Dynamics, Topology and Computations

Będlewo, Poland 4-10 June, 2006

Conference Program

Monday, June 5th

8:00-8:50 Breakfast

Plenary Session

8:50- 9:00 Opening

9:00- 9:50 **Michael Benedicks**, Royal Institute of Technology
Perturbation based and computer aided proofs for the existence of chaotic attractors

9:50-10:40 **Yasumasa Nishiura**, RIES, Hokkaido University
Application of the computational homology to complex morphology

10:40-11:10 Coffee break

11:10-12:00 **Martin Berz**, Michigan State University
Rigorous High-Order Computational Methods

12:00-12:30 **Kyoko Makino**, Michigan State University
Taylor Model-based Verified Integration of ODEs

End of Plenary Session

13:00 Lunch

Parallel Sessions

Session A

15:30-16:00 **Natalia Żelazna**, Jagiellonian University, Poland
A homology algorithm based on acyclic subspace

16:00-16:30 **Bogdan Batko**, WSB-NLU
On the homology of representable sets

16:30-17:00 Coffee break

17:00-17:30 **Marian Mrozek**, Jagiellonian Univ. and WSB-NLU, Poland
Coreduction Homology Algorithm

17:30-18:00 **Marcin Żelawski**, Jagiellonian University, Poland
Blood Vessel Architecture Analysis Based on Homology Algorithms

18:00-18:30 **Sejin Han**, University of Maryland
TBA

Session B

15:30-16:00 **Takashi Sakajo**, Hokkaido Univ.
Integrable four-vortex motion on sphere with zero moment of vorticity

16:00-16:30 **Sergiy Maksymenko**, NAS of Ukraine, Kiev, Ukraine
Smooth shifts along orbits of vector fields

16:30-17:00 Coffee break

17:00-17:30 **Piotr Oprocha**, AGH, Kraków, Poland
Specification property and dense distributional chaos

17:30-18:00 **Jacek Tabor**, Jagiellonian University
On fuzzy differential equations

18:00-18:30 **Aleksander Ćwiszewski**, N. Copernicus Univ., Toruń
Linearization method for homotopy invariants of perturbations of m-accretive operators

End of Parallel Sessions

19:30 Welcome party

Tuesday, June 6th

8:00-9:00 Breakfast

Plenary Session

9:00- 9:50 **Oliver Junge**, Munich University of Technology
Rigorous numerics for infinite dimensional maps

9:50-10:40 **Daniel Wilczak**, Jagiellonian University
A geometric method for some bifurcation problems

10:40-11:10 Coffee break

11:10-12:00 **Alessandra Celletti**, Universitá di Roma &Tor Vergata& (Italy)
Stability of a 3-body problem in Celestial Mechanics

12:00-12:30 **Thomas Wanner**, George Mason University
On the Accuracy of Homology Computations for Nodal Domains

End of Plenary Session

13:00 Lunch

Parallel Sessions

Session A

15:30-16:00 **Stanislaus Maier-Paape**, RWTH Aachen
Rigorous numerics to verify heteroclinic connections

16:00-16:30 **Gábor Kiss**, University of Szeged
Stability conditions for linear autonomous functional differential equations

16:30-17:00 Coffee break

17:00-17:30 **Tomasz Kaczynski**, Université de Sherbrooke
Multivalued Discrete Dynamical System Framework for Surface Modelling, Part I

17:30-18:00 **Sara Derivière**, Universite de Sherbrooke, Canada
Dynamical System Frameworks for Surface Modeling and Image Recognition, Part II

Session B

15:30-16:00 **Tomasz Nowicki**, IBM
The cut-off phenomenon, on the attractors of distributions on graphs

16:00-16:30 **Wacław Marzantowicz**, UAM, Poznań, POLAND
A symmetry implies chaos for a sphere mapping

16:30-17:00 Coffee break

17:00-17:30 **Tomasz Kapela**, Jagiellonian University, Kraków
Computer assisted proofs of choreographies existence.

17:30-18:00 **Maciej Capiński**, Jagiellonian University, Poland
Transition chains in the planar restricted elliptic three body problem

End of Parallel Sessions

18:30 Dinner

Wednesday, June 7th

8:00-9:00 Breakfast

Plenary Session

9:00- 9:50 **Steven M. LaValle**, University of Illinois
Minimum Wheel-Rotation Paths for Differential-Drive Mobile Robots

9:50-10:40 **Stefano Luzzatto**, Imperial College London
A computer-assisted proof in one-dimensional dynamics

10:40-11:10 Coffee break

11:10-12:00 **Gianni Arioli**, Politecnico di Milano
A functional analytic approach to computer assited proofs.

12:00-12:30 **Robert Ghrist**, University of Illinois, Urbana
Homological Methods for Sensor Networks

End of Plenary Session

13:00 Lunch

14:15-20:00 Excursion

20:00 Garden Party (barbecue)

Thursday, June 8th

8:00-9:00 Breakfast

Plenary Session

9:00- 9:50 **Barnabas Garay**, Budapest Univ. of Technology
Optimization and the Miranda approach in detecting horseshoe–type chaos by computer

9:50-10:40 **William Kalies**, Florida Atlantic University
A Computational Approach to Conley's Decomposition Theorem

10:40-11:10 Coffee break

11:10-12:00 **Daniel Stoffer**, ETH Zurich
Delay equations with rapidly oscillating stable periodic solutions

12:00-12:30 **Warwick Tucker**, Uppsala University
Reconstructing metabolic networks using interval analysis

End of Plenary Session

13:00 Lunch

Parallel Sessions

Session A

15:30-16:00 **Roberto Barrio**, University of Zaragoza, SPAIN
Chaos Indicators and spurious structures

16:00-16:30 **Vivina Barutello**, Università di Milano-Bicocca
A bisection algorithm for the numerical Mountain Pass

16:30-17:00 Coffee break

17:00-17:30 **Alexander Lust**, University of Bielefeld, Bielefeld, Germany
A hybrid method for computing Lyapunov exponents

17:30-18:00 **Olga Pochinka**, Russia
On classification of Morse-Smale diffeomorphisms on 3-manifolds

Session B

15:30-16:00 **Jean-Philippe Lessard**, Georgia Tech
Validated Continuation for Equilibria of PDE's

16:00-16:30 **Zbigniew Galias**, AGH, Kraków
On rigorous studies of chaotic attractors of low dimensional continuous time systems

16:30-17:00 Coffee break

17:00-17:30 **Mikołaj Zalewski**, Jagiellonian University
Periodic solution of a delay differential equation

17:30-18:00 **Piotr Zgliczynski**, Jagiellonian University, Krakow, Poland
Rigorous numerics for dissipative PDEs

End of Parallel Sessions

18:30 Dinner

19:45 Excursion – Poznań by night

Friday, June 9th

8:00-9:00 Breakfast

Plenary Session

9:00- 9:50 **Susanna Terracini**, Universita' di Milano Bicocca
On the variational approach to the n-body problem

9:50-10:40 **Marshall Hampton**, University of Minnesota Duluth
Orbits and dynamics of the four vortex-problem

10:40-11:10 Coffee break

11:10-12:00 **Sławomir Rybicki**, N. Copernicus University, Toruń, Poland
Equivariant gradient maps

12:00-12:30 **Carles Simó**, Universitat de Barcelona
How large are the stability regions around triangular points in the 3D RTBP

End of Plenary Session

13:00 Lunch

Parallel Sessions

Session A

15:30-16:00 **Justyna Fura**, Nicolaus Copernicus University, Poland
Periodic solutions of second order Hamiltonian systems bifurcating from infinity

16:00-16:30 **Anna Gołębiewska**, UMK Toruń, Poland
Degree Theory for Equivariant Strongly Indefinite Operators

16:30-17:00 Coffee break

17:00-17:30 **Krzysztof Muchewicz**, N. Copernicus University, Toruń, Poland
Solutions of elliptic equations with Neumann boundary conditions

17:30-18:00 **Joanna Gawrycka**, N. Copernicus University, Toruń, Poland
Solutions of Multiparameter Systems of Elliptic Differential Equations

Session B

15:30-16:00 **Klaudiusz Wójcik**, Jagiellonian University
Isolating blocks in dimension 3.

16:00-16:30 **Paweł Pilarczyk**, Jagiellonian Univ. & Georgia Tech
Cubical Index Pairs and the Excision Property

16:30-17:00 Coffee break

17:00-17:30 **Wojciech Wójcik**, Vrije Universiteit Amsterdam, NL
Floer Homology for Braids on the Two-Disc

17:30-18:00 **Juliette Hell**, Freie Universität Berlin
Conley-Index of infinity

End of Parallel Sessions

18:30 Dinner

Saturday, June 10th

8:00-9:00 Breakfast

Plenary Session

9:00- 9:50 **Pieter Collins**, Centrum voor Wiskunde en Informatica
Computability in Dynamical Systems Theory

9:50-10:40 **Rafael de la Llave**, U. Texas at Austin
The parameterization method for invariant manifolds. Examples of breakdown of normal hyperbolicity

10:40-11:10 Coffee break

11:10-12:00 **Zin Arai**, Kyoto University, Japan
A Hyperbolicity Verification Algorithm and its Application

12:00-12:30 **Hiroshi Kokubu**, Kyoto University, Japan
Conley-Morse chain complexes and chain maps based on spectral sequences

End of Plenary Session

13:00 Lunch