

12.12.2018

## Conference program

International Conference

**“Shilnikov Workshop-2018”**

dedicated to the memory of

Leonid Pavlovich Shilnikov (1934-2011)

**Place:** *University Conference Center, Nizhny Novgorod University*

*Gagarina 23, Corp. 1, New library building (NLB), floor 4*

### PROGRAM

**Monday, December 17**

9-30 – 9-45 Registration

9-45 – 10-00 Opening

Plenary Sessions 1: **Chairman:** S. Gonchenko

10-00 – 11-00 **V.N. Belykh** “Simplified maps modeling funnel attractors in 3D flow with one or two equilibria”

11-00 – 11-30 **Coffee break**

11-30 – 12-15 A.S. Dmitrichev, D.S. Shchapin, **V.I. Nekorkin** “Cloning of chimera states in large multiplex network of linearly coupled relaxational oscillators with nonstationary inter-layer couplings”

12-15 – 13:00 **L. Lerman** “On skew products over a quasi-periodic shift of the circle”

13-00 – 14-30 **Lunch**

**Chairman:** A. Gonchenko

14-30 – 15-00 A. V. Mishin, A. A. Nechaev, M. A. Garasev, A. N. Stepanov, **VI .V. Kocharovsky** “Formation of a density bump at the front of a collisionless shock wave during the expansion of a laser plasma”

15-00 – 15-20 **A. A. Nechaev**, M. A. Garasev, A. V. Mishin, A. N. Stepanov, VI.V. Kocharovsky “Generation of magnetic field behind the front of a collisionless shock wave during the expansion of a laser plasma”

15-20 – 15-45 I.R. Garashchuk, **D.I. Sinelshchikov**, N.A. Kudryashov, A. Kazakov\_ “Multistability and Hyperchaos in the Dynamics of Two Coupled Contrast Agents”

15-45 – 16-00 **D.Malyshev**, A.Kazakov, E.Shiryayeva “On computationally effective methods for verification of the attractor pseudohyperbolicity”

16-00 – 16-20 **N.V. Stankevich**, E.S. Popova, A.P. Kuznetsov “Formation of hyperchaos after secondary Neimark-Sacker bifurcation”

16-20 – 16-40 **A.A. Emeliyanova**, V.I. Nekorkin “Attractors and repellers in a system of two nonidentical phase oscillators with adaptive couplings”

16-40 – 17-00 **Coffee break**

**Chairman:** S. Maksimenko

17.00 – 17.20 **A.A. Makeeva**, A.S. Dmitrichev, V.I. Nekorkin “Canard solutions in a one-dimensional array of FitzHugh-Nagumo neurons”

17.20 – 17.40 **M.M. Pugavko**, V. I. Nekorkin “Chaotic spatiotemporal dynamics of a chain of bistable maps”

17-40 – 18-00 **G.L. Alfimov**, A.S. Korobeinikov, C.J. Lustri, and D.E. Pelinovsky  
“Transparent points” in Discrete NLS Equation with Saturation.

18-00 – 18-20 G.L. Alfimov, I.V. Barashenkov, **A.P. Fedotov** “Moving solitons for the Lugiato-Lefever equation”

**Poster-session** (during Monday and Tuesday)

1) **E.S. Alekseeva**, A.E. Rassadin “The Estimation for Length of Closed Phase Trajectory of Two-Dimensional System of Ordinary Differential Equations”

2) E.S. Alekseeva, **A.E. Rassadin** “On Asymptotic Solution for One of the Simplest Model of Cosmological Inflation”

3) **D. I. Astakhova**, M. V. Sysoeva, I. V. Sysoev “Dependency of coupling estimates obtained with partial directed coherence method on time series length”

4) **Yu.V. Bakhanova** “Shilnikov homoclinic loops in the Rosenzweig-MacArthur model”

5) **Ali Ghannam** “On the approximation of cylinder map by non-autonomous Hamiltonian system rotation”

6) **O. Gordeeva**, V. Lukyanov “On bifurcations of two-dimensional diffeomorphisms with a quadratic homoclinic tangency to a nonhyperbolic saddle”

7) **E. Grines** “On discrete Shilnikov attractors in a system of symmetrically coupled oscillators”

8) **A. A. Grishchenko**, M. V. Sysoeva, C. M. van Rijn, I. V. Sysoev. Estimating optimal lag of embedding for state space reconstruction from scalar realizations of brain local field potentials before, during and after spike-wave discharges.

9) **A.O. Kazakov**, I.R. Sataev “On discrete Lorenz and Shilnikov attractors in the modified oscillator of Anishchenko-Astakhov”

10) **I. Korenkov** “Wild spiral attractors in the four-dimensional Shimitsu-Morioka system”

11) **A.G. Korotkov**, T.A. Levanova and G.V. Osipov “The dynamics of ensemble of neuron-like elements with excitatory couplings”

12) **A.V. Kostyuk**, M. V. Kornilov, D. D. Kulminskiy, V. I. Ponomarenko, I. V. Sysoev. Application of Partial Directed Coherence for assessing connectivity from time series of radio-engineering generators.

13) **A.D. Kozlov** “On numerical methods of pseudohyperbolicity check”

14) **T.A. Levanova**, A.G. Korotkov, G.V. Osipov “The impact of electrical couplings on the dynamics of discrete neuron-like elements”

15) **Morozov A.I.**, Pochinka O.V. "New research methods of Kupka-Smale diffeomorphisms"

16) **O. I. Pipikin, E.V. Pankratova** “Isolated cell's response near the boundary of firing mode domain”

17) **I.D. Remizov** “On estimation of error in approximations provided by Chernoff's product formula”

18) **I. Sinitsky** “On mixed dynamics of two-dimensional reversible maps with nontransversal heteroclinic cycles”

19) **A.I. Shykhmamedov** “Towards appearance of chaotic dynamics in the Henon map”

## Tuesday, December 18

Plenary session 2: **Chairman:** A. Morozov

10-00 – 10-45 **V. Grines** “On manifolds admitting structurally stable “sink-source” diffeomorphisms”

10-45 – 11-15 **Coffee break**

11-15 – 11-55 **S. Maksymenko**, O. Khohlyk “Diffeomorphisms preserving Morse-Bott foliations”

11-55 – 12-35 **M. Malkin**, K. Safonov “Detecting of chaos by perturbations of degenerate maps”

12-35 – 13-00 A. Delshams, **M. Gonchenko**, P. Gutierrez, Exponentially small splitting of separatrices associated to 3D whiskered tori with cubic frequencies.

13-00 – 14-30 **Lunch**

Session 1: Bifurcations and chaos (NLB, Conference Hall), <b>Chairman:</b> A. Korotkov	Session 2: Dynamical systems and applications (NLB, Exhibitory room) <b>Chairman:</b> A. Rassadin
<p>14-30 – 15-00 <b>I.V. Sysoev</b>, M. V. Sysoeva. Transitions between regimes in ensembles of coupled neurooscillators in application to epilepsy modeling.</p> <p>15-00 – 15-30 <b>M.I. Bolotov</b>, V.O. Munyayev, L.A. Smirnov and G.V. Osipov Symmetry broken states in an ensemble of coupled pendulums.</p> <p>15-30 – 15-50 <b>N.V. Barabash</b> “Ghost-attractor in blinking nonlinear rotator-oscillator”</p> <p>15-50 – 16-15 <b>A. Gonchenko</b>, E. Samylina “On the domain of existence of Lorenz-like attractors in a nonholonomic model of Celtic stone”</p> <p>16-15 – 16-40 <b>M.A. Rozhnova</b>, E.V. Pankratova, I.A. Lazarevich, S.V. Stasenko, V.B. Kazantsev “Bifurcations leading to periodic solutions in mathematical model of neural extracellular matrix”</p>	<p>14-30 – 15-00 <b>A. Kulikov</b>, D. Kulikov “Nontrivial invariant manifolds of the Kuramoto-Sivashinsky equation and the Galerkin method”</p> <p>15-00 – 15-20 <b>A. Sekatskaya</b> “On the influence of the shape of a region on the character of local bifurcations in the Kuramoto-Sivashinsky equation”</p> <p>15-20 – 15-40 <b>A.M. Kovaleva</b> “Stability and bifurcations of solutions for the nonlocal erosion equation in the case of a small spatial deviation”</p> <p>15-40 – 16-00 <b>K. Morozov</b> “On quasi-periodic perturbations of Duffing type equations”</p> <p>16-00 – 16-20 <b>E. Derunova</b>, Mazhar N. Ali “Topological states of matter as bifurcations of trajectories of Schrodinger equation in periodic potential”</p> <p>16-20 – 16-40 <b>O.S. Kostromina</b> “On quasi-periodic perturbations of pendulum-type equation”</p>

16-40 – 17-00 **Coffee break**

Plenary session 3: **Chairman:** S. Gonchenko

17-00 – 17-20 **E. Zhuzhoma**, V. Medvedev “On conjugacy of regular and semi-regular Smale diffeomorphisms”

17-20 – 17-40 I.A.Bashkirtseva, **S.S.Zaitseva** “Analysis of stochastic dynamic in autocatalytic regulation model”

17-40 – 18-00 **A.G. Korotkov**, T.A. Levanova, G.V. Osipov “Chaotic regimes in the ensemble of Fitzhugh-Nagumo elements with weak couplings”

**closing**