.

Schedule of talks

Dynamics, Topology and Computations

June 15 - 20, 2015, Bedlewo, Poland

International Conference
organized by

Stefan Banach International Mathematical Center

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

European Science Foundation

The Committee on Mathematics
of the
Polish Academy of Sciences

Warsaw Center of Mathematics and Computer Science

Monday, 15 June

8:00–9:00	Breakfast	
9:00–9:50	V. de Silva, *Topological persistence via category theory*	
10:00–10:50	M. Farber, *Topology of large random spaces*	
	Coffee break	
11:30–12:20	P. Pilarczyk, *A combinatorial-topological approach to automatic classification of global dynamics*	
12:30–13:00	J. Mireles James, *Coexistence of stationary hexagons and rolls in a spatial pattern formation problem: a computer assisted proof*	
13:00	Lunch	
15:30–16:00	P. Skraba, *An approximate nerve theorem*	
	Parallel session I	Parallel session II
16:00–16:30	M. Capiński, *Arnold diffusion in the elliptic restricted 3-body problem*	A. Borat, *Higher dimensional motion planners for $F(R^n, k)$*
16:30–17:00	A. Siłuszyk, *New central configurations in the planar 6-body problem*	M. Cohen, *The probability of choosing the unknot among 2-bridge knots using random Chebyshev billiard table diagrams*
	Coffee break	
17:30–18:00	A. Prokopenya, *Integrable cases of evolutionary equations in the restricted three-body problem with variable masses*	M. Ethier, *Persistence of singular eigenspaces*
18:00–18:30	W. Zakrzewski, *Recent progress on quasi-integrability*	M. Juda, *Scalable homology computing*
18:30–19:00	V. Gaiko, *Bifurcational and topological methods for low-dimensional polynomial dynamical systems*	J. Costa, *The topos foundation of persistence*
19:00	Dinner	

Tuesday, 16 June

8:00–9:00	Breakfast	
9:00–9:50	M. Guzzo, *Numerical computation of stable and unstable manifolds with fast Lyapunov indicators. Applications to the three body problem*	
10:00–10:50	J. Figueras, *How hyperbolic invariant tori bifurcate to strange objects: from numerics to rigorous results*	
	Coffee break	
11:30–12:20	Y. Hiraoka, *Random topology, minimum spanning acycle, and persistent homology*	
12:30–13:00	P. Franek, *Robust properties of zero sets via homotopy theory*	
13:00	Lunch	
15:30–16:00	H. Koch, *On hyperbolicity in the renormalization of near-critical area-preserving maps*	
	Parallel session I	Parallel session II
16:00–16:30	A. Luque, *Computer assisted proofs in KAM theory*	V. Kurlin, *Homologically persistent skeleton in computer vision and beyond*
16:30–17:00	A. Wasieczko-Zajac, *Geometric proof of strong stable/unstable manifolds with application to the Restricted Three Body Problem*	I. Knyazeva, *Computational topology approach for pattern recognition in 2D images*
17.00–17.30	C. Reinhardt, *Rigorous computation of unstable manifolds for nonlinear parabolic PDEs via the parametrization method*	A. Rieser, *A topological approach to spectral clustering*
	Coffee break	
18:00	Poster session	
19:30	Bonfire	

Wednesday, 17 June

8:00–9:00	Breakfast
9:00–9:50	K. Turner, *PCA of persistent homology rank functions with case studies in point processes, colloids and sphere packings*
10:00–10:50	H. Ito, *Integrable and superintegrable vector fields and their normal forms at equilibria*
	Coffee break
11:30–12:00	J. Gomez-Serrano, *Computer-assisted proofs in incompressible fluids*
12:45	Lunch
13:45	Excursion to the National Park
14:00	Excursion to Poznań
19:00	Dinner

Thursday, 18 June

8:00–9:00	Breakfast	
9:00–9:50	N. Makarenko, *Geometry and topology of digital images*	
10:00–10:50	J. Meiss, *Using witness complexes to analyze dynamical time series*	
	Coffee break	
11:30–12:20	S. Mukherjee, *Consistency of maximum likelihood estimation for some dynamical systems*	
12:30–13:00	M. Mrozek, *Constructing combinatorial multivector fields from data*	
13:00	Lunch	
15:30–16:00	T. Kaczyński, *Towards a formal tie between combinatorial and classical vector field dynamics*	
	Parallel session I	Parallel session II
16:00–16:30	S. Pilyugin, *Inverse shadowing for actions of finitely generated groups*	H. Wagner, *Topological text analysis and generalized similarity measures*
16:30–17:00	J. Cyranka, *A construction of two different solutions to an elliptic system*	A. Rahm, *A software for computations on the dynamics and topology of the Bianchi groups*
	Coffee break	
17:30–18:00	A. Czechowski, *Rigorous numerics for the FitzHugh-Nagumo slow-fast system*	A. Rathod, *Min-Morse: approximability and applications*
18:00–18:30	R. Szczelina, *Rigorous integration of delay differential equations and applications*	C. Landi, *Discrete Morse theory for reducing complexes in multidimensional persistence*
18:30–19:00	A. Belova, *Estimation of the rotation number by interval methods*	K. Ziemiański *Spaces of directed paths on semi-cubical sets*
19:00	Bonfire	

Friday, 19 June

8:00–9:00	Breakfast	
9:00–9:50	A. Patel, *Persistent homology for maps*	
10:00–10:50	M. Kahle, *The most persistent cycles in random geometric complexes*	
	Coffee break	
11:30–12:20	I. Taimanov, *Topological analysis of three-dimensional geological models*	
12:30–13:00	T. Wanner, *Rigorous validation of isolating blocks for flows*	
13:00	Lunch	
15:30–16:00	D. Wilczak, *When chaos meets hyperchaos*	
	Parallel session I	Parallel session II
16:00–16:30	F. Weilandt, *The discrete Conley index as the homotopy type of a space*	R. Castelli, *Fourier-Taylor parameterisation of invariant manifold for periodic orbits of vector field*
16:30–17:00	E. Vieira, *Transition matrices theory*	R. Sheombarsing, *Rigorous numerics for ODEs using Chebyshev series and domain decomposition*
	Coffee break	
17:30–18:00	D. Cherkashin, S. Kryzhevich, *Weak shadowing in topological dynamics*	K. Kropielnicka, *Effective approximation for the time dependant, linear Schrödinger equation*
18:00–18:30		I. Walawska, *Bifurcations and continuation of halo orbits – rigorous numerical approach*
18:30–19:00		K. Soga, *Numerical methods of weak KAM theory*
19:00	Dinner	

Saturday, 20 June

8:00–9:00	Breakfast
9:00–9:50	G. Arioli, *Symmetric boundary value problems and non-symmetric solutions*
10:00–10:50	Z. Galias, *On periodic windows for the Hénon map close to the classical case*
12:00	Lunch

Poster session on Tuesday, 16 June, starting at 18:00

D. Lima	*Smale's cancellation theorem: birth and death of connections*
B. Garda	*An efficient method to find all low-period windows for the logistic map*
M. Scolamiero	*Invariants for multidimensional persistence*
M. R. da Silveira	*Continuation detected through a spectral sequence analysis.*
J. Duda	*Maximal entropy random walk - when topology is not enough*
A. Gierzkiewicz	*Integrability of the Szekeres system*
I. Makarenko	*3D morphology of a random field from its 2D cross-section*
K. Soga	*Numerical methods of weak KAM theory*
A. Czechowski, P. Zgliczyński	*Rigorous numerics for PDEs with indefinite tail: existence of a periodic solution of the Boussinesq equation with time-dependent forcing*
M. Moczurad, P. Zgliczyński	*New lower bound estimates for quadratures of bounded analytic functions*
G. Jabłoński	*Persistence of generalized eigenspaces of self-maps*