

37TH SBMICRO
36TH SBCCI
7TH INSCIT
13TH WCAS
23RD SFORUM
1ST CHIP INCLUSIVO

CHIP in RIO



RIO DE JANEIRO AUGUST 28TH TO SEPTEMBER 2ND 2023



RIO DE JANEIRO AUGUST 28TH TO SEPTEMBER 2ND 2023

CHIP IN RIO 2023 ORGANIZING COMMITTEE

GENERAL CHAIR

Patrícia Lustoza de Souza, PUC-Rio, Brazil

LOCAL ARRANGEMENTS

Ana Barros, CEFET Rio, Brazil

Fabian Olivera, CEFET Rio, Brazil

Germano Penello, UFRJ, Brazil

Guilherme Torelly, PUC-Rio, Brazil

Maurício Pamplona Pires, UFRJ, Brazil

Roberto Jakomin, UFRJ, Brazil

FINANCE CHAIRS

Jacobus Swart, Unicamp, Brazil

Aymara Villela, Unicamp, Brazil

Celina Yunaka USP, Brazil

EXHIBITION CHAIR

Maurício Pamplona Pires, UFRJ, Brazil

PANELS CHAIR

Marcelo Lubaszewski, UFRGS, Brazil

MESSAGE FROM THE ORGANIZING COMMITTEE

The **Chip in** conference series is the most important international congress in the field of microelectronics and microtechnologies, held annually in Brazil, encompassing five different events, namely: Symposium on Microelectronics Technology and Devices – SBMicro, Symposium on Integrated Circuits and Systems Design – SBCCI, International Symposium on Instrumentation Systems, Circuits and Transducers – INSCIT, Workshop on Circuits and Systems Design – WCAS and Student Forum – SForum. They form the largest forum in Latin America for discussions and debates in those fields, ranging from conception, design, processing and modelling of devices and systems to characterization of integrated circuits, sensors, actuators, microstructures, instrumentation as well as product development. In 2023, named **Chip in Rio 2023**, it will take place in Rio de Janeiro, the iconic city of the country, with breathtaking landscapes. The Rio de Janeiro community is proud of hosting this back to face-to-face issue and we are very enthusiastic to welcome all the conference attendees.

We thank Brazilian authorities, scientific societies, national and international institutions for their support and private sponsors for their generous contributions.

During **Chip in Rio 2023**, a parallel event with outreach workshops and seminars in different underprivileged communities in Rio de Janeiro, called **Chip inclusivo**, will take place for the first time. We expect this initiative will become part of the **Chip in** series in the future.

We hope that this Conference will be scientifically stimulating and productive, and wish you enjoy visiting Rio de Janeiro.



INTRODUCTION

The **Chip in** series takes place annually in Brazil since 2000. In that year the Brazilian Symposium on Microelectronics Technology and Devices (SBMicro) and the Symposium on Integrated Circuits and Systems Design (SBCCI) merged into a single congress, in 2001 the Student Forum (SForum) was introduced, and they were joined in 2011 by the Workshop on Circuits and Systems Design (WCAS) and in 2016 by the Symposium on Instrumentation Systems, Circuits and Transducers (INSCIT). Since then the series encompasses all five events, which keep their original characteristics, having each its own Program Chair. The previous issues were:

- 2022 Chip in the Minuano – Rio Grande do Sul (virtual)
- 2021 Chip in the Fields – Campinas, São Paulo (virtual)
- 2020 Chip in the Fields – Campinas (cancelled due to the pandemic)
- 2019 Chip in Sampa – São Paulo, São Paulo
- 2018 Chip in the Pampa – Bento Gonçalves, Rio Grande do Sul
- 2017 Chip on the Sands – Fortaleza, Ceará
- 2016 Chip on the Mountains – Belo Horizonte, Minas Gerais
- 2015 Chip in Bahia – Salvador, Bahia
- 2014 Chip in Aracaju – Aracaju, Sergipe
- 2013 Chip in Curitiba – Curitiba, Parana
- 2012 Chip in Brasília – Brasília, DF
- 2011 Chip on the Cliffs – João Pessoa, Paraíba
- 2010 Chip in Sampa – São Paulo, São Paulo
- 2009 Chip on the Dunes – Natal, Rio Grande do Norte
- 2008 Chip in the Pampa – Gramado, Rio Grande do Sul
- 2007 Chip in Rio – Rio de Janeiro, Rio de Janeiro
- 2006 Chip in the Mountains – Ouro Preto, Minas Gerais
- 2005 Chip in the Island – Florianopolis, Santa Catarina
- 2004 Chip on the Reefs – Porto de Galinhas, Pernambuco
- 2003 Chip in Sampa – São Paulo, São Paulo
- 2002 Chip in the Pampa – Porto Alegre, Rio Grande do Sul
- 2001 Chip in Pirenópolis – Pirenópolis, Goiás
- 2000 Chip in the Jungle – Manaus, Amazonas

37TH SYMPOSIUM ON MICROELECTRONICS TECHNOLOGY AND DEVICES - SBMICRO

PROGRAM CHAIRS

Michelly de Souza, FEI, SP, Brazil
Roberto Jakomin, UFRJ, RJ, Brazil
Valeriya Kilchytska, UV Louvain – Belgium

TUTORIAL CHAIR

Marcelo Pavanello, FEI, Brazil

PUBLICITY CHAIR

Linyer Ruiz, UEM, Brazil

PUBLICATION CHAIR

Jhonattan Cordoba, UFMG, Brazil

LIAISON CHAIRS AMERICAS/ASIA/EUROPE

Gottfried Strasser, TU-Vienna, Austria
Cor Claeys, IMEC, Belgium
Peter Qiang Liu, University of Buffalo, USA
Matias Miques, UCU, Uruguay
André Saraiva, Diraq, Australia

36TH SYMPOSIUM ON INTEGRATED CIRCUITS AND SYSTEMS DESIGN - SBCCI

PROGRAM CHAIRS

Ney Calazans, Brazil
Diana Göhringer, TU-Dresden, Germany

TUTORIAL CHAIR

Fabian Olivera, CEFET Rio, Brazil

PUBLICITY CHAIR

Ricardo Reis, UFRGS, Brazil

PUBLICATION CHAIR

Rafael Garibotti, PUC-RS, Brazil

LIAISON CHAIRS

Luciano Ost, Loughborough University, UK
Matheus Trevisan Moreira, Meta, USA

13TH WORKSHOP ON CIRCUITS AND SYSTEMS DESIGN - WCAS

PROGRAM CHAIRS

Arthur Liraneto, Cadence Design Systems
Sandro Binsfeld Ferreira, UNISINOS, São Leopoldo, Brazil

PUBLICITY CHAIR

Linyer Ruiz, UEM, Brazil

7TH SYMPOSIUM ON INSTRUMENTATION SYSTEMS, CIRCUITS AND TRANSDUCERS - INSCIT

PROGRAM CHAIRS

Sebastian Yuri Catunda, UFRN, Brazil
Fernando Sousa, UFSC, Brazil
Elyson Carvalho, UFS, Brazil

PUBLICITY CHAIR

Raimundo Freire, UFCG, Brazil

PUBLICATION CHAIR

Diomadson Belfort, UFRN, Brazil

LIAISON CHAIRS

Max Cortner, IEEE-IMS, USA
Jorge F. Daher, CIEA, Uruguay
Chi Hung Hwang, NARLabs, Taiwan
Dominique Dallet, IMS, France

23RD STUDENT FORUM - SFORUM

PROGRAM CHAIRS

Cristina Meinhardt, UFSC, Brazil
Germano Maioli Penello, UFRJ, Brazil

PUBLICITY CHAIR

Linyer Ruiz, UEM, Brazil

PUBLICATION CHAIR

Cristina Meinhardt, UFSC, Brazil

Chip in Rio 2023 will be held at the Museu de Arte do Rio - MAR and the plenary talks will take place at the Museu do Amanhã, both located in downtown Rio de Janeiro, facing each other.



MAR • Museu de Arte do Rio

Praça Mauá, 5 - Centro - Rio de Janeiro
RJ - CEP: 20081-240



MdA • Museu do Amanhã

Praça Mauá, 1 - Centro - Rio de Janeiro
RJ - CEP: 20081-240

GENERAL INFORMATION

Rio de Janeiro is a beautiful cosmopolitan city by the coast with a unique geography, combining rocks, mountains with breathtaking beaches. The largest urban forest in the world is in Rio de Janeiro. It is the destination of many tourists seeking for natural beauty, culture and a friendly atmosphere. Since Rio de Janeiro is a large city with significant social contrast, we advise you to beware of pickpockets.

WEATHER

The average temperature in Rio de Janeiro during August is 23°C. Traditionally, this has been the dry season, but in the past years we have seen some rain in this period.

EXHIBITORS

The exhibit will take place at Mirante and Foyer, 5th and 6th floors of the Museu de Arte do Rio. The exhibitors are:

Cadence
Chip inclusivo
Chipus
EnSilica
EV Group
Imec
Rigol
Senai
Siborg
Silvaco
Synopsys
WG3

SOCIAL PROGRAM

Monday August 28th from 6:30 – 8:00 pm

Welcome reception at Varanda Carioca and Room 3.1 - MAR

Thursday August 31st at 7:00 pm

Conference dinner at Cais do Oriente

AWARDS

- **Padre Landell de Moura 2023 Prize** • created in 2007 to stimulate research and innovation activities in the field of Microelectronics, to celebrate and to recognize Padre Landell de Moura achievements.
- **José Camargo da Costa Prize** • given to the best Masters' dissertation and Ph. D's thesis in the fields of Fabrication Processes in Micro and Nanoelectronics and Design and Testing of Integrated Circuits.
- **Best Paper Awards**

1ST CHIP INCLUSIVO

A parallel event with outreach workshops and seminars in different underprivileged communities in Rio de Janeiro will take place for the first time.

The activities will be conducted by:



TEM MENINA NO CIRCUITO

Group winner of the “Nature Awards for Inspiring Women in Science”, in the “Science Outreach” category, promoted by the journal Nature.



MANNA TEAM

One of the largest network of researchers in the field of Exponential Technologies, the ones that have a potential to shape society, such as Internet of Things, Robotics and Artificial Intelligence.



LAPED

Laboratório de Pesquisa em Ensino e Divulgação de Ciência, dedicated to upbringing professionals in the field of Science Education and Outreach Initiatives. The group brings together theoretical, experimental and applied science to better develop Science Education. It also connects science teachers with research based at universities, promotes upbringing courses for science teachers, carries out workshops of modern science for high school students and develops experimental kits to introduce scientific concepts to elementary schools’ pupils.



DISSE

Instituto Nacional de Ciência e Tecnologia em Dispositivos Semicondutores, performs research on infrared photodetectors and solar cells, considered strategic devices, as well as on epitaxial growth of semiconductor nanostructures, irrigating scientific partners with excellent quality samples. Topics on basic research are concentrated on 2D materials, photonic crystals, polaritons and spin effects, which we consider to have great potential for the devices of tomorrow.



VENUES

Nave do Conhecimento da Penha e de Padre Miguel

PROGRAM

- 1. Tem Menina no Circuito** • Maleable electric circuits, workshop of circuits with papers and modeling dough using LEDs, motors, paper and batteries. Indicated for children over 9 years.
September 1st all day at Nave do Conhecimento de Padre Miguel
- 2. LAPED** • Seminar by Prof. Vitor Acioly, Sirius, the new Brazilian particle accelerator and the cutting-edge technology made by Brazilians.
September 1st afternoon at Nave do Conhecimento de Padre Miguel
- 3. DISSE** • Seeing the Invisible (Vendo o Invisível), Experiments to perceive infrared radiation.
September 1st morning at Nave do Conhecimento da Penha
- 4. Manna Team** • MannAcademia Internet de Drones (IoD)
September 1st afternoon at Nave do Conhecimento da Penha
- 5. Manna Team** • MannAcademia de Internet das Coisas Robóticas (IoRT)
September 2nd morning at Nave do Conhecimento da Penha
- 6. Manna Team** • MannAcademia de Inovação
September 2nd afternoon at Nave do Conhecimento da Penha

MAP



PROGRAM AT A GLANCE

MONDAY 28.08

08:00			
08:20	Registration Pilotis MAR		
08:40			
09:00	ROOM 2.2	AUDITORIUM MAR	
09:20	Tutorials Design of Supply Regulators for High Efficiency RF Transmitters	Tutorials SBMicro 2D Materials and their Role in Future Electronics	
09:40	Jose Silva-Martinez, Texas A&M University, College Station, EUA	Frank Schwier, Technische Universität Ilmenau, Germany	
10:00			
10:20	Coffee Break Foyer and Mirante MAR		
10:40			
11:00	ROOM 2.2	AUDITORIUM MAR	
11:20	Tutorials Electronic Physical Design Automation - Fundamentals and Challenges	Tutorials SBMicro High Performance Quantum Computing in Nanoelectronics	
11:40	Ricardo Reis, Universidade Federal do Rio Grande do Sul, Brazil	Adam W. Skorek, University of Québec, Canada	
12:00			
12:20			
12:40			
13:00	LUNCH		
13:20			
13:40			
14:00	ROOM 2.2	AUDITORIUM MAR	ROOM 2.3
14:20	Tutorials Approximate Computing: Advanced VLSI Design Techniques for Energy-Efficient CMOS Accelerators	Tutorials SBMicro From micro-semiconductor devices to the discovery of the black hole in the Milky way	CECCI Council
14:40	Sergio Bampi, Universidade Federal do Rio Grande do Sul, Brazil		
15:00	Coffee Break Foyer and Mirante MAR		
15:20			
15:40	Coffee Break		
16:00	ROOM 2.2	AUDITORIUM MAR	ROOM 2.3
16:20	IEEE CEDA Brazil Chapter Meeting	Tutorials SBMicro Reliability of Metal Gate / High-K CMOS devices	APCI
16:40			
17:00			
17:20	AUDITORIUM MAR		
17:40	SBMicro Assembly		
18:00			
18:20			
18:40	VARANDA CARIOCA + ROOM 3.1		
19:00	Welcome reception		
19:20			
19:40			

TUESDAY 29.08

Registration Pilotis MAR				08:00
				08:20
				08:40
AUDITORIUM MUSEU DO AMANHÃ Opening				09:00
				09:20
AUDITORIUM MUSEU DO AMANHÃ Otavio Schiper Recent projects at the intersections of art, science and technology				09:40
				10:00
				10:20
Coffee Break at Museu do Amanhã				10:40
AUDITORIUM MUSEU DO AMANHÃ Gottfried Strasser On-Chip Sensing Monolithically Integrated Quantum Cascade Devices				11:00
				11:20
				11:40
AUDITORIUM MUSEU DO AMANHÃ Peter Beerel Efficient and Trustworthy AI at the Edge				12:00
				12:20
				12:40
LUNCH				13:00
				13:20
				13:40
				14:00
AUDITORIUM MAR SBMicro Session I Electrical Characterization	ROOM 2.2 SBCCI Analog and Mixed Signal Circuits	ROOM 3.1 INSCIT I	ROOM 2.3 Paul Malisse - IMEC	14:20
				14:40
				15:00
				15:20
AUDITORIUM MAR CECCI Assembly	VARANDA CARIOCA Poster session			15:40
	Coffee Break Foyer			16:00
	ROOM 2.2 Ray Ross - Cadence	VARANDA CARIOCA Poster session		16:20
				16:40
AUDITORIUM MAR Panel: How far can Artificial Intelligence go without advanced chips?				17:00
				17:20
				17:40

WEDNESDAY 30.08

Registration Pilotis MAR				08:00
				08:20
				08:40
AUDITORIUM MUSEU DO AMANHÃ Valeriya Kilchytska Advanced SOI-based MOSFETs for Analog and RF applications: electrical characterization perspectives				09:00
				09:20
				09:40
AUDITORIUM MUSEU DO AMANHÃ Muhammad Al Faruque Cross-Layer Security of Embedded and Cyber-Physical Systems				10:00
				10:20
				10:40
Coffee Break at Museu do Amanhã				11:00
AUDITORIUM MUSEU DO AMANHÃ Women in Microelectronics Dra. Linnyer Ruiz, Rosana Casais (ABISEMI) and others				11:20
				11:40
				12:00
				12:20
				12:40
LUNCH				13:00
				13:20
				13:40
				14:00
AUDITORIUM MAR SBMicro Session II Photovoltaics and Photodetectors	ROOM 2.2 SBCCI Digital Circuits and Applications	ROOM 3.1 INSCIT 2	ROOM 2.3 WCAS Low Power Design and Verification Bootcamp by Cadence	14:20
				14:40
				15:00
				15:20
Coffee Break Foyer and Mirante MAR				15:20
AUDITORIUM MAR SBMicro Session III Device and Circuit Simulation	ROOM 2.2 SBCCI EDA Test and Reliability	ROOM 3.1 INSCIT 3	ROOM 2.3 WCAS Low Power Design and Verification Bootcamp by Cadence	15:40
				16:00
				16:20
				16:40
AUDITORIUM MAR Panel: How ready is Brazil to host new chip manufacturing and design companies?				17:00
				17:20
				17:40



THURSDAY 31.08

Registration Pilotis MAR				08:00
				08:20
				08:40
AUDITORIUM MAR SBMicro Session IV Transistor modeling and characterization	ROOM 2.2 SBCCI SoC, NoC and Reconfigurable Circuits	ROOM 3.1 INSCIT 4	ROOM 2.3 WCAS State-of-the-art Industry Verification Flow Bootcamp by Ensilica	09:00
				09:20
				09:40
				10:00
				10:20
Coffee Break Foyer		Coffee Break Foyer		10:40
Celebrating 40 years of SBCCI CECCI Awards				11:00
AUDITORIUM MAR SBMicro Session V Effects of Temperature on Semiconductor Devices	ROOM 2.2 SBCCI Radio Frequency Circuits	ROOM 3.1 INSCIT 5	ROOM 2.3 WCAS State-of-the-art Industry Verification Flow Bootcamp by Ensilica	11:20
				11:40
				12:00
				12:20
				12:40
LUNCH				13:00
				13:20
				13:40
				14:00
AUDITORIUM MAR Business Forum	ROOM 2.2 IEEE CASS Workshop Current Trends in IC Design	VARANDA CARIOCA Poster Session II		14:20
				14:40
				15:00
				15:20
				15:40
Coffee Break		Coffee Break Foyer and Mirante MAR		15:40
AUDITORIUM MAR Business Forum	VARANDA CARIOCA Poster Session II		16:00	
			16:20	
			16:40	
AUDITORIUM MAR Panel: Novas Políticas para o Desenvolvimento da Indústria de Semicondutores no Brasil				17:00
				17:20
				17:40
				18:00
				18:20
				18:40
CAIS DO ORIENTE Conference Dinner				19:00
				19:20
				19:40
				20:00
				20:20

FRIDAY 01.09

08:00	Registration Pilotis MAR			
08:20				
08:40	AUDITORIUM MAR SBMicro Session VI Sensors and Actuators	ROOM 2.2 SBCCI EDA, Test and Reliability - II	ROOM 3.1 SForum Invited Talk and Best Paper Candidates	ROOM 2.3 WCAS Test & Measurement
09:00				ROOM 2.3 WCAS Test & Measurement
09:20				
09:40				
10:00				
10:20	Coffee Break Foyer and Mirante MAR			
10:40	AUDITORIUM MAR Semiconductors: opportunities in European Union and Brazil			
11:00	AUDITORIUM MAR CA-ME			
11:20				
11:40				
12:00	AUDITORIUM MAR SBMicro Session VII Novel Materials and Devices	ROOM 2.2 SBCCI Visual Signal Processing Systems	ROOM 3.1 INSCIT 6	ROOM 2.3 WCAS Industrial sessions
12:20				
12:40				
13:00				
13:20				
13:40				
14:00				
14:20				
14:40	AUDITORIUM MAR SBMicro Session VIII Photonics and Optoelectronics	ROOM 2.2 SBCCI Digital Circuits and Applications II	ROOM 3.1 INSCIT 7	ROOM 2.3 WCAS
15:00				
15:20				
15:40				
16:00				
16:20	AUDITORIUM MAR Awards & Closing			
16:40				
17:00				
17:20				
17:40				
18:00				
18:20				
18:40				
19:00				
19:20				
19:40				
20:00				
20:20				

PROGRAM CHIP IN RIO 2023

KEYNOTE SPEAKERS

Monday, August 28th • Auditorium Museu do Amanhã

9:00 – 9:40 Opening

Tuesday, August 29th • Auditorium Museu do Amanhã

9:40 – 10:40 Otávio Schipper

Recent projects at the intersections of art, science and technology

11:00 – 12:00 Gottfried Strasser, Technical University of Vienna, Austria

On-Chip Sensing Monolithically Integrated Quantum Cascade Devices

12:00 – 13:00 Peter Beereel, University of Southern California, EUA

Efficient and Trustworthy AI at the Edge

Wednesday, August 30th • Auditorium Museu do Amanhã

9:00 – 10:00 Valeriya Kilchytska, Université Catholique de Louvain, Belgium

Advanced SOI-based MOSFETs for Analog and RF applications: electrical characterization perspectives

10:00 – 11:00 Muhammad Al Faruque, University of California Irvine, USA

Cross-Layer Security of Embedded and Cyber-Physical Systems

11:20 – 12:40 Moderator Profa. Dra. Linyer Ruiz, President of SBMicro and participants: Rosana Casais (ABISEMI) and others

Women in Microelectronics



PANELS

Tuesday, August 29th • Auditorium MAR

17:00 – 18:00 **How far can Artificial Intelligence go without advanced chips?**

Moderator

Edmundo Silva, Universidade Federal do Rio de Janeiro, Brazil

Panelists

Peter Beereel, University of Southern California, EUA

Frank Schwierz, Technische Universität Ilmenau, Germany

Adam W. Skorek, University of Québec, Canada

Wednesday, August 30th • Auditorium MAR

17:00 – 18:00 **How ready is Brazil to host new chip manufacturing and design companies? What is still missing?**

Moderator

Victor Grimblatt, Synopsys, Chile

Panelists

Raymond Ross, Cadence, Brazil

Rogério Nunes, Smart Modular Technologies, Brazil

Murilo Pessati, Chipus, Brazil

Thursday, August 31st • Auditorium MAR

17:00 – 18:00 **Novas Políticas para o Desenvolvimento da Indústria de Semicondutores no Brasil**

Moderadora

Fernanda Kastensmidt, Universidade Federal do Rio Grande do Sul, Brazil

Panelistas

Henrique Miguel, MCTI

Rogério Nunes, Presidente da ABISEMI

Linyer Ruiz Aylon, Presidente da SBMicro

GROUP MEETINGS

Monday, August 28th

- 14:00 – 15:20 **Room 2.3** • CECCI Council Meeting
15:40 – 15:00 **Room 2.3** • APCI Meeting Tech update Cadence
16:00 – 17:00 **Room 2.2** • IEEE CEDA Brazil Chapter Meeting
17:00 – 18:20 **Auditorium MAR** • SBMicro Assembly

Tuesday, August 29th

- 15:40 – 16:40 **Auditorium MAR** • CECCI Assembly

Friday, September 1st

- 11:00 – 12:00 **Auditorium MAR** • CA-ME Meeting

PRESENTATIONS BY SPONSORS

Tuesday, August 29th

- 14:20 – 15:40 **Room 2.3** • IMEC, Tuesday Paul Malisse,
16:20 – 17:00 **Room 2.2** • Cadence Ray Ross

BUSINESS FORUM

Thursday, August 31st • Auditorium MAR

- 14:20 - 17:00 Business Forum
Moderator
Dra. Linnyer Ruiz, President of SBMicro
Participants
Henrique Miguel (MCTI), Diônes Lima (Softex) and José Bertuzzo (Instituto Eldorado)

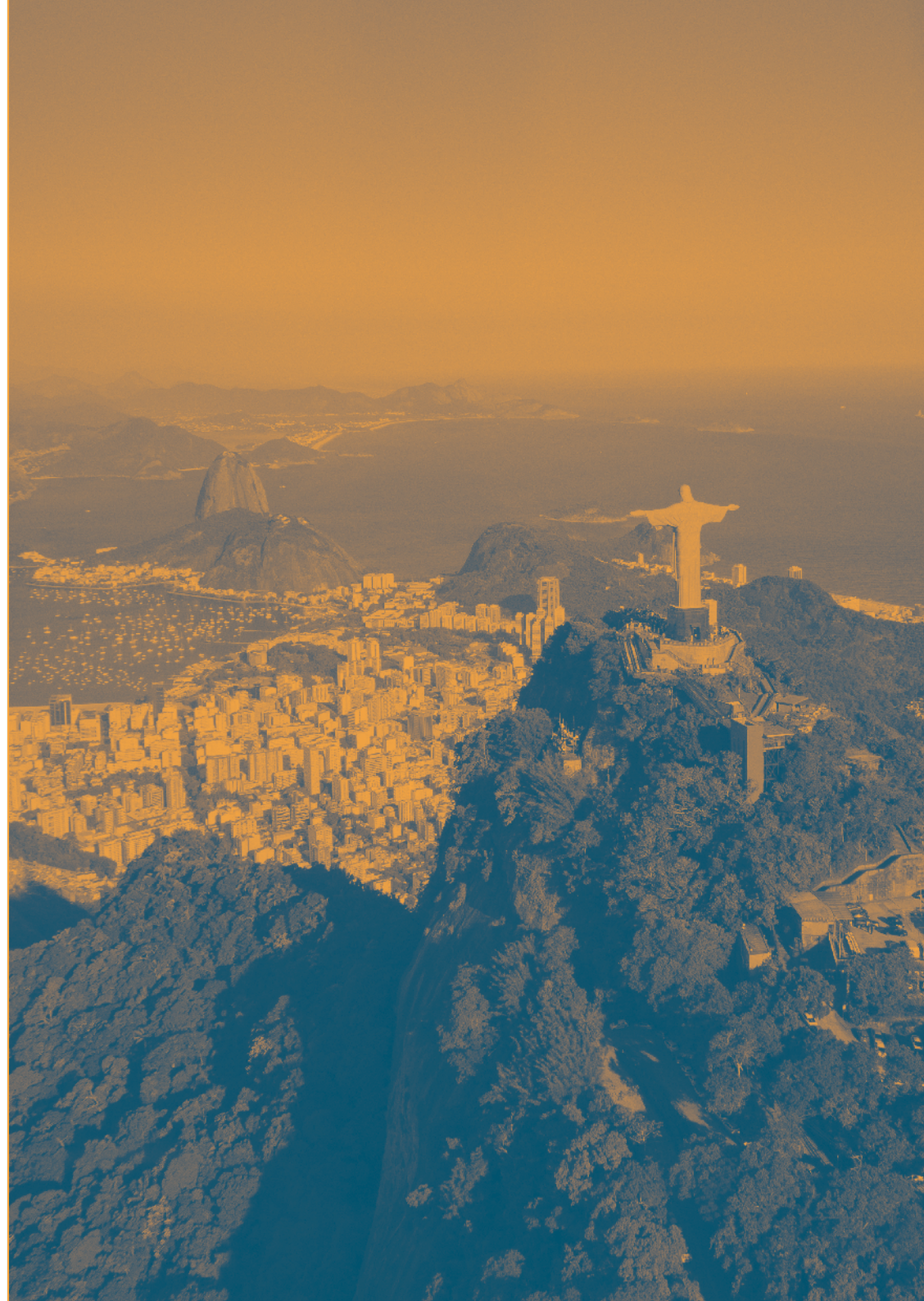
CLOSING AND AWARDS CERIMONY

Thursday, August 31st • Room 2.2

- 11:40 – 12:00 Celebrating 40 years of SBCCI - CECCI Awards

Friday, September 1st • Auditorium Museu de Arte do Rio

- 17:00 – 18:00 Best Paper Awards
Padre Landell de Moura
José Camargo da Costa



SBMICRO 2023 PROGRAM

Monday, August 28th

TUTORIALS

- 9:00 – 10:40 **2D Materials and their Role in Future Electronics**
Frank Schwierz, Technische Universität Ilmenau, Germany
- 11:00 – 12:40 **High Performance Quantum Computing in Nanoelectronics**
Adam W. Skorek, University of Québec, Canada
- 14:00 – 15:20 **From micro-semiconductor devices to the discovery of the black hole in the Milky way**
Edmundo Gutierrez, National Institute for Astrophysics, Optics and Electronics, Mexico
- 15:40 – 17:00 **Reliability of Metal Gate / High-K CMOS devices**
Andreas Kerber, Intel, EUA

Tuesday, August 29th

SESSION I: ELECTRICAL CHARACTERIZATION

- 14:20 **CMOS Ring Oscillator Aging**
Andreas Kerber, Intel, U.S.A.
- 15:00 **Influence of the source/drain doping region on the reconfigurability of BESOI MOSFET**
Daniel Ramos, Ricardo Rangel, Katia Sasaki, Pedro Duarte and João Martino
- 15:20 **Experimental Characterization of Switching Properties of ReRAM Devices by the Capacitance Measurements**
Fernando Costa, Aseel Zeinati, Renan Trevisoli, Durga Misra and Rodrigo Doria

POSTER SESSION I

- 15:40 – 17:00 **Analysis of Low-Dropout Voltage Regulator designed with Gate-All Around nanosheet transistors**
Rayana Carvalho, João Martino and Paula Agopian
- Anti-reflective system for photodetectors to reduce the reflectance in the SWIR range**
Marcelo Rua, Rudy Kawabata, Paulo Victor Costa, Ana Carolina Monteiro, Leila Rosa Cruz, Carlos Luiz Ferreira and Patricia Souza
- Development of a robust system for substrate preparation and growth of MoS₂ thin films for application in thermoelectric**
Flavio Assahi, João Ider, Adhimar Oliveira, Rero Rubinger and Carla Rubinger
- Development of resistors with TaxNy deposited by RF sputtering using lithography technique.** Rodrigo Reigota César, Melissa Mederos Vidal, Ednan Joanni, Vivian Andrade, Ricardo Teixeira and José Alexandre Diniz
- Low-Cost Ultraviolet Radiation Sensor Using Epoxy-Resin Optical Filters Over MOS Photodiodes**
Fernando Lucas Nogueira Santos, Sebastião dos Santos Filho and João Martino
- Mobility Extraction Methods in AlGaN/GaN HEMTs**
Eduardo Panzo, Eddy Simoen, Nilton Graciano Júnior, Maria Glória Caño de Andrade
- Reliability Aspects and Study of Copper Seed Deposition on Polyimide via Sputtering**
Leonardo Shimizu Yojo, Favero Santos, Fagnaldo Braga Pontes, Carlos Raimundo Pereira dos Santos, Willyan Hasenkamp and Elvio Carlos Dutra e Silva Jr.
- Skin-on-a-chip: a Microfluidic Device Development using a Photolithography-based Microfabrication Process**
Luíse Cambuzzi Dalló, Sabrina Esperança Nunes, Samuel Tavares Maraschin, Letícia de Menezes Mariano, Tayná Copes Rodrigues, Ariadna Shuck, Sandro Binsfeld Ferreira, Iara Fernandes and Celso Peter
- The Five Priority Topics of Microelectronics Training to Meet Future Societal Challenges**
Olivier Bonnaud

Wednesday, August 30th

SESSION II: PHOTOVOLTAICS AND PHOTODETECTORS

- 14:00 Measurement and Characterization of a PV Cell for Indoor Visible Light Communication
Vitória Monteiro, Diego Maran de Mattos, Paulo César Comasseto Aguirre, Lucas Compassi Severo and Alessandro Gonçalves Girardi
- 14:20 Analytical and numerical simulations of surface-modified glass coverslips to enhance energy harvesting on indoor MOS solar cells
Gabriel Louzada, Marcos Watanabe and Sebastião dos Santos Filho
- 14:40 Electrical Characterization and Modeling of SiO/SiO₂ Layers for Passivation of Indoor MOS Solar Cells for Energy Harvesting
William Shiga, Marcos Watanabe and Sebastião dos Santos Filho
- 15:00 Effect of the Substrate Bias on the Electrical Characteristics of UTBB PIN Diodes Working as Photodetectors
Fernando Oliveira Souza da Silva and Rodrigo Doria

SESSION III: DEVICE AND CIRCUIT SIMULATION

- 15:40 Monitoring the Temperature of a Nanowire SOI MOSFET Using a Neighbor PIN Diode
Felipe Carnielli and Marcelo Pavanello
- 16:00 Analysis of the trade-off between voltage gain and frequency response of OTA designed using experimental data of omega-gate nanowire SOI MOSFETs
Gustavo de Araujo, João Martino and Paula Agopian
- 16:20 Junctionless Transistors Based Current Mirrors: Analog Figures of Merit Dependence on the Devices Width
Andre Shibutani, Renan Trevisoli and Rodrigo Doria
- 16:40 Temperature influence on Operational Transconductance Amplifier designed with triple gate SOI FinFETs
Henrique Hilkner, Paula Agopian and João Martino

Thursday, August 31st

SESSION IV: TRANSISTOR MODELING AND CHARACTERIZATION

- 09:00 MOSFETs with Stacked 2D Nanosheet Channels – An Auspicious Option to Delay Forever
Frank Schwierz, Technische Universität Ilmenau, Germany
- 09:40 Compact Modeling of Transition Metal Dichalcogenide Ballistic Transistors
Adelcio de Souza, Daniel Ricardo Celino and Murilo Araujo Romero
- 10:00 Unveiling the Potential Profile for Channel Access in Staggered Organic Thin-Film Transistors
Stefan Blawid and Shabnam Donnhäuser
- 10:20 Experimental Comparison of Threshold Voltage Extraction Methods in SOI Nanowire Transistors
Vinícius Prates, Marcelo Pavanello and Michelly de Souza
- 10:40 Interface Trap Density of Commercial 1.7 kV SiC Power MOSFETs
Lucas Spejo, Samuel Lucidi, Marcos Vinicius Puydinger dos Santos, José Alexandre Diniz and Renato Amaral Minamisawa

SESSION V: EFFECTS OF TEMPERATURE ON SEMICONDUCTOR DEVICES

- 11:20 Cryogenic characterization and modeling of advanced CMOS technologies at 4.2 K and below
Edmundo Gutierrez, National Institute for Astrophysics, Optics and Electronics, Mexico
- 12:00 Electrical Characterization of Ω -Gate Nanowire MOSFETs Down to Cryogenic Temperatures
Jefferson Almeida Matos, Michelly de Souza, Mikael Cassé, Sylvain Barraud, Olivier Faynot and Marcelo Antonio Pavanello
- 12:20 Low field Mobility Degradation Factors Temperature Dependence in Two level Stacked Nanowire MOSFETs from 120K to 400K
Jaime Rodrigues, Mikael Cassé, Sylvain Barraud, Maud Vinet, Olivier Faynot and Marcelo Pavanello
- 12:40 Study of the effect of multiple conduction on threshold voltage in a MIS-HEMT from 450 K down to 200 K
Welder Perina, João Martino, Eddy Simoen, Uthayasankaran Peralagu, Nadine Collaert and Paula Agopian

POSTER SESSION II

- 14:20 – 17:00 **Comparing Rectangular and ELT MOSFET layouts under TID**
Paulo Garcia Junior, Guilherme I. Grandesi, Alexis Cristiano Vilas Bôas, Renato Giacomini, Roberto Baginski Batista Santos, Luis Eduardo Seixas and Marcilei Aparecida Guazzelli
- Influence of gate insulator and AlGaN barrier layer on MISHEMT conduction mechanisms**
Bruno Canales, João Martino and Paula Agopian
- Innovative Radiation-Hardened-By-Design Technique to Improve the Tolerance of the Total Ionizing Dose (X-Ray) Effects on the Mismatching of the Analog MOSFETs**
Vinicius Vono Peruzzi, Gabriel Augusto da Silva and Salvador Pinillos Gimenez
- MicroTec TCAD Software Use for Micro- and Nanostructure Course at UAS Jena**
Michael Obrecht and Michael Rueb
- Multiband Rectenna for Radio Frequency Energy Harvesting Applied to Wireless Sensor Network**
Yago Souto and Francisco de Assis Brito Filho
- Novel nanotube multiquantum dot devices**
Roger Tormo Queralt, Christoffer Bo Moller, David A. Czaplewski, Gernot Gruber, Marta Cagetti, Stefan Forstner, Nuria Urgell-Olle, Jennifer Anais Sanchez-Naranjo, Chandan Samantha, Christina S. Miller and Adrian Bachtold
- Preparation and characterization of PVC-PMMA polymer blends as flexible bases for III-V photovoltaics**
Graciana de Sousa, Luciana Dornelas Pinto, Fabiele Collovini Tavares, Guillermo Júnior Nogueira Soares, Rogério Valaski, Roberto Jakomin, Maurício Pamplona Pires and Patrícia Lustoza Souza
- Trade-off between channel length and mechanical stress in the Operational Transconductance Amplifier designed with SOI FinFET**
Arllen Ribeiro, Gustavo de Araujo, João Martino and Paula Agopian

Friday, September 1st

SESSION VI: SENSORS AND ACTUATORS

- 08:40 **Microwave-Based Complementary Split-Ring Resonator for the Detection of Variations in Aqueous Media**
Reinaldo Velasquez, Diego Tami, Gilberto Medeiros Ribeiro, Cássio Gonçalves do Rego and Jhonattan Cordoba Ramirez
- 09:00 **Fabrication and characterization of polymer CMUTs**
Gustavo Marcati A. Alves, Chi Nan Pai and Gustavo Pamplona Rehder
- 09:20 **Frugal Love wave acoustic sensor full platform for in situ operation in liquids**
Ollivier Tamarin, Wejden Gongji, Maxence Rube, Martine Sebeloue, Idris Sadli, Dominique Rebiere, Hatem Ben Ouada and Corinne Dejous
- 09:40 **Assembly of Piezoelectric MEMS Vibration Sensor for Cochlear Implant**
Ricardo Teixeira, Alexander Flacker, Giuliano Maiolini, Rodrigo Reigota César, Guilherme Cartagena Miron and Júlio Apolinário Cordioli
- 10:00 **Electrical characterization of Er-doped PANI/MPS Schottky junctions for sensing naphthalene**
João Henrique Pinton, Lucas Costa Leite, Pedro Henrique Gomes Lopes and Danilo Huanca
- 10:20 **Study of a graphene optical sensor applied in glottic tumor**
Jacilene Medeiros, Fernando Cesar Rufino, Giuseppe Antonio Cirino, Arlindo Neto Montagnoli and José Alexandre Diniz

SESSION VII: NOVEL MATERIALS AND DEVICES

- 12:00 Additive Processed ZnO Transparent Vertical Field Effect Transistor
Sajid Hussain, Fawad Saeed, Lei Wei and Tayeb Mohammed Brahim
- 12:20 Laser-induced graphene in flexible PI/PDMS polymer aiming at application in pressure sensors
Deissy Johanna Feria Garnica, Alexandre Tavares Lopes, Daniel Purificação, Inés Pereyra and Marcelo N.P. Carreño
- 12:40 Fabrication and Characterization of High Performance Supercapacitors with NiCo₂O₄/g-C₃N₄
Tarcísio Lessa, Leandro Marques Samyn, Suresh Babu Rajendran, Matheus Pereira Almeida and Ana L.F. Barros
- 13:00 Characterization of graphene monolayer on a silicon substrate by chemical transfer and lamination for the fabrication of transistors
Letícia Mariano, Sabrina Esperança Nunes, Samuel Tavares da Silva Maraschin, Luíse Cambruzzi Dalló, Sandro Binsfeld Ferreira and Celso Peter

SESSION VIII: PHOTONICS AND OPTOELECTRONICS

- 14:40 Development of Flexible and Conductive PVA-based Material for Wearable Sensor
Tayná Rodrigues, Sabrina E. Nunes, Luíse Cambruzzi Dalló, Letícia M. Mariano, Iara J. Fernandes, Tatiana L. A. C. Rocha and Celso R. Peter
- 15:00 Mapping and Optimization of Oscillator Strength in Quantum Bragg Mirror Detectors as a Function of their Dimensions
Jose Ruiz, Pedro H. Pereira, Germano M. Penello, Guilherme M. Torelly, Patricia L. Souza and Mauricio P. Pires
- 15:20 GaAs/AlGaAs based quantum Bragg mirror detector
Germano Maioli Penello, Pedro Henrique Pereira, Guilherme Torelly, Fernando Fernandes, James Rushing, Jacob A. Tenorio, Paul Simmonds and Alain Quivy

- 15:40 Ultra-Compact Low-Loss Photonic Crystal Waveguide in Serpentine Form
Renan Silva, Gabriel Felipe Novy, Omar Paranaíba Neto and Jhonattan C. Ramirez
- 16:00 Dark Current and Electron Activation Energy in Quantum Bragg Mirror Detectors (QBMDs)
Luis Angel Monzon, Pedro Henrique Pereira, Patricia Lustoza de Souza, Germano Maioli Penello and Mauricio Pamplona Pires
- 16:20 Unlocking the Potential of Photonic Crystals: Exploring Designs for High-Performance Switches
Gabriel Novy, Omar Vilela Neto, Jhonattan Cordoba, Guilherme S. C. Caporali and Talles E. M. Marques

SBCCI 2023 PROGRAM

Monday, August 28th

TUTORIALS

- 09:00 – 10:40 Design of Supply Regulators for High Efficiency RF Transmitters
Jose Silva-Martinez, Texas A&M University, College Station, EUA
- 11:00 – 12:40 Electronic Physical Design Automation - Fundamentals and Challenges
Ricardo Reis, Universidade Federal do Rio Grande do Sul, BR
- 14:00 – 15:40 Approximate Computing: Advanced VLSI Design Techniques for Energy-Efficient CMOS Accelerators
Sergio Bampi, Universidade Federal do Rio Grande do Sul, BR

Tuesday, August 29th

SESSION 1: ANALOG AND MIXED SIGNAL CIRCUITS

- 14:20 A Wireless Weatherproof Acoustic Sensor System to Detect Anomalies in Substation Power Transformers
Gabriel Gialluca, Gustavo T. Gialluca, Bruno Masiero, Eduardo R. de Lima, Larissa M. Almeida and Fabiano Fruett

- 14:40 **Evaluation and Comparison of Offset Compensation Techniques for a Multi-Stage Comparator**
Beatriz Rezende, João L. J. Brum, Martina C. Rodrigues, Lucas C. Severo, Alessandro Girardi, William Prodanov and Paulo C. C. de Aguirre
- 15:00 **Revisiting the Ultra-Low Power Electronic Neuron Towards a Faithful Biomimetic Behavior**
Théo P. Rioufol, Zalfa Jouni, Thomas Soupizet and Pietro M. Ferreira
- 15:20 **Voltage Regulator with Ellipsoidal Transistors**
Marcos P. B. de Lima, Fernando Barúqui and Carlos F. T. Soares

Wednesday, August 30th

SESSION 2: DIGITAL CIRCUITS AND APPLICATIONS I

- 14:00 **A Hardware Design for the Multi-Transform Module of the Versatile Video Coding Standard**
Bianca Silveira, Daniel Palomino, Claudio Diniz and Guilherme Corrêa
- 14:20 **Evaluation of Imprecise Subtractors into Test Zone Search for VVC Encoding**
Rafael Ferreira, Luciano V. Agostini, Claudio Diniz and Bruno Zatt
- 14:40 **4K UHD@60fps Design for the VVC Affine Motion Estimation Reconstructor**
Marcello Muñoz, Denis Maass, Murilo Perleberg, Luciano V. Agostini, Guilherme Corrêa and Marcelo S. Porto
- 15:00 **An Energy-Efficient Interpolation Unit targeting VVC Encoders with Approximate Adder**
Rafael da Silva, Mateus Grellert and Ricardo A. L. Reis

SESSION 3: EDA, TEST AND RELIABILITY - I

- 15:40 **FPGA Placement: Dynamic Decision Making Via Machine Learning**
Timothy Martin, Charlotte Barnes, Gary Grewal and Shawki Areibi

- 16:00 **A Non-Blocking Multistage Interconnection using Regular Clock Schemes for QCA Circuits**
Stefan Leal, Michael Canesche, Omar Paranaiba, José A. Nacif and Ricardo Ferreira
- 16:20 **Effect of Unique Table Implementation in the Performance of BDD Packages**
João Nespolo, Renato Peralta, Paulo Butzen and André I. Reis

Thursday, August 31st

SESSION 4: SOC, NOC AND RECONFIGURABLE CIRCUITS

- 9:00 **Implementation of Image Averaging on DRRA and DiMArch Architectures**
Pudi Dhilleswararao, Goudu Vamsi, Srinivas Boppu, Ritika Ratnu and Ahmed Hemani
- 9:20 **Design of an Advanced System-on-Chip Architecture for Chaotic Image Encryption**
Arthur M. Lima, Lucas G. Nardo, Erivelton G. Nepomuceno, Janier A. Garcia and Jones Y. M. A. Silva
- 9:40 **Secure Network Interface for Protecting IO Communication in Many-cores**
Gustavo Comarú, Rafael Faccenda, Luciano L. Caimi and Fernando G. Moraes
- 10:00 **Hardware Implementation of a Sliding Detection Algorithm for Robotic Hands Using Force Sensors**
Jose M. Peñaloza and Daniel M. Muñoz
- 10:20 **Energy and Computing Assessment of Video Processing Kernels on CPU and FPGA platforms**
Fillipi Mangrich, Joao G. F. Foes, Mateus Grellert and Ismael Seidel
- 10:40 **FPGA-Based Brain-Computer Interface System for Real-Time Eye State Classification**
Christian A. Acuña, Christian Flores and Jimmy Tarrillo

SESSION 5: RADIO FREQUENCY CIRCUITS

- 11:20 A 1.2 V, 80-230 MHz, 1.75 mW Phase Locked Loop N-Integer Clock Synthesizer
Mateus Castro, Leonardo S. Moraes, Fabio K. Pereira and Eduardo R. Lima
- 11:40 A 24.25-30.5GHz Fully Integrated SiGe Phase Shifter/VGA/ Power Amplifier in 0.13 μ m BiCMOS Technology for 5G Beamforming Applications
Anaïs Tourissaud, Eric Kerherve, Nathalie Deltimple, Steeven Voisin and Romain Mathieu
- 12:00 Design of Oscillator and Charge Pump for the Startup of Ultra-Low-Voltage Energy Harvesters
Franciele Nornberg, Marcio B. Machado, Rafael Radin, Carlos Galup-Montoro and Marcio Schneider
- 12:20 Jitter Noise Impact on Analog Spiking Neural Networks: STDP Limitations
Zalfa Jouni, Théo P. Rioufol, Siqi Wang, Aziz Benlarbi-Delai and Pietro M. Ferreira
- 12:40 Study of an Avalanche Compensation Mirror for SiGe High Performance Power Amplifiers dedicated to 5G applications
Anaïs Tourissaud, Eric Kerherve, Nathalie Deltimple and Romain Mathieu

Friday, September 1st

SESSION 6: EDA, TEST AND RELIABILITY - II

- 8:40 Addressing Single-Event-Multiple-Transient Faults in Asynchronous RH-Click Controllers
Felipe Kuentzer, Christos Georgakidis, Christos Sotiriou and Milos Krstic
- 9:00 Memory Controller with Adaptive ECC for Reliable System Operation
Marco P. Stefani, Cesar A. M. Marcon, Felipe Silva and Jarbas Silveira
- 9:20 A Detailed Electrical Analysis of SEE on 28 nm FDSOI SRAM Architectures
Cleiton Marques, Walter C. Bartra, Frédéric Wrobel, Leonardo Brendler Alexandra Zimpeck, Paulo Butzen and Cristina Meinhardt

- 9:40 Towards a Machine Learning based Method for Indirect Test Generation of Mixed-Signal Circuits
Allan F. G. Ferreira, Lucas Zilch, Vinícius Navarro, Marcelo Lubaszewski and Tiago Balen
- 10:00 Power and Performance Costs of Radiation-hardened ML Inference Models Running on Edge Devices
Geancarlo Abich, Anderson I. da Silva, Jonas F. Gava, Altamiro A. Susin, Ricardo A. L. Reis and Luciano C. Ost
- 10:20 ATMR Design by Construction based on Two-level ALS
Gabriel Ammes, Guilherme B. Manske, Paulo Butzen, André I. Reis and Renato P. Ribas

SESSION 7: VISUAL SIGNAL PROCESSING SYSTEMS

- 12:00 Estimating Software and Hardware Video Decoder Energy Using Software Decoder Profiling
Matthias Kränzler, André Kaup and Christian Herglotz
- 12:20 A New Approach to Video Coding Leveraging Hybrid Coding and Video Frame Interpolation
Andre B. Brascher, Gabriela F. da Silveira, Luiz H. Cancellier, Ismael Seidel, Mateus Grellert and Jose L. Güntzel
- 12:40 Low-Energy and Reduced-Area Hardware Architecture for the Versatile Video Coding FME
Vanio R. Filho, Nicole Citadin, Marcio Monteiro, Ismael Seidel, Mateus Grellert and Jose L. Güntzel
- 13:00 An UHD 4K@120fps Hardware for the VVC Prediction Refinement with Optical Flow
Murilo Perleberg, Marcello Muñoz, Denis Maass, Vladimir Afonso, Luciano V. Agostini and Marcelo S. Porto

SESSION 8: DIGITAL CIRCUITS AND APPLICATIONS II

- 14:40 Assessment of Lightweight Cryptography Algorithms on ARM Cortex-M Processors
Nicolas Moura, Joaquim Lucena, Eduardo V. Pereira, Ney L. V. Calazans, Luciano C. Ost, Fernando G. Moraes and Rafael F. Garibotti
- 15:00 Improving the Efficiency of Cryptography Algorithms on Resource Constrained Embedded Systems via RISC-V Instruction Set Extensions
Fernando G. Moraes and Carlos G. A. Gewehr

- 15:20 **Validating an Automated Asynchronous Synthesis Environment with a Challenging Design: RISC-V**
Willian A. Nunes, Marcos L. L. Sartori, Matheus T. Moreira, Fernando G. Moraes and Ney L. V. Calazans
- 15:40 **Exploring Nanomagnetic Logic with Bennett Clocking**
Pedro A. Silva, Jeferson Chaves, José A. Nacif, Ricardo Ferreira and Omar V. Neto
- 16:00 **AV1 Residual Syntax Elements Assessment and Efficient VLSI Architecture**
Jiovana Gomes, Rodrigo N. Wuerdig, Fábio L. L. Ramos and Sergio Bampi
- 16:20 **New Modified 4:2 Approximate Compressors for Low-power Applications**
Vinícius Zanandrea and Cristina Meinhardt

INSCIT 2023 PROGRAM

Tuesday, August 29th

INSCIT 1

- 14:20 **Alignment precision enhancement of side-shifted dual periodic permanent magnets array with an enclosed-case electromagnetic acoustic transducer**
Lucas Martinho, Iury Martins, João Pedro Andrade, Lei Kang, Steve Dixon and Alan Kubrusly
- 14:40 **Temperature Control System for Biological Tissues in Electroporation Studies**
Pablo Rodrigo Hoffmann, Roddy Romero, Lucas Bertinetti Lopes and Daniela Hisayasu Suzuki
- 15:00 **Liquid Detection based on Radar Cross-Section Measurement of Love Wave Sensor**
Marlo Andrade Santos, Raimundo Carlos Silvério Freire, Arthur Silva Souza, Hamida Hallil, Ollivier Tamarin and Corinne Dejous
- 15:20 **Transformer Oil Viscosity Measurements Using Love Wave Sensor**
Arthur Souza, Raimundo Carlos Silvério Freire, Luiz Augusto M. Martins Nobrega, Marlo Andrade Santos, Alexandre Jean René Serres, Ollivier Tamarin and Corinne Dejous

Wednesday, August 30th

INSCIT 2

- 14:00 **Invited: Simple Offset Elimination Technique for Two-Wire Measurements**
Michael Obrecht
- 14:20 **A simplified automatic impedance matching**
João Pedro Andrade, Vivian Suzano Medeiros and Alan Conci Kubrusly
- 14:40 **Bearing heating open-loop control system to reduce variability in BLDC motor tests**
João Machado, Rodolfo C. C. Flesch, Mauricio M. Schaefer and Rafael H. de Santana
- 15:00 **A relative humidity measurement system tolerant to condensation events applied to apple storage**
Tiago Possato, Jean da Costa and Marcelo Teixeira
- 15:40 **A Simple Model for Dirt Deposition Classification in Insulators Based on Visible Spectrum Images**
Christiane Raulino Almeida Molina, Jugurta Montalvão, Raimundo Carlos Silvério Freire, Graziella Bedenik, Ulisses D. E. S. Lebre and Charles A. C. de Araujo
- 16:00 **Smart Water Management: a Self-Sufficient IoT-Based Application for Pressure and Flow Monitoring in Water Distribution Systems**
Lucas Oliveira, José V. S. de Araújo, Jose Helio Bento da Silva, Juan Mauricio Villanueva, Carlos A. de S. Filho and Moises Nuñez Ochoa
- 16:20 **Performance Analysis of a Differential pair Oscillator with SAW Sensor in Feedback Loop**
Sávio Bezerra, Raimundo Carlos Silvério Freire, Jalberth Fernandes de Araujo, Henrique Silva, Maria Natália Freitas Nunes, Maxence Rube, Izadora Cardoso, Eduarda dos Santos and Marcos Bernardo
- 16:40 **Antoniou Gyrator as a Tuner for Current Transformers**
Graziella Bedenik, Stephane Carvalho, Lucas Molina, Elyson Carvalho, Ulisses D. E. S. Lebre and Charles A. C. de Araujo

Thursday, August 31st

INSCIT 4

- 9:00 **Non-Foster Circuit Compensation for Piezoelectric Energy Harvesters**
Rodrigo Porto, Lucas Murliky, Fernando Rangel and Valner Brusamarello
- 9:20 **A 2.4 GHz Wireless Temperature Sensor designed in 130 nm CMOS technology with 0.07 °C precision from -100 °C to 200 °C**
Hugo Giló and Francisco Brito-Filho
- 9:40 **MIS capacitor as portable oxygen detection sensor**
Felipe Soares Mendes, Mauro Sergio Braga, Ruth Flavia Vera Villamil Jaimes and Walter Salcedo
- 10:00 **Development of a small-scale spectrophotometer to monitor microalgae cultures on CubeSats**
Gil Pinheiro, Alenne Moraes, Caio Burlini, Jorge Amaral, Lia Teixeira and André Luís Salomão
- 10:20 **Current Transformer-Based System for Measuring Leakage Current**
Stephane Carvalho, Graziella Bedenik, Lucas Molina, Elyson Carvalho, Ulisses D. E. S. Lebre and Charles A. C. de Araujo
- 10:40 **Evaluation of Envelope Detection for Partial Discharge Source Localization**
Allan David Silva, Raimundo Carlos Silvério Freire, Luiz A. M. Nobrega, George Victor Rocha Xavier, Itaiara Carvalho and Izadora Cardoso

INSCIT 5

- 11:20 **Investigating Water Contamination with LoRa-Enabled Surface Acoustic Wave Sensors**
Haydar Jammoul, Maxence Rube, Martine Sebeloue, Idris Sadli, Corinne Dejous, Clency Perrine, Yannis Pousset and Ollivier Tamarin

- 11:40 **Fuzzy Logic Decision Module for LoRa at 2.4 GHz Adaptive Network Deployment**
Moises Nunez and Juan M. Mauricio Villanueva
- 12:00 **IoT Sensor Node to Evaluate Indoor Air Quality in Air Conditioner Systems**
Rogério Ballestrin, William Garcia, Max Feldman and Ivan Muller
- 12:20 **Supercapacitor Portable System for Automatic Acquire of Electrical Signals, Characterization and Electrical Schematic Modeling for Microelectronic Device Application**
Mariana Campos, Gustavo Dourado, Arnaldo de Brito, Rodrigo Lassarote Laval and Luciana Pedrosa Salles
- 12:40 **Tuning Key Parameters of Electric Circuit Model for Application in Solid-State Supercapacitors**
Paulo Ferreira, Hene Saud, Pedro Candiotta Oliveira, João Paulo Trigueiro, Rodrigo Lavall and Luciana Pedrosa Salles

Friday, September 1st

INSCIT 6

- 12:00 **Detection of Small Flaws using the Potential Drop Technique**
Gil Pinheiro, Jorge Amaral, Thieplo de Benites Bertola Gonçalves, Emanuel Seixas, Williams Canuto Costa and José Ponciano Gomes
- 12:20 **Evaluation of Envelope Detection for Radiometric Measurements of Partial Discharges in Instrument Transformers**
Allan David Silva, Raimundo Carlos Silvério Freire, Luiz A. M. Nobrega, Itaiara Carvalho, George Victor Rocha Xavier, Henrique Silva and Arthur S. Souza
- 12:40 **Design of a Low-Noise Signal Conditioning Circuit for Analog MEMS Accelerometers**
Marcelo Romanssini, Lucas Compassi-Severo, Paulo César Comassetto de Aguirre and Alessandro Girardi
- 13:00 **Design of a Multiturn RVDT with Flat-Helix Coils**
Graziella Bedenik, Paulo Gabriel Barreto Nogueira, Lucas Molina, José Carvalho Filho and Elyson Carvalho

Friday, September 1st

INSCIT 7

- 14:40 **MOS Capacitor Modeling and Optimization for Fully Integrated DC-DC Converters**
Marcos Bernardo, Arthur Souza, Raimundo Carlos Silvério Freire, Antonio Augusto Lisboa de Souza and Henrique Silva
- 15:00 **A Thermoelectric Generator Model validated by Different Thermal Patterns**
Mariana Ferreira, Maria Paula Medeiros Gomes Miguel, Cleonilson Protasio Souza, Yajun An and Orlando Baiocchi
- 15:20 **Instrumentation for quantum correlation analysis of polarized Stokes-anti-Stokes photon pairs**
Tiago Freitas, Paula D. Machado, Lucas V. Carvalho, Raul C. Silva, Marcelo F. Santos, Carlos H. Monken and Ado J. Vasconcelos
- 15:40 **Study and Development of a Battery Monitoring System (BMS) for a Formula Electric Vehicle**
Pedro Medeiros, Ítalo Sibaldo Santos de Oliveira, Walklis Victor Lima da Penha, Juan Moises Mauricio Villanueva, Moises NUNEZ, Euler Macedo and Nathalia Araújo Araújo da Fonseca Alves
- 16:00 **Improved Self-Biased Differential Amplifiers Using Multiple-V_t CMOS Transistors**
Fabian L. Cabrera

WCAS 2023 PROGRAM

Wednesday, August 30th

- 14:00 – 15:20 **Low Power Design and Verification Bootcamp by Cadence**
- 15:40 – 17:00 **Low Power Design and Verification Bootcamp by Cadence**

Thursday, August 31st

- 9:00 – 11:00 **State-of-the-art Industry Verification Flow Bootcamp by Ensilica**
- 11:20 – 13:00 **State-of-the-art Industry Verification Flow Bootcamp by Ensilica**

Friday, September 1st

- 08:40 – 09:40 **Test & Measurement Training: Rohde & Schwarz**
- 09:40 – 10:40 **Test & Measurement Training: RIGOL**
- 12:00 – 12:20 **Industrial session: Ensilica**
- 12:20 – 12:40 **Industrial session: Telemetry**
- 12:40 – 13:00 **Industrial session: Chipus**
- 13:00 – 13:20 **Industrial session: Instituto Eldorado**
- 14:40 – 15:00 **An Ultra-Low Power Management Unit for Implantable Biomedical Applications**
Mateus Castro, Tito Burini, Aline Rocha, Karine Santos, Ricardo Valero Castro, José Andrade and Fernando Chavez
- 15:00 – 15:20 **A 500-S/s 8-b 1-V Low Power SAR ADC With 49.92-dB SNR Using a Straightforward Layout Technique in 180-nm CMOS**
Ricardo Valero Castro, Karine Santos, José Alberto Andrade, Mateus Biancarde Castro, Fernando Chavez, Tito Burini and José Bohorquez
- 15:20 – 15:40 **Power impact of data gating multiplier modules in a RISC-V core**
Kaio Fernandes and Lucas Wanner

SFORUM 2023 PROGRAM

Tuesday, August 29th

POSTER SESSION I

- 15:40 – 17:00 **Fast Simulation-Based Method for Characterization of CMOS Ring Oscillators in a 180 nm Process**
Nicole Corradini and Fabian Olivera
- Efficient Hardware for VVC Residual Syntax Elements Generation**
Gabriel Bitencourt Cardoso, Jiovana Gomes, Sergio Bampi and Fábio Luís Livi Ramos
- Adaptive Biasing Circuitry for a CMOS Power Amplifier**
Luciano Auer, Alexandre Arrivé and Bernardo Leite
- Building a Low Cost Spin Coater with Arduino**
André Linhares, Raphael Nunes da Silva Moreira Souza and Germano Maioli Penello
- Area and Energy Evaluation of an FME Hardware Architecture for HEVC and VVC Encoders**
Nicole Citadin, Vanio Rodrigues Filho, Ismael Seidel, Marcio Monteiro, Mateus Grellert and José Güntzel
- Design of a Linear Transconductance OTA using the Open Sky130 Process Design Kit**
Carolina Vieira Souza, Edmar Philipe Ribeiro and Estêvão Coelho Teixeira
- A Comparative Analysis of Ring Oscillator Configurations Utilizing CMOS Inverters and Differential Pair Amplifiers as Delay Elements**
Felipe Righi, Vinícius Guimarães, Lucas Compassi-Severo, Paulo César Comassetto de Aguirre and Alessandro Girardi
- Comparative Design of CMOS Class-D Audio Amplifier for Switching and Conduction Losses Operation**
Thiago Oliveira, Luciana Pedrosa Salles and Dalton Martini Colombo
- Systematically Classifying Trusthub Hardware Trojan Benchmarks**
Ana Flávia Bomfim and José Augusto Nacif

Design of a Low-Cost Nanosatellite for Atmospheric Monitoring

Juliana Silva Marquione, Igor Daher Cabral, Rafael Bonioli Kneip, Estêvão Coelho Teixeira and Washington Orlando Irrazabal Bohorquez

Implementation of a Semi-Automatic Design Procedure of Preamplifiers in a Multistage CMOS Comparator

João Brum, Beatriz Rezende, Crístian Müller, Lucas Compassi Severo, Alessandro Girardi and Paulo César Comassetto de Aguirre

A Hardware Design for Linear Equation System Solving of VVC Affine ME

Denis Maass, Marcello Muñoz, Murilo Perleberg, Marcelo Schiavon Porto and Luciano Agostini

Design and Implementation of a Simple Moving Average Filter for a UWB/UHF Hybrid RFID Tag

Hércules Santos and Gilmar Beserra

A 915 MHz Active Inductor-Based Band-pass Filter for sub-GHz RF Receivers

Raul deOliveira, Tailize Cordeiro de-Oliveira, Alessandro Girardi, Paulo César Comassetto de Aguirre and Lucas Compassi-Severo

PUPPY Microprocessor: a RISC-V MCU for IoT Applications

Gabriel Gouveia, Ivan Hirata, Catherine Pancotto, Laisa Costa de Biase, Bruno Sanches, Wilhelmus Van Noije and Marcelo Zuffo

Thursday, August 31st

POSTER SESSION II

- 14:20 – 17:00 **Ultra Wide Band Transmitter Layout for a Vital Sign Monitoring Passive Tag**
Julia Silva, Wellington Amaral and Ciro Barbosa Costa
- Millimeter-wave CMOS Transformers for Power Amplifier Impedance Matching**
Enzo Coutinho and Bernardo Leite

Investigation of the Doping Profile of a Non-intentionally Doped Epitaxial Layer of a PIN Photodiode

Raphael Steinvacher, Cristian Anderson Delfino, Gustavo Soares Vieira, Rudy Massami Kawabata, Mauricio Pamplona Pires and Patricia Lustoza de Souza

Fifty Years of the 555 Timer – A Tribute from a Didactic IC Design Perspective

Guilherme S. Albuquerque, Diego S. Silva, Wesley M. Cantarino and Estêvão Coelho Teixeira

Behavioral Modeling of Radio Frequency Power Amplifiers Using a Multiple Depth Memory Volterra Series

Felipe Ribeiro and Eduardo Lima

Optimization of Multi-Junction Solar Cells for the Martian Orbit

Jéssica Lorenzi and Daniel Neves Micha

Characterization of Si and Simulation of III-V Sub-Cell for Double Junction Photovoltaics

Willian Bazilio, Rudy Kawabata, Guilherme Torelly and Patricia Souza

Design of a 3-Stage Decimation Filter for a Sigma-Delta ADC

Otavio Elias Viana de Freitas, Edivania Ferreira Silva, Lucas Compassi-Severo, Alessandro Girardi, Crístian Müller and Paulo César Comassetto de Aguirre

Three-dimensional TCAD Simulation of n-Type Nanowires Operating at Cryogenic Temperatures down to 20K

João Victor da Silveira and Marcelo Pavanello

Linearization of Volterra series based on first order Taylor series expansion

Daniele Richartz and Eduardo Golçalves de Lima

A 0.5-V Low-Power Negative Resistance-based TIA for Passive Down-conversion Mixer

Suzian Santos, Alessandro Girardi, Paulo César Comassetto de Aguirre and Lucas Compassi-Severo

A Power Management System for High-Altitude Pico Balloon Radiation Monitoring Platform

Matheus Carvalho, Tawan Chrysther dos Santos, Renan D. P. de Oliveira, Lucas Compassi-Severo, Alessandro Girardi, Paulo César Comassetto de Aguirre and Edson Pereira

Analysis of topologies of MOSFET Current Mirrors

Vinícius Guimarães, Felipe Righi, Alessandro Girardi, Paulo César Comassetto de Aguirre and Lucas Compassi-Severo

Preliminary Design and Comparative Analysis Between Different DT Sigma-Delta Modulators

Victor Lima, Tawan Chrysther dos Santos, Renan D. P. de Oliveira, Lucas Compassi Severo, Alessandro Girardi, Crístian Müller and Paulo César Comassetto de Aguirre

Analysis of the Discrepancies Between Simulation and Measurement of an Antenna

Erik Mezzomo and Sandro Binsfeld Ferreira

Friday, September 1st

SESSION I: INVITED TALK AND BEST PAPER CANDIDATES

- 08:40 Invited Talk: Open Source Silicon
Prof. Francisco Brito Filho (UFERSA, Brazil)
- 09:20 Optimization of Multi-Junction Solar Cells for the Martian Orbit
Jéssica Lorenzi and Daniel Neves Micha
- 09:35 Behavioral Modeling of Radio Frequency Power Amplifiers Using a Multiple Depth Memory Volterra Series
Felipe Ribeiro and Eduardo Lima
- 09:50 Area and Energy Evaluation of an FME Hardware Architecture for HEVC and VVC Encoders
Nicole Citadin, Vanio Rodrigues Filho, Ismael Seidel, Marcio Monteiro, Mateus Grellert and José Güntzel
- 10:05 A Hardware Design for Linear Equation System Solving of VVC Affine ME
Denis Maass, Marcello Muñoz, Murilo Perleberg, Marcelo Schiavon Porto and Luciano Agostini

IEEE CASS WORKSHOP

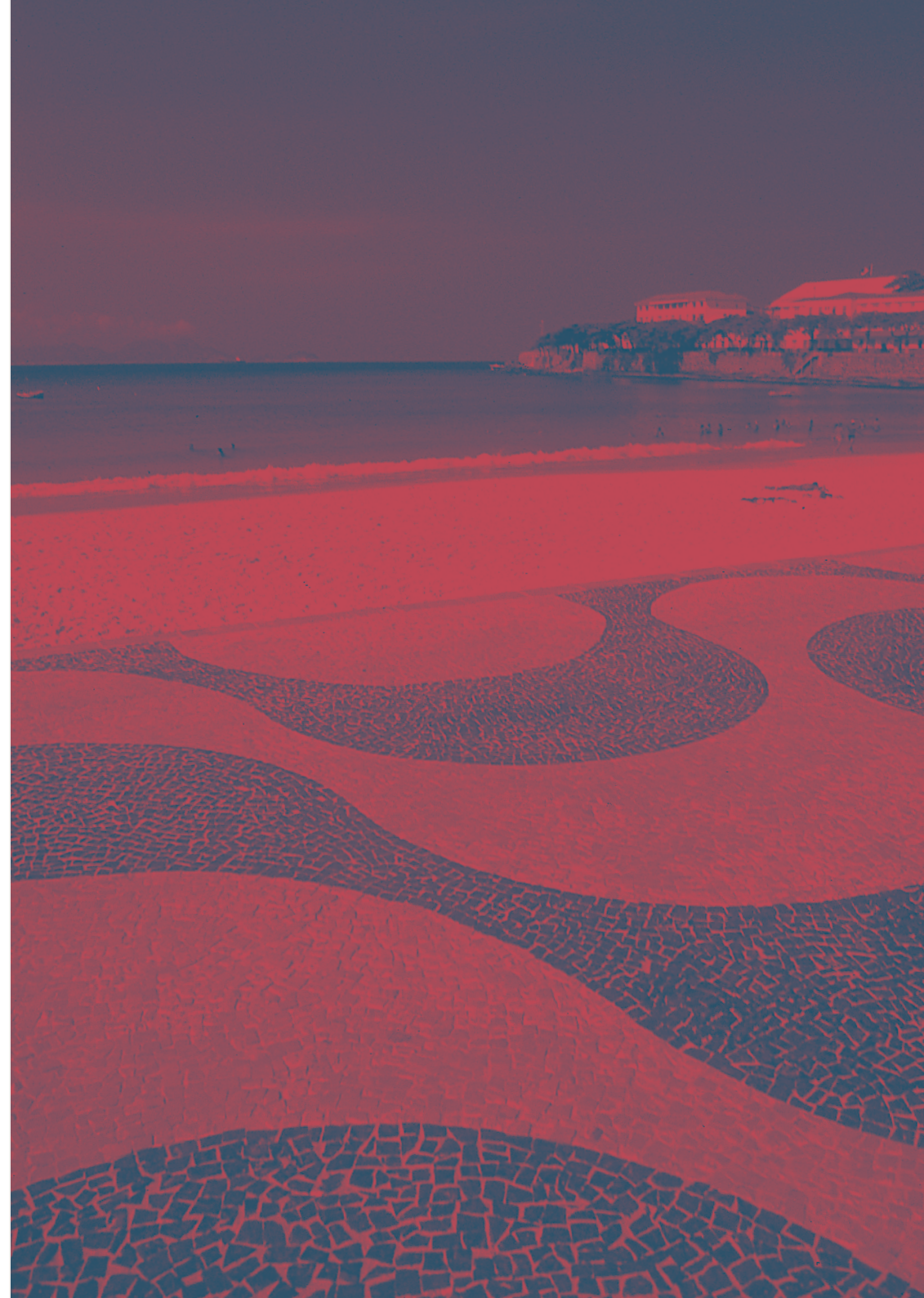
CURRENT TRENDS IN IC DESIGN

Thursday, August 31st

14:20 – 15:00 **Ratio Based Analog/RF Design: A Generalization of gm/ID and Inversion Coefficient Methods**
Fernando Silveira, Universidad de la República, Uruguay

15:10 – 15:50 **Physical Design: New Solutions Inspired in the Past**
Ricardo Reis, Universidade Federal do Rio Grande do Sul, BR

16:00 – 16:40 **The Tangled Tree of Technology**
Victor Grimblatt, R&D Group Director and General Manager,
Synopsys, Chile



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