

International Conference

Days on Diffraction 2026

June 1 – 5, 2026

St. Petersburg

Program

Monday, June 1st10.50 *Opening session*

	<i>Optics (I)</i> Chair: Nikolay Rosanov
11.00	D.V. Vikulin , D.Y. Yavorsky, B.P. Lapin, C.N. Alexeyev, M.A. Yavorsky: Acousto-optic conversion of higher-order vector modes in circular optical fibers induced by a torsional acoustic wave
11.20	B.P. Lapin , E.V. Makurina, M.A. Yavorsky, C.N. Alexeyev: Controlling structured light in a chain of Sagnac resonators
11.40	E.V. Makurina , B.P. Lapin, M.A. Yavorsky, C.N. Alexeyev: Fredkin gate based on an add-drop Möbius resonator
12.00	V.G. Farafonov , G.Y. Bespyatyy, V.B. Il'in, D.G. Turichina: On the Rayleigh approximation for non-confocal core-mantle nanospheroids with a silver core
12.20	N.V. Zagaynov , W. Pauls: Exact solutions and series expansions for parabolic wavefront diffraction in aberration metrology

Coffee break

	<i>Optics (II)</i> Chair: Aleksei Kiselev
13.10	O.A. Dyukareva , A.V. Ustinov: Analysis of axial intensity for aperture constraints beams
13.30	E. Ryabkov , D.G. Baranov: Coupled-mode theory for superscattering
13.50	V.A. Diukov , K.S. Grigoriev, V.A. Makarov: Imbert–Fedorov shifts in the geometry of oblique incidence of a Gaussian beam on an isotropic gyrotropic medium
14.10	A.A. Gladkij , N.A. Veretenov, N.N. Rosanov, B.A. Malomed, V.A.I. Osipov, B.D. Fainberg: Quantum coherent superradiant states in hybrid perovskites: stability and fundamental solitons
14.30	N.N. Rosanov , S.V. Fedorov, M.V. Arkhipov: Topology of hodographs for electromagnetic and quantum waves

Tuesday, June 2nd

	<i>Asymptotic methods</i> Chair: Anna Tsvetkova
10.00	S.Yu. Dobrokhotov , V.E. Nazaikinskii, A.A. Tolchennikov: Homogenization and dispersion effects in problems about short-wave asymptotics of the wave equation with an irregularly rapidly oscillating velocity
10.20	A.A. Tolchennikov : The effect of multiplicity change for a system of Maxwell's equations with a localized electromagnetic field source
10.40	M.N. Demchenko : On the ultrahyperbolic equation perturbed by the potential
11.00	O.O. Fedorov : Asymptotic solution of the problem of propagation of time-harmonic elastic waves from a localized source in an isotropic inhomogeneous medium
11.20	M. Rouleux : Semi-classical resonances and adiabatic evolution

Coffee break

	<i>Mathematical aspects of wave propagation (I)</i> Chair: Sergey Dobrokhotov
12.10	L.A. Kalyakin : Stability of a fast traveling wave in a hyperbolic equation
12.30	A.I. Allilueva : Short-wave solutions of the wave equation with localized velocity perturbations
12.50	A.V. Ivanov : Hyperbolic properties of $SL(2, \mathbb{R})$ -cocycles over irrational rotation
13.10	A.V. Tsvetkova : Dynamics of the three-dimensional localized wave packet generated by the spherical Bessel function j_0
13.30	A.S. Poretskii, D.S. Smorchkov : Difference acoustic equation in discrete waveguides near thresholds

Coffee break

	<i>Diffraction (I)</i> Chair: Andrey Shanin
14.20	A.V. Shanin, K.S. Kniazeva : On an exchange pulse associated with an avoided crossing
14.40	A.Yu. Laptev , A.V. Shanin, O.I. Makarov, K.S. Kniazeva: Asymptotic evaluation of three-dimensional integral describing the sound radiation by moving source in the periodic medium
15.00	M.V. Perel : Fabry–Pérot resonances and above-barrier reflection in monolayer graphene under electrostatic and magnetic fields
15.20	E.A. Zlobina : The Malyuzhinets–Popov-type diffraction problem
15.40	I.M. Pinto : An old/new path-integral tool for eigenvalue-eigenfunction computation in electromagnetics

Wednesday, June 3rd

	<i>Acoustics and elastic waves (I)</i> Chair: Evgeny Glushkov
10.30	M.V. Golub , K.K. Kanishchev, O.V. Doroshenko, M.A. Arsenov, A.D. Khanazarian, A.A. Eremin, A.G. Kuchumov, S.V. Shil'ko: Characterization of elastic moduli of plastics in additive manufacturing using guided waves for simulation and design of prosthetic stump sleeves
10.50	M.V. Golub , M.A. Arsenov, K.K. Kanishchev, O.V. Doroshenko: Two-stage method for identification of elastic moduli in FDM-printed polymers using guided wave dispersion
11.10	E.V. Glushkov , N.V. Glushkova, D.D. Khalturina: Controlled driving of a piezoelectric transducer array for selective guided wave excitation in elastic waveguides
11.30	S.I. Fomenko , A.K. Romashin: Simulation of wave propagation in stratified porous elastic media based on multiscale modeling
11.50	M.G. Zhuchkova : Concerning a property of roots of the dispersion relation

Coffee break

	<i>Acoustics and elastic waves (II)</i> Chair: Mikhail Golub
12.40	E.V. Glushkov, N.V. Glushkova , O.A. Ermolenko: Combined numerical-analytical evaluation of dominant guided waves generated at the edge of a composite plate by a focused high-frequency acoustic beam
13.00	E.V. Glushkov, N.V. Glushkova, O.A. Ermolenko : Hidden mode A_0 in a submerged anisotropic plate
13.20	A.A. Eremin , M.V. Vareldzhan, E.V. Glushkov, N.V. Glushkova: Simulation of elastic guided wave scattering by a delamination in a layered anisotropic structure
13.40	A.S. Lednov, A.V. Nasedkin : Study of the efficiency of multilayer spherical piezoelectric transducers from porous piezoceramics in an acoustic medium
14.00	V.A. Emelianov , I.A. Rummyantsev, A.A. Eremin, A. Panayi: Modal analysis of elastic guided wave scattering by localized obstacles in rods with complex-shaped cross-section

Coffee break

	<i>Localized waves</i> Chair: Victor Zalipaev
15.00	V. Zalipaev , M. Lebedev: Excitation of surface plasmon by incident Gaussian beam localised near a flat interface between dielectric medium and Drude metal
15.20	I.P. Dragileva, A.B. Plachenov : Tilted unidirectional few-cycle waves
15.40	M. Zamboni-Rached , J. Desbas: Micrometer-scale structured light with simultaneous longitudinal and transverse control
16.00	A.P. Kiselev : Solutions of the wave equation with arbitrary functions: A short review of relatively undistorted waves

Thursday, June 4th

	<i>Mathematical aspects of wave propagation (II)</i> Chair: Ekaterina Zlobina
10.00	A.V. Shanin: Laplace–Beltrami equation in the framework of diffraction theory
10.20	A.V. Shanin, R.F. Shabanov, O.I. Makarov: A method for constructing meromorphic function fields on coverings of higher-genus surfaces for solving diffraction problems
10.40	A. Matskovskiy, G. Zavorokhin, P. Petrov, A. Zakharenko, S.E. Dosso: On the dependence of acoustic modes on media parameters in the Pekeris–Airy waveguide
11.00	V.A. Kozlov, O.V. Motygin: On stability for rotational Stokes waves with constant vorticity
11.20	A.M. Krivtsov: Linear deep-water waves: from the bulk problem to local models

Coffee break

	<i>Electromagnetics and radiophysics</i> Chair: Tatiana Zaboronkova
12.10	A.V. Kudrin, T.M. Zaboronkova, A.S. Zaitseva: Radiation pattern of a system of concentric circular loop antennas in a magnetoplasma
12.30	A.V. Kudrin, T.M. Zaboronkova, A.S. Zaitseva: Energy radiation characteristics of a planar concentric circular array of magnetic loop antennas in a magnetoplasma
12.50	W. Pauls: Geometrical optics approach to integrability of nearly circular or elliptical billiards
13.10	V.Yu. Martynova, S.V. Tikhov, D.V. Valovik: Propagation of nonlinear coupled TE-TM waves in a planar waveguide filled with nonlinear media: analytic and numerical results
13.30	H. Tiwari, A. Tomar, A. Chauhan, R. Kumar: Far-field behavior of nonlinear waves in a non-ideal interstellar medium

Coffee break

	<i>Diffraction (II)</i> Chair: Alexey Popov
14.20	R.M. Feshchenko: Propagation of the partially coherent X-ray radiation and exact transparent boundary conditions
14.40	M.A. Lazarev, P.A. Morozov, A.V. Popov, I.V. Prokopovich: Radiation pattern of a resistively loaded GPR antenna at the interface between two media
15.00	M. Bochkarev, N. Solodovchenko, G. Chekmarev, K. Samusev, M. Limonov: Spectral singularities of Fano resonances in extinction cross-section

Friday, June 5th

	<i>Numerical approaches (I)</i> Chair: Anna Maslovskaya
11.00	L.I. Goray, N.A. Kostromin : An effect of grating groove geometry representations on diffraction efficiency
11.20	A.S. Dashkov , N.A. Kostromin, L.I. Goray: Open source & AI/ML in device design: paradigm or exaggeration?
11.40	I.A. Yakovlev , N.I. Khokhlov: Numerical simulation of seismic wave propagation in a planetary model on overset and multi-block grids
12.00	A.V. Favorskaya , N.I. Khokhlov: Grid-characteristic method on Chimera meshes for sonar acoustic and seismic study of ice ridges
12.20	A.V. Favorskaya, A.A. Kozhemyachenko , N.I. Khokhlov, V.I. Golubev: Simulation of wave diffraction in damaged rails using grid-characteristic method on overset grids

Coffee break

	<i>Numerical approaches (II)</i> Chair: Leonid Goray
13.10	G.V. Kuznetsov , A.L. Delitsyn: Inter-channel interaction evaluation in a multichannel fiber optic communication line
13.30	Y. Shuai, A.G. Maslovskaya : Traveling wave dynamics in a coupled nutrient-bacteria diffusive system
13.50	A.A. Evdokimov , P.A. Nets, A.A. Eremin: Hybrid numerical-analytical scheme for the evaluation of elastic guided wave scattering by a localized obstacle in an isotropic layer
14.10	V.A. Es'kin , E.V. Ivanov: Gradient-based inverse lithography for EUV masks via the waveguide method and a physics-informed neural operator

Program of the Mini-symposium “Inverse Problems”

Monday, 1 June, 2026

Chairman: **M.I. Belishev**

09.55–10.00	ZOOM check, greetings, hugs
10.00–10.40	V.G. Romanov : An inverse problem for a nonlinear acoustics equation
10.45–11.25	N.P. Bondarenko : Quasiperiodic inverse Sturm–Liouville problem
<i>Coffee break</i>	
11.40–12.20	A.V. Nair , R.G. Novikov: Holographic uniqueness theorems in two dimensions

Lunch

14.00–14.40	H. Yücel , M.V. Perel, Ö. Özdemir: Application of the ray method in photoacoustic tomography for layered media
14.45–15.25	Rakesh : The fixed angle inverse scattering problem for Riemannian metrics
15.30–16.00	D.V. Korikov : On non-homeomorphic surfaces with close DN maps

Tuesday, 2 June, 2026

Chairman: **V.S. Mikhailov**

10.00–10.40	N.Yu. Saburova : On isospectral periodic graphs
10.45–11.25	S.I. Knizhin , M.V. Tinin, M.A. Zverev, S.N. Kolesnik: Wave diagnostics of ionospheric plasma via spatial signal processing
<i>Coffee break</i>	
11.40–12.20	V.L. Litvinov , K.V. Litvinova: Development of a mathematical model for the analysis of resonant vibrations of a string of varying length on an elastic foundation, taking into account dissipative factors

Lunch

14.00–14.30	M.I. Belishev, S.A. Simonov : Self-modeling property of Schrödinger and Dirac operators on the half-line
14.35–15.05	A.S. Mikhaylov, V.S. Mikhaylov : Dynamic inverse problem for doubly infinite Jacobi matrices
15.10–15.40	M.I. Belishev : On a stability of time-optimal reconstruction by the Boundary Control method