

FIRST WORKSHOP

ADVANCES IN ANALOG & MIXED-SIGNAL INTEGRATED CIRCUITS



模擬與混合信號集成電路全國重點實驗室
Laboratório de Referência do Estado em
Circuitos Integrados em Muito Larga Escala Analógicos e Mistos
State Key Laboratory of Analog and Mixed-Signal VLSI



SEPTEMBER 17,
2026



UNINOVA
AUDITORIUM

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Portuguese Competence Centre in Semiconductors

WORKSHOP PROGRAM

MORNING: DATA-CONVERTERS

9h00: The Design of High-Linearity High-Resolution Oversampling Incremental ADCs for Sensor Applications



Sai-Weng Sin is currently a Professor and the Associate Dean (Academic Affairs) of the Faculty of Information Science and Computing, and Deputy Director (Academic) of the Institute of Microelectronics at the University of Macau. He is currently serving as the Chair of the Data Converters Subcommittee at IEEE CICC, a TPC member of the VLSI Conference, A-SSCC, and TPC Co-Chair of ICTA Conference. He also serves as the Associate Editor-in-Chief (Digital Communications) of IEEE Transactions on Circuits and Systems II (TCAS-II). He was a Distinguished Lecturer for the IEEE Solid-State Circuits Society (SSCS) for 2024-2025.

9h30: A 3rd-order MASH Switched-Capacitor SDM using Ultra-Incomplete Settling employing an Area Reduction Technique



Nuno Paulino was born in Beja, Portugal, in 1969. He graduated from the Instituto Superior Técnico (IST), Lisbon, in 1992, and received the M.Sc. degree from the Technical University of Lisbon in 1996 and the Ph.D. degree from the NOVA University of Lisbon (NOVA) in 2008. He has been with the Department of Electrical Engineering (DEE), School of Science and Technology at NOVA (NOVA FCT), since 1999. Since 1999, he has also been a Senior Researcher with the Centre of Technology and Systems, UNINOVA. In 2003, he co-founded ACACIA Semiconductor, a Portuguese engineering company specialized in high-performance data converter and analog front-end products, acquired by S3 in 2007. From 1996 to 1999, he was an Analog Design Engineer with Rockwell Semiconductor, USA.

10h00: Advancements in Dynamic Time-varying Amplifier and Time-Domain Quantization: Voltage/Time Domain Combined ADC Research (remote presentation)



Mingqiang Guo is currently an Assistant Professor and PhD Supervisor at the Institute of Microelectronics / State-Key Laboratory of Analog and Mixed-Signal VLSI, University of Macau. In recent years, as the principal investigator, he has led 4 national and provincial-ministerial research projects, 3 industry-sponsored collaborative projects, and 4 university-level research projects. He has published more than 40 peer-reviewed IEEE international papers, including 15 journal papers in JSSC and TCAS-I, as well as 18 conference papers at ISSCC, VLSI, CICC, ESSCIRC and ASSCC.

10h30: Beyond the ADC: Integrated Auxiliary Circuits for a Fully Integrated Mixed-Signal SoC



Hugo Serra obtained the M.Sc. and the Ph.D. degrees in Electrical and Computer Engineering (ECE) in 2012 and 2017, respectively, from the Faculty of Sciences and Technology, NOVA University of Lisbon (NOVA FCT), Portugal. Between 2013 and 2018, he was a researcher at the Centre for Technology and Systems (CTS) UNINOVA of FCT NOVA. Between January 2019 and October 2021, he was an auxiliary researcher of the Radio Systems group at the Institute of Telecommunications. From November 2021 to November 2024, he was working as a RF design engineer at Koala Tech. Since September 2022 he has been an assistant professor at NOVA FCT. His

research interests include switched-capacitor filter, analog-to-digital converters and evolutionary algorithms.

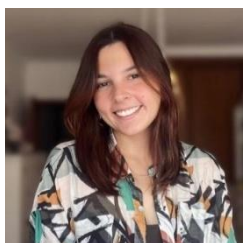
11h00: My Research Journey on Time-Domain ADCs (remote presentation)



Dr. Zhang currently serves as a TPC Member for IEEE CICC and ICTA Conferences.

Minglei Zhang received the B.S. degree in microelectronics from Tianjin University, Tianjin, China, in 2011, and the Ph.D. degree in microelectronics from the Institute of Microelectronics, Chinese Academy of Sciences, Beijing, China, in 2017. From 2014 to 2017, he was a Visiting Ph.D. Student with the Analog and Mixed-Signal Center, Texas A&M University, College Station, TX, USA. He is currently an Assistant Professor with the State Key Laboratory of Analog and Mixed-Signal VLSI, Institute of Microelectronics, University of Macau, Macau, China. His research interests include high-speed and energy-efficient data converters, smart sensors, and edge

11h30: Design of High-Speed Analog-to-Digital Converters combining Time-and-Frequency Interleaving



She has also contributed to European and national research efforts in power management circuit during her previous work on flexible circuits.

Mariana Barrosinho is a PhD student at NOVA FCT, where she is pursuing her research on “Design of High-Speed Analog-to-Digital Converters combining Time-and-Frequency Interleaving”. She holds an Integrated Master’s degree in Micro and Nanotechnologies Engineering from NOVA FCT, where her master’s thesis, “Design and Implementation of a Programmable LDO Circuit using Oxide TFT Technology” was awarded the 3rd Prize by the Ordem dos Engenheiros. Her research interests encompass the design, simulation, and implementation of high-

11h45: A C-2C Charge-Sharing SAR Quantization for Zoom ADCs



Converter for Internet-of-Things applications, developed using deep-nanoscale Bulk CMOS (28-nm) and oxide thin-film transistor technologies.

Hugo Viana is a Micro and Nanotechnology Engineer, graduated from NOVA School of Science and Technology in January 2022. His master's thesis focused on active inductors implemented using thin-film transistor technology and their integration into oscillator circuits. In 2022, he joined UNINOVA-CTS as a Research Fellow, working in collaboration with CENIMAT on national and European projects. Since 2024, he has been enrolled in the PhD program in Electrical and Computer Engineering at NOVA University of Lisbon. His doctoral research focuses on the design and experimental evaluation of an Incremental-Zoom Analog-to-Digital

AFTERNOON: ANALOG AND MIXED-SIGNAL ICs AND CIRCUIT TECHNIQUES

13h30: High efficiency burst power delivery in Miniaturized IoT Systems



Man-Kay Law (Senior Member, IEEE) received the B.Sc. degree in computer engineering and the Ph.D. degree in electronic and computer engineering from Hong Kong University of Science and Technology (HKUST), Hong Kong, in 2006 and 2011, respectively. He is currently a Full Professor with the Faculty of Information Science and Computing, as well as the State Key Laboratory of Analog and Mixed-Signal VLSI, Institute of Microelectronics, University of Macau, Macau, China. His research interests are in the development of ultra-low-power CMOS sensing/readout circuits and energy harvesting solutions, as

well as hardware security techniques for smart Internet of Things (IoT) applications. He serves as a Technical Committee Member for IEEE CAS Committee on Sensory Systems as well as Biomedical and Life Science Circuits and Systems. He was a Distinguished Lecturer of IEEE CASS and IEEE SSCS. He was a TPC Member of IEEE ISSCC and also the ISSCC Far-East Chair.

14H00: Circuit Techniques for Power-Efficient Brain Interfaces



Tiago L. Costa is an Associate Professor at the Department of Microelectronics at Delft University of Technology, The Netherlands, where he leads the Therapeutic Ultrasound Microsystems Lab. Dr. Costa received his PhD in Electrical and Computer Engineering from Instituto Superior Técnico in Lisbon, Portugal, in 2015, after which he joined Columbia University, NY, as a postdoctoral researcher, where he worked on ultrasound phased arrays for non-invasive neural stimulation and wireless power transfer for implantable medical devices. Since moving to TU Delft in 2019, his group has been advancing programmable ultrasound microsystems that incorporate integrated circuits and microfabricated materials to develop innovative ultrasound Technologies for therapeutic applications.

14h30: Low-Jitter mm-Wave Frequency Generation



Jun Yin received the B.Sc. (2004) and the M.Sc. (2007) degrees in Microelectronics from Peking University, Beijing, China, and the Ph.D. (2013) degree in ECE from Hong Kong University of Science and Technology (HKUST), Hong Kong, China. He is currently an Associate Professor at the State Key Laboratory of Analog and Mixed-Signal VLSI, University of Macau, Macau, China. His research areas are circuits for high-speed communications and low-power IoTs. He authored or co-authored 1 book, 3 book chapters, and more than 110 peer-reviewed international conference and journal publications. He serves or has served on the TPCs for ISSCC, ESSERC, and A-SSCC. He was an Associate Editor of the TCAS-I.

15h00: Hardware Security: Entropy Generation and Encryption



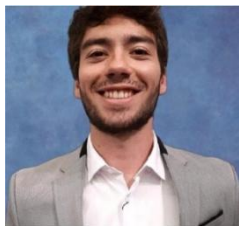
Luis B. Oliveira graduated with a degree in electrical and computer engineering, and the Ph.D. degree, in 2002 and 2007 respectively, from IST-UL. He obtained the 'Habilitation' degree, in Electronics, in 2016 from the NOVA FCT. Since 2007, Luis Oliveira has been with the DEEC at FCT NOVA, where he is an Associate Professor. He has more than 130 publications in International Journals and Conferences and is co-author of three books. He was Associate Editor of the IEEE Transactions on Circuits and Systems - II, TCAS-II, 2018-2023. His current research interests are on RF CMOS circuits and Hardware Security primitives (TRNGs and PUFs).

15h30: A general dynamic modeling method for Chiplet power delivery system based on LEGO architecture



Wen-Liang Zeng received the Ph.D. degree in electrical and computer engineering from the University of Macau in 2020. From September 2023 to August 2025, he was a Visiting Post-Doctoral Research Associate with the Power Electronics Research Laboratory, Princeton University, USA. He joined the Institute of Microelectronics and the State Key Laboratory of Analog and Mixed-Signal VLSI at the University of Macau as an Assistant Professor in Oct. 2025. His research interests include power management integrated circuit for IoT applications, 12/48V-to-1V integrated Point-of-Load (PoL) Voltage Regulation Module (VRM), and power architecture modeling.

16h00: CMOS Ultrasound Imaging Architectures for Wearable Diagnostic Devices (remote presentation)



Diogo Dias (Student Member, IEEE) was born in 1998, Barreiro, Portugal. He received a B.Sc. and M.Sc. degrees in Electrical Engineering from NOVA University of Lisbon, Portugal in 2020 and 2022, respectively. He is a Ph.D. candidate in Electrical Engineering at NOVA University of Lisbon, Portugal, at the Micro-Nano-electronics Group, in a mixed scholarship-based collaboration with the Bioelectronics Group at Delft University of Technology, The Netherlands. His research is centered on optimization of Analog-Mixed Signal CMOS sensor interfaces for diagnostic ultrasound-on-chip systems, focusing on near-sensor diagnostic data compression.

16h30: A Full Current-Mode AFE with Dark Noise Suppression using Differential Leading-Edge Discrimination for the CMS/LHC Timing Detector at CERN



Edgar Albuquerque was born in Goa, India, in 1969. He graduated in Electrical and Computer Engineering in 1994 and obtained the MSc and Ph.D. degrees in 1998 and 2001, respectively all from Instituto Superior Técnico, Technical University of Lisbon. He was a post-doctoral fellow at INESC-ID till 2012, where he was engaged in the development of analog front-end ASICs for PET tomography scanners based on APDs (Avalanche Photo-Diodes). In 2017 he joined PETSys electronics and has been involved in the development of the TOFHiR SiPM read-out ASIC for the new MIP timing detector of the CMS experiment for the 2025 HL-LHC upgrade. His main research interests are in analog and mixed-signal integrated circuits mainly for radiation detectors. He is also interested in renewable wind energy systems.

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