

International Conference-School
Dynamics, Bifurcations and Chaos 2015
(DBC II)

20 – 24 July of 2015

Venue: *University Conference Center*
Nizhny Novgorod University
Gagarina 23, Corp. 1 ,
New library building (NLB), floor 4

In the framework of the Conference,
we hold the Workshop

**“Applications of Dynamical Systems to Mathematical
Models from Sciences and Engineering”**

PROGRAM

Nizhny Novgorod -2015

Monday, July 20

9.00 – 9.45 Registration

9.45 – 10.30 Opening (NLB, Conference Hall)

Chairman S. Gonchenko (NLB, Conference Hall)

10.30 – 11.15 **W. Anischenko** “Chimera state realization in chaotic systems. The role of hyperbolicity”

11.20 – 12.05 **A. Shilnikov** TBA

12.10 – 12.40 **Coffee-break**

12.40 – 13.25 **D. Turaev**, “On Bonatti-Diaz cycles”

13.30 – 14.30 **Lunch**

Chairman L. Lerman (NLB, Conference Hall)

14.30 – 15.15 **O. Pochinka**, Course “On topological classification of structurally stable dynamical systems”, Lecture 1

15.20 – 16.00 **O.Podvigina** “Two-parameter bifurcation study of the regularized long-wave equation”

16.00 – 16.30 **Coffee-break**

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| | Section: Bifurcations and strange attractors Chairman: V. Belykh (NLB, Conference Hall) | Section: Dynamical systems with additional structures Chairman: O. Pochinka (NLB, Exhibition Room) |
| 16.30-17.00 | J. Creaser "The Lorenz system near the loss of the foliation condition" | S. Maksymenko "Actions of symplectic groups of diffeomorphisms of orientable surfaces on spaces of smooth functions" |
| 17.00-17.30 | S. Hittmeyer "From wild Lorenz-like to wild Rovella-like dynamics" | L. Vlasenko "New invariants of topological conjugacy of noninvertible inner mappings" |
| 17.30-18.00 | A. Rodrigues "Dynamics near a homoclinic network with a bifocus" | P. Akhmetev "Higher asymptotic linking numbers in homology spheres" |

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| Workshop "Applications of Dynamical Systems to Mathematical Models from Sciences and Engineering" Chairman: A. Vladimirov (NLB, Room 3) | |
| 16.30 – 17.00 | O. Isaeva "On synchronization of hyperbolic chaotic generators and based on it communication schemes" |
| 17.00 – 17.20 | I. Shepelev "Dynamical chimeras in a ring of oscillators with local coupling" |
| 17.20 – 17.40 | A. Slepnev "Chimera States in Ensemble of Non-Locally Coupled Anishchenko – Astakhov Self-Sustained Oscillators" |
| 17.40 - 18/00 | D. Savin "Experimental study of transition to the robust chaos in the Kuznetsov generator" |

Tuesday, July 21

Chairman A. Shilnikov (NLB, Conference Hall)

10.00 – 10.45 **V. Belykh** "Singularly-hyperbolic attractors in phase systems"

10.50 – 11.35 **A. Neiman** "Phase diffusion in unequally noisy coupled oscillators"

11.40 – 12.10 **Coffee-break**

12.10 – 12.50 **I. Belykh** "Repulsive Inhibition Promotes Synchrony in Excitatory Bursting Neurons: Help from the Enemy"

12.50 – 13.30 **T. Lazaro** "Dynamics and bifurcations in a simple quasispecies model of tumorigenesis"

13.30 – 14.30 **Lunch**

Chairman I. Belykh (NLB, Conference Hall)

14.30 – 15.15 **O. Pochinka**, Course "On topological classification of structurally stable dynamical systems", Lecture 2

15.15 – 16.00 **V. Grines**, Course "On interrelation between dynamics and the topology of the ambient manifold", Lecture 1

16.00 – 16.30 **Coffee-break**

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| | Section: Bifurcations and strange attractors Chairman: A. Vieiro (NLB, Conference Hall) | Section: Dynamical systems with additional structures Chairman: V.Grines (NLB, Exhibition Room) |
| 16.30-17.00 | A.M. Lopez Barragan. Finiteness and existence of attractors and repellers on sectional hyperbolic sets | L. Efremova "Concept of Stability as a Whole of a Family of Fibers Maps for C^1 -Smooth Skew Products and Its Generalization" |
| 17.00-17.30 | A. Okunev "Attractors of partially hyperbolic skew products with circle fiber" | E. Zhuzhoma "On classification of Morse-Smale systems with few nonwandering points" |
| 17.30-17.50 | I. Shilin "Lyapunov unstable Milnor attractors" | E. Gurevich, D. Malyshev "On an algorithm of recognizing the topological conjugacy classes of Morse-Smale cascades" |
| 17.50-18.10 | V. Kruglov "Hyperbolic chaos in model systems with ring geometry" | E. Grines "On constructing simple examples of three-dimensional flows with two heteroclinic cycles" |

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| Workshop "Applications of Dynamical Systems to Mathematical Models from Sciences and Engineering" Chairman: D. Balandin (NLB, Room 3) | |
| 16.30 – 17.00 | A. Savin "Strange nonchaotic attractors in quasiperiodically driven Ikeda map with weak dissipation" |
| 17.00 – 17.20 | M.Pozdnyakov "Multistability in quasiperiodically driven Ikeda map" |
| 17.20– 17.40 | V.Biragov, L.Kuznetsova "Invariants of the Orthodox Paschalion" |
| 17.40-18.00 | V. Serykh "Evidence of a strange non-chaotic attractor in the El Nino dynamics" |
| 18.00-18.20 | V.Doroshenko "Strange nonchaotic attractor of Hunt and Ott in system with a ring geometry" |

Wednesday, July 22

Chairman: A. Morozov (NLB, Conference Hall)

10.00 – 10.45 **S. Kuznetsov** "Parametric generators of chaos"

10.50 – 11.35 **A. Delshams** "Diffusion through non-transverse heteroclinic chains: A long-time instability for the NLS"

11.40 – 12.10 **Coffee-break**

12.10– 12.50 **A.Vladimirov, M.Tlidi, D.Turaev, A.Pimenov, S. Gurevich** "Control of cavity solitons by time-delayed optical feedback"

13.00 – 14.30 **Lunch**

Chairman: A.Delshams (NLB, Conference Hall)

14.30– 15.15 **V.Grines**, Course "On interrelation between dynamics and the topology of the ambient manifold" Lecture 2

15.15 – 15.55 **E.Ugalde** "Piecewise Contractions as Models of Regulatory Networks"

15.55 – 16.35 **A.Borisov**, "Hierarchy of dynamics and the Hamiltonization of nonholonomic systems"

16.35 – 17.00 **Coffee-break**

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| | Section: Bifurcations and strange attractors Chairman: M. Malkin (NLB, Conference Hall) | Section: Dynamical systems with additional structures Chairman: L. Efremova (NLB, Exhibition Room) |
| 17.00-17.30 | M. Gonchenko "Homoclinic tangencies in area-preserving and orientation-reversing maps" | A. M. Cherubini, J.S.W. Lamb, M. Rasmussen "A study of the stochastic resonance as a random dynamical system." |
| 17.30-18.00 | J.C. Tatjer "Invariant curves of quasi-periodically forced maps" | S. Sokolov "Falling Motion of a Circular Cylinder Interacting Dynamically with Point Vortices" |
| 18.00 – 18.30 | A. Vieiro "Periodic forcing of a 2-dof Hamiltonian undergoing a Hamiltonian-Hopf bifurcation" | P. Ryabov "Bifurcations of first integrals in the Kowalevski-Sokolov case" |

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| Workshop "Applications of Dynamical Systems to Mathematical Models from Sciences and Engineering" Chairman: T. Vadivasova (NLB, Room 3) | |
| 17.00 – 17.20 | A. Chekmareva "The destruction of conservative dynamics in the system of phase equations by symmetry breaking" |
| 17.20 – 17.40 | N. Stankevich "An autonomous systems with quasiperiodic dynamics: examples and properties" |
| 17.40 – 18.00 | M. Obychev "Features of dynamics of the implicit maps. Conservative and near conservative case." |
| 18.00 – 18.20 | M. Kulakov "Clustering in the coupled Ricker population model" |

Posters – Wednesday, July 22 (NLB, Room 3)

- 1) **M. Khavinson, A. Kolobov, M. Kulakov** "Modeling of the employed population number nonlinear dynamics: the agent-based approach"
- 2) **M. Kulakov, M. Khavinson** "Nonlinear dynamics of the number of different age specialists in the regional economy"
- 3) **O. Kostromina** "Towards homoclinic bifurcations and complex dynamics in the system with a "figure-eight" of a saddle"
- 4) **S. Khrisanfova** "The dynamics of a system of phase oscillators depending on coupling strength and other parameters"
- 5) **Yu. Levchenko** "The topological classification of locally direct product of DA-diffeomorphism of a 2-torus and rough diffeomorphism of the circle"
- 6) **Aleshin K.N., Matrosov V.V., Mishagin K.G.** "Dynamics of a spin-transfer nanooscillator controlled by external magnetic field"
- 7) **K. Sergeev** "Dynamics of ensemble of active Brownian particles interacting via Morse potential forces"
- 8) **M. Galinskii** "TBA"

Thursday, July 23

Chairman: D. Turaev (NLB, Conference Hall)

9.30 – 10.15 **T. Vadivasova** “Synchronization of running waves in an active medium with periodic boundary conditions”

10.20 – 10.50 **Coffee-break**

10.50 – 11.30 **M. Malkin** “Renormalizations and Universality for Bifurcations in Lorenz-like Systems”

11.30 – 12.00 **K.Shah** “Fermi acceleration in billiards with holes”

12.00 – 13.00 **Lunch**

14.00 – 18.00 **Boat trip**

19.00 – 22.00 **Conference dinner**

Friday, July 24

Chairman: S. Kuznetsov (NLB, Conference Hall)

10.00 – 10.45 **A. Shirikyan** “Global stabilization for a damped-driven conservation laws”

10.50 – 11.35 **S. Gonchenko** “Reversible mixed dynamics”

11.40 – 12.10 **Coffee-break**

12.10 – 12.50 **N.Derendyaev** “About laws of conservation in the dynamics of fluid”

13.00 – 14.30 **Lunch**

Chairman: S. Gonchenko (NLB, Conference Hall)

14.30 – 15.10 **A. Kirillov** TBA

15.10 – 15.40 **K.Morozov**, A. Morozov “On transitory systems”

15.40 – 16.10 **V. Kostin**, I. Laryshin, A.Silaev, N.Vvedenskii “Ionization-induced wavemixing of intense laser pulses”

16.10 – 16.30 **Coffee-break**

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|----------------------|---|--|
| | SectionS: Bifurcations and strange attractors & Dynamical systems with additional structures Chairman: D. Turaev (NLB, Conference Hall) | Workshop “Applications of Dynamical Systems to Mathematical Models from Sciences and Engineering” Chairman: A.E. Rassadin (NLB, Room 3) |
| 16.30-17.00 | I. Ovsyannikov TBA | A. Rassadin TBA |
| 17.00-17.20 | A. Kazakov “On chaotic dynamics in the nonholonomic Suslov model” | E.Kadina, M. Tai “Dynamical Self-Assembly Process” |
| 17.20 – 17.40 | A. Gonchenko TBA | T.Gurina “Cascades of bifurcations in a two-parameter ecological system” |
| 17.40–18.00 | T. Levanova “Multistable regimes in the motif of Rulkov maps with inhibitory couplings” | TBA |

Closing