International Conference

Days on Diffraction 2024

June 10 – 14, 2024

St. Petersburg

Program

Monday, June 10, 2024

	Asymptotic methods (I) Chair: Sergey Dobrokhotov
11.20	**S.A. Nazarov**: Asymptotics of spectrum of the Dirichlet problem with a row of small concentrated masses
11.40	**A.I. Allilueva**, A.I. Shafarevich: Quasi-classical asymptotics describing the electron-hole interaction and the Klein effect for the (2+1)-Dirac equation in discontinuously varying fields
12.00	**I. Bogaevskii**, M. Rouleux: Glancing points and asymptotic solutions
12.20	**D.I. Borisov**: On negative eigenvalues of toy graph with small edge
12.40	*Coffee break*

	Asymptotic methods (II) Chair: Maria Perel
13.00	**S.Yu. Dobrokhotov**, D.S. Minenkov, M.M. Votiakova: Long nonlinear water waves in "whispering galleries" formed by gentle shores
13.20	A.I. Shafarevich, **O.A. Shchegortsova**: Isotropic surfaces and complex vector bundles corresponding to the Schrödinger equation with a delta potential
13.40	A.I. Shafarevich, **V.V. Rykhlov**: Spectral series of the Schrödinger operator with double delta potential on a three-dimensional spherically symmetric manifold
14.00	**E.A. Zlobina**, A.P. Kiselev, N.S. Fedorov: Paraxial wave propagation along a delta potential
14.20	*Coffee break*

	Asymptotic methods (III) Chair: Ilya Bogaevskii
14.40	**M.V. Babich**: On Jordan structure of matrices from Lie algebra complex orthogonal group so(N,C)
15.00	**A.V. Tsvetkova**: Localized Gaussian beams and asymptotics of solutions of the Helmholtz equation
15.20	**M.V. Perel**: Asymptotic normal modes for the Schrödinger-type equation with two-scale time dependence of the Hamiltonian

Tuesday, June 11, 2024

	Diffraction Chair: Victor Zalipaev
11.40	A.V. Shanin, A.I. Korolkov, **O.I. Makarov**: Diffraction by a Dirichlet $\pi/3$ wedge on a hexagonal lattice
12.00	A.I. Korolkov, A.V. Shanin, **A.Y. Laptev**: Mortar coupling between FEM and BAE with non-conforming meshes and its applications to diffraction modeling
12.20	**V.D. Burtsev**, T.S. Vosheva, A.P. Sedov, A.V. Nikulin, D.S. Filonov: Miniature Mobius strip inspired scatterer
12.40	*Coffee break*
	Optics (I) Chair: Nikolay Rosanov
13.00	**K.A. Bronnikov**, N.S. Solodovchenko, A.P. Chetverikova, M.F. Limonov: Hot spots and field focusing in dielectric ring resonators
13.20	**B.P. Lapin**, E.V. Barshak, M.A. Yavorsky, C.N. Alexeyev: Optical vortices in multihelicoidal fibers with torsional mechanic stress
13.40	**D.V. Vikulin**, E.V. Barshak, C.N. Alexeyev, B.P. Lapin, M.A. Yavorsky: All-fiber generation and control of higher-order optical beams via lowest-order flexural acoustic wave
14.00	**V. Zalipaev**, I. Bubenchikov, A. Tityapkin, S. Kozlov: Diffraction of a video pulse
14.20	*Coffee break*
	Optics (II) Chair: Aleksei Kiselev
14.40	**N.N. Rosanov**: "Violations" and violations of relations for the electrical area of short electromagnetic pulses
15.00	**N.A. Veretenov**, S.V. Fedorov, N.N. Rosanov: 3D optical vector soliton with crossed vortex lines
15.20	**A.B. Plachenov**: Unidirectional pulses

Wednesday, June 12, 2024

	Acoustics and elastic waves (I) Chair: Evgeny Glushkov
11.20	A.A. Evdokimov, M.V. Vareldzhan, **A.A. Eremin**: Scattering of fundamental elastic guided waves by localized 3D obstacles in bimaterial isotropic laminates
11.40	**O.A. Ermolenko**, E.V. Glushkov, N.V. Glushkova: Ultrasonic inspection of fluid-loaded anisotropic laminate plates
12.00	**S.I. Fomenko**, M.V. Golub, P.E. Usov: Guided wave propagation control in multilayered piezoelectric waveguide by system of electrodes connected via electrical circuit
12.20	**M.V. Golub**, S.I. Fomenko, O.V. Doroshenko, V.V. Kozhevnikov, E.A. Okoneshnikova, K.K. Kanishchev: Semi-analytical methods for modelling elastic wave conversion, trapping and focusing in layered elastic metamaterials with arrays of voids

12.40	*Coffee break*

	Acoustics and elastic waves (II) Chair: Maria Wilde
13.00	**G.V. Filippenko**: Axisymmetric vibrations of a cylindrical elastic shell with inhomogeneous Poisson's ratio
13.20	A.D. Khanazaryan, **M.V. Golub**, A.A. Makarenko: Hybrid semi-analytical method for modelling in-plane wave motion of elastic laminates with periodic and localized volumetric inhomogeneities
13.40	**D.D. Zakharov**, I.S. Nikitin: Implementation of the Peano and WKB approaches to find vibrational modes and frequencies of a thin rod with variable parameters
14.00	**M.G. Zhuchkova**: Scattering of surface waves by linear discontinuities in elastic half-space: approximate approach

14.20	*Coffee break*

	Acoustics and elastic waves (III) Chair: Mikhail Golub
14.40	**E.V. Glushkov**, N.V. Glushkova, O.N. Kiselev: Source energy distribution and wave energy streamlines in an elastic anisotropic half-space
15.00	**M.V. Wilde**, V.N. Pleshkov: On distinguishing between bending edge wave and Lamb wave A0 in the wave-fields exited by an edge load
15.20	E.V. Glushkov, **N.V. Glushkova**, A.A. Tatarkin: Guided waves and resonance effects in piezoelectric laminate structures
15.40	**O.V. Motygin**: Non-uniqueness in the water wave problem for partially submerged bodies and an ice plate floating on the surface

Thursday, June 13, 2024

	Mathematical methods Chair: Anna Tsvetkova
12.00	A.A. Matskovskiy, **G.L. Zavorokhin**: On elastic waves in topographic waveguides
12.20	**A.V. Ivanov**: Solutions to difference Riccati equation via continued fractions
12.40	**Yu.V. Pavlov**, A.L. Gai'kov: Some solutions of nonlinear wave equations with first derivatives
13.00	**M.N. Demchenko**: On the scattering problem for the nonhomogeneous ultrahyperbolic equation
13.20	**A.M. Ghazaryan**, A.M. Ishkhanyan: A conditionally exactly solvable 1D Dirac pseudoscalar interaction potential
13.40	*Coffee break*
	History of diffraction Chair: Andrei Shanin
14.00	**I.M. Pinto**: Ray chaos and its short wave footprints — old and new paradigms
14.20	**A.P. Kiselev**, E.A. Zlobina: Parabolic-equation approach in high-frequency grazing diffraction theory: from Fock to nowadays
14.40	**P.A. Belov**: Metamaterials in Russia and former USSR
15.00	**M.F. Limonov**, K.B. Samusev: History of diffraction in natural and synthetic opals

Friday, June 14, 2024

	Numerical approaches Chair: Leonid Goray
11.00	**R.M. Feshchenko**: On cylindrically symmetrical exact transparent boundary condition in cylindrical computational domain
11.20	V.G. Farafonov, **D.G. Turichina**, V.B. Il'in, S.I. Laznevoi: Some new results of applying the separation of variables method to spheroids
11.40	L.I. Goray, **A.S. Dashkov**, N.A. Kostromin, D.A. Barykin: An improved numerical algorithm for the wave equation optimization problems
12.00	**A.G. Maslovskaya**, L.I. Moroz: Fractional diffusion-wave modification of Landau–Khalatnikov model applied to polarization switching in ferroelectric nanowires
12.20	**L.I. Goray**: Anomalously high diffraction efficiency of low-frequency sinusoidal and lamellar gratings for neutron optics

12.40	*Coffee break*

	Electromagnetics & radiophysics Chair: Tatiana Zaboronkova
13.00	**E.A. Ivanova**, W.H. Müller, W. Rickert, E.N. Vilchevskaya: Wave processes in conducting media from the point of view of classical and extended electrodynamics
13.20	**V. Zalipaev**: Surface waves generation by array of thin wires in the presence of impedance surface of metallic grid
13.40	A.V. Kudrin, **A.S. Zaitseva**, T.M. Zaboronkova: Electrodynamic characteristics of a multigap loop antenna with phased excitation located on the surface of an anisotropic cylinder
14.00	G.V. Chalyshov, A.A. Dyundyaeva, **D.V. Valovik**: Nonstandard perturbation approach to find nonlinearized solutions in a problem of electromagnetic wave propagation in a plane waveguide with nonlinear filling
14.20	E.V. Bazhilova, A.V. Kudrin, **T.M. Zaboronkova**, A.S. Zaitseva: Whistler wave radiation from a circular phased array of loop antennas in a magnetoplasma

Program of the Mini-symposium "Inverse Problems"

Monday, 10 June, 2024

Chairman: **M.I. Belishev**

09.55−10.00	ZOOM check, greetings, hugs
10.00−10.40	**V.G. Romanov**: An inverse problem for a quasilinear wave equation
10.45−11.25	S.R. Jathar, M. Kar, **V.P. Krishnan**, V.A. Sharafutdinov: Explicit inversion formulas for normal operators of momentum ray transforms
Coffee break	
11.40−12.20	**A.Yu. Chebotarev**, E.A. Mikolosyuk, A.E. Kovtanyuk: Inverse problem for a quasilinear model of complex heat transfer with internal thermal radiation

Lunch

14.00−14.40	**N.Yu. Saburova**: Spectral invariants for Schrödinger operators on periodic discrete graphs
14.45−15.15	**A. Timonov**: Utilizing the viscosity approximation and Carleman weight-based quasi-reversibility method for acoustic imaging

Tuesday, 11 June, 2024

Chairman: **M.I. Belishev**

10.00−10.40	**T. Furuya**: Consistency of the Bayes method for the inverse scattering problem
10.45−11.25	**M.A. Shishlenin**, N.S. Novikov, S.I. Kabanikhin: Electroacoustic tomography: inverse problems and deep learning
Coffee break	
11.40−12.20	**A.E. Kovtanyuk**, C. Kuttler, K.O. Koshel, A.Y. Chebotarev: Inverse extremal problem for an anti-tumor therapy model

Lunch

14.00−14.40	**G. Nakamura**: Relaxation tensor for extended Burgers model
14.45−15.25	**Rakesh**: Fixed angle inverse scattering for Riemannian metrics
Coffee break	
15.35−16.05	M.I. Belishev, **D.V. Korikov**: Stability of solutions to the two-dimensional EIT problem

Wednesday, 12 June, 2024

Chairman: **V.S. Mikhaylov**

10.00−10.40	**N.P. Bondarenko**: Inverse spectral problem for higher-order differential operators
10.45−11.25	**M.M. Malamud**: Explicit solution to Birman's problem for Schrödinger operators
Coffee break	
11.40−12.20	**K.S. Kuznetsov**, E.V. Amosova, S.D. Afanasyeva, S.V. Dranov: PINN method and solution of inverse problems of complex heat transfer

Lunch

14.00−14.40	**M.-E. Pistol**: Isospectral quantum graphs
14.45−15.25	**V.N. Sivkin**, R.G. Novikov: Numerical implementation of multipoint formulas in inverse problems

Thursday, 13 June, 2024

Chairman: **V.S. Mikhaylov**

10.00−10.40	P.G. Grinevich, **R.G. Novikov**: Transparent scatterers and transmission eigenvalues
10.45−11.15	A.S. Mikhaylov, **V.S. Mikhaylov**: Inverse dynamic problem for a one-dimensional dissipative system
Coffee break	
11.35−12.05	M.I. Belishev, **S.A. Simonov**: A functional model for a class of symmetric semi-bounded operators

Lunch

14.00−14.25	**L. Pestov**: On a variant of Acoustic Imaging based on the Boundary Control Method
14.30−14.50	**A.I. Vakulenko**: M. Kac problem with augmented data
14.55−15.25	**M.I. Belishev**: Triangular factorization of operators, functional models and inverse problems