

**Preliminary conference program (in Moscow time)**

**The meetings of the conference will be held in the Turin Conference Hall of the  
Omega Sirius Hotel.**

**Zoom link for remote participation in meetings:**

**<https://us06web.zoom.us/j/8156565680?pwd=PE2Y71gJVdQM3wpgSmX6z7iAErACCa.1>**

**Monday, October 6**

9:00- 9:20: Registration

9:20- 9:30: Welcome

**Plenary Session**

*Chair: R.G. Novikov*

9:30-10:20: **S.I. Kabanikhin** (Sobolev Institute of Mathematics, Russia)

Inverse and ill-posed problems in geosciences

10:30-11:20: **A.A. Laptev** (Sirius University, Russia, Imperial College, London ,UK)

TBA (online)

Coffee break

*Chair: A. Hasanoglu*

11:40-12:30: **T. Hohage** (University of Göttingen, Germany), F. Oberender  
(University of Göttingen, Germany)

Inverse problems in quantum statistics and their regularization (online)

12:40- 13:30: **A. Aspri** (Università degli Studi di Milano Statale, Italy)

Lipschitz stable reconstruction of polyhedral inclusions in conductive and elastic  
media from local boundary data (online)

13:40: Lunch

**Session «Mathematical methods of inverse problems and quasilinear equations»**

*Chair: V.V. Lychagin*

15:00: **A.G. Kushner** (Lomonosov Moscow State University, Russia)

Contact and symplectic geometry in nonlinear PDEs

15:30: **V.I. Golubev** (Moscow Institute of Physics and Technology, Institute of Computer-Aided Design RAS, Russia), I. Petrov (Moscow Institute of Physics and Technology, Institute of Computer-Aided Design RAS, Russia); I. Nikitin (Institute of Computer-Aided Design RAS, Russia)

Full-wave modeling of seismic barriers with the grid-characteristic method

16:00: **V.S. Mikhaylov**, A.S. Mikhaylov (PDMI, Russia)

On the complex moment problem and dynamic inverse problem for Jacobi matrices.

16:30: **A.S. Mikhaylov**, S.A. Simonov (PDMI, Russia); V.S. Mikhaylov (PDMI, Russia)

On the inverse problem of acoustic scattering. Analogue of the A-function.

*Chair: V. Mikhaylov*

17:00: **A.V.Lapin** (Sechenov University, Russia), A. Marukhin (Sechenov University, Russia)

Numerical solution of some inverse problems of parameter identification for the one-phase Stefan problem with fractional time derivative.

17:30: **A.M.Gaipova** (People friendship university of Russia, Russia)

Construction of the Carleman Function for a Mixed Problem of the Metaharmonic Equation

18:00: Yu.Smirnov, A.Lapich (Penza State University, Russia)

A two-step method for solving the inverse problem in microwave tomography

18:30: : **M.Dudar** (Sobolev Institute of Mathematics, Russia)

Numerical methods for solving the two-dimensional eikonal equation and inverse problems

## **Tuesday, October 7**

*Chair: S.I. Kabanikhin*

9:30-10:20: **A.A. Shanarin** (MIPT, Russia), N.V. Trusov (MSU, Russia)

Mathematical model of the interest rate influence on the repayment of the credit debt

10:30-11:20: **O.S. Rozanova** (Lomonosov Moscow State University, Russia)

On the closure of moment chains in the kinetic model of cold plasma

Coffee break

*Chair: A.A. Shanarin*

11:40-12:30: **I.A. Taimanov** (Sobolev Institute of Mathematics, Russia)

On the inverse spectral problem for one-dimensional periodic Schrodinger operators with PT-potentials. (**online**)

12:40- 13:30: **R.G. Novikov** (École polytechnique, France & IEPT RAS, Russia)

A holographic global uniqueness in passive imaging (**online**)

13:40: Lunch

## **Section « Optimization and variational methods»**

*Chair: D. Yu. Karamzin*

15:00: **M.V. Balashov** (V. ICS RAS, Russia)

Nonempty interior of a set-valued integral and its applications

15:30: **A. Zhukova**, D.Yu. Karamzin (Federal Research Center Computer Science and Control of Russian Academy of Sciences, Russia)

16:00: **T.A. Zvonareva**, O.I. Krivorotko (Sobolev Institute of Mathematics SB RAS, Russia)

Mean field control for describing the behavior of influenced users in online social networks

*Chair: M.V. Balashov*

16:30: **D.Yu. Karamzin** (Federal Research Center Computer Science and Control of Russian Academy of Sciences, Russia)

On the study of optimal control problems with irregular constraints

Numerical analysis of a linear optimal control problem with a higher-order state constraint

17:00: **F. Fedorov** (Lomonosov Moscow State University, Russia)

Studying the well-posedness of the boundary value problem for a system of Riccati type equations based on the concept of mean field games

17:30: (MIPT, Russia)

Градиентные подходы к обратным и некорректным задачам математической физики

18 :00 : **V.K.Tolstykh** (DSU, Russia)

Optimization of Distributed Control in Quasi-Linear Systems

18:30: **A.Lobanov** (MIPT, ISP RAS, HSE Russia)

On the Possibility of Linear Convergence in the Convex Setting: GD-type First- and Zero-Order Optimization Algorithms under Generalized Smoothness

## Wednesday, October 8

### Plenary Session

*Chair: V.V. Kravchenko*

9:30-10:20: **M.I. Belishev** (PDMI, Russia), S. Simonov (St. Petersburg Department of Steklov Mathematical Institute of Russian Academy of Sciences, Russian Federation)

Triangular factorization and functional models of operators and systems

10:30-11:20: **N.Yu. Saburova** (Northern (Arctic) Federal University, Russia)

Floquet isospectrality for discrete Schrödinger operators on periodic graphs

Coffee break

*Chair: R.G. Novikov*

11:40-12:30: **V.V. Kravchenko** (Cinvestav, Mexico & Southern Federal University, Russia)

Direct and inverse Zakharov-Shabat scattering (**online**)

12:40- 13:30: **T.P. Novikova** (École polytechnique, France)

Fast post-processing of polarimetric data for real-time brain imaging during neurosurgery (online)

13:40: Lunch

### Section «Inverse problems and tomography»

*Chair: M.Shishlenin*

15:00: **M.M. Malamud** (St Petersburg University, Russia)

The inverse spectral problem for Dirac type systems on the half line.

15:30: **A.V. Nair**, R.G. Novikov (CMAP, École polytechnique, France)

On reconstruction from imaginary part for radiation solutions in two dimensions

16:00: **L.N. Pestov** (Immanuel Kant Baltic federal University, Russia)

On recovering a Hamiltonian by the scattering map.

16:30: V.A. Sharafutdinov, **N. Vaitzel** (Sobolev Institute of Mathematics, Russia)

The Cormack inversion formula for Doppler tomography in two dimensions

17:00: **D.I. Zotov** (Moscow State University, Russia)

Correction of fields registered during tomography of object

*Chair: L.N. Pestov*

17:30: **M. Shishlenin** (Sobolev Institute of Mathematics, Russia), S. Kabanikhin (Sobolev Institute of Mathematics, Russia); N. Novikov (Sobolev Institute of Mathematics, Russia)

Nonlinear problems of ultrasound tomography

18:00 : **Alfred Puro** (Evroakademia Tondi 55,11316, Tallinn, Estonia), I. Glagolev (Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia)

Application of R. Novikov's algorithm for solving the Radon problem in axially symmetric GRIN media (online)

18:30: **L. Frumin** (Institute of Automation and Electrometry SD RAS, Novosibirsk, Russian Federation), A. Chernyavsky (Institute of Automation and Electrometry SD RAS, Novosibirsk, Russian Federation)

Accelerated algorithm for solving the scattering problem for the manakov model

19:00: **S. Mukhina** (ICS RAS, Russia)

Contactization of first order PDE systems on two-dimensional manifolds

## Thursday, October 9

### Plenary Session

*Chair: L.N. Pestov*

9:30-10:20: **M.V. Klibanov** (University of North Carolina at Charlotte, USA)

Global convergence for mean field games (online)

10:30-11:20: **J.-G. Caputo** (NSA Rouen Normandie, France)

Source identification on a driven and damped network

Coffee break

*Chair: O.S. Rozanova*

11:40-12:30: **V.V. Lychagin** (Institute of control science, Russia)

On geometry of turbulent media and Navier-Stokes equations

12:40- 13:30: **Yu.V. Averboukh** Krasovskii Institute of Mathematics and Mechanics (Russia), HSE University (Russia)

Nonlocal balance equation

13:40: Lunch

### Session «Mathematical modeling»

*Chair: N.Obrosova*

15:00: **K. Borissov** (European University at St. Petersburg, Federal Research Center "Computer Science and Control" Russian Academy of Sciences, Russia)

Economic growth and robotization

15:30: **L.V. Egorov** (Federal Research Center “Computer Science and Control” of

the Russian Academy of Sciences, Russia)

The Schumpeterian growth model

16:00: **O.I. Krivorotko**, N.Y. Zyatkov (Sobolev Institute of Mathematics SB RAS, Russia)

Multi-population epidemic control problem and deep learning

*Chair: K. Borissov*

16:30: **N.K. Obrosova**, A.A. Shananin (Federal Research Center "Computer Science and Control" of the Russian Academy of Sciences, Lomonosov Moscow State University, Russia)

Nonlinear input-output models with resource constraints

17:00: **G.S. Parastaev** (Federal Research Center "Computer Science and Control" of the Russian Academy of Sciences, Lomonosov Moscow State University, Russia)

On asymptotic stability of Lorenz curves in the welfare state model

17:30: **A.Timonov** (University of South Carolina, USA)

On an approach to acoustic imaging based on the regularized variational quasi-reversibility method (**online**)

18:00: **M.Tarasenko** (Moscow State University, Russia)

Mathematical Modeling of Mortgage Market Demand in Russia

18:30: **N.V.Trusov** (MSU, Russia), L.V. Egorov (Federal Research Center "Computer Science and Control" of the Russian Academy of Sciences, Russia)

The group behaviour analysis of the high-frequency traders based on Mean Field Games approach

19:00: **P.Gilev** (Altai State University, Institute of Mathematics and Information Technologies, Russia), V.Pohgosyan (Altai State University, Institute of Mathematics and Information Technologies, Russia),

Theoretical and computational research of the model of filtration of two immiscible incompressible fluids in a thin poroelastic layer

### **Friday, October 10**

#### **Plenary Session**

*Chair: M.I. Belishev*

9:30-10:20: **Yu.V. Vassilevski**, T.K. Dobroserdova, A.A. Danilov (INM RAS, Russia)

Tomography-based personalization of mathematical models and clinical applications

10:30-11:20: **S.Medvedev** (Federal Research Center for Information and Computational Technologies, Russia)

Hamiltonian formulation of the equations of an ideal fluid in curvilinear coordinates

Coffee break

*Chair: A.V.Lapin*

11:40-12:30: **A.S. Shurup** (Lomonosov Moscow State University & Schmidt Institute of Physics of the Earth, Russia)

Three-dimensional model of passive seismoacoustic tomography using surface-type waves

Study of models of transport of multifractional sediments and suspensions in coastal marine systems based on systems of quasilinear parabolic equations

12:40- 13:30: **B.L. Sharma** (Indian Institute of Technology, Kanpur, India)

Some applications of bifurcation analysis in elasticity and mechanics

13:30: **Summing up the results. Conference closing** (K.Konkov, A.Shananin, R.Novikov)