

Preliminary program of talks

Monday, December 3

9:30: Welcome

Chair: J. Boman

10:00: **S.I. Kabanikhin** (ICM&MG SB RAS, Russia), M. Shishlenin, N. Novikov
Big Data and Gelfand-Levitan-Krein equations

10:35: **M. Agranovsky** (Bar-Ilan University, Israel)
On integrable domains and surfaces

11:10: **R.G. Novikov** (Ecole Polytechnique, France)
Moutard type transformations for generalized analytic functions

11:45: **V. Michel** (IMJ, France)
About the two dimensional conductivity inverse problem

12:20: Coffee break & lunch

Section «Inverse problems and tomography»

Chair: A. Laptev

13:20: **C. Shi** (University of Goettingen, Germany), O. Scherzer (University of Vienna & Johann Radon Institute, Austria), P. Elbau (University of Vienna, Austria)
Singular values of the attenuated photoacoustic imaging operator

13:55: **A.S. Shurup** (Moscow State University, Faculty of Physics, Russia)
Three-dimensional ocean acoustic tomography based on two-dimensional multichannel Novikov- Santacesaria algorithm

14:30: **A.D. Agaltsov** (Max Planck Institute for Solar System Research, Germany)
Fixed-frequency identities for the Green function and uniqueness results for passive imaging

15:05: **F.O. Goncharov** (Ecole Polytechnique, France)
Some numerical aspects of iterative inversions of weighted Radon transforms in 3D

15:40: Coffee break

Chair: A.S. Shurup

16:00: **E. V. Fadeev**, K.V. Dmitriev, O.D. Rumyantseva (Moscow State University, Faculty of Physics, Russia)
Restore point discontinuities and the analysis of the scattering of the retarded and advanced waves

16:35: A.B. Bakushinsky (Institute for Systems Analysis, Russia), **A.S. Leonov** (National Nuclear Research University 'MEPHI', Russia) Numerical solving three-dimensional coefficient inverse

problem for the wave equation with integral data in a cylindrical domain

17:10: A. Danilin, **V. Filatova** (Immanuel Kant Baltic Federal University, Russia)
Breast ultrasound tomography problem (3D simulation)

Section «Inverse problems in economic, finance and medicine»

Chair: Zhang Shuhua

13:20: O. Krivorotko; E. Kondakova; **M. Marchenko** (ICM&MG SB RAS, Russia),
Numerical solving the inverse problems for stochastic differential equations arising in economy

13:55: **M. Shishlenin** (Institute of Computational Mathematics and Mathematical Geophysics SB RAS; Sobolev Institute of Mathematics SB RAS (Russia))
Coefficient inverse problems for parabolic equations: application to medicine and finance

14:30: **O. Krivorotko** (Institute of Computational Mathematics and Mathematical Geophysics of SB RAS; Novosibirsk State University, Russia)
Identification of mathematical models for social, epidemiological and economic processes

15:05: **D. Yermolenko** (Institute of Computational Mathematics and Mathematical Geophysics of SB RAS, Russia)
Regularization of the inverse problem for the mathematical model HIV dynamics

15:40: Coffee break

Chair: A.A. Shanin

16:00: **N.I. Klemashev** (Moscow State University, Russia)
Nonparametric methods for analyzing statistics by means of neoclassical demand model

16:35: **N. Pavlova** (MIPT, Russia)
Application of theory of coincidence points to investigation of economic models

17:10: A. Leonidov, **E. Serebryannikova** (LPI, MIPT, Russia)
The model of endogenous growth of the capital-labour ratio

17:45: **N. Trusov** (Lomonosov Moscow State University, Russia)
Application of mean field games approximation to economic processes modeling

Tuesday, December 4

Chair: R.G.Novikov

10:00: **I.A. Taimanov** (Sobolev Institute of Mathematics, Russia)
Darboux-Moutard transformations and Poincare-Steklov operators

10:35: **M.I. Belishev** (PDMI of RAS, Russia), A. Vakulenko
On algebra associated with 3d harmonic quaternion fields

11:10: **J. Boman** (Stockholm University, Sweden)
Radon transforms supported in hypersurfaces and a conjecture by Arnold

11:45: **A. Laptev** (Imperial College London, UK)
On factorisation of a class of Schrödinger operators

12:20: Coffee break & lunch

Section «Inverse problems in mathematical physics»

Chair: I.A. Taimanov

13:20: **A. Jollivet** (CNRS & University of Lille, France)
Estimates for the Steklov zeta function of a planar domain

13:55: **A.S. Demidov** (Moscow State University, Russia)
On the search algorithm for all essentially different solutions of the inverse problem for the Grad-Shafranov equation

14:30: **M.I. Ismailov** (Gebze Technical University, Turkey)
Inverse scattering transform method for a nonlinear integro-differential evolution equation with $2 + 1$ dimensions

15:05: **V.S. Dryuma** (IMI, Moldova)
On integrating of nonlinear differential equations in the field theory problems

15:40: Coffee break

Chair: M.I. Belishev

16:00: B.G. Bukchin (IEPT RAS, Russia), **A. Fomochkina** (Gubkin University; IEPT RAS (Russia))
The estimate of the errors of earthquake parameters determination from surface wave amplitude spectra

16:35: **M.M. Malamud** (RUDN, Russia)
Uniqueness results for first order systems of ODE

17:10: A. Mikhaylov, **V. Mikhaylov** (PDMI of RAS, Russia)
Inverse dynamic problem for Stieltjes string

17:45: **A. Kostenko** (University of Vienna, Austria)
On the absolutely continuous spectrum of generalized indefinite strings

Section «Quasilinear equations and computations»

Chair : L. Beklaryan

13:20: S. Zhang (Tianjin University of Finance and Economics, China); **A. Lapin** (Kazan Federal University (Russia) S. Lapin (Washington State University, USA)
Numerical solution of a parabolic optimal control problem with a controlled coefficient of state equation

13:55: **V. Vedenyapin**(Keldysh Institute Appl.Math. , Russia)
Entropy in the sense of Boltzmann and Poincare

14:30: : **A.V. Podoroga** , I.V. Tikhonov (Moscow State University, Russia)
The exact method of solving quasilinear differential equations in some special cases

15:05: **N.I. Khokhlov** (MIPT, Russia); N. Yavitch (MIPT, Russia); M. Malovichko (MIPT, Russia)Comparison of the finite-difference and integral realization of Helmholtz's solver

15:40: Coffee break

Chair: V. Vedenyapin

16:00: A. Beklaryan (National Research University Higher School of Economics, CEMI RAS Russia), **L. Beklaryan**(CEMI RAS, MIPT, Russia)
Systems with polynomial potential. Existence of bounded and periodic soliton solutions. Numerical realization of soliton solutions

16:35 : **A. A. Kozhemyachenko** (MIPT, Russia); I.B. Petrov (MIPT, Russia)
Calculation of interaction between railway and train

Section «Numerical methods»

Chair: I.B.Petrov

13:20: **A. A. Skubachevskii** (MIPT, Russia)
Numerical modelling of electromagnetic waves. FDTD and PIC methods.

13:55: **K.A. Beklemysheva** (MIPT, Russia)

Numerical modeling of delamination in fiber-metal laminates caused by low-velocity impact

14:30: A. Favorskaya (MIPT, Russia), **V. Golubev** (MIPT, Russia)
Some aspects of elastic migration in heterogeneous media

15:05: A. Favorskaya (MIPT, Russia); **B. V. Galitskii** (MIPT, Russia)

Grid-characteristic method with a minimized number of computational operations

15:40: Coffee break

16:00: **P. Stognii**(MIPT, Russia)

Numerical modelling of 2D gas pockets spread in the Arctic zone

16:35: **A. Kabanova**(MIPT, Russia); A. Kozhemyatchenko (MIPT, Russia); Numerical modelling of the damaged wheel and rail interaction using grid-characteristic method

17:10: **A. Gordov** (MIPT, Russia); N.I. Khokhlov (MIPT, Russia)

Research of the numerical anisotropy for the grid-characteristic method for dynamic waves

17:45: **V. Axenov** (MIPT, Russia); A. Vasyukov (MIPT, Russia); K. Beklemysheva (MIPT, Russia)

Numerical simulation of membrane deformation under the high-speed load

Wednesday, December 5

Chair: S. I. Kabanikhin

9:25: **M. V. Ruzhansky** (Ghent University, Belgium; Queen Mary University of London, UK)
Very weak solutions for wave equations

10:00: **M.V. Pavlov** (FIAN Russia)

Integrability of the Benney system

10:35: **A.V. Arutyunov** (RUDN), E.S. Zhukovskiy (Tambov State University, Russia), Zhukovskiy, Sergey Evgen'yevich (MIPT)

Variational Principles in Nonlinear Analysis

11:10: **V.P. Palamodov** (Tel Aviv University, Israel)

Reconstruction of the refractive index from single-distance radiograph

11:45: **A.G. Yagola** (Moscow State University, Russia)

A posteriori error estimates for solutions of inverse ill-posed problems

12:20: Coffee break & lunch

Section «Mathematical modeling and computations »

Chair : A. Lapin

13:20: **S. Zhang** (Tianjin University of Finance and Economics, China);

A new idea for forecasting based on data-driven PDE and ODE

13:55: **A.V. Favorskaya** (MIPT, Russia)

A novel approach to study wave phenomena in heterogeneous media

14:30 **M. Elaeva**, E. Blanter (HSE, Russia)

Solar meridional flow through the inverse problem in the Kuramoto model with three oscillators

15:05: L. Pankratov, **A. Voloshin** (MIPT, Russia)

An upscaled Kondaurov type non-equilibrium model of two-phase flow in fractured non-homogeneous media

15:40: Coffee break

Chair: A. Lapin

16:00: **N. Volosova** (Bauman MSTU, Russia), D.F. Pastukhov (PSU, Belarus), K.A. Volosov (MIIT, Russia)

The expansion of the area of application of methods of mathematical physics to steganography

16:35 : **D. Makarenko** (MIPT, Russia)

Non-gradient methods for determining the minimum energy of complex molecules.

17:10: **A.A. Shananin** (MPT, Russia)

Model of network economic structures

Section «Optimization in inverse problems»

Chair : Yu.G. Evtushenko

13:20: **M.V. Balashov**(ICS RAS Russia), B. Polyak (ICS RAS, Russia), A. Tremba (ICS RAS, Russia)
The gradient projection algorithm for smooth functions and prox-regular sets

13:55: **A. Ivanova** (MIPT, Russia)

Gradient descent for economical problem with several sectors.

14:20: **V. M. Elsukov** (MIPT, Russia)

ACCELERATED ADAPTIVE RANDOM BLOCK-COORDINATE DESCENT

14:45: **A. Rogozin** (MIPT, Russia), V. Potashnikov (IEP, Russia); A. Gasnikov (MIPT, Russia)
Selection of Economic Development Determinants via SEM Models

15:10: **D. O. Selikhanovych** (MIPT, Russia)

Comparison of variations of the linear coupling method

15:40: Coffee break

Chair: Yu. G. Evtushenko

16:00: **A. Titov** (MIPT, Russia), A. Ivanova (MIPT, Russia), M. Alkousa (MIPT, Russia),
F. Stonyakin (CFU, Russia); A. Gasnikov (MIPT, Russia)
ONE METHOD FOR CONVEX OPTIMIZATION PROBLEMS WITH NON-SMOOTH STRONGLY CONVEX
CONSTRAINT

16:25: **A. Agafonov** (MIPT, Russia)
General scheme for estimating the rate of convergence in the strongly convex case

16:50 : **D. Dvinskikh** (Weierstrass Institute Berlin)
Computation of non-regularized Wasserstein barycenter using KL prox-structure

18:00: Conference closing