The 9th International Conference on Unsolved Problems of Noise
UPoN'24, Hungary, 3-7 June 2024

Preliminary program

June 3, Monday

Afternoon: **Getting Together Reception** at Obuda University, Bécsi út 96/B, Budapest.
Time: TBD

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June 4, Tuesday

9:00-9:30 **Opening ceremony**

Session: Noise in biology and biomedicine - 1

9:30-10:05 **Keynote talk:** Kovacs, Levente, Obuda Univ., Hungary:
Personalized Cancer Therapy by Model-based Optimal Robust Control Algorithm

10:05-10:40 **Keynote talk:** Chialvo, Dante, USAM, Argentina:
What kind of noise is brain noise?

10:40-11:00 **Coffee break**

Session: Noise in quantum systems - 1

11:00-11:35 **Keynote talk:** Zubairy, Suhail, Texas A&M Univ., USA
Counterfactual Communication: Protocol and Controversy

11:35-12:10 **Keynote talk:** Dyakonov, Michel, Univ. Montpellier, France:
On the impossibility (of practical) quantum computing

12:10-12:35 **Invited talk:** Belzig, Wolfgang, Univ. Konstanz, Germany
Quantum Fluctuations of Squeezed Magnons in Ferro- and Antiferromagnets

12:35-13:00 **Invited talk:** Macucci, Massimo, Univ. of Pisa, Italy
Effect of control signal phase noise on the fidelity of superconducting qubits

13:00- 14:30 **Lunch (on site)**

Session: Noise and oscillations

14:30-15:05 **Keynote talk:** Dykman, Mark, MSU, USA:
Fluctuations in weakly damped driven vibrational systems

15:05-15:40 **Keynote talk:** Goychuk, Igor, Univ. Erlangen-Nürnberg, Germany:
Nonlinear viscoelastic transport and diffusion: How can seemingly overdamped Brownian particles exhibit sustained oscillations?

15:40-16:05 **Invited talk:** Chan, Ho Bun, Hong Kong Univ. Sci.Tech, Hong Kong
Controlled asymmetric Ising model implemented with parametric micromechanical oscillators

16:05-16:25 Pikovsky, Arkady (University of Potsdam, Potsdam, Germany)
Stochastic dynamics of the phase of noise-driven oscillations

16:25-16:45 **Coffee break**

Session: Noise in society

16:45-17:20 **Keynote talk:** Weissman, Michael, UIUC, USA:
Bayesian analysis of the probable origins of Covid: Quantifying "friggin' likely"

17:20-17:40 Pethes, Róbert (Physiological Controls Research Center, Óbuda University, Hungary) and Levente Kovács (University Research, Innovation and Service Center, Óbuda University)
Constructing Socially-Inspired Networks Using the Static Edge Voting Model

== End of Tuesday sessions

June 5, Wednesday

Session: Noise at the nano scale

9:00-9:35 **Keynote talk:** Balandin, Alexander, UCLA, USA:
Noise of charge density waves in low-dimensional quantum condensate materials

9:35-10:10 **Keynote talk:** McClintock, Peter, Univ. of Lancaster, UK:
Noise-driven permeation of ions through tiny channels and pores in biology and nanotechnology
Burov, Stas, Bar Ilan Univ., Israel
Universality of Exponential Tails for Transport in Disordered Media

10:10-10:35 **Invited talk:** Burov, Stas, Bar Ilan Univ., Israel
Universality of Exponential Tails for Transport in Disordered Media

10:35-11:00 Pralgauskaite, Sandra (Vilnius University, Lithuania), Frydrichas Mireckas (Vilnius University), Darya Meisak (Vilnius University), Jan Macutkevic (Vilnius University), Jonas Matukas (Vilnius University) and Juras Banys (Vilnius University)
Low Frequency Noise and Carrier Transport in Hybrid CNT/Metal/Polymer Composites

11:00-11:20 **Coffee break**

11:20-11:40 Gonnella, Giuseppe (Department of Physics, Università degli Studi di Bari, Italy), Daniela Moretti (Department of Physics, Università degli Studi di Bari), Giovanni Battista Carollo (Department of Physics, Università degli Studi di Bari) and Antonio Suma (Department of Physics, Università degli Studi di Bari)
Mass fluctuations as a subordinating process in cluster dynamics

11:40-12:00 Rehman, Adil (CENTERA Laboratories, Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw 01-142, Poland.)
Similarity of the 1/f Noise Properties in HgCdTe and Graphene

Session: Various noise processes

12:00-12:25 **Invited talk:** Dubkov, Alexander, Lobachevsky State Univ., Russia
Probability characteristics of Gompertz model with different kinds of colored noise excitation

12:25-12:50 **Invited talk:** Abbott, Derek, Univ. of Adelaide, Australia
Two-envelope problem

13:00-14:30 **Lunch (on site)**

Session: Noise in devices

14:30-15:05 **Keynote talk:** Deen, Jamal, McMaster Univ., Canada:
Low-frequency noise in downscaled silicon transistors - trends and unsolved issues

15:05-15:30 **Invited talk:** Scandurra, Graziella, Univ. of Messina, Italy
Reducing leakage effects and measurement time in Low Frequency Noise Measurements

15:30-15:50 Filatov, Dmitrii (Lobachevskii University of Nizhnii Novgorod, Russia), Daria Vrzheshch (Lobachevskii University of Nizhnii Novgorod) and Alexander Dubkov (Lobachevskii University of Nizhnii Novgorod)
Response of a memristor to an external noise signal

15:50-16:10 Grueneis, Ferdinand (Institute for Applied Stochastic, Germany)
Spectral Features and Counting Statistics of the Intermittent Poisson Process in the Presence of 1/f Fluctuations

16:10-16:30 **Coffee break**

Session: Noise in sensing

16:00-16:30 **Invited talk:** Smulko, Janusz, Tech. Univ. Gdansk, Poland
Perspectives of Fluctuation-Enhanced Gas Sensing by Two-dimensional Materials

16:30-17:00 **Invited talk:** Soskin, Stanislav, Nat. Acad, Sci, Ukraine
Using activation for accurate measurement of temperature greatly exceeding the barrier

17:00 -17:20 Sik, Ondrej (Brno University of Technology, Faculty of Electrical Engineering and Communications, Department of Physics, Czech Republic), Nikola Papez (Brno University of Technology, Faculty of Electrical Engineering and Communications, Department of Physics), Robert Macku (Brno University of Technology, Faculty of Electrical Engineering and Communications, Department of Physics), Nadezda Bogatyreva (Brno University of Technology, Faculty of Electrical Engineering and Communications, Department of Physics) and Petr Sedlak (Brno University of Technology, Faculty of Electrical Engineering and Communications, Department of Physics)
Low-frequency noise of a graphene chemical resistor operating near the Dirac point

17:20-17:40 Hino, Kaito (The University of Electro-Communications, Japan), Tota Mizuno (The University of Electro-Communications), Ryusei Iwasaki (The University of Electro-Communications), Kazuyuki Mito (The University of Electro-Communications) and Naoaki Itakura (The University of Electro-Communications)
Investigation of Functional Design in Back-Input Interface Using Motion Sensor

17:40-18:00 Mizuno, Tota (The University of Electro-Communications, Japan), Shodai Yada (The University of Electro-Communications), Kazuyuki Mito (The University of Electro-Communications) and Naoaki Itakura (The University of Electro-Communications)
Proposal of a highly operable Eye Glance Input Interface Using MediaPipe

== End of Wednesday sessions

June 6, Thursday

Session: Noise in biology and biomedicine - 2

9:00-9:35 **Invited talk:** Yakovlev, Vladislav, Texas A&M Univ., USA
Can we utilize a noise in biological systems?

9:35-10:05 **Invited talk:** Holcman, David, ENS, France
Modeling and asymptotic of extreme events in stochastic processes and application in cell biology

10:05-10:30 **Invited talk:** Der, Andras, HUN-REN Biological Research Centre, Hungary
What can we really learn from heart rate variability?

10:30-10:55 **Invited talk:** Vadai, Gergely, Univ. of Szeged, Hungary
The noise of our daily motion – general spectral characteristics of human mobility and activity

10:55-11:15 **Coffee break**

11:15-11:25 Kuljić, Bojan (Subotica Tech, College of Applied Sciences, Subotica, Serbia) and Peter Odry (University of Dunaújváros, Hungary)
Extracting Biomedical Signals from High Noise Environments

11:25-11:45 Uchida, Masafumi (The University of Electro-Communications, Japan) and Riku Akamine (The University of Electro-Communications)
Analysis of Temporal Fluctuations in Repetitive Pick-and-place Movement Using Detrended Fluctuation Analysis

11:45-12:10 Petrychuk, Mykhailo (Forschungszentrum Juelich, IBI-3, Germany), Denys Pustovyi (FZJ, IBI-3), Nazarii Boichuk (FZJ,IBI-3), Yongqiang Zhang (FZJ,IBI-3), Hanlin Long (FZJ,IBI-3) and Svetlana Vitusevich (Forschungszentrum Juelich,IBI-3)
Random Telegraph Signal Noise Spectroscopy: Challenges and Opportunities For Biosensing Applications

12:10-12:30 Pralgauskaite, Sandra (Vilnius University, Lithuania), Lukas Dundulis (Vilnius University), Justinas Glemza (Vilnius University), Aivaras Spokas (Center for Physical Sciences and Technology), Andrius Bičiūnas (Center for Physical Sciences and Technology), Mindaugas Kamarauskas (Center for Physical Sciences and Technology), Bronislovas Čechavičius (Center for Physical Sciences and Technology), Renata Butkutė (Center for Physical Sciences and Technology) and Jonas Matukas (Vilnius University)
Low Frequency Noise Spectroscopy of NIR A3B5-Bi MQW Lasers for Blood Oxygen Detection

12:30-12:50 Shimizu, Miku (The University of Electro-Communications, Japan), Naoaki Itakura (The University of Electro-Communications), Kazuyuki Mito (The University of Electro-Communications) and Tota Mizuno (The University of Electro-Communications)
Comparative Study of Quantitative Removal Methods for Effects of Light Intensity Using Multiple Weight Conditions

13:00-14:30 **Lunch (on site)**

14:30-14:50 Kish, Laszlo B. (Texas A&M University, USA) and Andrea Antal (University of Göttingen, Germany)
Non-invasive Deep-Brain Stimulations by Spatiotemporal Fourier Synthesis

Session: Various noise processes-2

14:50-15:10 Semeraro, Massimiliano (Università degli Studi di Bari and INFN, Sezione di Bari, Italy), Antonio Suma (Università degli Studi di Bari and INFN, Sezione di Bari), Giuseppe Negro (Università degli Studi di Bari and INFN, Sezione di Bari) and Giuseppe Gonnella (Università degli Studi di Bari and INFN, Sezione di Bari)
Fluctuation Theorems for Heat exchanged between passive and active baths

15:10-15:30 Dubkov, Alexander (Lobachevsky University of Nizhni Novgorod, Russia), Alexey Kargovsky (Lomonosov Moscow State University) and Olga Chichigina (Lomonosov Moscow State University)
The correlation time of a super-Poisson renewal process characterized by waiting time distributions with the locally thickened tail

15:30-22:00 **Leisure-time and Banquet.**

Banquet Talk: Abbott, Derek, Univ. Adelaide, Australia
UPoN, and Randomness and science in everyday life

== End of Thursday program

June 7, Friday

Session: Artificial intelligence and deep learning

9:00-9:25 **Invited talk:** Kertesz, Gabor, Óbuda Univ., Hungary
Current challenges in the field of Deep Metric Learning

Noise in security

9:25-9:40 Balint, Krisztian (Óbuda University, Hungary)
Creating a Private Access Blockchain to Securely Store the Noise Measurement Report

9:40-10:00 Chamon, Christiana (Texas A&M University, USA)
Can the KLJN Scheme Be Implemented in Reinforced Concrete?

10:00-10:20 Davis, Kate (Texas A&M University, USA), Laszlo B. Kish (Texas A&M University) and Chanan Singh (Texas A&M University)
Dynamically watermarked smart power grids: Are they secure?

10:20-10:40 Flanery, Sarah (Texas A&M University, USA) and Christiana Chamon (Texas A&M University). Noise-Based *Biometric Authentication: Is It Secure?*

10:40 **Closing words**