10th International Conference

UNSOLVED PROBLEMS ON NOISE

September 8-11, 2026 — **Messina, Italy**

Università degli Studi di Messina

Sponsored by

SFB 1432

smartme

WOLFRAM MATHEMATICA
ADALTA
Distributore unico per l'Italia

INTERNATIONAL YEAR OF Quantum Science and Technology

Springer

Fontalba

Under the patronage of

Città di Messina

horcynus orca

Messina is a city where fluctuations are part of everyday life: winds, tides, currents, and waves continuously shape one of the world's most fascinating natural laboratories.

Università degli Studi di Messina

UPoN 2026
September 8-11 – MESSINA (ITALY)

10th International Conference on Unsolved Problems on Noise

UPoN 2026

8-11 September 2026, Messina, Italy

TECHNICAL PROGRAM

TABLE OF CONTENTS

WELCOME FROM THE GENERAL CHAIR

Dear Colleagues and Friends,

Welcome to the 10th International Conference on Unsolved Problems on Noise (UPoN 2026).

It is a great honor and a genuine pleasure to welcome you to Messina for this special edition of UPoN. Celebrating the tenth edition is much more than marking the passage of time; it means celebrating a scientific community that has grown through curiosity, collaboration, and the shared passion for exploring the fascinating world of noise and fluctuations. Every place has its own sound. Here in Messina, the sea is never truly silent. Waves, currents, wind, and life continuously intertwine in a symphony of fluctuations. What may seem like noise is, in reality, a source of information waiting to be understood. Perhaps this is why Messina feels like the perfect place to celebrate the tenth edition of UPoN.

Throughout the years, UPoN has become a place where ideas are exchanged freely, disciplines meet naturally, and collaborations often begin with a conversation during a coffee break as much as with a presentation in the lecture hall. I hope that this spirit will once again characterize every moment of the conference.

Noise is frequently perceived as uncertainty or disturbance. Yet, for our community, it represents something far more valuable: a key to understanding nature. Hidden within fluctuations lie information, correlations, and mechanisms that often cannot be revealed in any other way. Listening carefully to noise allows us to discover the unseen, turning apparent randomness into scientific insight.

The scientific program reflects the remarkable breadth of this field, bringing together contributions spanning electronics, physics, quantum technologies, sensing, complex

systems, artificial intelligence, biology, and many other areas where fluctuations play a fundamental role. I hope these days will inspire stimulating discussions, new perspectives, and lasting collaborations.

I would like to express my heartfelt gratitude to our keynote and invited speakers, the authors, reviewers, members of the Scientific and Organizing Committees, our sponsors, and all those whose dedication has made UPoN 2026 possible.

Finally, I encourage you to enjoy not only the conference but also the beauty of Messina and the unique atmosphere of the Strait, where Sicily meets the rest of Europe. May your time here be scientifically enriching, professionally rewarding, and personally memorable.

Thank you for being part of UPoN 2026.

Graziella Scandurra

UPoN 2026 General Chair
University of Messina
Italy

UPON 2026 COMMITTEE

GENERAL CHAIR

Graziella Scandurra, General Chair, University of Messina, Italy.

GENERAL CO-CHAIR

Carmine Ciofi, Co-chair, University of Messina, Italy.

LOCAL ORGANIZING COMMITTEE

Emanuele Cardillo, University of Messina, Italy.
Gino Giusi, University of Messina, Italy.
Luigi Ferro, University of Messina, Italy.

COMMITTEE OF FORMER CHAIRS

Derek Abbott, University of Adelaide, Australia.
Sergey Bezrukov, National Institutes of Health, USA.
Sergio Ciliberto, École Normale Superieure de Lyon, France.
Laszlo Kish, Texas A&M University, USA.
Xavier Oriols, Universitat Autònoma de Barcelona, Spain.
Janusz Smulko, Gdańsk University of Technology, Poland.

TECHNICAL AREA CHAIRS

Noise in biology and in biomedicine: Peter McClintock, Lancaster University, UK.
Noise in materials and devices: Bruno Sagnes, University of Montpellier, France.
Noise in circuits: Jean-Guy Tartarin, University of Toulouse, France.
Noise in quantum devices and systems: Elisabetta Paladino, University of Catania, Italy.
Acoustic and mechanical noise: Vincenzo Dattilo, European Gravitational Observatory, Italy.
Noise in human activities and application of noise: Christiana Chamon Garcia, Virginia Tech, USA.

INTERNATIONAL ADVISORY COMMITTEE

Leopold Van Brandt, UCLouvain, Belgium.
Luca Varani, Univ. Montpellier, France.
Massimo Macucci, University of Pisa, Italy.

Gergely Vadai, University of Szeged, Hungary.
Peter Mc Clintock, Lancaster University,UK.
Bruno Sagnes, University of Montpellier, France.
Elisabetta Paladino, University of Catania, Italy.
Nicole Fabbri, LENS - European Laboratory for Non-Linear Spectroscopy, Italy.
Jean-Guy Tartarin, University of Toulouse, France.
Vincenzo Dattilo, European Gravitational Observatory, Italy.
Christiana Chamon Garcia, Virginia Tech, USA.
Laszlo Kish, Texas A&M University, USA.
Janusz Smulko, Gdańsk University of Technology, Poland.

UPON 2026 KEYNOTE SPEAKERS

KEYNOTE LECTURE: SEPTEMBER 8, H 9:00

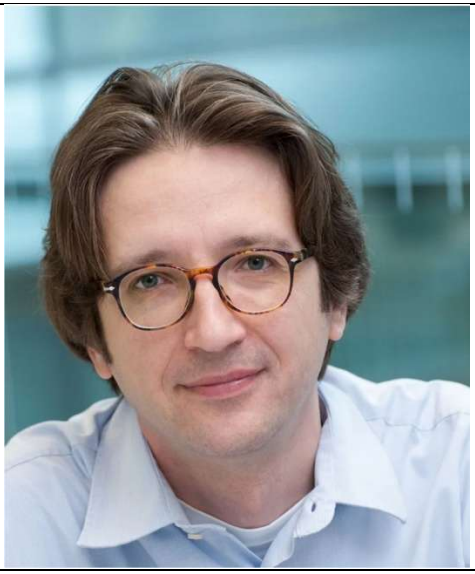
The beneficial role of noise: stochastic resonance and beyond

Luca **Gammaitoni,**
Department of Physics and Geology
University of Perugia
Italy

ABSTRACT

The phenomenon of Stochastic Resonance has become the hallmark of a whole new wave in the discussion of stochastic nonlinear physical systems, in which the role of noise and fluctuations can have beneficial effects, if certain conditions are met. In this seminar, we will briefly review Stochastic Resonance and introduce new phenomena in which the role of noise is producing benefits far beyond what is normally expected.

KEYNOTE LECTURE: SEPTEMBER 9, H 9:00



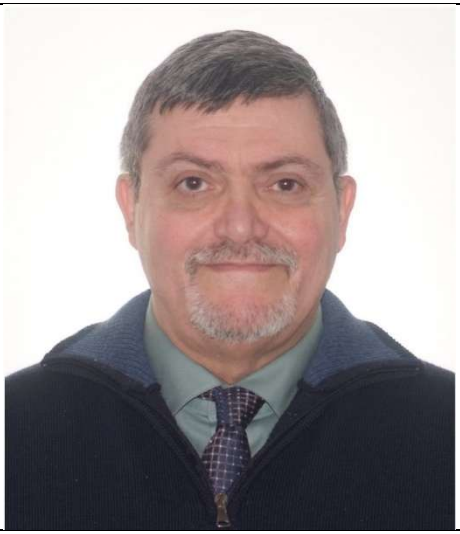
Spin noise and diamond spin qubits

Fedor **Jelezko,**
Institute of Quantum Optics,
Ulm University,
Germany

ABSTRACT

Diamond spin qubits are attracting increasing attention due to their potential applications in quantum information processing and sensing. In this talk, we will discuss the role of quantum projection noise in quantum sensing, and its impact on the sensitivity and frequency resolution of diamond colour centres as quantum magnetometers. We will also explore the detection of nuclear magnetic resonance (NMR) signals at the nanoscale using quantum sensors, where spin noise acts as the signal.

KEYNOTE LECTURE: SEPTEMBER 9, H 11:10



Decoherence and 1/f noise in Quantum Nanoscience: Superconducting Quantum Computing Devices

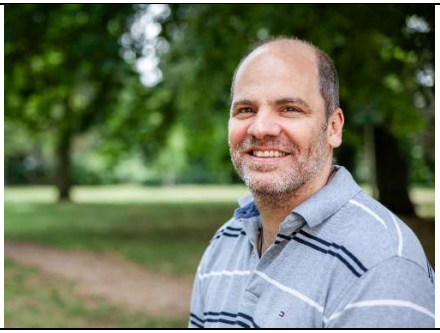
Giuseppe A. **Falci,**
Department of Physics and Astronomy
"E. Majorana",
Università di Catania,
Italy

ABSTRACT

In standard quantum mechanics, physical systems are often idealized as isolated entities evolving under unitary dynamics. In practice, however, unavoidable interactions with environmental degrees of freedom lead to decoherence, limiting the performance of quantum technologies. In quantum computing, decoherence manifests as errors that hinder the realization of the expected computational advantage, low-frequency noise being the major source of degradation in solid-state quantum platforms.

In this talk, I review the main approaches to addressing decoherence induced by broadband colored noise, using superconducting quantum devices as a case study. I discuss diagnostic tools for identifying decoherence mechanisms and outline the main strategies for their mitigation. Open problems—such as the detection of non-Gaussian noise features, their effects in multilevel and multi-qubit systems, and the development of a comprehensive theory of quantum 1/f noise—are also addressed.

KEYNOTE LECTURE: SEPTEMBER 10, H 9:00



Computing at kT: A Stochastic Thermodynamics Perspective

Massimiliano **Esposito,**
University of Luxembourg,
Luxembourg

ABSTRACT

As electronic devices operate increasingly close to the thermal energy scale kT, fluctuations become an intrinsic component of their dynamics rather than a perturbation. In this regime, computation must be understood as a nonequilibrium physical process.

In this talk, I will show how stochastic thermodynamics provides a consistent framework to describe nonlinear electronic circuits in the presence of noise, with a focus on subthreshold CMOS technologies. By enforcing thermodynamic consistency at the level of stochastic dynamics, this approach allows one to characterize energy exchanges, dissipation, and fluctuations in computational devices.

I will discuss how this perspective naturally leads to probabilistic computing elements that exploit thermal noise, and argue that stochastic thermodynamics offers a principled way to think about computation in energy-limited, noisy regimes.

KEYNOTE LECTURE: SEPTEMBER 11, H 9:00

Towards the Low-Frequency Frontier: Noise, System Dynamics and Digital Twins

Fabrizio **Barone,**
University of Salerno,
Italy

ABSTRACT

Low-frequency measurements are strongly influenced by the interaction between the system under investigation, the sensing device and the surrounding environment. Intrinsic sensor noise, external disturbances, electronic drift and noise within the measurement chain can compromise accuracy and distort the observed response, particularly in complex systems characterised by multiple degrees of freedom and coupled dynamics.

This keynote lecture examines the effects of these factors on measurement quality and system identification, with particular emphasis on mechanical sensors and feedback-controlled devices. Sensitivity, damping, structural configuration and electronic design are considered key parameters for enhancing weak-signal detection, mitigating noise and achieving a more reliable characterisation of the system's dynamic behaviour.

The same perspective is extended to digital twins by incorporating noise, environmental variability and actual system dynamics into the modelling process. This approach enables the development of models that more accurately reflect operating conditions, thereby improving monitoring reliability and anomaly detection.

UPON 2026 VENUE

UPoN 2026 will be held at the **Rettorato dell'Università degli Studi di Messina**, in Piazza Pugliatti 1, 98122 Messina.

Housed in the historic building on Piazza Pugliatti, the Rectorate serves as the institutional and administrative heart of the University of Messina.

It contains the Aula Magna, a prestigious venue for high culture and the site of the university's most important academic ceremonies.

The historic **Aula Cannizzaro**, which has long hosted conferences and symposia of international significance, serves as the venue for UPoN.

The afternoon session on Wednesday the 9th will take place at **Horcynus Orca Park**, which we will reach together by bus.

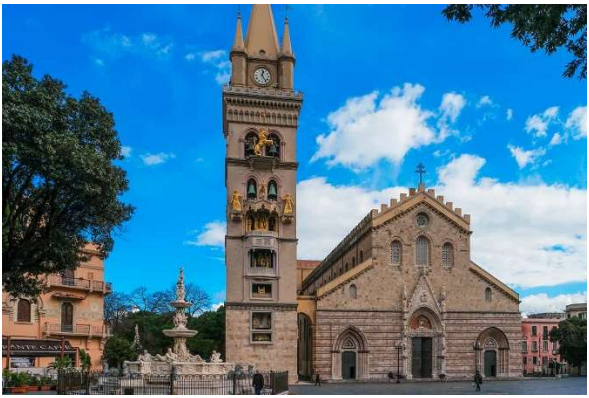
Horcynus Orca Park is a cultural and scientific center located in Messina, specifically in the picturesque area of Torre Faro at Capo Peloro.

It stands at the northeastern tip of Sicily, exactly where the Tyrrhenian and Ionian Seas meet. It takes its name from the famous novel by Stefano D'Arrigo.

We will have the opportunity to discuss “noise” on the shores of the Strait, enjoying traditional Sicilian ice cream in an exceptional setting.

PROGRAM SCHEDULE - TUESDAY, SEPTEMBER 8

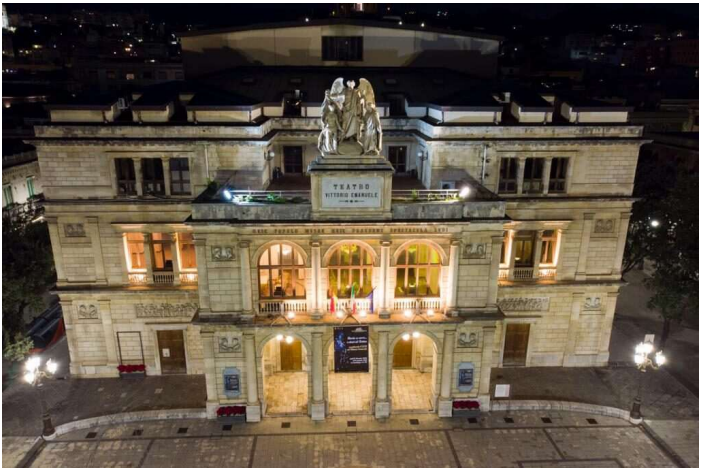
8:00-8:45	Registration (open until 17:20)
8:45-9:00	**Conference Opening** *Graziella Scandurra*[1], UPoN 2026 General Chair
9:00-10:00	**Keynote Speaker:** *Luca Gammaitoni*[2]: The beneficial role of noise: stochastic resonance and beyond. Session chair: *Luca Varani*[3]
10:00-10:50	**Session: Theory of noise and fluctuations** Session Chair: *Gergely Vadai*[4]
10:00-10:30	Too good to be true: Can too much evidence be unreliable? (**Invited**) *D. Abbott*[5]
10:30-10:50	Blackbody Photon-Number Fluctuations as a New Paradigm for the Fine-Structure Constant: From Subatomic to Cosmological Scales. *L. Varani*[3], *F. Intini*[6], *L. Reggiani*[7], *and Felipe da S. Alves*[8]
10:50-11:20	**Coffee break**
11:20-13:00	**Visit to the Astronomical Clock (Basilica Cattedrale "Santa Maria Assunta", very close to the conference venue)**
13:00-14:30	**Lunch**



Basilica Cattedrale "Santa Maria Assunta"

PROGRAM SCHEDULE - TUESDAY, SEPTEMBER 8

14:30-16:10	**Session: Fluctuations and noise in materials and devices 1** Session Chair: *Bruno Sagnes*[3]
14:30-14:50	Reducing the low-frequency noise of graphene resistors by gold nanoparticle deposition. *K. Drozdowska-Czubek*[9], *J. Smulko*[9]
14:50-15:10	Non-Gaussian Ambient Light Cancellation Overflow Noise in Wrist and Finger Photoplethysmography: A Statistical Characterization using the MAX30102 Sensor. *R. Rahman*[10], *F. Mahzabeen*[10]
15:10-15:30	Low-Frequency Noise and Temperature Resolution in Amorphous Silicon p-i-n Sensors. *G. Giusi*[1], *G. Scandurra*[1], *F. Cappelli*[11], *D. Caputo*[11], *G. Petrucci*[11], *C. Ciofi*[1]
15:30-15:50	Noise Analysis of micrometer-scale Vanadium Dioxide Resistors for Temperature Sensing. *G. Brandsteert*[12], *T. Ratier*[12], *L. Lahaye*[12], *V. Kilchytska*[12], *B. Reulet*[13], *D. Flandre*[12], *L. Van Brandt*[12]
15:50-16:10	Experimental studies of Charge-Density-Wave in 1T-TaS2 ink-printed devices at elevated temperatures. *J. Smulko*[9], *K. Drozdowska-Czubek*[9], *S. Rumyantsev*[14]
16:10-16:40	**Coffee break**
16:40-17:20	**Session: Fluctuations and noise in materials and devices 2** Session Chair: *Bruno Sagnes*[3]
16:40-17:00	1/*f* noise in the nonlinear coefficients of dc- and ac-biased tunnel junctions. *N. Fontaine*[13], *B. Reulet*[13]
17:00-17:20	Noise Spectroscopy of beta-Ga2O3 Epitaxial Layers Grown on Sapphire Substrate. *S. Pralgauskaitė*[15], *K. Gudeliauskas*[15], *J. Glemža*[15], *J. Matukas*[15], *J. Jorudas*[16], *S. Indrišiūnas*[16], *P. Gečys*[16], *P. Kašalynas*[16], *C. Huang*[17], *R. Horng*[17]
17:20-18:45	**Free time**
18:45-19:15	**Transfer to Teatro Vittorio Emanuele** (Instructions will be provided during the conference)
19:30-22:00	**Piano Concert & Welcome Cocktail** **"Improvising the Unpredictable"**



Teatro Vittorio Emanuele

Luciano Troja - Pianist & Composer

Italian pianist and composer Luciano Troja is a prominent figure in contemporary jazz and improvised music. His musical background bridges a rigorous academic education in Italy with advanced training in New York, shaping a distinctive style that seamlessly blends European lyrical traditions with the expressive freedom of American jazz. Throughout his career, he has led various creative ensembles—ranging from duos to quartets—and performs regularly at music festivals and venues across Europe and the United States. His acclaimed discography has achieved significant international recognition, including prestigious nominations at the Independent Music Awards in the US and enthusiastic reviews from global music critics. In addition to his career as a performer and composer, he shapes the cultural landscape as the artistic director for one of Italy's oldest and most historic concert societies, a role he has held for over a decade.

Luciano Troja will improvise for us on the conference themes.

PROGRAM SCHEDULE - WEDNESDAY, SEPTEMBER 9

8:30-9:00	Registration (open until 14:20)
9:00-10:00	**Keynote Speaker:** *Fedor Jelezko*[18]: Spin noise and diamond spin qubits Session Chair: *Massimo Macucci*[19]
10:00-10:40	**Special Session: Quantum Sensing** Session Chair: *Giuseppe Falci*[20]
10:00-10:20	Machine-Learning-Assisted Quantum Sensing of Noise Correlations. *L. Giannelli*[20], *S. Mukherjee*[20], *D. Fasone*[20], *E. Paladino*[20], *G. Falci*[20]
10:20-10:40	Magnetic sensing and imaging with NV centers in diamond. *S. Hernandez Gomez*[21]
10:40-11:00	**Coffee break**
11:00-12:00	**Keynote Speaker:** *Giuseppe Falci*[20]: Decoherence and 1/f noise in Quantum Nanoscience: Superconducting Quantum Computing Devices. Session Chair: *Massimo Macucci*[19]
12:00-12:40	**Session: Noise in nano-scaled and quantum devices and systems** Session Chair: *Giuseppe Falci*[20]
12:00-12:20	Noise-driven ionic transport in single-walled carbon nanotubes. *D. Luchinsky*[22], *P. McClintock*[22], *W. Gibby*[22], *I. Khovanov*[23]
12:20-12:40	Approximate model of phase noise in qubit control pulses. *A. Barsotti*[19], *M. Macucci*[19]

PROGRAM SCHEDULE - WEDNESDAY, SEPTEMBER 9

12:40-14:00	**Lunch**
14:00-15:00	**Free time**
15:00-16:00	**Transfer to Horcynus Orca (by bus provided by the Organization)**
16:00-17:40	**Session: Noise in biology and in biomedicine 1** Session Chair: *Peter McClintock*[22]
16:00-16:30	Is noise always stochastic? (**Invited**) *A. Stefanovska*[22]
16:30-17:00	Statistical fluctuations of large-scale mind states. (**Invited**) *D. Chialvo*[24]
17:00-17:20	Biological Noise as a Therapeutic Tool: A Novel Platform based on the Constrained Disorder Principle *Y. Ilan*[25]
17:20-17:40	Analysis of Repetitive Handwriting by Using the Multifractal Spectrum. *M. Uchida*[26]
17:40-18:15	**Round Table: Evolution of Research on Noise** Panelists: *D. Abbott*[5], *L. Kish*[27], *P. McClintock*[22]
18:15-19:15	**Round Table will continue during Sicilian Ice Cream Tasting!**

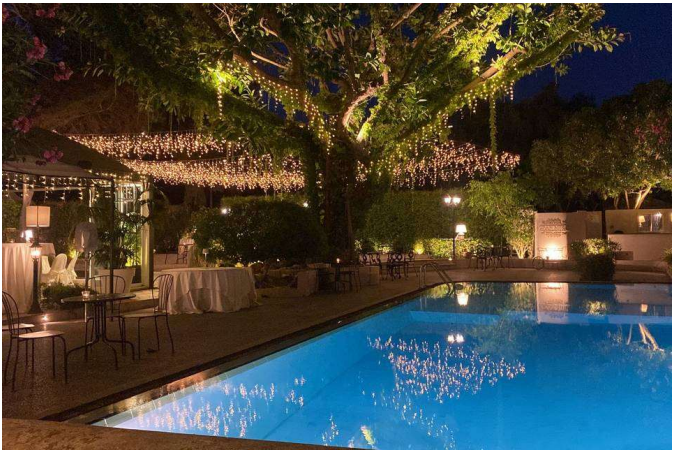
Stretto di Messina

PROGRAM SCHEDULE - THURSDAY, SEPTEMBER 10

8:30-9:00	Registration (open until 18:30)
9:00-10:00	**Keynote Speaker:** *Massimiliano Esposito*[28]: Computing at kT: A Stochastic Thermodynamics Perspective Session Chair: *Jean-Charles Delvenne*[12]
10:00-10:50	**Special Session 1: Stochastic Thermodynamics 1** Session Chair: *Leopold Van Brandt*[12]
10:00-10:30	Higher order moments of entropy production and consequences for electronic devices. (**Invited**) *J. Delvenne*[12]
10:30-10:50	Fluctuations of integrated currents and timing observables for dissipation inference in Markov jump processes. *A. Garilli*[29]
10:50-11:20	**Coffee break**
11:20-12:20	**Special Session 1: Stochastic Thermodynamics 2** Session Chair: *Leopold Van Brandt*[12]
11:20-11:40	Stochastic thermodynamics and predictability of Ornstein–Uhlenbeck processes: application to the Madden–Julian Oscillation. *R. Benincasa*[30], *J.B. Weiss*[31], *D. Du*[32], *G. S. Duane*[31]
11:40-12:00	Taming nonequilibrium thermal fluctuations in subthreshold CMOS circuits. *J. Freitas*[33]
12:00-12:20	Energy statistics in two-qubit solid-state system. *Z. Rashid*[21], *S. Hernández Gómez*[21], *S. Gherardini*[21], *N. Fabbri*[21]
12:20-13:00	**Session: Noise in biology and in biomedicine 2** Session Chair: *Peter McClintock*[22]
12:20-12:40	Effects of Screen Conditions and 20 Hz Band-Pass Filtering on Gaze Discrimination in SSVEP-Based BCIs. *H. Gyobu*[26], *T. Mizuno*[26], *N. Itakura*[26], *S. Matsuno*[26], *S. Ogo*[26], *S. Tanaka*[26]
12:40-13:00	Theoretical Foundation and Validation of R-B Color Difference for Robust Hemodynamic Assessment in Actual Images. *M. Shimizu*[26], *N. Itakura*[26], *K. Mito*[26], *T. Mizuno*[26]
13:00-14:30	**Lunch**

14:30-15:50	**Session: Noise in biology and in biomedicine 3** Session Chair: *Peter McClintock*[22]
14:30-14:50	Local Spatial Patterns of Hemodynamic Fluctuations in Near-Infrared Face Images Under Acute Stress. *E. Gono*[34]*, K. Nagumo*[34]*, A. Nozawa*[34]
14:50-15:10	Toward Human Motor Control State Discrimination in Rhythmic Movements from Short-Time Fluctuation Characteristics Using Neural Networks. *K. Nagumo*[34]*, A. Nozawa*[34]
15:10-15:30	Rare Deep-Brain Stimulation Pulse Trains from Purely High-Frequency Harmonics. *L. Kish*[27]*, S. M. Bezrukov*[35]*, L. Kovács*[36]
15:30-15:50	ECG, PPG, and Elite HRV based HHR determination on a treadmill test. *M. Huotari*[37]
15:50-16:50	**Session: Noise in human activities 1** Session Chair: *Christiana Chamon Garcia*[38]
15:50-16:20	Ultradian Organization of the Human Physical Activity. (**Invited**) *A. Dér*[39]
16:20-16:50	High Frequency Attack Against the KLJN Secure Key Exchange Scheme. (**Invited**) *L. Kish*[27]*, K. Entesari*[27]
16:50-17:20	**Coffee break**
17:20-18:20	**Session: Noise in human activities 2** Session Chairs: *Christiana Chamon Garcia*[38]*, Laszlo Kish*[27]
17:20-17:40	Two Factor Authentication with PPG and Voice Input Leveraging Hidden Markov Model. *S. Saif*[38]*, M. Karamat*[38]*, C. Garcia*[38]
17:40-18:00	Above and Beyond the Daily Rhythm: How Can We Examine the Fluctuations in Our Everyday Motion? *B. Maczák*[4]*, C. Nagy*[4]*, G. Skrionya*[4]*, A. Hock*[4]*, C. G. Horváth*[40]*, R. Bódizs*[40]*, G. Vadai*[4]
18:00-18:20	Noiseprint: Toward Robust Image Classification via Intrinsic Sensor Noise Signatures *C. Garcia*[38]
15:50-18:20	Poster: Artificial Intelligence-data driven analysis of human activities noise in the banking sector: Implications for security and economic performance. *C. Sahani*[50], *A. Sharma*[50], *P. Kumar*[50], *R. Kumar*[50]
18:20-19:30	**Free time**

19:30-20:30	**Transfer to the gala dinner venue (Villa Ida)**
20:30-22:30	**Gala Dinner (Villa Ida)**



Villa Ida

PROGRAM SCHEDULE - FRIDAY, SEPTEMBER 11

9:00-10:00	**Keynote Speaker:** *Fabrizio Barone*[41]: Towards the Low-Frequency Frontier: Noise, System Dynamics and Digital Twins Session Chair: *Carmine Ciofi*[1]
10:00-11:10	**Special Session: Noise in Gravitational-Wave Detectors: Sources, Mitigation, and Open Problems** Session Chair: *Vincenzo Dattilo*[42]
10:00-10:30	Noise in the Advanced Virgo Plus detector. (**Invited**) *Francesco Di Renzo*[42]
10:30-10:50	Optical electronics and environmental noises that affect the stability performances and reliability of the laser injection of Virgo. *P. Lagabbe*[42]
10:50-11:10	Environmental Noise Coupling in Virgo Gravitational-Wave Detector: Magnetic Measurements and Acoustic Simulations. *L. Lunghini*[2]*, I. Fiori*[42]*, M. Punturo*[43]*, M.C. Tringali*[42]
11:10-11:30	Bias from Noise Idealization in Null Stream Searches for Non Tensorial Gravitational Wave Polarizations. *B. Cirok*[4]*, I.C.F. Wong*[44]*, G. Vadai*[4]
11:30-11:50	**Coffee break**
11:50-13:20	**Session: Noise in circuits** Session Chair: *Jean-Guy Tartarin*[45]*, Matthias Rudolph*[46]
11:50-12:20	GaN-based Low-Noise Amplifiers: A review. (**Invited**) *M. Rudolph*[46]
12:20-12:40	Self-reconfigurable GaN LNA: a game changer for next generation of robust RF receivers. *J.G. Tartarin*[45]
12:40-13:00	Stochastic port-Hamiltonian modeling of electrical networks out of equilibrium. *M. Bonnin*[47]*, L. Desoppi*[13]*, L. Van Brandt*[12]*, J. Delvenne*[12]*, B. Reulet*[13]*, F. Bonani*[47]*, F. Traversa*[48]
13:00-13:20	A Reactive Capacitive Variant of the Kirchhoff-Law-Johnson-Noise (KLJN) Secure Key Exchange Scheme. *C. Garcia*[38]*, S. Ferdous*[49]*, L. Kish*[27]
13:20-13:30	**Conference closing**
13:30-14:30	**Lunch**

Author affiliations

[1]University of Messina, Italy

[2]University of Perugia, Italy

[3]University of Montpellier, France

[4]University of Szeged, Hungary

[5]University of Adelaide, Australia

[6]University of Modena and Reggio Emilia, Italy

[7]Salento University, Italy

[8]Federal Institute of Education, Science and Technology of Minas Gerais (IFMG), Brazil

[9]Gdańsk University of Technology, Poland

[10]North South University, Basundhara, Bangladesh

[11]University of Rome "La Sapienza", Italy

[12]UCLouvain, Belgium

[13]University of Sherbrooke, Canada

[14]CENTERA Laboratories, Institute of High Pressure Physics PAS, Warsaw, Poland

[15]Vilnius University, Lithuania

[16]Center for Physical Sciences and Technology, Lithuania

[17]National Yang Ming Chiao Tung University, Taipei, Taiwan

[18]Institute of Quantum Optics, Ulm University, Germany

[19]University of Pisa, Italy

[20]University of Catania, Italy

[21]LENS - European Laboratory for Non-Linear Spectroscopy / INO-CNR, Firenze, Italy

[22]Lancaster University, UK

[23]University of Warwick, UK

[24]National University of San Martin, Argentina

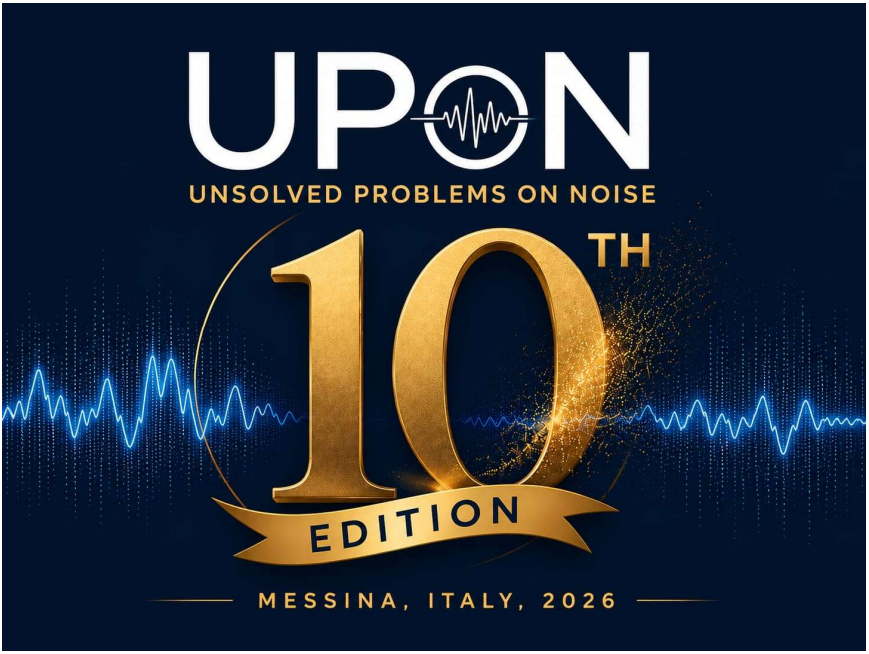
[25]Hadassah Medical Center, Jerusalem, Israel

[26]The University of Electro-communications, Chōfu, Tokyo, Japan

[27]Texas A&M University, Texas, USA

[28]University of Luxembourg, Luxembourg
[29]University of Padova, Italy
[30]University of Bologna, Italy
[31]University of Colorado, Boulder, USA
[32]Princeton University, NJ, USA
[33]University of Buenos Aires, Argentina
[34]Aoyama Gakuin University, Japan
[35]National Institutes of Health (NIH), Bethesda, Maryland, USA
[36]Obuda University, Budapest, Hungary
[37]University of Oulu, Finland
[38]Virginia Polytechnic Institute and State University, USA
[39]HUN-REN Biological Research Centre, Szeged, Hungary
[40]Semmelweis University, Budapest, Hungary
[41]University of Salerno, Italy
[42]European Gravitational Observatory (EGO), Italy
[43]INFN, Perugia, Italy
[44]KU Leuven, Belgium
[45]LAAS-CNRS, Toulouse, France
[46]Brandenburg University of Technology (BTU), Germany
[47]Polytechnic of Turin, Torino, Italy
[48]MemComputing, Inc., San Diego, CA, USA
[49]Advanced Micro Devices, Inc. (AMD), Santa Clara, CA, USA
[50]Graphic Era Deemed to be University, Clement Town, Dehradun, Uttarakhand, India

Notes



Listen to the Noise.
Discover the unseen.