

## ECCTD 2023 – Technical Program | Friday, November 10, 2023

9:00 - 10:00

PLENARY SESSION – Room Emma Strada

Chair: Fernando Corinto

**An integrated approach to vision chips in CMOS**

Ricardo Carmona-Galan - *Institute of Microelectronics of Seville (CSIC), SPAIN*

10:00 - 11:00

SESSION 1: Memristor Circuits and Systems

Chair: Georgios Ch. Sirakoulis – Room Emma Strada

10:00-10:15

**In-memory Computing Architectures for Quantized Neural Networks**

Olga Krestinskaya, Li Zhang and Khaled Nabil Salama

10:15-10:30

**High-Performance Sense Amplifier Design for Ferroelectric Non-volatile Memory**

Nandakishor Yadav, Yukai Shen, Raik Hoffmann and Konrad Seidel

10:30-10:45

**Computing logic tasks with a physical tunable memristor chaotic reservoir**

Manuel Escudero, Sabina Spiga and Stefano Brivio

10:45-11:00

**Read/write latency aware controller design for nonvolatile memory**

Ipek Gecin, Nandakishor Yadav, Alptekin Vardar, Shaown Mojumder, Konrad Seidel and Thomas Kämpfe

11:00 - 11:30

COFFEE BREAK – Foyer of Aula Magna

11:30 - 12:45

SESSION 2: Circuit Models and Design

Chair: Igor S. Stievano – Room Emma Strada

11:30-11:45

**Design approach to CMOS LNA for FR2 band**

Alberto Arcusa Puente, Jorge Marqués-García, Antonio Dionisio Martínez-Pérez, Francisco Aznar and Santiago Celma

11:45-12:00

**An approach to the modeling and design of the gm-boosted common-gate LNA**

Jorge Marqués-García, Antonio Dionisio Martínez-Pérez, Francisco Aznar and Santiago Celma

12:00-12:15

**Discrete-Time Models and Simulations of Charge Pumps Using a Hardware Description Language**

Wissem Jallouli and Stefano Gregori

12:15-12:30

**Behavioral LPV Macromodels for Analog Circuit Blocks**

Tommaso Bradde and Stefano Grivet-Talocia

12:30-12:45

**Linear laser driver design in 65-nm node CMOS technology for IFoF optical links**

Diego Fabián Paredes Páliz, Antonio D. Martínez Pérez, Francisco Aznar and Santiago Celma

13:00 - 14:30

LUNCH BREAK – Foyer of Aula Magna

14:30 - 15:30

PLENARY SESSION – Room Emma Strada  
Chair: Alon Ascoli

**Computer Vision Based Solution Building, Deployment and Management for Next Generation Network Infrastructure**

Csaba Rekeczky - *Verizon Communications, USA*

15:30 - 16:30

SESSION 3: Applications of Circuit and Network Modelling  
Chair: Giuseppe Grassi – Room Emma Strada

**15:30-15:45 Topological Modelling of Gas Networks for the Statistical Assessment of Hydrogen Blending**

Igor Simone Stievano, Pierluigi Leone, Paolo Manfredi and Riccardo Trincherò

**15:45-16:00 Design and optimization of networked energy harvesting systems**

Kailing Song, Michele Bonnin, Fabio Traversa and Fabrizio Bonani

**16:00-16:15 Test Structures Designed for Device-to-Device Process Variation and Noise Measurement in 22nm SOI Technology**

Nandakishor Yadav, Yannick Raffel, Ricardo Orlando Revello Olivo, Raik Hoffmann, Konrad Seidel and Luca Pirro

**16:15-16:30 Bifurcation analysis of PV-fed dc-dc converters in the presence of strong interference**

Niall Cullinane, Brendan Hayes and Marissa Condon

16:30 - 17:00

COFFEE BREAK – Foyer of Aula Magna

17:00 - 18:15

SESSION 4: Nonlinear Dynamic Circuits & Systems - I  
Chair: Michele Bonnin – Room Emma Strada

**17:00-17:15 On the Versatility of the Dynamic Route Map Tool**

Alon Ascoli, Nicolas Schmitt, Ahmet Samil Demirkol, Ioannis Messaris, Ronald Tetzlaff and Leon Chua

**17:15-17:30 Periodic steady-state stability analysis in the frequency domain: a Harmonic Balance implementation**

Fabrizio Bonani, Kailing Song, and Fabio L. Traversa

**17:30-17:45 A Mixed-signal Circuit Exploiting Chaos and Cross-correlation for Fast Time-based Electrochemical Impedance Spectroscopy of Sensors**

Antonio Vincenzo Radogna and Giuseppe Grassi

**17:45-18:00 Enhancing Stable Diffusion with Continuous-Time Neural Architectures**

András Horváth

**18:00-18:15 Mycelium Computer Optical Interface**

Iosif-Angelos Fyrigos, Andrew Adamatzky and Georgios Ch. Sirakoulis

19:45 - 23:00

ECCTD 2023 – CONFERENCE DINNER  
“Circolo Ristorante La Posta” - Via Vela, 15, 10128 Torino

## ECCTD 2023 – Technical Program | Saturday, November 11, 2023

9:00 - 10:00

PLENARY SESSION – Room Emma Strada  
Chair: Alon Ascoli

**Artificial Intelligence-enabled Biomimetic Olfaction Sensor for Odor Discrimination and Odor Identification**

Shirong Huang and Gianauelio Cuniberti - *Chair of Materials Science and Nanotechnology, TU Dresden, GERMANY*

10:15 - 11:00

SESSION 5: Innovative Applications of Circuit Methods  
Chair: Andras Horvath – Room Emma Strada

10:15-10:30

**Bias Voltage Generation for Inductorless-LNA Process Variation Compensation**

Antonio Dionisio Martínez-Pérez, Diego Fabian Paredes-Páliz, Francisco Aznar and Santiago Celma

10:30-10:45

**From the lab to the bottle: innovative approaches in the field of distillation for quality and sustainability enhancement**

Jacopo Secco, Fabio Pareschi, Elisabetta Spinazzola, Fernando Corinto, Kilian Kutzner, Hans Wiech and Sebastian Scharf

10:45-11:00

**Design of a 5-bit variable gain amplifier and a power combiner for antenna arrays at 19.5 GHz**

Uxua Esteban Eraso, Carlos Sánchez-Azqueta, Concepción Aldea and Santiago Celma

11:00 - 11:30

COFFEE BREAK – Foyer of Aula Magna

11:30 - 12:30

SESSION 6: Nonlinear Dynamic Circuits & Systems - II  
Chair: Michele Bonnin – Room Emma Strada

11:30-11:45

**Chaotic Random Number Generator Based on Irregular Sampling of Irregular Signal**

Salih Ergun

11:45-12:00

**A study on Monte-Carlo integration with divided interval using chaotic sequences**

Akio Tsuneda and Masato Uetani

12:00-12:15

**Boosting the identifiability of a compensated measurement PUF via non-linear transformations**

Raúl Aparicio-Téllez, Miguel Garcia-Bosque, Guillermo Díez-Señorans and Santiago Celma

12:15-12:30

**Second-order compensated measurement to obtain multi-bit responses on Physically Unclonable Functions**

Jorge Fernández-Aragón, Guillermo Díez-Señorans, Miguel Garcia-Bosque and Santiago Celma

12:30

ECCTD 2023 – CLOSING CEREMONY