

INTERNATIONAL CONGRESS

NONLINEAR DYNAMICAL
ANALYSIS – 2007

*Dedicated to the 150th anniversary of
academician A.M. Lyapunov*

CONGRESS PROGRAM

*June 4–8, 2007
Saint Petersburg, Russia*

CONGRESS ORGANIZERS

- Ministry of Education and Science of Russian Federation
- Russian Academy of Science
- Russian Foundation for Basic Research
- Saint Petersburg State University
- Smirnov Scientific Research Institute of Mathematics and Mechanics, Saint Petersburg University
- FSUE SRC RF CSRI "Elektropribor"
- Academy of Nonlinear Sciences

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SCIENTIFIC AREAS OF THE CONGRESS

1. Stability theory and nonlinear oscillations
2. Nonlinear control
3. Classical mechanics
4. Celestial mechanics
5. Nonlinear differential equations and their applications
6. Mathematical modeling in natural, technical and humanitarian sciences
7. Games theory and its applications in management
8. Chaos theory

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**SCHEDULE OF
INTERNATIONAL CONGRESS
NONLINEAR DYNAMICAL ANALYSIS-2007**

<i>June 4</i>	<i>15.00–21.00</i>	Registration (14 liniya, 29)
<i>June 5</i>	<i>9.00–10.00</i> <i>10.00–10.30</i> <i>10.30–13.30</i> <i>13.30–14.30</i> <i>15.00–20.00</i>	Registration (Universitetskaya emb., 7/9) Congress opening Plenary lectures (Universitetskaya emb., 7/9) Lunch Oral and Poster Sessions (14 liniya, 29)
<i>June 6</i>	<i>10.00–14.00</i> <i>14.00–15.00</i> <i>15.00–20.00</i>	Plenary lectures (Universitetskaya emb., 7/9) Lunch Oral and Poster Sessions (14 liniya, 29)
<i>June 7</i>	<i>10.00–13.00</i> <i>13.30–14.30</i> <i>15.00–20.00</i>	Oral and Poster Sessions (14 liniya, 29) Lunch Oral and Poster Sessions (14 liniya, 29)
<i>June 8</i>	<i>10.00–13.00</i> <i>13.30–14.30</i> <i>15.00–19.00</i> <i>19.00–20.00</i> <i>20.00–22.00</i>	Cultural program Lunch Plenary lectures (Universitetskaya emb., 7/9) Congress closing (Universitetskaya emb., 7/9) Social Dinner

PLENARY LECTURES

Chair: G. A. Leonov

Tuesday, June 5

Morning session

- 10.30–11.30 **Pliss V.A.** On the life and creative work of A.M. Lyapunov
 11.30–12.30 **Sell G.R.** Lyapunov bundles in cyclic feedback systems with delays
 12.30–13.30 **Kurzhanskii A.B.** On the problems of dynamics and control for hybrid systems

Wednesday, June 6

Morning session

- 10.00–11.00 **Chernousko F.L., Ananyevskiy I.M., Ovseevich A.I.** Methods of control and evaluation for dynamic systems with uncertainties and restrictions
 11.00–12.00 **Cellina A.** Existence and properties of solutions of variational problem
 12.00–13.00 **Burton T.A.** Liapunov's direct method for integral equations
 13.00–14.00 **Vasiliev S.N., Kozlov R.I., Lakeev A.V.** Development of the Lyapunov functions method in the theory of heterogeneous and other dynamical systems

Friday, June 8

Afternoon session

- 15.00–16.00 **Kozlov V.V.** First Lyapunov method for strongly nonlinear systems of differential equations
 16.00–17.00 **Lan Wen.** Generic dynamics away from homoclinic bifurcations
 17.00–18.00 **Godunov S.K.** Application of new mathematical apparatus "one-dimensional spectral matrix portraits" to the solution of the problem of blade row aero-elastic oscillations
 18.00–19.00 **Rumyantsev V.V.** On variational principles for the systems with unilateral constraints

STABILITY THEORY AND NONLINEAR OSCILLATIONS

Section chair: V. A. Pliss

Tuesday, June 5

Afternoon session

Session chair: V. A. Pliss

- 15.00–15.40 **Mallet-Paret J.** Singularly Perturbed State-Dependent Delay Equations: Asymptotics and Stability
- 15.40–16.20 **Trenogin V.A., Sidorov N.A. and Loginov B.V.** Lyapounov-Schmidt methods in bifurcation theory and some applications
- 16.20–16.35 **Pakshina N.A.** The Nizhniy Novgorod period of Alexander Lyapunov's life
- 16.35–16.50 **Lopatuhin A.L., Lopatuhina I.Ye., Polyakhova E.N., Polyakhov N.N.** Alexander Lyapunov and his role in St. Petersburg scientific school of mathematics in the 19-20th centuries
- 16.50–17.05 **Terekhin M.T.** Periodic solutions of non-linear differential equation systems with parameter
- 17.05–17.20 **Bibikov Yu.N., Basov V.V.** Invariant Tori of Periodic Systems with Cubic Unperturbed Parts
- 17.20–17.40 **Coffee-break**
- 17.40–17.55 **Petrov N.N.** Lyapunov stability of fixed points for polynomial maps in some compact rings
- 17.55–18.10 **Andreev A.S.** On stability problem for functional-differential equation with respect to part of variables
- 18.10–18.25 **Zadorozhny V.F.** Lyapunov problem and spectrum of dynamical systems
- 18.25–18.40 **Izobov N.A., Mazanik S.A.** Properties of the coefficient and the exponent of the reducibility of linear differential systems
- 18.40–18.55 **Basseville S., Leger A.** Stability in simple systems involving shocks and friction

- 18.55–19.10 **Antonovskaya O.G., Goryunov V.I.** On the optimization of the algorithm of the direct Lyapunov method application to the investigation of interval-undefined systems dynamics
- 19.10–19.25 **Lychak M.M.** Analysis of discrete system dynamics using Lyapunov function sequences
- 19.25–19.40 **Bobtsov A.A., Bystrov S.V., Grigorev V.V., Motylkova M.M.** Construction of Lyapunov functions for research of discrete systems with periodic factors

Wednesday, June 6

Afternoon session

Session chair: Yu. N. Bibikov

- 15.30–15.45 **Rasvan V.** Around some research and results of A. M. Liapunov on systems with periodic coefficients-discrete time counterpart
- 15.45–16.00 **Mailybaev A.A. and Seyranian A.P.** Bifurcations of equilibria in potential systems at bimodal critical points
- 16.00–16.15 **Melnikov G.I.** A method of differential inequalities for Lyapunov functions in estimations of system stability in enclosed areas
- 16.15–16.30 **Krasovskii S.G.** On the constructing of unbounded spectral sigma-sets for even dimensional linear systems with small parameter multiplying the derivative
- 16.30–16.45 **Basov V.V.** Normalization of two-dimensional systems with a non-disturbed part ($\alpha x_1^2 + x_1 x_2, x_1 x_2$)
- 16.45–17.00 **Bogdanov A.Yu.** Development of the direct Lyapunov method for non-linear non-autonomous discrete equations with indefinite after-effect
- 17.00–17.30 **Coffee-break**
- 17.30–17.45 **Pochinka O.V.** Construction of Liapunov function with minimal number of critical points
- 17.45–18.00 **Bratus' A.S., Posviansky V.P.** Stability a spatial dynamics for hypercycles evolution equation of natural selforganization
- 18.00–18.15 **Kuzmina L.K.** Stability problems in theory of systems with multi-time scales

- 18.15–18.30 **Bykov V.G.** Automatic balancing of the imbalanced rotor with the gyroscopic effect
- 18.30–18.45 **Krysko V.A., Krysko A.V., Zhygalov M.V., Papkova I.V., Savelieva N.E., Shekaturova T.V., Kuznetsova E.S.** The nonlinear dynamics theory of distributed mechanical systems
- 18.45–19.00 **Zubov S.V.** Lyapunov type functions for multidimensional dynamical systems
- 19.00–19.15 **Manuylov K.V.** The problem of stability as variational problem for Lyapunov's functions presented as trigonometrical functions of algebraic curve of genus p
- 19.15–19.30 **Panasenko E.A., Tonkov E.L.** Uniformly asymptotically stable invariant sets for differential inclusions and Lyapunov functions
- 19.30–19.45 **Matrosov V.M., Somov Ye.I.** Stability and nonlinear dynamics of the spacecraft multiple gyromoment stabilizer systems

Thursday, June 7

Morning session

Session chair: E. L. Tonkov

- 10.00–10.30 **Trenogin V.A.** On the first Lyapunov method for differential equations in Banach space
- 10.30–10.50 **Zuber I.E., Gelig A.Kh.** Robust stabilization of nonlinear systems
- 10.50–11.05 **Kosov A.A.** Stabilization of heterogeneous mechanical systems
- 11.05–11.20 **Malikov A.I.** Stability and stabilization of hybrid systems
- 11.20–11.35 **Furasov V.D.** Vector Lyapunov functions and problems of robust stabilization
- 11.35–12.00 **Coffee-break**
- 12.00–12.15 **Finogenko I.A.** On the problem of tracking, controllability and stabilization for mechanical systems with the use of a combination of discontinuous feedbacks and impulse controls

- 12.15–12.30 **Kabelkov A.N., Kabelkov V.A., Burtseva O.A., Nefedov V.V.** Research of states and control of oscillations of nonlinear viscous-elastic systems
- 12.30–12.45 **Sankin Yu.N.** A frequency method for the evaluation of stability of non-holonomic systems with distributed parameters
- 12.45–13.00 **Obodan N.I., Gromov V.A.** The numerical method for non-linear PDEs branching analysis

Thursday, June 7

Afternoon session

Session chair: E. L. Tonkov

- 15.00–15.20 **Sergeev V.S.** Some problems of stability investigation in critical cases for integrodifferential equations of Volterra type
- 15.20–15.40 **Lestev A.M., Tikhonov A.A., Lestev M.A.** Non-linear phenomena in dynamics of oscillating micro-mechanical gyroscopes
- 15.40–16.00 **Chaikin S.V.** Relative equilibria of a gyrostat on a circular orbit at the symmetric location of a gyrostatic momentum with respect to its central inertia ellipsoid
- 16.00–16.20 **Shmatko T.V.** Application of the Lyapunov stability definition in the problems of non-linear elastic systems vibrations stability
- 16.20–16.40 **Ilyina L.P., Manuylov K.V., Panfeorov A.A.** Rotation of deformable shell described by the algebraic elliptical surface with real compressible liquid inside around fixed center of gravity
- 16.40–17.00 **Bychkov A.S., Merkuriev M.G.** Some sufficient condition for stability of hybrid automata trivial stationary state
- 17.00–17.20 **Burkin I.M.** Convergence and absolute stability of systems with monotonous non-linearities
- 17.20–17.40 **Kunitsyn A.L., Tashimov L.T., Tkhai V.N.** Lyapunov systems: Stability, Hopf bifurcations and Control
- 17.40–18.00 **Marion M.** Approximate inertial manifolds

NONLINEAR CONTROL

Section chair: N. N. Petrov

Tuesday, June 5

Afternoon session

Session chair: A. A. Tolstonogov

- 15.00–15.30 **Korobov V.I.** Development of the A.M. Lyapunov method ideas in mathematical control theory
- 15.30–15.45 **Tolstonogov A.A.** Relaxation in non-convex problems of optimal control
- 15.45–16.00 **Sedova N.O.** Synthesis of stabilizing controls for non-autonomous systems with after-effect
- 16.00–16.15 **Lukoyanov N.Yu.** On Lyapunov functionals in control problems of nonlinear systems with aftereffect
- 16.15–16.30 **Bobtsov A.A., Grigorev V.V., Nikolaev N.A.** Output stabilization of time-delay nonlinear system
- 16.30–16.45 **Zhukovskiy V.I., Sorokin K.S.** Risks in multi-criteria problems
- 16.45–17.00 **Ganebny S.A., Kumkov S.S., Patsko V.S., Pyatko S.G.** Nonlinear robust control in problems with fixed terminal time
- 17.00–17.30 **Coffee-break**
- 17.30–18.00 **Walther H.-O.** State-dependent delays: results and problems
- 18.00–18.15 **Kruglikov S.V.** Sufficient conditions of stability of hierarchic systems interaction under conditions of incomplete information
- 18.15–18.30 **Shorikov A.F.** Problems of adaptive minimax control for Pursuit-Evasion process in discrete-time dynamical systems
- 18.30–18.45 **Rakovic Sasa V., Konstantinos I. Kouramas** The minimal robust positively invariant set and its invariant approximations via finite time Aumann integrals

- 18.45–19.00 **Beisenbi M.A., Kulniyazova K.S.** On a method of the Lyapunov function construction for the investigation of a control system robust stability
- 19.00–19.15 **Pakshin P.V.** Problems of robust stabilization and comparison with stochastic Lyapunov function
- 19.15–19.30 **Pilishkin V.N.** Synthesis of robust regulators for the non-linear systems on the bounded sets environments
- 19.30–19.45 **Chernyshov K.R.** Towards applications of probabilistic inequalities in a robust control problem
- 19.45–20.00 **Sokolov V.F.** Synthesis of an asymptotically sub-optimal robust control under unknown perturbation weights

Wednesday, June 6

Afternoon session

Session chair: V.I. Zhukovskiy

- 15.00–15.15 **Aranovskiy S.V., Bobtsov A.A., Grigoriev V.V., Nikolaev N.A.** Adaptive observer for chaotic duffing system
- 15.15–15.30 **Blizorukova M.S.** On a stable reconstruction of phase states and controls of dynamical systems
- 15.30–15.45 **Bodunov N.A.** Local parametric identifiability of linear stationary systems via a single-time observation of solutions
- 15.45–16.00 **Zaytsev V.A.** On stabilization of a periodic system with observer
- 16.00–16.15 **Zoteev V.Ye.** Parametrical identification nonlinear dissipative systems based on modern information technologies
- 16.15–16.30 **Maksimov V.I.** Dynamic identification of controls in the equation of phase field
- 16.30–16.45 **Gusev M.I.** Experiment planning in problems of non-linear systems guaranteed identification
- 16.45–17.00 **Gorobtsov A.S., Ryzhov E.N.** Analytical synthesis of auto-oscillations in multiple-circuit control systems
- 17.00–17.15 **Fedyukov A.A.** First order regulator synthesis for the stabilization of a double reversed pendulum

17.15–17.40 **Coffee-break**

- 17.40–17.55 **Gabasov R.F., Kirillova F.M., Ruzhitskaya E.A.**
Realization of constrained feedback in a non-linear control problem
- 17.55–18.10 **Gusev S.V.** Construction of parameter-dependent Lyapunov functions using parametric Yakubovich lemma
- 18.10–18.25 **Pavlenok N.S.** Construction of algorithms for program and positional solutions of a linear-quadratic optimal control problem
- 18.25–18.40 **Proskurnikov A.V.** Infinite-dimensional Yakubovich-Kalman lemma for non-strict inequalities
- 18.40–18.55 **Stanzhitskii A.N.** Optimal control of the stochastic systems with quadratic criterion of quality
- 18.55–19.10 **Krotov V.F., Bulatov A.V.** On convergence of a dual method for linear-quadratic optimal control problem
- 19.10–19.25 **Butenina D.V., Butenina N.N., Metrikin I.A.** Zones of immunity and sovereignty of a controlled dynamical system on the plane
- 19.25–19.40 **Butenina N.N., Korobitsin V.V.** Phase portrait of a dynamical system on the plane

*Thursday, June 7**Morning session**Session chair: V. I. Korobov*

- 10.00–10.15 **Liguo Zhang, Yangzhou Chen, and Pingyuan Cui**
Multiple Lyapunov Functions for Impulsive Switched Systems
- 10.15–10.30 **Baranov V.V., Baranova E.L., Maslennikova A.V., Matrosov V.M.** On the problem and methods of correlative control
- 10.30–10.45 **Zuev A.L.** Localization of a limit set and precompactness of trajectories of differential equations in a Banach space
- 10.45–11.00 **Orlov V.B., Petrov Yu.P.** The widening of A. M. Lyapunov's investigations on a parametric stability

- 11.00–11.15 **Balashevich N.V., Gabasov R., Kirillova F.M.** Optimal real-time control of dynamical systems
- 11.15–11.45 **Coffee-break**
- 11.45–12.00 **Ashimov Abd.A., Sagadiev K.A., Borovskii Yu.V., Iskakov N.A., Ashimov As.A.** On the extremal bifurcation in a problem of variational calculus about dynamical system evolution control under multi-parameter perturbation
- 12.00–12.15 **Srochko V.A.** Method of bilinear approximations for optimal control problems
- 12.15–12.30 **Koustousova E.K.** On external polyhedral estimates of reachable sets to linear systems and systems with bilinear uncertainty
- 12.30–12.45 **Komleva T.A., Plotnikov A.V.** Non-linear controlled systems under conditions of uncertainty

Thursday, June 7

Afternoon session

Session chair: N. A. Bodunov

- 15.00–15.15 **Valuev A.M.** Composite model of a transforming process. Program control and invariant system synthesis
- 15.15–15.30 **Gaeva Z.S., Shananin A.A.** Numerical algorithm for the control problem of the processes described by the kinetic equation
- 15.30–15.45 **Grigoriev V.V., Bystrov S.V., Boltunov G.I., Bobtsov A.A., Kremlev A.S., Kamnev D.A.** Piezoelectric devices control
- 15.45–16.00 **Plotnikov V.A., Kichmarengo O.D.** Numerical-asymptotic solution of a control problem with vectorial criterium on trajectories with maximum
- 16.00–16.15 **Terletskii V.A.** Optimality conditions and numerical methods in hyperbolic systems control problems
- 16.15–16.30 **Schulte H.** Approximate Modeling of a Class of Nonlinear Oscillators using Takagi-Sugeno Fuzzy Systems

- 16.30–16.45 **Antonik V.G.** Method of successive approximations for concave optimal control problem
- 16.45–17.00 **Bobronnikov V.T., Matveev A.V.** Mathematical modeling of movement. The software for solving of unmanned aerial vehicles autopilot synthesis problem
- 17.00–17.15 **Shiryaeva S.O., Volkova M.V.** The analytical investigation of a viscosity influence on a charged thick jet of conductive liquids nonlinear oscillations
- 17.15–17.40 **Coffee-break**
- 17.40–17.55 **Aksenyushkina E.V.** Method of local improvement for a class of optimal control problems
- 17.55–18.10 **Khrustalev M.M., Romyantsev D.S.** Optimal control of diffusive processes with information restrictions under conditions of system matrix perturbations, control and state vector measurements errors
- 18.10–18.25 **Sokolova S.P., Sokolova L.A.** Dynamic properties of nonlinear interval systems
- 18.25–18.40 **Sudarchikov S.A., Ushakov A.V.** Interval linearization in a problem median modal management
- 18.40–18.55 **Chernyshov K.R.** Maximal correlation and statistical linearization
- 18.55–19.10 **Druzhinin E.I.** Construction of rough non-closed control systems on the basis of preventive perturbation compensation
- 19.10–19.25 **Masina O.N.** About optimum on stability the laws of control of nonlinear dynamic systems
- 19.25–19.40 **Muharliamov R.G.** The construction of dynamical equations of nonlinear constrained systems

CLASSICAL MECHANICS

Section chair: E. V. Kustova

Tuesday, June 5

Afternoon session

Session 1. Theoretical Mechanics

Session co-chairs: V.M. Morozov, Mei Fengxiang

- 15.00–15.30 **Mailybaev A.A., Seyranian A.P., Yabuno H.** Experiments on stability of mechanical systems
- 15.30–15.45 **Shang Mei, Chen Xiangwei and Mei Fengxiang** Conserved quantities and one-step corrections method for dynamical system
- 15.45–16.00 **Mei Fengxiang, Shang Mei, He Ming** Symmetries and conserved quantities of Birkhoffian system
- 16.00–16.15 **Takeshi Taniguchi** Exponential stability for strongly damped non-linear wave equations of Kirchhoff type
- 16.15–16.30 **Vujichich V.** Tensorial integration in mechanics
- 16.30–16.45 **Zegzhda S.A., Yushkov M.P., Soltakhanov Sh.Kh.** The dynamic analysis of high-order non-linear non-holonomic constraints
- 16.45–17.00 **Morozov V.M, Kalenova V.I., Sobolevsky B.M.** Stability of time-varying dynamical systems of the certain class
- 17.00–17.15 **Shamolin M.V.** The case of complete integrability in 4d rigid body dynamics at nonconservative field of forces
- 17.15–17.45 **Coffee-break**
- 17.45–18.00 **Starkov K.E.** Some results concerning the localization of compact invariant sets of one class of laser systems
- 18.00–18.15 **Pascal M.** Periodic motions of coupled oscillators with dry friction
- 18.15–18.30 **Zevin A.A.** Absolute stability criteria for non-linear mechanical and control systems with a time lag

18.30–18.45 **Byachkov A.B., Ivanov V.N.** Multibody systems dynamics equations in redundant quasi-coordinates and quasi-velocities

18.45–19.00 **Belyakov A.O., Seyranyan A.P.** Swing dynamics

19.00–20.00 **Poster session:**

- **Ivanov V.N.** Application of iterative methods for a solution of the equations of multibody systems
- **Morozov V.M., Chao Tze** On stability of steady-state motions of mechanical systems consisted of two rigid bodies those connected by elastic band
- **Tukhtasinov M.** On the structure of discrete variant control manifold of heat distribution in the semi-infinite beam
- **Fedorovsky G.D.** Development and opportunities of application of the concept of generalized time to the mathematical description of deformation and damageability of rheologically complex media
- **Filatkina E.V.** On the limit behaviour of solutions of a timely periodical mechanical system with non-stationary restraints

Wednesday, June 6

Afternoon session

Session 2. Hydroaeromechanics

Session chair: R. N. Miroshin

15.00–15.20 **Kuznetsov V.I., Ender A.Ya.** Non-linear oscillations in a vacuum diode with an electron beam

15.20–15.40 **Popov G.A., Khrustalev M.M.** One-dimensional non-stationary physical-mathematical model of the plasma flow acceleration in an ablative impulse plasma engine

15.40–16.00 **Nagorni S.S., Fomina O.N., Tsibarov V.A., Tsoy S.V.** Modification of Blood Stochastic Model

16.00–16.20 **Grunicheva E.V., Kurbatova G.I., Popova E.A.** About a non-stationary model of a gas flow into marine pipelines

- 16.20–16.40 **Zaripov D.M.** Mathematical modelling of conduct pipe oscillations induced by pressure waves in the internal liquid
- 16.40–17.00 **Kusyumov A.N., Makarova L.A.** On the self-similar wave for the equations of a one-dimensional non-stationary adiabatic viscous gas flow
- 17.00–17.20 **Peregudin S.I., Kholodova S.Ye.** Mathematical modeling of dynamic of stratified compressible liquid

17.20–17.40 **Coffee-break**

- 17.40–17.50 **Bogatko V.I., Kolton G.A., Potekhina E.A.** Approximate analytical solution of three-dimensional unsteady problem of hypersonic flow near a thin wing
- 17.50–18.00 **Aksenova O.A., Khalidov I.A.** On the stability of nonlinear dynamic system corresponding to multiple ray reflection of rarefied gas atoms from channel walls
- 18.00–18.10 **Khalidov I.A., Shalaginov Ye.A.** Investigation of an iterative scheme for a problem of a rarefied gas flow in a channel
- 18.10–18.20 **Miroshin R.N.** The moment method investigation of gas-surface scattering
- 18.20–18.35 **Lubimtsev R.S., Ryabinin A.N.** Kite motion simulation
- 18.35–18.50 **Lushchenko I.V.** The exploration of oscillations of cylinders in a flow and the effect of disc, established before cylinder, on this oscillations
- 18.50–19.05 **Ryabkov M.Ye.** Analysis of structure singularities of nonlinear oscillations in some problems of ship theory

19.05–20.00 **Poster session:**

- **Grigoriev A.I., Zharov A.N., Zharova I.G.** Nonlinear asymptotic analysis of a charged drop of viscous liquids oscillations
- **Zavyalov O.G.** Hydrodynamic theory lubrication tasks of a sliding bearing
- **Loginov B.V., Makeev O.V.** On conditions of flutter onset for elongated plate in supersonic gas flow

- **Obgadze T., Davitashvili I.** Optimization of airplane wing's profile
- **Radchenko V.P., Saushkin M.N.** Mathematical model of a relaxation of residual stresses in a superficially hardened layer of structures under creep conditions

Thursday, June 7

Morning session

Session 3. Theoretical Mechanics

Session co-chairs: S. A. Zegzhda, M. P. Yushkov,

- 10.00–10.15 **Pasynkova I.A.** Conic precessions of a dynamically non-equilibrium Jeffcott rotor in elastic non-linear bearings
- 10.15–10.30 **Polyshchuk D.F.** Interconnected nonlinear mechanical problems
- 10.30–10.45 **Krasinskii A.Ya.** On the stability of coupled mechanical systems stationary motions
- 10.45–11.00 **Melnikov V.G.** Identification of inertia tensors and centers of gravity of rigid bodies on systems with high dissipation using antisymmetric program motions
- 11.00–11.15 **Tovstik T.P.** Nonlinear equations on the Celt stone dynamics
- 11.15–11.45 **Coffee-break**
- 11.45–12.00 **Malikov A.I., Vezdenetsky E.Ye., Yafasov F.I.** Evaluation of the state of electro-mechanical control systems
- 12.00–12.15 **Rodyukov F.F.** Influence of the power's relations on stability of the system "synchronous generator – a synchronous motor"
- 12.15–12.30 **Tverev K.K.** Generalization of the ideal constraint notion for electromechanical systems
- 2.30–12.45 **Ivanov S.Ye.** Ratings of a nonlinear vibroprotection of instrument mechanical system with two degree of freedoms
- 12.45–13.00 **Berkovich L.M.** Research of dynamical systems by methods of transformation of variables and factorization of differential operators

*Thursday, June 7**Afternoon session***Session 4. Mechanics of Solids and Theoretical Mechanics***Session co-chairs: M. A. Narbut, S. B. Filippov*

- 15.00–15.15 **Altynbekov S.** About one quasilinear problem of non-uniform grounds vibroconsolidation
- 15.15–15.30 **Antonov V.A., Baranov A.S.** Accumulation of small elements deformation at the chaotic fluid motions
- 15.30–15.45 **Vel'misov P.A.** Stability Investigation of Solutions of one Class Initial-Boundary Value Problems for Systems of Integro-Differential Equations in Aeroelasticity
- 15.45–16.00 **Voloshinova T.V., Ershov B.A.** The frequency stability criterion for mechanical systems with irrational links
- 16.00–16.15 **Gouskov A.M., Panovko G.Ya.** Flexible beam with mobile support nonlinear dynamics
- 16.15–16.30 **Mikheev A.V.** Study of local stability of shallow orthotropic shells on the elastic base in Kirchhoff-Love and Timoshenko models
- 16.30–16.45 **Pavilaynen G.V., Yushin R.Yu.** On the inaccuracy in numerical analysis of elastoplastic stability of anisotropic material plates
- 16.45–17.00 **Popov N.N., Isutkina V.N.** The solution of two-dimensional stochastic creep problem in polar coordinates
- 17.00–17.10 **Trushin S.I., Mirgorodskii A.V.** Numerical Procedures for Nonlinear Dynamic and Stability Analysis of Isotropic and Orthotropic Laminated Shells
- 17.10–17.30 **Coffee-break**
- 17.30–17.45 **Bardin B.S.** On the stability of solid body pendulum motions in the case of Bobylev-Steklov
- 17.45–18.00 **Sidikov M.N.** On the motion of a mechanical system of variable mass with non-ideal restraints
- 18.00–18.15 **Khanukaev Yu.I.** On the Hamilton-Jacobi method for restrained systems

- 18.15–18.30 **Shvygin A.L.** Computation of characteristic factors for pendulum motions of a heavy solid body with one fixed point
- 18.30–18.45 **Nosova E.M.** The dynamic analysis of a longitudinal motion of a car with acceleration
- 18.45–19.00 **Nesmachniy D.V., Lukashov S.S.** The analysis of pendulum oscillations under the action of resistant force proportionate to velocity

CELESTIAL MECHANICS

Section chair: K. V. Kholshevnikov

Tuesday, June 5

Afternoon session

Session 1. Motion of Artificial Celestial Bodies; Exoplanet motions

Session co-chairs: K. V. Kholshevnikov, Yu. D. Medvedev

- 15.00–15.25 **Ivashkin V.V.** Low-energy lunar trajectories of a new type
- 15.25–15.50 **Grigoriev I.S., Zapletin M.P.** About optimization path rendezvous with the group of asteroid
- 15.50–16.15 **Amelkin N.I.** Stability of Stationary Motion of body-linked system, containing rotors, in a central gravitational field
- 16.15–16.40 **Afanasyev V.A., Degtyarev G.L., Meschanov A.S., Sirazetdinov T.K.** Inertial high precision control of an observation satellite at uncertainty
- 16.40–17.00 **Coffee-break**
- 17.00–17.25 **Tikhonov A.A., Antipov K.A.** Multipole models of a geomagnetic field and influence of orbit regression in the problem of electro-dynamic control of a satellite orientation
- 17.25–17.50 **Kuteeva G.A., Sokolov L.L.** Kozai-Lidov effect and possible motions of exoplanets
- 17.50–18.15 **Gusev A.V., Kitiashvili I.** Bifurcation analysis of gravimagnetic interactions for spin-orbit evolution of extra-solar planetary systems

*Wednesday, June 6**Afternoon session***Session 2. General Problems of Celestial Mechanics***Session chair: V. V. Ivashkin*

- 15.00–15.25 **Ilyina T.A.** On the equations regularization and solutions hardening in some problems of celestial mechanics
- 15.25–15.50 **Perov N.I., Medvedev Yu.D.** New central configurations: methods of construction and investigation of the stability
- 15.50–16.15 **Lodyzhenskiy V.K., Kirbyatiev S.V., Kirpichnikov A.P., Silantieva O.A.** About body motion under the action of inverse-square-law of space forces which is gravitating it towards two fixed centers
- 16.15–16.40 **Kholshevnikov K.V.** On Liapunov theory of equilibrium figures of celestial bodies
- 16.40–17.05 **Zausaev A.F.** Mathematical modelling of motions of celestial body foundation in the new principle of interaction

*Thursday, June 7**Afternoon session***Session 3. Motion of Natural Celestial Bodies***Session co-chairs: V. V. Orlov, A. S. Shmyrov*

- 15.00–15.25 **Bashakov A.A., Pitjev N.P., Sokolov L.L.** Quasirandom motions in the restricted three-body problem and asteroid 99942 Apophis trajectory
- 15.25–15.50 **Bykova L.E., Galushina T.Yu.** The Investigations of the NEAs Chaotic Dynamics in the Vicinities of Orbital Resonances
- 15.50–16.15 **Shmyrov A.S.** Extremal trajectories in the planetary few bodies problem
- 16.15–16.40 **Yakovlev A.B.** Peculiarity of dust particle motion in the near-surface plasma layer of disatmospheric celestial body

16.40–17.00 **Coffee-break**

17.00–17.25 **Baidin A.E.** Analysis of methods of determination of perturbed orbits of double stars based on positional observations

17.25–17.50 **Gusev A.V., Petrova N.K.** The Moon: scientific achievements, fundamental problems, international perspectives

17.50–18.15 **Martynova A.I., Orlov V.V.** Transitions between different orbit types in unstable triple systems

18.15–20.00 **Poster session**

- **Abramov V.V.** Efficiency of Adams-Moulton method in mathematical modelling of the motion of small bodies of solar system
- **Bykova L.E.** The Investigations of NEAs orbital evolution in the Vicinity of 3/1 Resonance with Jupiter
- **Gorbikov S.P., Melnikov V.F.** Modelling of distribution of energetic electrons in a loop of solar flare
- **Grigoriev I.S., Danilina I.A.** Optimization spatial path flight on geotransition orbit spacecraft with accelerating block
- **Gusev A.V.** International Center of Science, Education and Internet technology "Kazan – GeoNa - 2010"
- **Gusev A.V., Petrova N.K.** Free nutation periods in the rotation of the Earth-like planets
- **Zausaev A.A.** Matematical modelling of motion of short-period comets during 400 years (1800-2200)
- **Kurlyandskii V.V.** Modelling of geographical and astronomical conditions of historical events in co-ordinate systems connected to galactic, ecliptic, celestial (Earth) equator, local horizon planes

NONLINEAR DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS

Section chair: Yu. V. Churin

Tuesday, June 5

Afternoon session

Session chair: Yu. V. Churin

- 15.00–15.40 **Negrini P.** Platonic polyedra, topological constraints and periodic solutions of the classical N-body problem
- 15.40–16.00 **Mazumdar H.P., Islam N.** Some effects of feedback control on the rossler dynamical systems
- 16.00–16.20 **Moller M., Glocker C.** Non-smooth models of electrical switching elements
- 16.20–16.35 **Grines V.Z.** Liapunov function and topological classification of Morse-Smale diffeomorphisms
- 16.35–16.50 **Rudykh G.A.** Existence and uniqueness of the classical solutions to a nonlinear nonlocal boundary value problem of plasma physics
- 16.50–17.05 **Koshelev A.I., Narbut M.A.** On application of the universal iterative process to problems in nonlinear theory of elasticity and nonstationary filtration
- 17.05–17.20 **Yakovenko G.N.** Non-linearity as a creation of globality and non-commutativity
- 17.20–17.40 **Coffee-break**
- 17.40–17.55 **Arguchintseva M.A.** On the optimization of the initial form of an ablating body
- 17.55–18.10 **Akhmedov A.** Generalized localization principle for spectral expansions of Laplace operator on the sphere
- 18.10–18.25 **Zernov A.Ye., Kuzina Yu.V.** Asymptotic behaviour of one Cauchy problem solutions
- 18.25–18.40 **Zernov A.Ye., Chaichuk O.R.** Singular Cauchy problems for functional-differential equations: solvability, number of solutions, asymptotics

- 18.40–18.55 **Peregudova O.A.** Development of comparison method in stability problem for functional-differential equationn
- 18.55–19.10 **Gladilina R.I., Ignatiev A.O.** On the existence of Lyapunov functions for the stability problem of differential systems with impulse effect
- 19.10–19.25 **Boykov I.V.** The stability and stabilization of solutions of the differential equations and its applications
- 19.25–19.40 **Smirnova V.B., Shepeliavyi A.I.** On discrete analogues for periodic Lyapunov functions

Wednesday, June 6

Afternoon session

Session chair: B. F. Ivanov

- 15.30–15.45 **Churin Yu.V.** On inner points of manifold of equations with singular periodic solutions
- 15.45–16.00 **Makarenko A.V.** Complexity analysis of integrated trajectories of autonomous ordinary differential equations of the second order
- 16.00–16.15 **Tovstik P.E., Tovstik T.M.** On the linearization of the quasi-linear system with one degree of freedom under harmonic or under random excitation
- 16.15–16.30 **Mulkidzhan T.S.** On conditions of existence of limit cycles and autooscillations for nonlinear dynamical systems of continuous and discrete types
- 16.30–16.45 **Semenov E.I.** New exact solutions of non-autonomic Liouville equation
- 16.45–17.00 **Rogalev A.N.** Research of stability on a final interval of time by the guaranteed method
- 17.00–17.15 **Kusyumov A.N.** About Local Catastrophes for One Class of Systems of Ordinary Differential Equations
- 17.15–17.40 **Coffee-break**
- 17.40–17.55 **Budochkina S.A.** First integrals in mechanics of the Helmholtz systems with infinite number of degrees of freedom

- 17.55–18.10 **Ogorodnikov Ye.N.** Local and non-local boundary value problems for a system of hyperbolic type equations and non-local equation with involutively transformed arguments
- 18.10–18.25 **Bochkarev G.P.** Increasing of the quadratic variational problem parameter with rising the number of boundary conditions
- 18.25–18.40 **Bykova T.S.** On Lyapynov reducibility of systems with aftereffect
- 18.40–18.55 **Tokarev S.P.** Smooth reducibility to the normal form in one critical case
- 18.55–19.10 **Moskovskikh A.S.** Lax pairs for the Calogero model for a one-dimensional non-linear evolution equation
- 19.10–19.25 **Volosov K.A.** New property of PDE and new way for solutions are constructing of PDE in the parametric form

Thursday, June 7

Morning session

Session chair: Yu. V. Churin

- 10.00–10.15 **Andreev A.F.** On the instability Chetaev's theorem
- 10.15–10.30 **Biryukov R.S., Butenina N.N.** On singular points of a non-stationary vector field
- 10.30–10.45 **Ivanov B.F.** Some condition of existence of bounded solutions for one class of nonlinear equations
- 10.45–11.10 **Kushner A.G.** Contact geometry of nonlinear wave equation
- 11.10–11.25 **Matrosov I.V.** On existence and uniqueness for solutions of discontinuous systems of algebraic- differential equations
- 11.25–11.40 **Petrov K.M., Tsyganov A.V., Loginov B.V.** On the divergence of elongated plate in supersonic gas flow subjected to compressing or extending stresses
- 11.40–12.00 **Coffee-break**
- 12.00–12.15 **Sidorov S.V.** Solutions bifurcation cascades in non-linear differential equations of diffusion type

- 12.15–12.30 **Filimonov A.M.** Stephan-Vallee-Poussin problem for singular one dimensional hyperbolic systems of quasilinear partial differential equations
- 12.30–12.45 **Savchin V.M.** Variational principles and equation transformations
- 12.45–13.00 **Scripnik N.V.** Impulsive differential inclusions

Thursday, June 7

Afternoon session

Session chair: Yu. V. Churin

- 15.00–15.30 **Sidorov N.A., Dreglea A.I.** Construction of branches solutions by regularized successive approximations method
- 15.30–15.45 **Sakharov A.N.** Classification of s^1 -extensions of the quasi-periodic flows
- 15.45–16.00 **Sesekin A.N., Fetisova Yu.V.** Discontinuous solutions of functional-differential equations with generalized functions
- 16.00–16.15 **Пых Ю.А.** Прямой метод Ляпунова в теории систем с нелинейными парными взаимодействиями
- 16.15–16.30 **Samoilova E.N.** On the solution of some singular integral-differential equations
- 16.30–16.45 **Surkov A.V.** On the functional-differential equations with discontinuous right-hand side
- 16.45–17.00 **Slavko A.V.** On the infinite-dimensional systems of NAMBY type

MATHEMATICAL MODELING IN NATURAL, TECHNICAL AND HUMANITARIAN SCIENCES

Section co-chairs: R. M. Yusupov, A. V. Timofeev

Tuesday, June 5

Afternoon session

Session 1. Mathematical modeling in natural sciences

Session co-chairs: R. M. Yusupov, B. V. Sokolov

- 15.00–15.20 **Ermakov S.M.** Modern advancement of stochastic computational methods
- 15.20–15.40 **Musolino A., Rizzo R.** Sensitivity analysis of nonlinear systems via wavelet transform
- 15.40–16.00 **Apartsin A.S., Solodusha S.V., Spiryaev V.A., Scherbinin M.S.** On a new approach to the identification of Volterra polynomials
- 16.00–16.20 **Demjanovich Yu.K., Kosogorov O.M.** Algorithms of parallel wavelet adaptive compression
- 16.20–16.40 **Radev St., Boyadjiev T.** Numerical modelling of an unsteady glass fibre drawing process
- 16.40–17.00 **Vershinin M.I., Vershinina L.P.** Nonlinear dynamical model of the Earth surface displacement with a fuzzy adaptation
- 17.00–17.20 **Efimov I.N., Morozov E.A.** Canonical method of non-linear dynamical systems integration
- 17.20–17.40 **Coffee-break**
- 17.40–18.00 **Kovalevsky M.Yu., Logvinova L.V., Matskevich V.T.** Non-linear dynamics of structured condensed media
- 18.00–18.20 **Kolesnikov A.P.** On the stability of the topological spline method applied to initial-boundary value problems
- 18.20–18.40 **Kolesov A.Yu., Mishchenko E.F., Rozov N.Kh.** The buffer phenomenon in non-linear mathematical models

18.40–19.00 **Sadykova O.I.** The qualitative analysis of generalized Volterra models

19.00–20.00 **Poster session:**

- **Demjanovich Yu.K., Makarov A.A.** Caliber relations for non-polynomial splines of Lagrange's type
- **Altynbekov S., Imanbaev N.S., Nijazymbetov A.D.** About one mixed problem of ground mechanics
- **Gavriushin S.S.** Computer analysis and synthesis of nonlinear mechanical structures with the guided elastic deformation
- **Malanin V.V., Poloskov I.E.** Analysis of deterministic and stochastic systems with a divergent argument
- **Khramchenkov M.G.** Peculiarities of mathematical modelling of complex geological and geotechnical processes
- **Argatov I.I.** Asymptotic modelling of periodical phenomena during the wear process at the elastic contact
- **Blokhin A.M., Mishchenko E.V.** On an approach to studying the stability of shock waves in a viscous gas
- **Burova I.G., Demina A.F.** The error of approximation by smooth interpolation splines
- **Burova I.G., Demina A.F., Khasan I.R.** The solution of Cauchy problem using minimal nonpolynomial splines
- **Grigoriev Yu.D.** Comparison between the locally most powerful unbiased test and the class of tests for hypotheses on the nonlinear regression parameter
- **Efimov I.N., Morozov E.A.** Using a canonical integration method in design of electronic and ion optic systems
- **Zeifman A.I.** Asymptotic of the rate of convergence to the limit regime for some linear systems of differential equations
- **Petrov V.E.** Effect of chemical reactions on inverse energy cascade in quasi 2d turbulence

*Wednesday, June 6**Afternoon session***Session 2. Mathematical modeling in technical sciences***Session co-chairs: A. V. Timofeev, A. L. Ronzhyn*

- 15.00–15.20 **Davidson B.H., Isaev V.K.** Mathematical modeling processes stability and airspace systems optimization
- 15.20–15.40 **Timofeev A.V., Yusupov R.M.** Synthesis and modeling of systems of intellectual, neural and multi-agent control
- 15.40–16.00 **Gorbunov V.K.** The generalized model of consumer demand without a utility function
- 16.00–16.20 **Klin'shov V.V., Nekorkin V.I.** Mathematical modelling of a working memory system
- 16.20–16.40 **Krivulin N.K.** Evaluation of Lyapunov exponents in generalized linear stochastic dynamical systems
- 16.40–17.00 **Lubimtsev Ja.K., Metrikin V.S.** A method of Lyapunov functions for the investigation of vibro-impact systems dynamics
- 17.00–17.20 **Memnonov V.P.** An enhancement of mathematical simulation performance for parallel calculations in distributed grid clusters
- 17.20–17.40 **Coffee-break**
- 17.40–18.00 **Ogorodnikov Yu.I.** Determination of tolerances on the realization of a program control in automatic systems
- 18.00–18.20 **Potapov A.A.** Fractal models and methods in non-linear physics problems
- 18.20–18.40 **Prozorova E.V.** Influence of the dispersion in mathematical models
- 18.40–19.00 **Ruzhnikov V.A., Silina M.V., Chernyshev E.P.** On the evaluation of Lyapunov stability of relay auto-oscillating systems models

19.00–20.00 **Poster session:**

- **Gorbatov V.A., Gorbatov A.V., Gorbatova M.V., Denisenko M.V.** Evaluation of logical control systems dynamics
- **Zotov Yu.K., Timofeev A.V.** Reversible models of nonlinear dynamics and methods of synthesis of high quality control
- **Kuznetsov A.P., Savin A.V., Savin D.V.** Some peculiarities of dynamical systems behaviour in the case of weak dissipation
- **Nikushchenko D.V., Pavlovsky V.A.** Derivation of an underwater object motion equation on the basis of a new form of attached mass coefficients
- **Nudner I.S., Maximov V.V., Babchik D.V.** Modeling of the interaction of surface waves with permeable obstacles
- **Rodyukov F.F., Shepelyavy A.I.** Analysis of the stability of the electromagnetic pendulums
- **Syrtsev A.V., Timofeev A.V., Kolotaev A.V.** Mathematical and imitation modelling of multi-agent telecommunication networks with dataflow adaptive control
- **Alexandrov A.A., Kabanov S.A.** Optimization of the flying object dynamics using spiral prognosis model
- **Zuev S.M., Trifonenko B.V.** Special form of the Lagrange's equations of dynamic carrier telescope platform

*Thursday, June 7**Afternoon session***Session 3. Mathematical modeling in humanitarian sciences***Session co-chairs: V. P. Zabolotskiy, V. P. Ivanov*

- 15.00–15.20 **Galeeva Y.I., Gafiyatov I.Z., Potapov G.P.** The synergy model of the gdp projections
- 15.20–15.40 **Gerasimova I.B., Khasanova N.V. Urazbakhtina L.R.** Nonlinear dynamic efficiency analysis of small science group activity

- 15.40–16.00 **Gorelova G.V.** Analysis of properties of social-economical systems on cognitive models. Methodology and program system
- 16.00–16.20 **Ignatyev M.B.** Modeling of bad formalized systems
- 16.20–16.40 **Izmodenova K.V., Maslennikova A.V.** Modified model of world dynamics. Scenario analysis of social security and sustainable development possibility in the XXI century
- 16.40–17.00 **Krachun G.P.** Mathematical modelling of dynamics and the forecast of public health in region on the basis of application of Chebishev's polynoms
- 17.00–17.20 **Lebedev V.V., Lebedev K.V.** Nonlinear effects in the long-run forecasting models of macroeconomics
- 17.20–17.40 **Coffee-break**
- 17.40–18.00 **Simonov P.M.** On a method of the investigation of dynamic economic models
- 18.00–18.20 **Fomkin P.A.** The investigation of nonlinear mathematical models of epidemics
- 18.20–18.40 **Solozhentsev Ye.D.** Scenary logical-probabilistic models for bribe-taking and corruption detecting
- 18.40–20.00 **Poster session:**
- **Zakharchenko V.S.** To the problem of the decision of the effective management of modern university
 - **Kulmagambetov I.R., Koichubekov B.K., Ricklefs V.P.** Influence of alpha-stimulating neurobiofeedback on non-linear dynamics of electroencephalogram
 - **Kulmagambetov I.R., Koichubekov B.K., Ricklefs V.P.** Method of electrocardiogram correlation dimension calculation during short-time recordings
 - **Kulmagambetov I.R., Koichubekov B.K., Ricklefs V.P.** Analysis of heart rate non-linear dynamics during biofeedback sessions
 - **Miroshnichenko I.D.** Modelling of educational processes on the basis of parallel technologies
 - **Khatskevich V.L.** On the stability of the set of equilibrium for the dynamic model of the competitive market

GAMES THEORY AND ITS APPLICATIONS IN MANAGEMENT

Section chair: L. A. Petrosyan

Tuesday, June 5

Afternoon session

Session co-chairs: V. V. Mazalov, O. A. Malafeyev

- 15.00–15.20 **Domansky V.K., Kreps V.L.** Game theoretic model for strategic use of insiders' information on financial markets
- 15.20–15.40 **Malafeyev O.A., Gritsai K.N.** Mathematical competitive models of auctions with many-agent interaction
- 15.40–16.00 **Sedakov A.A.** Strategic Behavior in Dynamic Games with Partial Cooperation
- 16.00–16.20 **Strokan P., Matsuhisa T.** Communication equilibrium and Nash equilibrium
- 16.20–16.40 **Syurin A.** Stable coalitional structures in dynamic games with perfect information
- 16.40–17.00 **Mazalov V.V., Fal'ko A.A.** Best choice-problem for two players
- 17.00–17.20 **Mazalov V.V., Rettieva A.N.** Bioresource management problem with changing area for fishery
- 17.20–17.40 **Coffee-break**
- 17.40–18.10 **Naumova N.I.** Models of concordance of collective requests
- 18.00–18.30 **Gasratov M.G., Zakharov V.V.** Mathematical model of material Supply Chain Management in case of market competition
- 18.30–18.50 **Prasolov A.V.** On stability and instability conceptions in economical dynamics
- 18.50–19.20 **Malafeyev O.A., Konstantinov A.M.** Nonlinear competitive dynamical model of Joint-Stock company
- 19.20–19.40 **Malafeyev O.A., Parfenov A.P.** Many-agent interaction in dynamical networks with non-linear gains

- 19.40–20.00 **Malafeyev O.A., Radchenko A.Yu.** Multicriteria non-linear control problems and idempotent analysis

Wednesday, June 6

Afternoon session

Session co-chairs: A. N. Lyapunov, E. B. Yanovskaya

- 15.00–15.20 **Kleimenov A.F.** Construction of solving strategies for players in nonantagonistic positional differential game
- 15.20–15.40 **Mamatov M.S.** On a pursuit game problem described by non-linear partial differential equations
- 15.40–16.00 **Parilina E.M.** Cooperative Stochastic Game with Finite Number of Game Elements
- 16.00–16.20 **Petrosyan L.A.** Cooperative stochastic differential games
- 16.20–16.40 **Petrosyan L.A., Mamkina S.I.** Strategic stability of coalitional solutions
- 16.40–17.00 **Pechersky S.L.** Proportional excess for NTU games and related solutions
- 17.00–17.20 **Lyapunov A.N.** Equilibrium solutions in the multicriteria optimization problems
- 17.20–17.40 **Coffee-break**
- 17.40–18.10 **Garnayev A.Yu.** A police versus criminal game
- 18.10–18.30 **Zenkevich N.A., Kuzyutin D.V.** Game-theoretical model of the quality management at education and training market
- 18.30–18.50 **Zenkevich N.A., Ryskov I.E.** The solution of a stochastic two person market entry game
- 18.50–19.20 **Zyatchin A.V.** Strong Nash equilibrium in a repeated game with stochastic dynamic
- 19.20–19.40 **Shevkoplyas E.V.** On the cooperation under random game duration
- 19.40–20.00 **Yanovskaya E.B.** Stability of nonhomogeneous problem distribution methods

*Thursday, June 7**Afternoon session**Session co-chairs: V. L. Kreps, S. A. Vavilov*

- 15.00–15.20 **Kozlovskaya N.V.** Theoretical-gaming model of atmospheric pollution reducing with asymmetric contaminators
- 15.20–15.40 **Kandoba I.N., Uspenskii A.A.** Models of consumer demand dynamics at a market
- 15.40–16.00 **Chlyngaryan A.S.** Control with a guide in a gaming problem of approaching with m target sets
- 16.00–16.20 **Melnikov V.V.** Superadditivity for special classes of characteristic functions
- 16.20–16.40 **Akimova A.N.** Analytic solution for especial linear programming problem
- 16.40–17.00 **Kreps V.L.** Game theoretic model of resource allocation problems between several markets
- 17.20–17.40 **Coffee-break**
- 17.40–18.10 **Bakulev A.V., Oskolkov I.V.** Structure of own capital and business stability: searching for equilibrium and management strategy
- 18.10–18.30 **Daunizeau J., Kiebel S.E., Friston K.J.** Variational Bayesian deterministic annealing approach for non-linear stochastic dynamic system: application to neural masses
- 18.30–18.50 **Harrison L.M., Friston K.J.** Diffusion-based geometric priors for imaging
- 18.50–19.20 **Markovkin M.V.** An iterative method for the deducing of a characteristic function of linear-quadratic cooperative differential games
- 19.20–19.40 **Chabdarov S.M., Karimullin E.M.** Poly-Gauss models and methods in the statistical theory of dynamic systmes
- 19.40–20.00 **Vavilov S.A., Ermolenko K.Yu.** On the joint control of assets under uncertainty

CHAOS THEORY

Section chair: G. A. Leonov

Tuesday, June 5

Afternoon session

Session co-chairs: K.E. Starkov, S.Yu. Pilyugin

- 15.00–15.30 **Fradkov A.L.** Lyapunov functions in cybernetical physics
- 15.30–16.00 **Chueshov I.D.** Invariant manifolds, reduction principle, and nonlinear master-slave synchronization in coupled systems
- 16.00–16.30 **Shestakov A.A., Druzhinina O.V.** On conditions of stability of trajectories in problems of celestial and classical mechanics
- 16.30–17.00 **Starkov K.E., Starkov K.K.** Localization analysis of compact invariant sets of some nonpolynomial systems with complex dynamics
- 17.00–17.30 **Coffee-break**
- 17.30–18.00 **Johnson R.** On minimal subsets of projective flows
- 18.00–18.30 **Pilyugin S.Yu.** Generic relations between approximate and exact dynamics
- 18.30–19.00 **Yang Wanly, Li Hongyan, Qian Kun.** Analysis of stability of nonlinear control systems
- 19.00–19.30 **Osipenko G.S.** Construction of invariant measure functions and entropy evaluation in dynamic systems
- 19.30–20.00 **Shiriaev A., Freidovich L., Robertsson A., Johansson R.** A method for planning orbitally stable periodic solutions in underactuated mechanical systems

*Wednesday, June 6**Afternoon session**Session co-chairs: N.B. Ampilova, E.V. Vasilieva*

- 15.00–15.20 **Avrutin V., Schanz M.** Organizing centers in 2D and 3D parameter spaces of non-smooth dynamical systems
- 15.20–15.40 **Avrutin V., Schanz M.** On well-structured robust chaos in discontinuous maps
- 15.40–16.00 **Beyn W.-J., Lust A.** A hybrid method for computing Liapunov exponents
- 16.00–16.20 **Kondratieva N.V., Leonov G.A.** Global stability of electro-mechanical systems
- 16.20–16.40 **K.Gediz Akdeniz, Fatma Aydogmus, Serap Sagaltici and Cem Onem.** Chaotic dynamics of Gursev instantons in phase space
- 16.40–17.00 **Ampilova N.B.** On the construction of an invariant measure on a symbolic image
- 17.00–17.20 **Coffee-break**
- 17.20–17.40 **Anashkin O.V.** On stability of discrete systems
- 17.40–18.00 **Balyakin A.A.** Transition from distributed systems to finite-dimensional ones: calculation of quantitative characteristics of complex dynamics regimes
- 18.00–18.20 **Balyakin A.A., Blokhina E.V.** Peculiarities of Lyapunov exponents spectrum calculation in distributed systems
- 18.20–18.40 **Vasilieva E.V.** Stable periodical points of smooth diffeomorphisms with a homoclinic point
- 18.40–19.00 **Gaiko V.A.** Global qualitative analysis of polynomial dynamical systems
- 19.00–19.20 **Gorbikov S.P., Menshenina A.V.** Investigation of the bifurcation resulting in chaotic motions of dynamical systems with impact interactions

- 19.20–19.40 **Evdokimov S.M., Zvyagintseva T.Ye.** Existence of a limit cycle in a system with hysteresis function of a relay type

19.40–20.00 **Poster session:**

- **G. Cigdem Yalcin and K.Gediz Akdeniz** Lyapunov exponents and chaotic CLDW physiological system
- **Isaeva O.B.** Realization of complex analytical dynamics phenomena in coupled oscillating systems

Thursday, June 7

Morning session

Session chair: G.A. Leonov

- 10.00–10.20 **Magnitskii N.A.** Dynamical chaos in nonlinear differential equations of the second order with periodic coefficients
- 10.20–10.40 **Magnitskii Yu.N.** Chaos and structures in nonlinear social-economic Weidlich-Trubetskov models
- 10.40–11.00 **Pavlov V.A., Pavlov V.V.** Catastrophes of wing & balancing
- 11.00–11.20 **Ponomarenko V.P.** Dynamic regimes, bifurcations and chaos in systems with frequency and frequency-phase control
- 11.20–11.40 **Coffee-break**
- 11.40–12.00 **Ryashko L.B., Bashkirtseva I.A.** The analysis and synthesis of stochastic attractors: a method of Lyapunov functions
- 12.00–12.20 **Seledzhi S.M., Kudryashova E.V.** Bifurcation of doubling period in Phase locked-loops
- 12.20–12.40 **Shamrikov B.M.** The Laypunov's methods in the discrete systems
- 12.40–13.00 **Epstein G.L.** Research of processes in a power system with a source of chaotic oscillations

*Thursday, June 7**Afternoon session**Session co-chairs: S.G. Kryzhevich, N.V. Kuznetsov*

- 15.00–15.20 **Udwadia F.** Synchronization of Multiple Chaotic Gyroscopes Using the Fundamental Equation of Mechanics
- 15.20–15.40 **Jalnine A.Yu.** Synchronization of systems with robust chaos based on coupled Van-der-Pol oscillators
- 15.40–16.00 **Ivanova A.S., Kuznetsov S.P.** Globally coupled maps in presense and absense of noise
- 16.00–16.20 **Kiselev V.B.** Using of the recurrence plots for heliogeophysical time series analysis
- 16.20–16.40 **Zhusubaliyev Zh.T., Chevychelov S.Yu.** On torus birth bifurcations in piece-wise smooth dynamical systems
- 16.40–17.00 **Kryzhevich S.G.** Chaos in the neighborhood of a grazing bifurcation
- 17.00–17.20 **Coffee-break**
- 17.20–17.40 **Kuznetsov A.P., Savin A.V.** Visualization of complex structure of non-autonomous dynamical systems parameter space using the maps of Lyapunov exponents
- 17.40–18.00 **Kuznetsov A.P., Sedova Yu.V.** Method of Lyapunov exponents maps for the investigation of coupled transformation with noise
- 18.00–18.20 **Kuznetsov N.V., Leonov G.A., Seledji S.M.** Phase locked-loops in circuit techniques
- 18.20–18.40 **Leonov G.A., Olenchuk S.A.** Lorenz system homoclinic bifurcation parameter approximation
- 18.40–19.00 **Leonov G.A., Reitmann V.** Extensions of Lyapunov's ideas in the algebraic approximation of attractors
- 19.00–19.20 **Lyashko S.A.** About sufficient conditions of the Lorenz system homoclinic orbit existence
- 19.20–19.40 **Novoselov O.N.** Identification and analysis of dynamical systems