

SCHEDULE OF TALKS

DYNAMICS, TOPOLOGY AND COMPUTATIONS 2025

JUNE 22 - 28, 2025, BEDLEWO, POLAND

INTERNATIONAL CONFERENCE
ORGANIZED BY

Stefan Banach International Mathematical Center

Faculty of Mathematics and Computer Science
of the
Jagiellonian University in Kraków

The Committee on Mathematics
of the
Polish Academy of Sciences



MONDAY, 23 JUNE

8:00–9:00	BREAKFAST
9.00-9.50	Omer Bobrowski, <i>Universality in Random Topology</i>
10.00-10.50	Simon Rohou, <i>Reliable localization of an underwater robot based on tubes and topological degree</i>
	COFFEE BREAK
11.30-12.20	Luc Jaulin, <i>Integral algebra for the validated integration of nonlinear differential inclusions</i>
12.30-13.00	Bogdan Batko, Combinatorial approach to sampled dynamics based on Gaussian process modeling
13:00	LUNCH
15.30-16.00	Warwick Tucker, <i>Generic Upper Bounds to the Cyclicity Problem and the Behavior of Lyapunov Constants</i>
	SESSION I
16.00-16.30	Dídac Gil Rams, <i>Splitting of separatrices in generalized standard maps</i>
16.30-17.00	Sushmita Yadav, <i>Equivalence of Equicontinuity and Distality of Non - Autonomous Systems on Real line</i>
17.00-17.30	Ibrahim Alraddadi, <i>The Asymmetric Periodically Forced Van Der Pol Oscillator</i>
17.30-18.00	Valery Gaiko, <i>Topological Methods for Studying Bifurcations and Multi-Stability of Polynomial Dynamical Systems</i>
18:30	BANQUET

TUESDAY, 24 JUNE

8:00–9:00 BREAKFAST

9.00-9.50 Isaia Nisoli, *Rigorous enclosure of the discrete spectrum for transfer operators*

10.00-10.50 Gabriela Pinzari, *An application of non-quasi-periodic normal form theory to celestial mechanics*

COFFEE BREAK

11.30-12.20 Michał Lipiński, *Conley-Morse persistence barcode: homological signature of a combinatorial bifurcation*

12.30-13.00 Jean-Phillipe Lessard, *Recent advances about the rigorous integration of parabolic PDEs via fully spectral Fourier-Chebyshev expansions*

13:00 LUNCH

15.30-16.00 Marian Gidea, *Geometric properties of normally hyperbolic invariant manifolds and scattering maps for conformally symplectic systems*

PARALLEL SESSION I

PARALLEL SESSION II

16.00-16.30 Luke Peterson, *Computer-assisted Proofs for Subharmonic Melnikov Functions with Applications to the Earth-Moon-Particle System*

Filip Łanecki, *The Classifying Strength of the Leray Functor*

16.30-17.00 Chiara Caracciolo, *Existence of KAM tori in the realistic planar three-body problem*

Jakub Mazur, *Effective algorithm for traversing all Depth Posets of a Lefschetz Complex*

17.00-17.30 Anna Gierzkiewicz, *Oscillating orbits in the Sitnikov model*

Bartosz Furmanek, *Topological simplification guided by the depth poset*

17.30-18.00 Aleksander Pasiut, *Oscillatory orbits to collision and infinity in the planar circular restricted three body problem*

Mateusz Przybylski, *A cohomology class as an invariant of shift equivalence for finite relations*

18:30 DINNER

WEDNESDAY, 25 JUNE

8:00–9:00 BREAKFAST

9.00-9.50 Kelin Xia, *Mathematical AI for Molecular Sciences*

10.00-10.50 Maciej Capinski, *Arnold Diffusion in the Full Three-Body Problem*

COFFEE BREAK

11.30-12.20 Pieter Collins, *The Ariadne Framework for Rigorous Numerics*

12.30-13.00 Marian Mrozek, *Combinatorial Links between Topology and Dynamics*

13:00 LUNCH

13:30 GUIDED EXCURSION TO POZNAŃ

19:00 DINNER

THURSDAY, 26 JUNE

8:00–9:00	BREAKFAST	
9.00-9.50	W. Chachólski, <i>Data, geometry and homology</i>	
10.00-10.50	David Hien, <i>Cycling Signatures: Identifying Cycling Motions in Time Series</i>	
	COFFEE BREAK	
11.30-12.20	Matthieu Cadiot, <i>Spectral stability of localized solutions</i>	
12.30-13.00	Piotr Kalita, <i>Stability of phase diagram for a gradient ODE with memory</i>	
13:00	LUNCH	
15.30-16.00	Gianni Arioli, <i>A comparative study of validated Taylor and Chebyshev integration of ODEs</i>	
	PARALLEL SESSION I	PARALLEL SESSION II
16.00-16.30	Paweł Pilarczyk, <i>Rigorous computation of expansion in one-dimensional dynamics</i>	Parker Duncan, <i>Maximal Cycles in the Čech Complex</i>
16.30-17.00	Evelyn Sander, <i>Computing Manifolds for Billiard Maps on Perturbed Elliptical Tables</i>	Bartosz Furmanek, <i>The existence of Conley complex with ring coefficients for gradient multivector fields</i>
17.00-17.30	Joan Gimeno, <i>An Explicit Normal Form Computation on Discrete Systems</i>	Damian Sadowski, <i>Combinatorial approach to sampled dynamics based on Gaussian process surrogate modeling</i>
17.30-18.00	Natalia McAlister, <i>A computer-assisted proof of the existence of blenders for a 3-dimensional Henon-like family</i>	Michał Palczewski, <i>Quiver Representations, Endomorphisms in Persistent Homology and the Conley Index Computation</i>
18:30	BONFIRE	

FRIDAY, 27 JUNE

8:00–9:00	BREAKFAST
9.00-9.50	Jordi Figueras, <i>Self-Similar Singular Solutions to the Nonlinear Schrodinger and the Complex Ginzburg-Landau Equations</i>
10.00-10.50	Marisa dos Reis Cantarino, <i>Blenders and robust transitivity for a family of derived-from-Anosov maps</i>
	COFFEE BREAK
11.30-12.20	Mikael Vejdomo-Johansson, <i>Cohomology and Circular Coordinates</i>
12.30-13.00	Robert Szczelina, <i>Investigating chaos in Delay Differential Equations</i>
13:00	LUNCH
15.30-16.00	Pau Martin, <i>Chaotic phenomena around L_4 in the RPC3BP beyond the Routh mass ratio</i>
	SESSION I
16.00-16.30	Juan Miranda, <i>Borel Transform: Validated Numerics and Applications</i>
16.30-17.00	Alessandro Pugliese, <i>Detection and proof of cusp bifurcations in multi-layer energy balance model</i>
17.00-17.30	Jakub Czwornog, <i>Continuation and bifurcations of periodic orbits and symbolic dynamics in the Swift–Hohenberg equation</i>
17.30-18.00	Jakub Kural, <i>Periodic orbits of ENSO delay differential equation model</i>
18.00-18.30	Philip Pita Forrier, <i>A study of the local behavior of the Taylor method for stiff ODEs</i>
18:30	DINNER

SATURDAY, 28 JUNE

8:00–9:00 BREAKFAST

9.00-9.50 Zbigniew Galias (AGH), *Is the classical Rössler attractor periodic?—a validated numerical study*

10.00-10.50 Alex Haro, *Some translated tori theorems and applications*

COFFEE BREAK