

26th International Conference on Noise and Fluctuations (ICNF'23)

Detailed program

<u>Noise and fluctuation topics</u>	
T	Theory
D	Electronic Devices & Materials
C	Electronic Circuits & Systems
S	Socioeconomical and Biophysical Systems

<u>Duration of talks</u>
Plenary: 45'
Invited: 25'
Regular: 12'

Tuesday 17/10/2023

08:30-09:00	CONFERENCE OPENING
09:00-10:00	PLENARY TALK - <i>Gérard Ghibaudo, CNRS, France</i> Carrier number fluctuations with correlated mobility fluctuations: a model's history and evolution
10:00-10:30	Coffee break
10:30-11:15	<u>SESSION S1 – SOCIAL AND ECONOMICAL SYSTEMS</u> Revealing the generality of 1/f noise based spectral characteristics of human activity across different datasets <i>Bálint Maczák, Csenge G. Horváth, Róbert Bódizs, Gergely Vadai</i> Scaling of variability measures in hierarchical demographic data <i>Aleksejus Kononovicius, Justas Kvedaravicius</i> Different aspects of the scale-free nature of human activity - examination of its spectral and statistical properties <i>Bálint Maczák, Krisztina Panna Komáromi, Gergely Vadai</i>
11:15-12:30	<u>SESSION D1 – TRANSISTORS</u> Energy-Efficient Selective Gas Detection Using Low-Frequency Noise Spectroscopy in Horizontal Floating-Gate Field-Effect-Transistor Sensor <i>Wonjun Shin, Ryun-Han Koo, Jung Gyuweon, Yujeong Jeong, Seongbin Hong, Jong-Ho Lee</i> Low-Frequency 1/f Noise Mechanism in Quasi-1D ZrS₃ Nanoribbons <i>Adil Rehman, Grzegorz Cywiński, Wojciech Knap, Janusz Smulko, Alexander Balandin, Sergey Rumyantsev</i> Applicability of the Carrier Number Fluctuations Model for Random Telegraph Noise of Nanoscale MOSFETs Operating in Saturation <i>Owen Gauthier, Sebastien Haendler, Quentin Rafhay, Christoforos Theodorou</i> Discussion on the main mechanisms contributing to the 1/f noise in GAA Si VNW pMOSFETs <i>Abderrahim Tahiat, Bogdan Cretu, Anabela Veloso, Eddy Simoen</i> Low frequency noise study of X-ray irradiated Si/SiGe:C BiCMOS technology bipolar transistors <i>Fabien Pascal, Bruno Sagnes, Jérôme Boch, Tadeo Maraine, Alain Hoffmann, Adebabay Belie Ayenew, Daniel Gloria, Sebastien Haendler, Pascal Chevalier, Manel Bouhouche, Johnny El Beyrouthy</i>
12:30-14:00	Lunch break
14:00-15:15	<u>SESSION T1 - FUNDAMENTALS AND SIGNAL PROCESSING</u> Fluctuation-dissipation and Johnson-Nyquist noise in thermoelectrics (Invited) <i>Thomas Szkopek</i> Resonant Separatrix Activation in Weakly-Dissipative Systems <i>Igor A. Khovanov, Peter McClintock, Nigel Stocks, Stanislav M. Soskin</i>

Automatic crossover detection of long-range correlation analysis based on detrending operation

Yudai Fujimoto, Ken Kiyono

Detection Of Informational Signal Among Noisy Signals

Zenoviy Kolodiy, Andriy Kolodiy

15:15-15:40 Coffee break

15:40-17:10 [SESSION D2 – DEFECTS AND NOISE SPECTROSCOPY](#)

Probing Band Tail States in MOSFETs at Cryogenic Temperatures through Noise Spectroscopy (Invited)

Ruben Asanovski, A. Grill, J. Franco, P. Palestri, R. Li, S. Kubicek, K. De Greve, B. Kaczer, L. Selmi

Immediate recapture in the trapping-detrapping process of a single charge carrier

Aleksejus Kononovicius, Bronislovas Kaulakys

Low Frequency Noise Spectroscopy of Near-Infrared Laser Diodes

Richard Pinkrah, Justinas Glemža, Sandra Pralgauskaite, Jonas Matukas, Aivaras Špokas, Andrius Bičiūnas, Bronislovas Čechavičius, Evelina Dudutienė, Renata Butkutė

Trap identification in gate-all-around vertically stacked Si n-channel Nanosheet FETs

Abderrahim TAHIAT, Bogdan Cretu, Anabela Veloso, Eddy Simoen

2D channel defect states properties extraction using DLTFs in AlGaIn/GaN HEMTs

Yoann Lechoux, Laurence Méchin, Bruno Guillet

18:30-19:30 City tour (*meeting point will be arranged*)

19:30 Welcome reception (La Bastille)

[Wednesday 18/10/2023](#)

09:00-10:00 PLENARY TALK – *Mark Dykman (Michigan State University, USA)*
Low frequency noise in qubits

10:00-10:30 Coffee break

10:30-11:30 [SESSION T2 – QUANTUM SYSTEMS AND NOISE](#)

Generation of autonomous quantum resources by dissipative quantum systems

Tomáš Novotný, Artur Slobodeniuk, Radim Filip

Exponentially strong symmetry breaking in a parametrically modulated quantum oscillator

Daniel Boneß, Wolfgang Belzig, Mark Dykman

11:15-12:30 [SESSION D3 – MATERIALS](#)

Low-Frequency Noise in van der Waals Materials: The Usual and Unusual Features (Invited)

Sergei Rumiantcev, Alexander Balandin

Description of the Low-Frequency Noise for Homogeneous Semiconductors

Vilius Palenskis, Sandra Pralgauskaite, Justinas Glemža, Jonas Matukas

1/f and Random Telegraph Noise of Single-Layer Graphene Devices with Interdigitated Electrodes

Georgia Samara, Nikolaos Vasileiadis, Alexandros Mavropoulis, Christoforos Theodorou, Konstantinos Papagelis, Panagiotis Dimitrakis

Low Frequency Noise and Synergy Effect in Hybrid Composites with Carbon Nanoparticles

Frydrichas Mireckas, Marina Korzhenevskaya, Sandra Pralgauskaitė, Jonas Matukas, Darya Meisak, Sergejs Gaidukovs, Jan Macutkevič, Jūras Banys

12:30-14:00 Lunch break

14:00-15:15 SESSION D4 – RELIABILITY AND VARIABILITY

Charge trapping in oxide defects as the common cause of random telegraph noise, 1/f noise, and reliability issues in field effect transistors (*Invited*)

T. Grasser, C. Wilhelmer, D. Waldhör, and M. Waltl

Low-Frequency Noise Analysis to Investigate the On-Current Behavior of HZO-Based Ferroelectric Tunnel Junctions under Cycling Stress

Ryun-Han Koo, Wonjun Shin, Sangwoo Ryu, Kyung Min Lee, Daewoong Kwon, Jong-Ho Lee

GaN HEMT trap-induced variability through concurrent noise and AC TCAD modelling

Eva Catoggio, Simona Donati Guerrieri, Fabrizio Bonani

Extraction of Drain Current Variability Components in Junctionless Nanowire Transistors

Lucas Mota Barbosa da Silva, Michelly de Souza, Marcelo Antonio Pavanello, Mikaël Cassé, Sylvain Barraud, Maud Vinet, Olivier Faynot

15:15-15:40 Coffee break

15:40-17:10 SESSION D5 – JUNCTIONS AND MEMORIES

Low frequency noise in AC biased metallic tunnel junctions

Nicolas Fontaine, Bertrand Reulet, Alexandre Dumont

Probability distribution of flicker noise in Au-decorated graphene-Si Schottky barrier diode

Janusz Smulko, Andrzej Kwiatkowski, Katarzyna Drozdowska, Lars Österlund, Tesfalem Welearegay, Adil Rehman, Sergey Rumyantsev

Low frequency noise measurements in LSMO/Nb:STO heterostructure

Jérémy Blond, Ali Mcheik, Zeinebou Eleye, Chantal Gunther, Sandeep Kumar Chaluvadi, Laurence Méchin, Victor Pierron, Bruno Guillet

NEP in AlGaIn/GaN based nanodiodes

Ignacio Iñiguez-de-la-Torre, Elsa Pérez-Martín, Philippe Artillan, Edouard Rochefeuille, Héctor Sánchez-Martín, Gaudencio Paz-Martínez, Tomás González, Javier Mateos

The Role of Tunneling Oxide in the Low Frequency Noise of Multi-level Silicon Nitride ReRAMs

Nikolaos Vasileiadis, Alexandros Mavropoulis, Christoforos Theodorou, Panagiotis Dimitrakis

Low-Frequency Noise in InGaAs-OI 1T-DRAMs

Carlos Marquez, Carlos Navarro, Siegfried Karg, Ruben Ortega, Cezar Zota, Francisco Gamiz

18:30 Gala dinner – Chateau de Sassenage (*meeting point will be arranged*)

Thursday 19/10/2023

09:00-10:00 PLENARY TALK – *Graziella Scandura & Carmine Ciofi (University of Messina, ITALY)*
Low-frequency noise measurement systems - design strategies and implementation challenges

10:00-10:30 Coffee break

10:30-11:15 SESSION T3 – MAGNETISM AND NOISE

Noise behavior of Hall-effect sensors at high magnetic field

Vincent Mosser, Rémi Boucher, Enrique Minaya Ramirez

Enhanced Stochastic Bit Rate for Perpendicular Magnetic Tunneling Junctions in a Transverse Field

Corrado Carlo Maria Capriata, Gabriel David Chaves-O'Flynn, Andrew D. Kent, Gunnar Malm

Probing interactions between atoms and external fields by spin noise spectroscopy

Joseph Delpy, Fabienne Goldfarb, Fabien Bretenaker

11:15-12:30 SESSION C1 – CIRCUITS

Noise induced oscillations in a second order circuit with nonvolatile memristor (Invited)

Michele Bonnin, Fabrizio Bonani, Fernando Corinto, Fabio Traversa, Manuel Escudero, Stefano Brivio, Sabina Spiga, Kailing Song

Original Design Procedure For Self-Reconfigurable Low Noise Figure and High RF Input Power Overdrive LNAs: Application To X-Band GaN MMICs

Jean-Guy Tartarin, Bastien Pinault, Damien SAUGNON

Verilog-A based implementation of Lorentzian noise spectra in compact models

Nikolaos Makris, Loukas Chevas, Matthias Bucher

Detailed balance and out-of-equilibrium measurements in microwave circuits

Alexandre Dumont, Pierre Février, Christian Lupien, Bertrand Reulet

12:30-14:00 Lunch break

14:00-15:00 SESSION D6 – QUANTUM DEVICES AND NOISE

Quantum Hall Devices for resistor standard and industrial applications (Invited)

Taro Itatani

Phase-coherent transport probed by noise measurements in quantum rings

Birkan Düzél, Olivio Chiatti, Christian Riha, Sven S. Buchholz, Dirk Reuter, Andreas Wieck, Saskia F. Fischer

Noise Dynamics in the Quantum Regime

Bertrand Reulet, Clovis Farley, Edouard Pinsolle

15:00-15:30 Coffee break

15:30-17:00 SESSION D7 – OPTOELECTRONICS AND PHOTONICS

Birefringence and dichroism effects in the spin noise spectra of a spin-1 system (Invited)

Shikang Liu, Joseph Delpy, Pascal Neveu, E Wu, Fabien Bretenaker, Fabienne Goldfarb

Variance and Skewness of Current Fluctuations Experimentally Evidenced in Single-Photon Avalanche Diodes

Léopold Van Brandt, Roselien Vercauteren, Diego Haya Enriquez, Valeriya Kilchytska, Nicolas André, Denis Flandre, Jean-Charles Delvenne

Optically Controlled Nanoscale FET Toward Advanced Biosensing Applications

Mykhaylo Petrychuk, Akira Fujiwara, Denys Pustovy, Yongqiang Zhang, Hanlin Long, Svetlana Vitusevich

Noise in a phase-locked VECSEL ring array

Sopfy Karuseichyk, Fabien Bretenaker, Vishwa Pal, Isabelle Sagnes, Sahil Sahoo

Experimental Evidence of Light Source Contribution in the Noise of Optoelectronic Devices Under Illumination

Alexandra Diaz, Chloé Wulles, Christoforos Theodorou, Anne Kaminski, Quentin Rafhay

Low frequency noise in p-InAsSbP/n-InAs infrared photodiodes and LEDs

*Nina Dyakonova, Sergey A. Karandashev, Michael E. Levinshtein,
Boris A. Matveev, Maxim A. Remennyi*



Friday 20/10/2023

09:00-10:00 PLENARY TALK – *Aneta Stefanovska (Lancaster University, UK)*
Noisy oscillators in biology and medicine

10:00-10:30 Coffee break

10:30-11:30 SESSION S2 – BIOPHYSICAL SYSTEMS

Investigating Dynamics of Heartbeat Rhythm using Pulse Period Tactile Stimuli

Kent Nagumo, Akio Nozawa

Predicting complex multi-species phase structure for ionic conduction in nanopores

William Gibby, Miroslav Barabash, Dmitry Luchinsky, P.V.E. McClintock, Igor Khovanov

Transition from brownian to anomalous diffusion of biomolecules as a signature of long-range electrodynamic interactions

*Tristan Béranger, Matteo Gori, Sandra Ruffenach, Elena Floriani, Frédéric Teppe,
Laurent Bonnet, Sébastien Mailfert, Didier Marguet, Pierre Ferrier, Luca Varani,
James Sturgis, Jeremie Torres, Marco Pettini*

Selective resonant diffusion of ions in an artificial analogue of a biological filter

Dmitry Luchinsky, W.A.T. Gibby, Miroslav Barabash, P.V.E. McClintock, I.A. Khovanov

11:30-12:45 SESSION T4 – QUANTUM TRANSPORT AND SUPERCONDUCTIVITY

Atomic scale noise reveals how electrons enter a superconductor (Invited)

Freek Masee

Full counting statistics of ultrafast quantum transport

Matthias Hübler, Wolfgang Belzig

Full Counting Statistics of Transport through Yu-Shiba-Rusinov Bound States

David Ohnmacht, Wolfgang Belzig, Juan Carlos Cuevas

Analysis of the Fano factor behavior in the presence of cascaded oblique barriers

Paolo Marconcini, Massimo Macucci

12:45-14:15 Lunch break

14:15-14:30 CONFERENCE CLOSING