THE SIXTEENTH WORKSHOP ON NONSTATIONARY SYSTEMS AND THEIR APPLICATIONS
February 5-8, 2023, Gródek nad Dunajcem, Poland

Organization of the workshop

DAY 0. Sunday, February 5, 2023. Arrival to Gródek nad Dunajcem

DAY 1. Monday, February 6, 2023

9:20 Opening of the workshop. Jacek Leśkow, Cracow University of Technology

9:30 Morning session I. Chair: Antonio Napolitano

9:30 – 10:00 Jacek Leśkow, Cracow University of Technology, Poland
"Functional Data Analysis for periodic signals"

10:00 – 10:30 Dominique Dehay, Universite Rennes, France
"Cyclic FOT-distribution analysis"

10:30 – 11:00 Christiana Drake, University of California, USA
"Inference with missing data"

11:00 – 11:30 Coffee break

11:30 Morning session II. Chair: Dominique Dehay

11:30 – 12:00 Antonio Napolitano, University of Parthenope, Naples, Italy
"A comparison of cyclic detectors"

12:00 – 12:30 Serhii Lupenko, Opole University of Technology, Poland
"The cyclic random processes and vectors: theoretical and applied aspects"

12:30 – 13:00 (on-line) **Timofey Shevgunov, Moscow**
"Some estimators of spectral correlation function and heuristic cyclostationarity detection based on their accumulation"

13:00 – 14:30 Lunch break

14:30 Afternoon session I. Chair: Jacek Leśkow

14:30 – 15:00 Niharika Bhootna, Indian Institute of Technology, Ropar, India
"Gegenbauer Autoregressive Tempered Fractionally Integrated Moving Average GARCH Process"

15:00 – 15:30 (on-line) **Valderio Reisen, UFES-UFBA, Brazil**
„An M-quantile approach to estimate GARCH models"

15:30 – 16:00 (on-line) **Aldo William Medina Garay, Federal University of Pernaumbuco-Recife, Brasil**
"The linear regression models with autoregressive symmetrical errors and incomplete data"

16:00 – 16:30 Coffee break

16:30 Afternoon session II. Chair: Agnieszka Wyłomańska

16:30 – 17:00 (on-line) **Marton Ispany, Faculty of Informatics, University of Debrecen, Hungary**
"On periodic non-negative integer-valued ARMA processes"

17:00 – 17:30 Paulo Prezzotti, IFES-Guarapari, Brazil
"The Periodic INAR(1,1_S) model. Estimation and Forecast studies"

17:30 – 18:00 (on-line) **Carlo Solci, UFES-UFBA, Brazil**
"Robust Local Boostrap for Stationary Time Series with Missing Data"

18:00 – 18:30 (on-line) **William Gardner, University of California**
"A Radically Different Method of Moments for Multivariate Parameter Estimation"

19:15 Dinner

DAY 2. Tuesday, February 7, 2023

9:30 Morning session I. Chair: Jacek Leśkow

9:30 – 10:00 Ihor Javors'kyj, Bydgoszcz University of Science and Technology, Poland
"PRNP modeling of stochastic recurrence for vibrations of rolling bearing with damaged outer race"

10:00 – 10:30 Agnieszka Wyłomańska, Wrocław University of Science and Technology, Poland
"The importance of the background noise properties for the vibration-based local damage detection"

10:30-11:00 Katarzyna Skowronek, Wrocław University of Science and Technology, Poland
"Assessment of background noise properties in time and time-frequency domains in the context of vibration-based local damage detection in real environment"

11:00 – 11:30 Coffee break.

11:30 Morning session II. Chair: Christiana Drake

11:30 – 12:00 Damian Jelito, Jagiellonian Univerity, Kraków, Poland
„Conditional correlation and the independence of random variables"

12:00 – 12:30 Kewin Pączek, Jagiellonian University, Kraków Poland
„Goodness-of-fit tests for the one-sided Lévy distribution based on quantile conditional moments"

12:30 – 13:00 Dawid Szarek, Wrocław University of Science and Technology, Poland
"Non-Gaussian feature distribution forecasting based on ConvLSTM neural network and its application to robust machine condition prognosis"

13:00 – 13:30 (on-line) **Bartosz Majewski, AGH University of Science and Technology, Kraków, Poland**
„Spectral Density Estimation for Spectrally Correlated Processes"

13:30 – 15:00 Lunch break

15:00 Afternoon session I. Chair: Jacek Leśkow

15:00 – 15:30 Wojciech Żuławiński, Wrocław University of Science and Technology, Poland
"Detection of cyclostationarity by robust statistics for signal disturbed by non-Gaussian noise"

15:30 – 16:00 (on-line) **Andrzej Makagon, Department of Mathematics, Hampton University, USA**
"An example of analysis of PARMA system"

16:00 – 16:30 (on-line) **Maksym Luz, BNP Paribas Cardif, Kyiv, Ukraine and Mikhail Moklyachuk, Taras Shevchenko National University, Kyiv, Ukraine**
"Prediction of stochastic processes with periodically correlated increments"

17:00 Special workshop dinner. Bus departing to Krynica.
19:00 Conference dinner in Krynica.

DAY 3. Wednesday, February 8 2023.

9:30 – 11:00 Open discussion: future of research on cyclostationarity in various areas of applications: mechanical engineering, finance, medicine and other fields. All participants are kindly asked to prepare their short input. Discussion moderators: Agnieszka Wylomanska and Jacek Leskow

12:30 Lunch, closure of the workshop.

Poster special session New methods of processing non-stationary signals with non-Gaussian characteristics for the purpose of monitoring complex mechanical structures

- **Anita Drewnicka, Wrocław University of Science and Technology, Poland**
  "The approach of damage detection in the presence of non-Gaussian noise with analysis of probability distributions applied to the time-frequency maps of the vibration signal"
- **Mateusz Gabor, Wrocław University of Science and Technology, Poland**
  "Nonnegative matrix factorization with beta-divergence based cost functions"
- **Justyna Hebda-Sobkowicz, Wrocław University of Science and Technology, Poland**
  "Informative frequency band selection in presence of non-Gaussian (impulsive) noise - adaptation of cross-dependence measures, alternative to classical ones"
- **Daniel Kuzio, Wrocław University of Science and Technology, Poland**
  "Identification of fault frequency variation in envelope spectrum in vibration-based local damage detection in changing load/speed condition"
- **Anna Michalak, Wrocław University of Science and Technology, Poland**
  "Influence of alpha-stable noise on the effectiveness of Nonnegative Matrix Factorization –Simulations and real data analysis"
- **Hamid Shiri, Paweł Zimroz, Wrocław University of Science and Technology, Poland**
  "Robust statistic model for long-term condition monitoring data under non-stationary operating conditions in the presence of noise with non-Gaussian characteristics"
- **Jacek Wodecki, Wrocław University of Science and Technology, Poland**
  "Cyclostationary vibration data analysis in real-life machine diagnostics – a case study of bearing failure in calcium carbonate production plant"