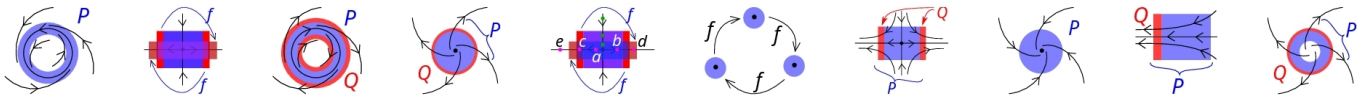


# Topological Invariants in Fixed Point Theory and Dynamical Systems

<https://www.pawelpilarczyk.com/topinv2024/>



## Aims and Scope

The conference on Topological Invariants in Fixed Point Theory and Dynamical Systems aims to bring together researchers interested in exploring and discussing recent advances, challenges and applications of topological invariants in the realms of fixed point theory and dynamical systems. The conference provides a platform for the exchange of ideas, collaboration, and dissemination of cutting-edge research in these interconnected fields.

## Organizing Committee

Grzegorz Graff, Paweł Pilarczyk, Justyna Signerska-Rynkowska

**Note:** Since there is no conference fee, the cost of coffee, snacks and lunches is not covered by the organizers.

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## Location

All the talks and discussions (except on Tuesday in the afternoon) 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](#).

## Schedule

The meeting begins on Monday, January 29, 2024 at 9:15am, and ends on Wednesday, January 31, 2024 at 2pm (14:00). The lengths of talks varies between 20 and 30 minutes, including discussion.

### Day One, Monday, January 29, 2024

9:15 – Opening

9:30–10:00 – Haibao Duan (Chinese Academy of Sciences): *On the twisted products of spheres that have the fixed point property*

10:00–10:30 – Jerzy Jezierski (Warsaw University of Life Sciences): *Nielsen number for finite abelian groups*

10:30–11:15 – Coffee break

11:15–11:35 – Patryk Topór (Gdańsk University of Technology): *The indices of a fixed point under iteration of an orientation-reversing  $\mathbb{R}^3$  homeomorphism*

11:35–11:55 – Alan Żeromski (Gdańsk University of Technology): *Fixed point index for boundary-preserving maps*

11:55–12:25 – Mateusz Przybylski (Jagiellonian University): *The Szymczak functor on the category of finite relations*

12:30–14:00 – Lunch

14:00–14:30 – Qiang Zhang (Xi'an Jiaotong University): *Some progress on fixed subgroups and fixed points*

14:30–15:00 – Xuezhi Zhao (Capital Normal University): *The minimal intersection numbers of loops on surfaces*

15:00–15:30 – Michał Bogdan (Polish Academy of Sciences): *Discreteness, stochasticity, geometry, topology and mechanical energy in small soft granular structures*

### Day Two, Tuesday, January 30, 2024

9:30–10:00 – Paweł Dłotko (Dioscuri Centre for Topological Data Analysis): *Topology and data*

10:00–10:30 – Adam Śpiewak (Polish Academy of Sciences): *Predicting dynamical systems from embeddings with self-intersections*

10:30–11:15 – Coffee break

11:15–11:35 – Niklas Hellmer (Dioscuri Centre for Topological Data Analysis): *From recurrence plots to random geometric complexes: Using topological data analysis for statistical hypothesis testing, with applications to detection of periodic impulses*

11:35–11:55 – Michał Palczewski (Gdańsk University of Technology): *The Lyapunov exponent and rigorous computation of expansion in one-dimensional dynamics*

11:55–12:15 – Katarzyna Tessmer (Gdańsk University of Technology): *Entropy-based methods in the analysis of long-term ECG recordings*

12:15–12:35 – Frank Llovera (Gdańsk University of Technology): *Analysis of dynamics of a map-based neuron model via Lorenz maps*

12:40–14:00 – Lunch

**Note:** Afternoon session in room 121, Main Building / Gmach Główny: building no. 1 on the [Campus Map](#):

14:00–14:30 – Błażej Szepietowski (University of Gdańsk): *Geometric representations of the braid group on a nonorientable surface* (room 121, Main Building)

14:30–15:30 – Open problems session (room 121, Main Building)

19:00 – Conference dinner: [Restaurant "Nowosopocka"](#), ul. Emilii Plater 7/9/11, Sopot

### Day Three, Wednesday, January 31, 2024

9:30–10:00 – Grzegorz Gabor (Nicolaus Copernicus University in Toruń): *On two-point BVPs in billiard spaces*

10:00–10:30 – Christopher Staecker (Fairfield University): *Thoughts on configurations of at most  $n$  points*

10:30–11:15 – Coffee break

11:15–11:45 – Łukasz Michalak (Institute of Mathematics, Physics and Mechanics, Ljubljana; Adam Mickiewicz University): *Algebraic periods of surface homeomorphisms*

11:45–12:15 – Piotr Bartłomiejczyk (Gdańsk University of Technology): *Expanding Lorenz maps with slope greater than or equal to  $\sqrt{2}$  are leo*

12:30–14:00 – Lunch