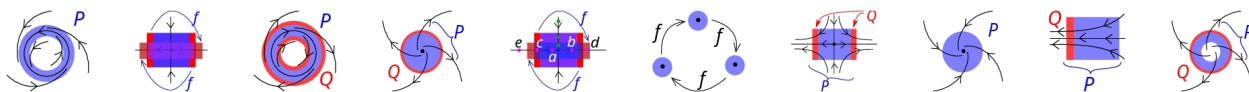


Applied Topology and Dynamical Systems

Gdańsk University of Technology, January 14–16, 2025

www.pawelpilarczyk.com/atds2025



Aims and scope

The purpose of the conference is to stimulate dialogue between researchers that work at the intersection of the fields of applied topology and dynamical systems, and are also interested in applying related mathematical methods to real-world problems, such as the analysis of biomedical time series data. In particular, selected scientists from Gdańsk University of Technology, University of Gdańsk, University of Ljubljana, Hebei Normal University, Adam Mickiewicz University, and Dioscuri Centre in Topological Data Analysis are going to deliver talks at the conference and discuss current and future ways of academic collaboration and joint research projects.

Highlights of Research in Progress

Considerable part of the conference will be assigned to **short talks** (10 minutes + 5 minutes discussion). These talks are going to be devoted to highlighting currently conducted research, especially to showing interesting projects of PhD and MSc students related to the theme of the conference.

Organizing Committee

Grzegorz Graff, Paweł Pilarczyk, Justyna Signerska-Rynkowska

Registration Fee

There is no registration fee. However, the meals, including coffee breaks and dinners, must be arranged and covered by each participant individually.

Location

All the talks and discussions will take place at Gdańsk University of Technology in the Faculty Council room no. 2/07 in the Nanotechnology Center, building no. 4 on the [Campus Map](#).

Day One: Tuesday, January 14, 2025

9:30–10:00 – Petar Pavešić (University of Ljubljana and Institute of Mathematics, Physics and Mechanics, Ljubljana, Slovenia): *Parametrized topological complexities of maps*

10:00–10:30 – Žiga Virk (University of Ljubljana, Slovenia): *Mapping spaces of persistence diagram into the Hilbert space with controlled distortion*

10:30–11:30 – coffee break

11:30–12:00 – Wacław Marzantowicz (Adam Mickiewicz University, Poznań): *Dynamics of homeomorphisms of surfaces*

12:00–12:30 – Łukasz Michałak (Adam Mickiewicz University, Poznań): *Surface homeomorphisms of algebraically finite type*

12:30–12:45 – Patryk Topór (Gdańsk Tech): *Fixed point indices of iterates of an orientation-reversing homeomorphism at a fixed point which is an isolated invariant set*

12:45–13:00 – Michał Palczewski (Gdańsk Tech): *Persistent homology of maps and relations*

13:00–15:00 – lunch break

15:00–17:00 – additional talks, discussions, etc.

19:00 – dinner

Day Two: Wednesday, January 15, 2025

9:30–10:00 – Paweł Dłotko (Dioscuri Centre in Topological Data Analysis, Warsaw): *TDA meets dynamics*

10:00–10:30 – Michał Bogdan (Institute of Mathematics of the Polish Academy of Sciences): *Topology meets mechanics: predicting the response to compression in metallic porous materials using Fourier-based computational approaches and topological data analysis*

10:30–11:30 – coffee break

11:30–11:45 – Jakub Malinowski (Dioscuri Centre in Topological Data Analysis): *Predicting mechanical properties of porous materials using topological data analysis*

11:45–12:00 – Laura Mieczkowska (University of Gdańsk): *Dold sequences for group actions*

12:00–12:15 – Mateusz Gałka (University of Gdańsk): *Stability of cellular automata*

12:15–12:30 – Alan Żeromski (Gdańsk Tech): *Nielsen coincidence number of (n,m) -valued pairs of maps of a circle*

12:30–12:45 – Mikołaj Rosman (Gdańsk Tech): *Bistability and chaos in the discrete two-gene Andreucut–Kauffman model*

12:45–13:00 – Nikodem Mierski (Gdańsk Tech): *Chaotic itinerancy in globally coupled logistic maps*

13:00–15:00 – lunch break

15:00–17:00 – additional talks, discussions, etc.

19:00 – dinner

Day Three: Thursday, January 16, 2025

9:30–10:00 – Jun Wang (Hebei Normal University, China): *Generalized configuration space and its homotopy groups*

10:00–10:30 – Piotr Bartłomiejczyk (Gdańsk Tech): *Itineraries of nonoverlapping generalized Lorenz-like maps*

10:30–11:30 – coffee break

11:30–11:45 – Maciej Block (Gdańsk Tech): *Periodic solutions of Hamiltonian system on CP^N*

11:45–12:00 – Marta Marszewska (Gdańsk Tech & Dioscuri Centre in Topological Data Analysis): *A quantitative method for analyzing dynamical systems using topological data analysis tools*

12:00–12:15 – Dorota Chańko (Gdańsk Tech): *Sequences realizable by diffeomorphisms of closed surfaces*

12:15–12:30 – Claudia Leslie Arias Coquil (Politecnico di Milano): *Applying Sliding Window Techniques for Topological Data Analysis (TDA) of Temporal Geo-Data: Challenges and Optimizations*

12:30–12:45 – Wojciech Jaworek (Gdańsk Tech): *Chaotic itinerancy. A set-oriented approach*

12:45–13:00 – Dorian Fałęcki (Gdańsk Tech): *Analysis of global dynamics using Conley–Morse graphs*

13:00–13:15 – Mateusz Masłowski (University of Gdańsk & Dioscuri Centre in Topological Data Analysis): *Topological tools for phase transitions: Exploring the 2D Ising model*

13:15 – lunch

Other participants of the conference (without talks)

Grzegorz Graff (Gdańsk Tech, Poland)

Paweł Pilarczyk (Gdańsk Tech, Poland)

Justyna Signerska-Rynkowska (Gdańsk Tech, Poland)

Xiaowei Pang (Hebei Normal University, China)

Jacek Gulgowski (University of Gdańsk, Poland)