



**N.N. Krasovskii**  
**Institute of Mathematics**  
**and Mechanics**

# PROGRAM

of the 8th International conference

NONLINEAR ANALYSIS AND EXTREMAL PROBLEMS  
(NLA-2024)

JUNE 24-28, 2024  
IRKUTSK, RUSSIA

## ORGANIZERS

Matrosov Institute for System Dynamics and Control Theory SB RAS

Sobolev Institute of Mathematics SB RAS

Krasovskii Institute of Mathematics and Mechanics UB RAS

Irkutsk State University

Mathematical Center in Akademgorodok

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The 8th International School-Seminar is supported by the Mathematical Center in Akademgorodok under the agreement No. 075-15-2022-282 with the Ministry of Science and Higher Education of the Russian Federation.

# SCHEDULE

June 24, Monday		June 25, Tuesday		June 26, Wednesday		June 28, Friday	
9:00-9:45	Registration	9:00-9:50	<b>Lecture</b>	9:00-9:50	<b>Lecture</b>	9:00-9:50	Poster session
9:45-10:00	Opening ceremony					9:50-10:00	Coffee break
10:00-10:50	<b>Lecture</b>	10:00-10:50	<b>Lecture</b>	10:00-10:50	<b>Lecture</b>	10:00-12:00	<b>Sessions</b>
10:50-11:00	Coffee break	10:50-11:00	Coffee break	10:50-11:00	Coffee break		
11:00-11:50	<b>Lecture</b>	11:00-11:50	<b>Lecture</b>	11:00-11:50	<b>Lecture</b>		
12:00-13:00	Lunch	12:00-13:00	Lunch	12:00-13:00	Lunch	12:00-13:00	Lunch
13:00-15:40	<b>Sessions</b>	13:00-14:20	<b>Sessions</b>	13:00-14:40	<b>Sessions</b>	13:00-13:50	<b>Lecture</b>
		14:20-14:30	Coffee break			13:50-14:00	Coffee break
		14:30-15:20	<b>Lecture</b>	14:40-15:00	Coffee break	14:00-14:50	<b>Lecture</b>
		15:20-15:30	Coffee break	15:00-16:20	<b>Sessions</b>	15:00	Closing ceremony
15:40-16:00	Coffee break	15:30-16:20	<b>Lecture</b>				
16:00-16:50	<b>Lecture</b>	16:20-16:40	Coffee break	16:20-16:40	Coffee break		
16:50-17:00	Coffee break	16:40-20:40	<b>Sessions</b>	16:40-20:40	<b>Sessions</b>		
17:00-17:50	<b>Lecture</b>						
18:00-20:00	Welcome reception						

The School-Seminar takes place in ISDCT SB RAS 134, Lermontov st., Irkutsk, Russia.

Website of the School-Seminar: <https://conference.icc.ru/event/7/>

# Lectures

**June 24, Monday, 10:00 – 11:50**

**ISDCT SB RAS, Room A**

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**Chair:** Alexander A. Tolstonogov

**Secretaries:** Anton S. Anikin, Svyatoslav V. Melkozerov

10:00 – 10:50 *Vladimir I. Bogachev.* Nonlinear Kantorovich problems of the optimal transportation (Lecture 1)

10:50 – 11:00 Coffee break

11:00 – 11:50 *Vladimir I. Bogachev.* Nonlinear Kantorovich problems of the optimal transportation (Lecture 2)

**June 24, Monday, 16:00 – 17:50**

**ISDCT SB RAS, Room A**

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**Chair:** Alexander S. Strekalovsky

**Secretaries:** Elena V. Chistyakova, Svyatoslav V. Melkozerov

16:00 – 16:50 *Zhenhai Liu.* Recent advances on partial differential variational inequalities

16:50 – 17:00 Coffee break

17:00 – 17:50 *Zhenhai Liu.* A differential system consisting of an evolution equation and a doubly nonlinear inclusion

**June 25, Tuesday, 9:00 – 11:50**

**ISDCT SB RAS, Room A**

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**Chairs:** Vladimir A. Dykhata, Alexander Yu. Gornov

**Secretaries:** Stepan P. Sorokin, Svyatoslav V. Melkozerov

9:00 – 9:50 ■ *Yuri S. Ledyayev.* Convexity of images of (non-) convex sets under nonlinear mappings

10:50 – 10:00 Coffee break

10:00 – 10:50 ■ *Yuri S. Ledyayev.* Harmonic analysis and optimal control

10:50 – 11:00 Coffee break

11:00 – 11:50 *Dmitrii V. Khlopin.* On limiting optimization problems (Lecture 1)

**June 25, Tuesday, 14:30 – 16:20**

**ISDCT SB RAS, Room A**

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**Chair:** Vladimir I. Bogachev

**Secretaries:** Maksim V. Staritsyn, Svyatoslav V. Melkozerov

14:30 – 15:20 ■ *Giovanni Colombo*. Recent advances on the optimal control of Moreau's sweeping process (Lecture 1)

15:20 – 15:30 Coffee break

15:30 – 16:20 ■ *Giovanni Colombo*. Recent advances on the optimal control of Moreau's sweeping process (Lecture 2)

**June 26, Wednesday, 9:00 – 9:50**

**ISDCT SB RAS, Room A**

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**Chairs:** Alexander Yu. Gornov, Mikhail V. Bulatov

**Secretaries:** Anton S. Anikin, Liubov S. Solovarova, Svyatoslav V. Melkozerov

9:00 – 9:50 *Dmitrii V. Khlopin*. On limiting optimization problems (Lecture 2)

10:50 – 10:00 Coffee break

10:00 – 10:50 *Linh Vu Hoang*. Spectral theory and asymptotic behavior of solutions for differential-algebraic equations (Lecture 1)

10:50 – 11:00 Coffee break

11:00 – 11:50 *Linh Vu Hoang*. Spectral theory and asymptotic behavior of solutions for differential-algebraic equations (Lecture 2)

**June 28, Friday, 13:00 – 14:50**

**ISDCT SB RAS, Room A**

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**Chair:** Alexander A. Tolstonogov

**Secretaries:** Anton S. Anikin, Svyatoslav V. Melkozerov

13:00 – 13:50 ■ *Alberto Bressan*. Optimal control of traveling profiles and moving sets (Lecture 1)

13:50 – 14:00 Coffee break

14:00 – 14:50 ■ *Alberto Bressan*. Optimal control of traveling profiles and moving sets (Lecture 2)

## Sessions

June 24, Monday, 13:00 – 15:40

ISDCT SB RAS, Room A

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### Partial differential equations 1

**Chairs:** Alexander L. Kazakov, Anna A. Lempert

**Secretary:** Maksim L. Zharkov

- 13:00 – 13:20     *Sergey A. Siniukov.* Asymptotic Solutions of the Nonlocal Kinetic Equation of Ionization of an Active Medium with Cubic Nonlinearity
- 13:20 – 13:40     *Elena Yu. Grazhdantseva.* Mixed Problem for a System of First Order Differential Equations
- 13:40 – 14:00     *Margarita Zvereva, Mikhail Kamenskii.* On Boundary Value Problems with Nonsmooth Solutions and Nonlinear Boundary Conditions
- 14:00 – 14:20     *Maxim Korpusov, Alexandra Matveeva.* On Critical Exponents for Weak Solutions of the Cauchy Problem for One (2+1)-Dimensional Nonlinear Equation of Wave Theory in Semiconductors
- 14:20 – 14:40     *Margarita V. Artemeva, M.O. Korpusov.* On the Blow Up the Solution of the Cauchy Problem for a (3+1)-Dimensional Heat-Electric Model
- 14:40 – 15:00     *Julia Belyaeva.* On the Exact Solutions to the Vlasov-Poisson System in a Cylindrical Domains
- 15:00 – 15:20     *Lina N. Bondar, Sanjar B. Mingnarov.* The Cauchy Problem for One Pseudohyperbolic System
- 15:20 – 15:40     *Bakhtovar Kh. Barotov, A. I. Kozhanov.* Study of the Solvability of Quasi-Parabolic Degenerate Integro-Differential Equations of Volterra Type

June 24, Monday, 13:00 – 15:40

ISDCT SB RAS, Room B

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### Dynamical systems 1

**Chair:** Gennadii V. Demidenko

**Secretary:** Pavel S. Petrenko

- 13:00 – 13:20     *Gennadii V. Demidenko, Vakhobbiddin S. Nurmakhmatov.* An Energy Estimate for One Pseudohyperbolic Equation
- 13:20 – 13:40     *Ivan D. Ilyinykh.* Asymptotic Behavior of Solutions to a Linear Delay Differential Equation

- 13:40 – 14:00 *Valentina V. Shemetova*. Boundary Value Problems for a Class of Pseudohyperbolic Equations
- 14:00 – 14:20 *Gennadii V. Demidenko*. Conditions for the Existence of Periodic Solutions to One Class of Systems of Nonlinear Differential Equations
- 14:20 – 14:40 *Inessa I. Matveeva*. On Estimates for Solutions to a Class of Nonautonomous Systems of Neutral Type with Concentrated and Distributed Delays
- 14:40 – 15:00 *Valeri Obukhovskii, Maria Soroka*. On Impulsive Fractional Differential Inclusions with a Nonconvex-Valued Right-Hand Side in Banach Spaces
- 15:00 – 15:20 *Elena Makhrova*. On Limit Sets of Monotone Maps on One-Dimensional Ramified Continua
- 15:20 – 15:40 *Valerii Obukhovskii, Sergey Kornev, Polina Korneva*. On the Existence of Bounded Solutions of Differential Inclusions

**June 24, Monday, 13:00 – 15:40**

**ISDCT SB RAS, Room C**

### **Nonlinear analysis and its applications 1**

**Chair:** Dmitrii V. Khlopin

**Secretary:** Maksim V. Staritsyn

- 13:00 – 13:20 *Sergey Buterin*. On Damping a Control System of Arbitrary Order with Global Aftereffect on a Temporal Tree
- 13:20 – 13:40 ■ *Yuri Sachkov*. Flat Sub-Lorentzian Problems on the Martinet Distribution
- 13:40 – 14:00 ■ *Valentin V. Gorokhovik*. Abstract Convexity and Subdifferentiability of Functions with Respect to Lipschitz Concave Functions
- 14:00 – 14:20 ■ *Alexander Kotyukov, Natalya Pavlova*. Equilibrium as a Coincidence Point of Two Mappings
- 14:20 – 14:40 ■ *Alexey Podobryaev*. Existence of the Longest Paths for Sub-Lorentzian Problems
- 14:40 – 15:00 ■ *Yavdat Sh. Ilyasov*. Finding Bifurcations by Extended Nonlinear Rayleigh Quotient Method
- 15:00 – 15:20 ■ *Alizhon Naimov, Alexander Korovin*. On Calculating the Mapping Degree of the Gradient of a Smooth Positively Homogeneous Function

15:20 – 15:40 ■ *Elena Gurevich*. On Embedding of Morse-Smale Diffeomorphisms in Topological Flows

June 25, Tuesday, 13:00 – 14:20

ISDCT SB RAS, Room A

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### Nonlinear analysis and its applications 2

**Chair:** Inessa I. Matveeva

**Secretary:** Pavel S. Petrenko

- 13:00 – 13:20 *Tatyana Sabatulina*. On Estimates of Solutions for Systems of Linear Autonomous Differential Equations with Aftereffect
- 13:20 – 13:40 *Vera Malygina*. On Sharp Two-Sided Estimates for Stable Solutions to Differential Equations with Delay
- 13:40 – 14:00 *Anton Balandin*. On the Positivity of the Cauchy Function and the Fundamental Solution of a Linear Autonomous Differential Equation of Neutral Type
- 14:00 – 14:20 *Kirill Chudinov*. Sufficient Stability Conditions for Solutions to Linear Differential Equations with Aftereffect

June 25, Tuesday, 13:00 – 14:20

ISDCT SB RAS, Room B

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### Optimization 1

**Chair:** Alexander Yu. Gornov

**Secretary:** Pavel S. Sorokovikov

- 13:00 – 13:20 *Ilya Minarchenko*. An Optimization Approach to Search of Nash Equilibrium in Nonmonotone Quadratic Games
- 13:20 – 13:40 *Tatiana Levanova, Ivan Khmara*. Applying a Tabu Search to Solving the Robust P-Median Problem
- 13:40 – 14:00 *Boris Melnikov, Elena Melnikova*. Optimization of the Solutions of the Pseudogeometric Version of the Traveling Salesman Problem
- 14:00 – 14:20 ■ *Alexandr Barinov*. One Problem of Achieving an Incompletely Known Target Set



### Dynamical systems 2

**Chair:** Ivan A. Finogenko

**Secretary:** Stepan P. Sorokin

- 13:00 – 13:20     *Ekaterina Getmanova.* Geometric Methods of Analysis in the Study of Some Problems in the Theory of Differential Inclusions
- 13:20 – 13:40     *Ivan A. Finogenko.* Method of Equivalent Control for Discontinuous Systems with Delay
- 13:40 – 14:00     *Andrei Svinin.* On the Properties of Solutions to Some System of Discrete Equations
- 14:00 – 14:20     *Alexey N. Rogalev.* Numerical-Symbolic Estimates of Geometric Characteristics of Reachable Sets and Functional Differential Equations

### Partial differential equations 2

**Chair:** Alexander L. Kazakov

**Secretary:** Pavel A. Kuznetsov

- 16:40 – 17:00     *Pavel Kuznetsov.* On Exact Solutions with Zero Fronts to the Parabolic Predator-Prey System
- 17:00 – 17:20     *Abu Bakarr Kamanda Bongay, Vladimir Vasilyev.* On Discrete Equations in a Multidimensional Space
- 17:20 – 17:40     *Hadish F. Gebreslasie, Vladimir Vasilyev.* On Some Pseudo-Differential Equation in a Certain Conical Domain
- 17:40 – 18:00     *Viktor Pavlenko.* Construction of Solutions of Analogues of the Schrodinger Non-Stationary Equations Corresponding to Some Hamiltonian Systems of the Kimura-Kawamuko List
- 18:00 – 18:20     ■ *Nikolai Krutov.* On the Possibility of Constructing an Explicit Formula of the Fundamental Solution for the Density of the Generalized Ornstein-Uhlenbeck Process
- 18:20 – 18:40     ■ *Anton Kulagin, Alexander Shapovalov.* Semiclassical Solutions to the Nonlocal Nonlinear Schrodinger Equation with an Anti-Hermitian Term Associated with the Dynamics of Quasiparticles

- 18:40 – 19:00 ■ *Viktor Korzyuk, Jan Rudzko*. Solutions of Problems for the Semilinear Wave Equation with a Dirac Potential
- 19:00 – 19:20 ■ *Sergey Shorokhov*. Solving Boundary Value Problems for Wave Pde with Quasi-Classical Variational Formulation and Neural Network
- 19:20 – 19:40 ■ *Sirozhiddin Z. Dzhamalov, B.K. Sipatdinova*. Linear Inverse Problem for Second Kind Mixed Type with Semi-Nonlocal Boundary Condition in a Primatic Unbounded Domain
- 19:40 – 20:00 ■ *Quvonchbek Asadov, Karimjon Sabirov*. Transmissionless Propagation of the Kink Soliton for the Nonlinear Klein-Gordon Equation on Branched Structures
- 20:00 – 20:20 ■ *Yuri Rykov*. Variational Formulation for One-Dimensional Systems of Conservation Laws
- 20:20 – 20:40 ■ *Tamara G. Sukacheva, Aleksey O. Kondyukov*. The Avalos-Triggiani Problem for the Linear Oskolkov System of Non-Zero Order and a System of Wave Equations

**June 25, Tuesday, 16:40 – 20:40**

**ISDCT SB RAS, Room B**

### Optimization 2

**Chair:** Andrey V. Orlov

**Secretary:** Maria V. Barkova

- 16:40 – 17:00 ■ *Akmal Mamatov*. A Dual Method for Solving a Game Problem with Arbitrary Situations
- 17:00 – 17:20 ■ *Rashid Yarullin, Igor Zabolin*. A Minimization Method with Sequential Use of Constraint Functions When Constructing Embedding Sets
- 17:20 – 17:40 ■ *Pavel Simakov, Konstantin Kudryavtsev*. About One Method of Decision-Making with Inaccurate Information About the Importance of Criteria
- 17:40 – 18:00 ■ *Nadezhda V. Dresvyanskaya*. Application of Piece-Wise Linear Support Functions in Linear Bilevel Programming Problems
- 18:00 – 18:20 ■ *Sofia Shperling*. Bin-By-Bin Strategy for the Two-Dimensional Irregular Bin Packing Problem
- 18:20 – 18:40 ■ *Dmitri G. Terzi*. On One Optimality Criterion for Solving the Traveling Salesman Problem

- 18:40 – 19:00 ■ *Alexey V. Ratushnyi, A. A. Panin, E. A. Brazhnikov.* Template-Based Approach to Dynamic Bin Packing with Placement Groups
- 19:00 – 19:20 ■ *Igor Prudnikov.* The Star Sets and Solution of Dc Problem
- 19:20 – 19:40 ■ *Vassili N. Malozemov, Grigoriy Sh. Tamasyan.* Comparative Analysis of Kozinets, Mdm and Smo Algorithms for Solving the Hard Svm-Separation Problem
- 19:40 – 20:00 ■ *Anastasiya Andrianova.* Reduction of Computational Complexity for Solving the Non-Guillotine Placement Problem on an Exact Model
- 20:00 – 20:20 ■ *Sergei Gladyshev.* Comparison Optimization Models for an Identical Parallel Machine Scheduling Problem with Uncertain Job Durations
- 20:20 – 20:40 *Tatiana Gruzdeva, Igor Semakin.* On Center-Based Clustering by Mahalanobis Distance

**June 25, Tuesday, 16:40 – 20:40**

**ISDCT SB RAS, Room C**

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### Dynamical systems 3

**Chair:** Alla A. Shcheglova

**Secretary:** Olga N. Samsonyuk

- 16:40 – 17:00 *Alla Shcheglova.* Controllability of Time-Varying Discrete Descriptor Systems
- 17:00 – 17:20 *Svetlana V. Solodusha.* Iterative Approach to Solving Polynomial Volterra Integral Equations of the First Kind
- 17:20 – 17:40 ■ *Levon Beklaryan, Armen Beklaryan.* Dualism of Theories of Solitonic Solutions of Infinite-Dimensional Dynamic Systems and Functional- Differential Equations of Pointwise Type
- 17:40 – 18:00 ■ *Valery Gaiko.* Global Limit Cycle Bifurcations in Predator-Prey Models of Ecological and Biomedical Systems
- 18:00 – 18:20 ■ *Igor Burkin, Oksana Kuznetsova.* Hidden Stability Boundaries of One System with Monotonic Nonlinearity in the Hurwitz Sector
- 18:20 – 18:40 ■ *Maxim V. Shamolin.* Invariants of Dynamical Systems with Dissipation
- 18:40 – 19:00 ■ *Andrei Vasin.* On Identity for Dyadic Coverings of Closed Sets with Zero Measure

- 19:00 – 19:20 ■ *Azamat Shavlukov*. On the Elliptic Umbilical Singularity of Solutions to Nonlinear Geometrical Optics System
- 19:20 – 19:40 ■ *Andrei Lomov*. On the Stability of Solutions to the Variational Prony Problem
- 19:40 – 20:00 ■ *Mikhail Bekhovskiy*. Realization of Additional Variables Method in Problems of Dynamics
- 20:00 – 20:20 ■ *Oksana Germider, Vasili Popov*. A Collocation Method Based on Roots of Chebyshev Polynomial for Solving Integral Equations

**June 26, Wednesday, 13:00 – 14:40**

**ISDCT SB RAS, Room A**

### **Nonlinear analysis and its applications 3**

**Chair:** Alla A. Shcheglova

**Secretary:** Svetlana V. Svinina

- 13:00 – 13:20 *Viktor A. Denisiuk*. Asymptotic Properties of Solutions to a System of Nonlinear Ordinary Differential Equations
- 13:20 – 13:40 *Timur Iskakov*. On Estimates of Solutions to Delay Differential Equations
- 13:40 – 14:00 *Irina Postanogova*. On Invertibility of the Operator for Derivative in a Neutral Type Differential Equation
- 14:00 – 14:20 *Vladislav S. Prokhorov*. On One Generalized Lyapunov Matrix Equation
- 14:20 – 14:40 *Ilya Aksenenko*. On Stability of a Linear Difference Equation with Complex Coefficients

**June 26, Wednesday, 13:00 – 14:40**

**ISDCT SB RAS, Room B**

### **Calculus of variations and control theory 1**

**Chairs:** Vladimir A. Dykhta, Vladimir A. Srochko

**Secretary:** Stepan P. Sorokin

- 13:00 – 13:20 *Yulia Danik, Mikhail Dmitriev, Dmitry Makarov*. A Penalty Functions Method for Feedback Control Design in Terminal Weakly Nonlinear Optimal Control Problems

- 13:20 – 13:40 ■ *Yurii F. Dolgii, Alexander N. Sesekin.* Construction of Approximations of Optimal Impulse Stabilizing Control for a Delayed System
- 13:40 – 14:00 ■ *Alexander Miller, Boris Miller, Alexey Popov, Karen Stepanyan.* Control of Autonomous Vehicles on the Basis of the Observation of Surrounding Landscape
- 14:00 – 14:20 *Mikhail I. Gusev.* Extremal Properties of the Reachable Set Boundary and the Lagrange Principle
- 14:20 – 14:40 *Vladimir A. Srochko, Alexander V. Arguchintsev.* Parametric Regularization of the Functional in a Linear-Quadratic Optimal Control Problem

**June 26, Wednesday, 13:00 – 14:40**

**ISDCT SB RAS, Room C**

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**Numerical methods**

**Chair:** Alexander Yu. Gornov

**Secretary:** Pavel S. Sorokovikov

- 13:00 – 13:20 *Pavel Sorokovikov.* Hybrid Non-Local Optimization Algorithms Based on Biogeography, Grey Wolf, Flower Pollination and L-Bfgs Methods
- 13:20 – 13:40 *Alexander Gornov, Tatiana Zarodnyuk, Anton Anikin, Pavel Sorokovikov, Alexander Tyatyushkin.* Practical Optimization in Non-Convex Optimal Control Problems
- 13:40 – 14:00 *Bilal S. Shevchenko, Natalia B. Zakharova.* Algorithms for Processing Remote Sensing Data in Problems of Variational Data Assimilation
- 14:00 – 14:20 *Alexander Arguchintsev, Daniil Kopylov.* Numerical Solution of the Optimal Control Problem Describing Separation Processes in a Distillation Column
- 14:20 – 14:40 *Olga Budnikova, Mikhail Bulatov.* On the Construction of Two-Stage Multistep Methods for the Numerical Solution of Integral Algebraic Equations

**Nonlinear analysis and its applications 4**

**Chair:** Gennadii V. Demidenko

**Secretary:** Maksim L. Zharkov

- 15:00 – 15:20     *Shuguang Li, Longjie Lv, Xiaoyi Ma.* Homogenization Modeling of Effective Permeability for Generalized Newtonian Flow in Porous Media
- 15:20 – 15:40     *Wenqiang Dong.* Stabilization of Discrete-Time Generalized Quasi-One-Sided Lipschitz Nonlinear Systems with Multiple Delays
- 15:40 – 16:00     *Longjie Lv, Shuguang Li, Mingyue Wei.* The Effects of Viscous Dissipation on the Nanofluid Natural Convection in a Tilted Square Cavity
- 16:00 – 16:20     *Ma Xin.* The First Initial-Boundary Value Problem for a Pseudohyperbolic Equation

**Calculus of variations and control theory 2**

**Chair:** Vladimir A. Dykhta

**Secretary:** Stepan P. Sorokin

- 15:00 – 15:20     ■ *Dmitrii Novikov.* Numerical Solution of a Particular Control Problem with Phase Constraints
- 15:20 – 15:40     ■ *Nina N. Subbotina, Evgenii Krupennikov.* On the Control Reconstruction for Trajectories of Differential Inclusions in Problems of Control Theory
- 15:40 – 16:00     ■ *Alexander Chentsov, Dmitrii Serkov.* On the Question of an Alternative in a Differential Game for Systems with the Properties of Generalized Uniqueness and Uniform Boundedness
- 16:00 – 16:20     ■ *Igor Lutoshkin, Maria Rybina.* Optimal Control of the Economic System in Conditions of Mass Disease with Vaccination

#### Dynamical systems 4

**Chair:** Anatoly V. Lakeev

**Secretary:** Pavel S. Sorokovikov

- 15:00 – 15:20 ■ *Andrey Perevaryukha*. Method for Modeling Infectious Processes with Chronization Using Equations Randomized Delay
- 15:20 – 15:40 ■ *Vyacheslav D. Sedykh*. On Singularities of Caustics in Spaces of Low Dimension
- 15:40 – 16:00 ■ *Andrey Osipov*. Operator Continued J- Fractions: Basic Facts and Possible Applications
- 16:00 – 16:20 ■ *Elena V. Alves, Manuel J. Alves, Joao S.P. Munembe, Yury V. Nepomnyashchikh*. Urysohn Operator in Subspaces of the Space of Essentially Bounded Functions

#### Nonlinear analysis and its applications 5

**Chair:** Ivan A. Finogenko

**Secretary:** Pavel S. Petrenko

- 16:40 – 17:00 ■ *Andrei Gorchakov, Vladimir Zubov*. Determination of Thermal Conductivity and Volumetric Heat Capacity by Heat Flow
- 17:00 – 17:20 ■ *Muzaffar Rahmatullaev, Olimxon Akhmedov*. P-Adic Quasi Gibbs Measures for the Four States P-Adic Sos Model on the Cayley Tree of Order Two
- 17:20 – 17:40 ■ *Zulfiya Gabidullina*. Analysis of Some Differential Properties of Nonconvex Functions
- 17:40 – 18:00 ■ *Regina R. Mutigullina, Regina D. Murtazina*. Decomposition of Webullah Function into an Orthogonal Row
- 18:00 – 18:20 ■ *Nailia T. Gabdrakhmanova*. Dynamic Models in Predictive Analytic with Examples of Problem Solving in Different Domains
- 18:20 – 18:40 ■ *Nyurgun Lazarev, Djulustan Nikiforov, Natalya Romanova*. Equilibrium Problem for a Timoshenko Plate Contacting by the Side Edge and the Bottom Boundary

- 18:40 – 19:00 ■ *Dzhamil Badardinov*. Existence and Uniqueness of Solutions to Polyharmonic Equations in Weighted Sobolev Spaces
- 19:00 – 19:20 ■ *E. R. Shaihev, Marat D. Bitkulov, Nadir E. Murtazin*. Time Series of Percolation Sensor Currents Under Conditions of Potentiostatic Chronoamperometry of Liquid Media
- 19:20 – 19:40 ■ *Mohisanam Turgunboyeva, Bahrom Samatov*. The I-Capture Problem in a Differential Game with Conflict-Controlled Inertial Players
- 19:40 – 20:00 ■ *Dmitriy Tverdyi, Roman Parovik*. The Inverse Problem of Determining the Optimal Coefficients of Mathematical Models Based on a Nonlinear Fractional Equation with a Gerasimov-Caputo Operator of Variable Order
- 20:00 – 20:20 ■ *Oleg Khamisov, Nadezhda Ulianova*. Optimization of Heat and Power Sources System Operation Taking into Account Losses At Cross-Flows
- 20:20 – 20:40 *Pavel Petrenko*. About Solvability and Controllability of Differential-Algebraic Equations with Hysteresis Phenomena

**June 26, Wednesday, 16:40 – 20:40**

**ISDCT SB RAS, Room B**

### **Calculus of variations and control theory 3**

**Chair:** Dmitry Yu. Karamzin

**Secretary:** Olga N. Samsonyukv

- 16:40 – 17:00 ■ *Igor V. Izmestev*. Control Problem for a Parabolic System with Uncertainties and Multiple Changes in Dynamics
- 17:00 – 17:20 ■ *Nikita Livanov, Igor Izmestev*. Problem of Control of Transportation of Elastic Beams by Carts Composition in the Presence of Uncertainty
- 17:20 – 17:40 *Dmitry Karamzin*. Pontryagin'S Maximum Principle for an Optimal Control Problem with Irregular Mixed Constraints
- 17:40 – 18:00 *Nikita Kosyanov*. Epidemic Optimal Control Problem with Vaccination and Isolation Processes
- 18:00 – 18:20 *Elena Goncharova, Nikolay Pogodaev, Lev Dreglea Sidorov, Maksim Staritsyn*. Exact Increment Formulas in Optimal Control of Balance Equations
- 18:20 – 18:40 *Denis Sidorov, Maksim Staritsyn*. On Numerical Solution of Optimal Control Problems of the Mckean-Vlasov Type



- 18:40 – 19:00 ■ *Anar Huseyin, Nesir Huseyin, Khalik G. Guseinov*. On the Robustness of the Trajectories of Nonlinear Control Systems with Respect to the Remaining Control Resource
- 19:00 – 19:20 ■ *Nikolai Trusov, Lev Egorov*. The Group Behaviour Analysis of the High-Frequency Traders Based on Mean Field Games Approach
- 19:20 – 19:40 ■ *Ilya Chupin, Yurii Dolgii*. Using the Hamilton Principle in Finding Impulse Controls for Manipulation Robots
- 19:40 – 20:00 *Vladimir A. Dykhta, Olga N. Samsonyuk, Stepan P. Sorokin, Maksim V. Staritsyn*. Optimality Conditions for Nonlinear Measure-Driven Processes
- 20:00 – 20:20 *Evgeny Cherkashin, Oksana Mazaeva*. Distributed Software System for Reservoir Shoreline Recognition Based on a Pre-Trained Neural Network

**June 26, Wednesday, 16:40 – 20:40**

**ISDCT SB RAS, Room C**

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### Dynamical systems 5

**Chair:** Anatoly V. Lakeev

**Secretary:** Pavel A. Kuznetsov

- 16:40 – 17:00 ■ *Olga Yufereva*. Interacting Particles in Continuous-Discrete Signal Estimation
- 17:00 – 17:20 ■ *Valery Dryuma*. The Ricci-Flat Metric in the Theory of Fluid Flows and the Equations of Rotation of a Top
- 17:20 – 17:40 ■ *Volkan ALA*. Complex Wave Solutions to the M-Fractional Kuramoto Equation Via Unified Solver Method
- 17:40 – 18:00 ■ *Suman Kumar*. Controllability of Nonlinear Delay Differential Control Systems in Hilbert Spaces
- 18:00 – 18:20 ■ *Levon K. Babadzanjanz, Irina Yu. Pototskaya, Yulia Yu. Pupyshcheva*. Integration of the Two-Body Problem Equations Using Polynomial Total Systems of Pdes
- 18:20 – 18:40 ■ *Platon G. Surkov*. On the Dynamical Reconstruction Problem of a Continuous Disturbance in a Fractional Order System
- 18:40 – 19:00 ■ *Jozil O. Takhirov, B.B. Anvarzhonov*. On the Free Boundary Problem for the Reaction-Diffusion-Advection Logistic Model
- 19:00 – 19:20 ■ *Gennady Ivanov, Gennady Alferov, Vladimir Korolev*. On the Stability of Solutions of Differential Equations with a Holomorphic

Right-Hand Side

- 19:20 – 19:40 ■ *Anvar Hasanov, Hilola Yuldashova*. Solving the Cauchy Problem for a Fractional Parabolic Equation Using the Hankel Transform Method
- 19:40 – 20:00 ■ *Jagan Mohan Jonnalagadda*. Positive Solutions of Discrete Fractional Boundary Value Problems
- 20:00 – 20:20 ■ *Shaoxing Zhang, Jinxiu Wu, Jinlong Yuan*. Prediction of Nonlinear Dynamical Systems Based on Kooperman Operator in Two-Dimensional Motion Model of Four-Wheel Car
- 20:20 – 20:40 ■ *Umida Baltaeva, Yulduz Babajanova, Boburjon Khasanov*. Solvability of a Problem with the Integral Gluing Condition for a Loaded Integro-Differential Equation

**June 28, Friday, 10:00 – 12:00**

**ISDCT SB RAS, Room A**

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### **Nonlinear analysis and its applications 6**

**Chair:** Alexander L. Kazakov

**Secretary:** Maria V. Barkova

- 10:00 – 10:20 *Maksim I. Makarov, Igor L. Kuzmin*. Longitudinal-Transverse Bending of a Rod Under the Action of Nonlinear Distributed Loads
- 10:20 – 10:40 *Garik Petrosyan*. On a Feedback Control System Described by a Fractional Differential Inclusion and a Sweeping Process
- 10:40 – 11:00 *Natalia A. Nikolaeva*. The Method of Fictitious Domains for an Equilibrium Problem of a Kirchhoff-Love Plate with a Flat Rigid Inclusion
- 11:00 – 11:20 *Irina Fankina*. On Junction Problem for Elastic Inclusions in an Elastic Body
- 11:20 – 11:40 *Sergey Kornev, Polina Korneva*. On One Development of the Method of Guiding Functions
- 11:40 – 12:00 ■ *Valery Vasilev*. On the Core of Aubin Extension of the Almost Positive Game

### Optimization 3

**Chair:** Alla A. Shcheglova

**Secretary:** Elena V. Chistyakova

- 10:00 – 10:20      ■ *Yong Xiu Feng, Ming Huang, Si Qi Zhang, Xiao Dan Chao.* A Proximal Bundle Algorithm for Solving the Equilibrium Problems with Inexact Data
- 10:20 – 10:40      ■ *Si Qi Zhang, Ming Huang, Ping Ping Qiao, Yong Xiu Feng, Suo Suo Yang.* A Proximal Bundle Method to Solve Variational Inequalities with Inexact Information
- 10:40 – 11:00      ■ *Tongtong Wang, Xiaotong Chen.* A Two-Phase Strategy for Elliptic Optimal Control Problems with  $L^1$ -Control Cost and Box Constraints
- 11:00 – 11:20      ■ *Kamlesh Raghuwanshi.* On Controllability of Semi-Linear Control Delay Systems
- 11:20 – 11:40      ■ *Dongyao Yang, Jinlong Yuan.* Sparse Optimal Control Problem Governed by Cyber-Physical Systems Using Pqa Method
- 11:40 – 12:00      ■ *Nidhi Shukla.* Well-Posedness and Controllability of Semilinear Impulsive Stochastic Functional Evolution Equations

### Dynamical systems 6

**Chair:** Svetlana V. Svinina

**Secretary:** Liubov S. Solovarova

- 10:00 – 10:20      ■ *Mikhail Bulatov, Liubov Solovarova.* On the Properties of the Collocation-Variational Approach for Solving Differential Algebraic Equations
- 10:20 – 10:40      ■ *Viktor F. Chistyakov, Elena V. Chistyakova.* Singular Points of the Jacobi Equation and Their Influence on the Properties of the Singular Quadratic Functional
- 10:40 – 11:00      ■ *Maria A. Skvortsova.* Estimates for Solutions to Neutral Type Differential Equations: Applications to the Hopfield Neural Networks Model

- 11:00 – 11:20 ■ *Mukhutdinova Aygul Ayratovna*. The Problem of the Inflow of a Hot Thermoviscous Liquid into a Cooled Annular Channel
- 11:20 – 11:40 ■ *Ziliya Z. Mamaeva*. Analysis of Natural Vibrations of a Liquid Column in a Vertical Well
- 11:40 – 12:00 ■ *Svetlana V. Akmanova*. On the Issue of Optimal Control of Hybrid Dynamic Systems

**June 28, Friday, 9:00 – 9:50**

**ISDCT SB RAS, Room B**

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**Poster session: Nonlinear analysis and extremal problems**

**Chair:** Stepan P. Sorokin

**Secretary:** Pavel A. Kuznetsov, Pavel S. Sorokovikov

*Aleksei Bogarev*. An Asymptotic Behaviour for Increments of Sums of Independent Random Variables and Stochastic Processes

*Darina I. Gurskaya*. Analysis of a Model of Average and Median Nominal Wages Using the Example of the Russian Economy for 2017-2023

*Maxim Kazantsev*. Security Market Prediction Using Decision Tree

*Daniil E. Gornakov, Nataliya A. Kolokolnikova*. One Variant of Particle Random Placement

*Vladislav Yakovlev*. Algorithms for Rasterizing Two-Dimensional Objects and Gradients

*Maria A. Skurygina, Petr Yu. Solodusha*. Application of Graph Theory to Modeling the Semantic Text Structure

*Vladimir D. Kistner, Vsevolod A. Voronov*. Generalized Heilbronn Problem

*Vladimir Podryadchikov, Varvara Zaharchenko*. Optimization of the Algorithm for Creating Periodic Tasks in the Electronic Document Management System

*Dariya Larionova*. Problems of Control and Optimal Control by Laser Action on a Two-Layer Material

*Vladislav O. Nesterov*. Stabilization of Linear Three-Dimensional Stationary Discrete Systems