circuit for Tunable Kernel Functions <i>Vassilis Alimisis, Marios Gourdouparis, Christos Dimas and Paul Sotiriadis</i>

Thursday, August 26th
(Room 1)

SBCCI Session 4 – Video Coding
 Session Chair: César Augusto Missio Marcon (PUCRS)

8:40 (4.1)	High-throughput and low-power architectures for the AV1 Arithmetic Encoder <i>Tulio Pereira Bitencourt, Fábio Luís Livi Ramos and Sergio Bampi</i>
9:00 (4.2)	High-Performance Design for the AV1 Multi-Alphabet Arithmetic Decoder <i>Jiovana Gomes and Fábio Luís Livi Ramos</i>
9:20 (4.3)	High-Throughput Sharp Interpolation Filter Hardware Architecture for the AV1 Video Codec <i>Daiane Freitas, Cláudio Diniz, Mateus Grellert and Guilherme Corrêa</i>
9:40 (4.4)	Configurable Power/Quality-Aware Hardware Design for the AV1 Directional Intra Frame Prediction <i>Luiz Neto, Marcel Correa, Bruno Zatt, Daniel Palomino, Luciano Agostini and Guilherme Corrêa</i>
10:00 (4.5)	Configurable Approximate Hardware Accelerator to Compute SATD and SAD Metrics for Low Power All Intra High Efficiency Video Coding <i>Victor Lima, Matheus Stigger, Leonardo Bandeira Soares, Cláudio Diniz and Sergio Bampi</i>

SBCCI Session 5 – Many-core Systems

Session Chair: Mônica Magalhães Pereira (UFRN)

10:30 (5.inv)	INVITED: Security Aspects of Reconfigurable FPGAs: from embedded to multi-tenant cloud <i>Lars Bauer, Karlsruhe Institute of Technology (KIT), Germany</i>
10:50 (5.1)	MUTECO: A Framework for Collaborative Allocation in CPU-FPGA Multi-tenant Environment <i>Michael Jordan, Guilherme Korol, Mateus Beck Rutzig and Antonio Carlos Schneider Beck</i>
11:10 (5.2)	Management Application - a New Approach to Control Many-Core Systems <i>Angelo Dalzotto, Leonardo Erthal, Marcelo Ruaro and Fernando Moraes</i>
11:30 (5.3)	Reflect3d: An Adaptive and Fault-Tolerant Routing Algorithm for Vertically-Partially-Connected 3D-NoC <i>Alexandre Almeida da Silva, Leonel Maia e Silva Junior, Alexandre Coelho, Jarbas Silveira and César Marcon</i>

SBCCI Session 6 – Design Automation and Reliability

Session Chair: José Luís Güntzel (UFSC)

14:10 (6.1)	Accuracy and Size Trade-off of a Cartesian Genetic Programming Flow for Logic Optimization <i>Augusto Berndt, Isac Campos, Brunno Abreu, Bryan Lima, Mateus Grellert, Jônata Carvalho and Cristina Meinhardt</i>
14:30 (6.2)	A method to join the On-set and Off-set of an incompletely boolean function into a single BDD <i>Renato Peralta, João Nespolo, Paulo Butzen, Mariana Kolberg and Andre Reis</i>
14:50 (6.3)	Asymmetric Aging Avoidance EDA Tool <i>Freddy Gabbay, Avi Mendelson, Basel Salame and Majd Ganaiem</i>
15:10 (6.4)	A Versatile Test Set Generation Tool for Structural Analog Circuit Testing <i>Lucas Zilch, Marcelo Lubaszewski and Tiago Balen</i>

Friday, August 27th **(Room 1)**

SBCCI Session 7 – Digital Design for Low Power - Circuits

Session Chair: Leonardo Bandeira Soares (IFRS)

9:00 (7.1)	Exploring Approximate Computing and Near-Threshold Operation to Design Energy-efficient Multipliers <i>Vinicius Zanandrea, Douglas Borges, Vagner Rosa and Cristina Meinhardt</i>
9:20 (7.2)	Optimizing Partial Product Terms for a Power-Efficient Radix-4 Modified Booth Multiplier <i>Jean Scheunemann, Marlon Sigales, Mateus Fonseca and Eduardo Costa</i>
9:40 (7.3)	A Robust and Power-Efficient VLSI Power Line Interference Canceling Design <i>Morgana Macedo Azevedo da Rosa, Patrícia da Costa, Guilherme Paim, Eduardo da Costa, Sergio Almeida and Sergio Bampi</i>
10:00 (7.4)	Soft Error Tolerant Quasi-Delay Insensitive Asynchronous Circuits: Advancements and Challenges <i>Ashiq Sakib</i>

SBCCI Session 8 – Digital Design for Low Power - Architectures

Session Chair: Fábio Luís Livi Ramos (UNIPAMPA)

10:30 (8.inv)	INVITED: Application of injection locked relaxation oscillators to the design of ultra-low power sensor interfaces <i>Franck BADETS, CEA Leti, Département DCOS</i>
10:50 (8.1)	Improving energy efficiency by transparently sharing SIMD Execution Units in Asymmetric Multicores <i>Caio Vieira and Antonio Carlos Schneider Beck</i>
11:10 (8.2)	ETCG: Energy-Aware CPU Thread Throttling for CPU-GPU Collaborative Environments <i>Tiago Knorst, Michael Jordan, Arthur Lorenzon, Mateus Beck Rutzig and Antonio Carlos Schneider Beck</i>
11:30 (8.3)	Evaluating the Performance, Energy and Area Tradeoffs of ATHENA in Superscalar Processors <i>Francisco Carlos Silva Junior, Ricardo Jacobi and Ivan Silva</i>

SBCCI Session 9 – Quantum Computing and New Devices

Session Chair: Omar Paranaíba Vilela Neto (UFMG)

14:10 (9.1)	Modeling wave propagation using automata cellular on Chip <i>Henrique de Moura and Daniel Munoz</i>
14:30 (9.2)	Novel Three-Input Gates for Silicon Quantum Dot <i>Maria Dalila Vieira, Icaro Moreira, Pedro Silva, Laysson Luz, Ricardo Ferreira, Omar Vilela Neto and José Augusto Nacif</i>
14:50 (9.3)	Optimizing a Robust Miller OTA Implemented with Diamond MOSFETs By Using iMTGSPICE <i>José Roberto Banin Júnior, Rodrigo Moreto, Gabriel da Silva, Carlos Thomaz and Salvador Gimenez</i>

INSCIT 2021 Technical Program

Tuesday, August 24th (Room 3)

INSCIT Session 1 – RF, MW and mmW Measurement Circuits and Techniques

Session Chair: Diomadson Belfort (UFRN)

14:10 (1.1)	Compact Dual-Band System for Near-Field Wireless Power Transfer Using Defected Ground Structures for Practical ISM Bands <i>Filipe Ferreira, Giovani Bulla and Ivan Müller</i>
14:30 (1.2)	Coplanar capacitor probes design for a moisture soil sensor operating at high frequencies <i>Rogério Junior, Eduardo Rodrigues and Roddy Romero</i>
14:50 (1.3)	NFC Energy Harvesting using Flexible Hybrid Electronics: An experimental case study <i>Victor Miranda, Dalton Colombo and Igor Monteiro</i>
15:10 (1.4)	A Full-Duplex Radiotelemetry Transceiver <i>Eduardo Augusto Junqueira and Robson de Lima</i>

Wednesday, August 25th (Room 3)

INSCIT Session 2 – Systems and Circuits for WSN and IoT

Session Chairs: Yuri Catunda (UFRN) and José Tauná Segundo (UFRN)

14:10 (2.1)	Towards a wireless energy autonomous IoT module with a self-adaptable data diet <i>Felipe Vitoriano, Gabriel Gomes and Davies Monteiro</i>
14:30 (2.2)	An Optimization Method based on LoRa Parameters for Energy Consumption Reduction <i>Rafael Benatti, Cleonilson Protasio Souza and Orlando Baiocchi</i>
14:50 (2.3)	Wireless Sensor Network for Monitoring Reproductive Events in Cattle <i>Yuri Valadão, Max Feldman, Ivan Muller, Bruno da Silva and Silvio Menegassi</i>
15:10 (2.4)	Learning-based identification of malicious circuits for trustworthy IoT systems <i>Frederico Coelho, Evandro Alves, Janier Arias-Garcia and Frank Sill Torres</i>

Thursday, August 26th (Room 3)

INSCIT Session 3 – Detectors, Sensors and Transducers Systems and Techniques

Session Chairs: Elyson Carvalho (UFS) and Raphael Cardoso (UFS)

8:40 (3.1)	Portable System for Automatic Acquisition of Electrical Signals for Supercapacitor Characterization <i>Paulo Ferreira, Hene Saud and Luciana Salles</i>
9:00 (3.2)	Temperature and Humidity Measurement Using an Off-the-shelf MEMS Sensor: Beyond Arduino's Playground <i>Samuel Lucena and Daniel Sampaio</i>

9:20 (3.3)	Analysis of the Wheatstone Bridge Radiometer Performance Dependence on the Ambient Temperature <i>José Tauná Dantas Segundo, Evandson Dantas, Sebastian Yuri Catunda and Diomadson Belfort</i>
9:40 (3.4)	Evaluation of an Equivalent Circuit Model for Simulation of Surface Acoustic Wave Sensors <i>Raphael Cardoso de Oliveira Jesus, Elyson Carvalho, Ollivier Tamarin, Raimundo Carlos Silvério Freire and Corinne Dejous</i>
10:00 (3.5)	A Textile Humidity Sensor for Wearable Applications in the 4.0 Era <i>Giuseppina Monti, Egidio De Benedetto, Annarita Tedesco, Dominique Dallet, Andrea Cataldo and Luciano Tarricone</i>

INSCIT Session 4 – Electric and magnetic instrumentation and measurement

Session Chairs: Valner Brusamarello (UFRGS) and Graziella Bedenik (UFS)

14:10 (4.1)	Ultra-Wide Band Rectenna Design with Impedance Matching Network Simplified <i>Euclides Chuma, Yuzo Iano and Leonardo Roger</i>
14:30 (4.2)	Easy-to-Implement Configurable Multimodal Electrostimulator <i>Matheus Cardoso Santos, Graziella Bedenik, Stéphane Carvalho, Tawan dos Santos, Elyson Carvalho, Jânio Coutinho Canuto and José Nunes de Carvalho Filho</i>
14:50 (4.3)	Measurement of Unbalanced Voltages in Three-Phase Induction Motors Using Acoustic Transducers and Zero-Crossing-Weighted Energy <i>Guilherme Lucas, Bruno de Castro, Brigitte Alves, Adam Glowacz and André Andreoli</i>
15:10 (4.4)	Comparing the Robustness of Deterministic and Stochastic Edge Detection Circuits to Transmission Noise <i>Danilo Barreto Cavalcanti, Antonio Nogueira Lima, Hugo Gayoso Meira Suassuna de Medeiros and Niago Moreira Nobre Leite</i>

Friday, August 27th **(Room 3)**

INSCIT Session 5 – Signal Processing and Data Storage

Session Chair: Ivan Muller (UFRGS)

8:40 (5.1)	Variability of Complex Networks Parameters on Effective Connectivity Analysis: An AbsenceEpilepsy Case <i>Viviane Tenório, Raimundo Carlos Silvério Freire and Evaldo Eder Carvalho Santana</i>
9:00 (5.2)	Counting, Classifying and Tracking Vehicles Routes at Road Intersections with YOLOv4 and DeepSORT <i>Luíz Gatelli, Gabriel Gosmann, Felipe Fitarelli, Anderson Schwertner, Guilherme Huth, valner Brusamarello and Ricardo Azambuja</i>
9:20 (5.3)	On the stockpiles volume measurement using a 2D scanner <i>Duan Lima and Guilherme Costa</i>
9:40 (5.4)	Impact Point of Probing Rockets by Telemetry and Slant Range <i>Nilton Cantanhede, Ewaldo Eder Carvalho Santana, Paulo Fernandes Silva Junior and Jonas Barros</i>
10:00 (5.5)	- withdrawn -

WCAS 2021 Technical Program

Monday, August 24th (Room 1)

WCAS Session 1 – Analog and RF Circuit Design Session Chair: Pedro Paro Filho (IQ-Analog Corporation)

14:10 (1.1)	Ultralow Voltage Power Converter Using a Microtransformer in MCM Technology <i>Antonio Telles, Marcio B. Machado, Marinalva M. Rocha and Ricardo Teixeira</i>
14:30 (1.2)	High-Level Modeling and Analysis of a Low-Voltage 8-Bit Current-Mode R-2R DAC <i>Luis Felipe Machado Dutra, Matheus Cortez and Paulo César Comassetto de Aguirre</i>
14:50 (1.3)	Design of an Inductorless Wide-band Low-noise Amplifier <i>Vinicius Vecchia and Leandro Manera</i>
15:10 (1.4)	Reconfigurable Reject Band Filter using Varactor Diode <i>Andre Tavora de Albuquerque Silva, Claudio Ferreira Dias, Eduardo Rodrigues de Lima and Gustavo Fraidenraich</i>

Wednesday, August 25th (Room 3)

WCAS Session 2 – Digital Systems Session Chair: José Arnaldo Bianco Filho (Cirrus Logic)

8:40 (2.1)	Compact System-in-Package Design for IoT Sigfox Applications <i>Felipe Kalinski Ferreira, Maurício Carlotto Ribeiro, Vilson José Petry Júnior, Willyan Hasenkamp Carreira, Arthur Liraneto Torres da Costa and Hamilton Klimach</i>
9:00 (2.2)	Remote FPGA Lab for Distance Learning <i>Ícaro Lima, Joseana Araújo and Elmar Melcher</i>
9:20 (2.3)	A Proposal of a CNN-based Hardware Accelerator for Recognizing Vehicle Plates using FPGA <i>George de Borba Nardes, Felipe Viel and Cesar Albenes Zeferino</i>
9:40 (2.4)	A new Approach for Automatic Layout Generation <i>Elias Ramos, Vitor Hugo F. Maciel, Germano Girondi and Ricardo Reis</i>
10:00 (2.5)	Verification of A Multi-Rate OFDM Modem Compliant to the IEEE802.15.4g Standard <i>Hamilton Costa Luis, Daniel Urdaneta and Eduardo Rodrigues Lima</i>
10:10 (2.6)	Functional Verification of A Multi-Rate FSK Modem Compliant to the IEEE802.15.4g standard <i>Ciro de Carvalho Lima, Daniel Urdaneta and Eduardo Rodrigues de Lima</i>

Friday, August 27th
(Room 3)

WCAS Session 3 – Industrial Panel

Session Chair: José Eduardo Bertuzzo (I. Eldorado)

14:10 – 15:30	<p>PANEL: Perspective of Insertion of Brazilian Design Houses in the Global Market, Moderator: <i>José Bertuzzo, I. Eldorado</i></p> <p>Panelists:</p> <ul style="list-style-type: none">• <i>Cesar Duenas – HCL,</i>• <i>Jim Guzzo – Impinj,</i>• <i>Julio Leão – EnSilica,</i>• <i>Júlio Oliveira - Idea! Electronic Systems,</i>• <i>Murilo Pilon Pessatti - Chipus Microeletrônica,</i>• <i>Mustafa Badaroglu - Qualcomm</i>
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WCAS Session 3 will also be broadcasted on-line on youtube channel for non-registered participants at www.youtube.com/SBMicro

SForum 2021 Technical Program

Wednesday, August 25th
(Room 3)

SForum Session 1 – Analog & RF Design

Session Chair: André Luiz Aita, UFSM

10:30 (1.1)	A 0.4-V 170-uW Fully-Integrated LNA for 2.4-GHz RF Receivers <i>Lucas Compassi Severo and Giovana Ceolin</i>
10:45 (1.2)	Selective Algorithm for Group Method of Data Handling Applied to Power Amplifier Modeling <i>Ana Paula Machado and Eduardo Lima</i>
11:00 (1.3)	Behavioural modelling with the reception of a modulated signal of a radio-frequency receiver based on N-path filters and mixers <i>Gabriel Gubert and Luis Lolis</i>
11:15 (1.4)	Circuit Analysis Based on Linearization Around Circuit Envelope <i>Dhessica M de Moura and Eduardo de Lima</i>
11:30 (1.5)	Characterization of a reconfigurable CMOS power amplifier with IEEE 802.11ax signals <i>Enzo Coutinho, Bruno Tarui and Bernardo Leite</i>
11:45 (1.6)	Mathematical Modeling Of The Output Power In Power Amplifiers <i>Luiz Tsurukawa and Eduardo Lima</i>

Thursday, August 26th
(Room 3)

SForum Session 2 - Applications

Session Chair: José Augusto Nacif, UFV

10:30 (2.1)	Design of Steel ASIC, a RISC-V processor <i>Vinicius dos Santos, Fábio Petkowicz, Cleiton Lima, Rafael da Silva, Rafael Calçada and Ricardo Reis</i>
10:45 (2.2)	Collenda: A Games Development Platform in reconfigurable environments using FPGA's devices <i>Gabriel Alves, Anfranserai Morais Dias and João Carlos Bittencourt</i>
11:00 (2.3)	Behavioral Model Comparison of two GFSK Demodulator Topologies for BLE <i>Arthur Morbach, Sandro Binsfeld Ferreira and Jonas Dandanel de Castro</i>
11:15 (2.4)	A Review On The Main Algorithms For Measuring Steps, Sleep And Falling In Wearable Applications <i>Rafael Ferreira, João Guilherme Cintas, Cláudio Klautau Mello, Ilan Sousa Correa, Leonardo Lira Ramalho and Aldebaro Klautau</i>
11:30 (2.5)	Posit-based Spiking Neuron in an FPGA <i>Victor Hugo Lopes da Silva, Jeferson Chaves, Rogério Martins Gomes and Bruno André Santos</i>
11:45 (2.6)	IC Design Implementation of an Artificial Neuron Using Open-Source Tools <i>Marcelo Carlos, Ricardo Pires and Sara Dereste dos Santos</i>

Friday, August 27th
(Room 3)

SForum Session 3 – Digital Design
Session Chair: Cláudio Machado Diniz

10:30 (3.1)	Exploring the use of 3-input Gates in Field-Coupled Nanotechnologies <i>Icaro Gabriel Moreira, Maria Dalila Vieira, Omar P. Vilela Neto, Ricardo Ferreira and José Augusto Nacif</i>
10:45 (3.2)	- withdrawn -
10:45 (3.3)	Digital Control Circuit for Offset Calibration in CMOS Comparators <i>João Brum and Paulo César Comassetto de Aguirre</i>
11:00 (3.4)	Generating Approximate Boolean Functions <i>Alexandre Crestani, Gabriel Ammes, Renato Ribas and Paulo Butzen</i>
11:15 (3.5)	Digital Control of a Synchronous 8-bit SAR ADC <i>Edivania Ferreira Silva, João Brum and Paulo César Comassetto de Aguirre</i>
11:30 (3.6)	Memory-Aware, Low-Power and High-Throughput AV1 FME Interpolation Architecture <i>William Kolodziejcki, Robson Domanski, Bruno Zatt, Marcelo Schiavon Porto and Luciano Agostini</i>

Tutorials

Monday, August 23rd

SBMicro 2021 - 2021 EDS Brazil Mini-colloquium

Room 1 and at <https://www.youtube.com/channel/UCRH2e1SQCyKGZMeM-332HUw>

Session Chair: Marcelo Pavanello

8:45 9:45	–	"Modeling and Simulation of FinFET and Nanosheet Transistors for Advanced Technology Nodes" <i>Yogesh Chauhan,</i>
10:00 11:00	–	"Hexagonal boron nitride based electronic devices and circuits: status and prospects" <i>Mario Lanza,</i>
11:15 12:15	–	"From CMOS to neuromorphic Computing, with a peek into the future" <i>Merlyne De Souza,</i>
15:15 16:30	–	"Heterogeneous Integration for AI Architectures" <i>Mukta Farooq, IBM-USA</i>

SBCCI 2021 - 2021 SSCS - CEDA - CASS Brazil Mini-colloquium

Room 2 and at <https://www.youtube.com/cassriograndedosul>

Session Chair: André Mariano

8:45 9:45	–	"Hardware Supported Cybersecurity for IoT" <i>Yier Jin, University of Florida, USA</i>
10:00 11:00	–	"Low power analog circuits for biomedical applications" <i>Pieter Harper, Eindhoven University of Technology, The Netherlands.</i>
11:15 12:15	–	"Trends on EDA" <i>Ricardo Reis, UFRGS-Brazil</i>
15:15 16:30	–	"Fully open source manufacturable PDK for a 130nm process" <i>Tim 'mithro' Ansell, Google, USA</i>

Common Session

SBMicro 2021 - 2021 EDS Brazil Mini-colloquium

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SBCCI 2021 - 2021 SSCS - CEDA - CASS Brazil Mini-colloquium

Room 1

Session Chairs: André Mariano and Marcelo Pavanello

13:45 15:00	–	"Quantum Computing in Nanoscale CMOS using Position-Based Charge Qubits" <i>Elena Blokhina and Robert Bogdan Staszewski</i>
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Notes:

Tutorial will also be broadcasted on-line on youtube channels for non-registered participants:

- SBMicro-EDS: <https://www.youtube.com/channel/UCRH2e1SQCyKGZMeM-332HUw>
- SBCCI-IEEE: <https://www.youtube.com/cassriograndedosul>

Mini Course

Tuesday, August 24th

Room 1

Session Chair: Gilson Wirth

Time: 8:30 – 11:00h

Title: **Semiconductor Device Characterization - A Quick Tutorial**

Speaker: **Alan Wadsworth, Keysight**

Abstract

Semiconductor device characterization can be complicated, but understanding the basics does not have to be. This tutorial does not assume that you have any previous semiconductor characterization experience, and it will be divided into two parts. The first part will cover the basics of current-voltage (IV) and capacitance-voltage (CV) characterization of semiconductor devices. The second part will cover more advanced topics including memory cell testing and fast pulsed measurement for applications such as NBTI and RTN characterization.

Biography

Alan Wadsworth is the Americas region Business Development Manager for Precision and Power Products at Keysight Technologies. He has over 30 years of industry experience in both semiconductor design and test, and he is the author of Keysight's 277-page Parametric Measurement Handbook. Alan has both Bachelor and Master of Science degrees in electrical engineering from the Massachusetts Institute of Technology and an MBA from Santa Clara University.



This session will also be broadcasted on-line on youtube channel for non-registered participants at https://www.youtube.com/watch?v=2_c1N0YtCyw

IoT Student Contest

Tuesday, August 24th

Room 2

Time: 9:00 – 11:00

Session Chairs / Contest Board Members: *Marcelo Soares Lubaszewski, UFRGS*
Vagner Santos da Rosa, FURG
Arthur Liaraneto Torres Costa, HT Micron

9:00	Boas-vindas
9:10	S3A – Sistema de Alerta Automático de Acidentes, Unisinos <i>Carolina Rosa Kelsch, Fernanda Schäfer Tesch da Silva, Márcia Cunha dos Santos, Mateus Begnini Melchiades, Vitória Francesca Biasibetti Zilli (Equipe)</i> <i>Lucio Rene Prade, Samuel Tavares da Silva Maraschin, Armando Leopoldo Keller (Mentores)</i>
9:25	Medidor de Consumo de Energia Elétrica, IFRS – Campus Rio Grande <i>Fernanda Araújo da Paz, Manoela Ribeiro Suita, Luís Felipe Milczarek Quadros, Matheus Mesquita de Vianna, Kauã Ortiz Silveira, Patrick da Silva Varela (Equipe)</i> <i>Thiago dos Santos da Fonseca, Rogério Malta Branco, Carlos Rodrigues Rocha (Mentores)</i>
9:40	Sensoriamento de Vibração de Elevadores para Manutenções Preditivas, UFRGS <i>Bruno Soares Zimmer, Evair Junior Antunes da Silva, Letícia Sofka Mazzi, Bruna Casagrande Cagliari, Guilherme Faccin Huth (Equipe)</i> <i>Paulo Francisco Butzen, Raphael Martins Brum (Mentores)</i>
9:55	Sistema de Detecção de Incêndio Florestal baseado em Árvores Inteligentes, UFPB <i>Rafael Senna Benatti, Maria Paula Medeiros Gomes Miguel, Mariana Marques Ferreira (Equipe)</i> <i>Cleonilson Protasio de Souza (Mentor)</i>
10:10	Nile: Um Sistema Inteligente para Criação de Tilápias, UFPE <i>Alexandre Henrique Soares da Silva Filho, Vinícius Cardoso Novaes, Filipe Baptistella Vieira, Gabriel Almeida Schneider, Sara Nicolay Ferreira Lins, Daniel Nascimento dos Santos (Equipe)</i> <i>Edna Barros (Mentora)</i>
10:25	Omni, IFRS – Campus Rio Grande <i>Garrenlus de Sousa, Mateus Orlandin Lorenzatti, Rafael Humann Petry (Equipe)</i> <i>Felipe Martin Sampaio, Renato Ribas (Mentores)</i>
10:40	Sensoriamento de Berços de Atracação de Navios, UFPE <i>Gabriel Lopes de Albuquerque Dutra, Daniel Costa Sampaio, Thiago Victor Mações Cavalcanti, Paulo de Oliveira Guedes, Matheus Vieira (Equipe)</i> <i>Edna Barros (Mentora)</i>
10:55	Considerações Finais

Sponsor Talks

Tuesday, August 24th

Room 1

Time: 15:40 – 17:40

Session Chair: Jacobus Swart, UNICAMP

15:40	“The Semiconductor Industry in the Heart of Europe” <i>Wim Sohler, Flanders Investment & Trade, Belgium</i>
16:00	“Stimulating and supporting the local Semiconductor ecosystem” <i>Paul Malisse, Imec, Belgium</i>
16:20	Accelerating Advancement in the Lab and Classroom with Keysight <i>Mauricio Kobayashi, Keysight, Brazil</i>
16:40	“Oportunidades e Perspectivas para a Indústria de Semicondutores no Brasil no Pós Pandemia” <i>Rosana Casais, ABISEMI, Brazil</i>
17:00	“Development of IoT LPWAN Devices” <i>Rogério Moreira, SMART Modular Technologies Brazil</i>
17:20	“Challenges and Opportunities for Global Semiconductor Businesses” <i>Izaías Silva, SILVACO, Brazil</i>
17:40	“ASIC design for ultra-low power consumption coherent optical DSPs” <i>Jacklyn D. Reis, Idea! Electronics Systems, Brazil</i>

This session will also be broadcasted on-line on youtube channel for non-registered participants at <https://www.youtube.com/watch?v=fSrb7Cdh-Pc>

Panel Session

Wednesday, August 25th

Room 1

Session Chairs: Davies William de Lima Monteiro and Roberto Panepucci

Time: 15:40 – 17:40h

Title: “Product Development - Open Labs or MPW foundry runs”

Panelists and topics:

Romano Hoofman, imec, Belgium	foundry services on ‘More-than-Moore’ technologies
Michael Skvarla, CNF/NNCI, USA	open access user facilities in the NNCI and the operation of the nanofabrication facility CNF at Cornell University
Ruben Sommer, CBPF/Sisnano, Brazil	Brazil’s SisNano Open Lab initiative in Nanotechnology
Flavio Plentz, UFMG, Brazil	startups making use of the available infrastructure to develop new products

This session will also be broadcasted on-line on youtube channel for non-registered participants at <https://www.youtube.com/watch?v=Yt-V2sBI-dc>

Business Forum

Thursday, August 26th

Room 1

Session Chairs: Linnyer Beatryz Ruiz Aylon

Time: 15:40 – 17:40h

Title: “Estratégias Brasileiras para Semicondutores”

Participants:

- Alex Melo, ABISEMI;
- Dônes Lima, Softex;
- Henrique Miguel, MCTI.

This session will also be broadcasted on-line on youtube channel for non-registered participants at <https://www.youtube.com/watch?v=wJ9nVtWrnLs>

Women in Microelectronics

Friday, August 27th

Room 1

Session Chairs: Linnyer Beatryz Ruiz Aylon

Time: 15:40 – 17:40h

Title: “TBD”

Participants: TBD

This session will also be broadcasted on-line on youtube channel for non-registered participants at <https://www.youtube.com/watch?v=X72lzL4iZXs>