

International Conference

Days on Diffraction 2020

May 25 – 29, 2020

St. Petersburg

Program

Monday, May 25, 2020

	<i>Acoustics and elastic waves</i> Chair: Aleksei Kiselev
11.00	Shpak A.N. , Golub M.V., Glinkova S.A., Khanazaryan A.D.: 3D mathematical model for the simulation of piezo-induced guided waves in an elongated plate-like structure
11.20	Glushkov E.V., Glushkova N.V., Miakisheva O.A. : Air-coupled ultrasonic inspection of anisotropic composite plates
11.40	Dmitry Zakharov : High-order asymptotic analysis of surface waves in an elastic solids with an interlayer or a coating
12.00	Inka Mueller , Shpak A.N., Golub M.V.: About the importance of numerical models for quality assessment of guided wave-based structural health monitoring systems

12.20 **Coffee break**

	<i>Diffraction (I)</i> Chair: Andrey Shanin
12.40	Nethercote M.A. , Assier R.C., Abrahams I.D.: High contrast approximation for penetrable wedge diffraction
13.00	Mironov M.A., Shanin A.V., Korolkov A.I., Kniazeva K.S. : Exchange pulse corresponding to phase synchronism in a flexible plate loaded by gas
13.20	Mikhail A. Lyalinov , Svetlana V. Polyanskaya: Spectral properties of a class of functional difference equations with meromorphic potential and applications
13.40	Ning Yan Zhu : Asymptotic analysis of plane-wave diffraction by a truncated, sound-hard wedge by means of the method of parabolic wave-equation

14.00 **Coffee break**

	<i>Diffraction (II)</i> Chair: Mikhail A. Lyalinov
14.20	Mikhail Popov : On matching of integral representation for whispering gallery wave propagating along smooth surface in \mathbb{R}^3 and a source of the wavefield
14.40	Shanin A.V., Korolkov A.I., Makarov O.I. : Representation of Green's functions as integrals on dispersion diagrams
15.00	Ekaterina Zlobina , Aleksei P. Kiselev: Diffraction by a jump of curvature: Wavefield at a moderate distance near the limit ray

Tuesday, May 26, 2020

	<i>Numerical methods</i> Chair: Leonid Goray
11.00	Tikhov S.V. , Valovik D.V.: Propagation of TM waves in a shielded dielectric layer with inhomogeneous cubic nonlinearity
11.20	Maslovskaya A.G. , Kuttler Ch.: Wave effects in stochastic reaction-diffusion model of quorum-sensing in bacterial populations
11.40	Leonid I. Goray, Alexander S. Dashkov : GPU-based optimizations of the boundary integral-equation method to solve direct and inverse diffraction problems
12.00	Philippov V.B. : Diffraction by a grid
12.20	Coffee break
	<i>Inverse problems (I)</i> Chair: Mikhail Belishev
12.40	Kovtanyuk A.E. , Chebotarev A.Yu., Turova V.L., Sidorenko I.N., Lampe R.: Inverse problem for a linearized model of oxygen transport in brain
13.00	Victoria Filatova : Medical ultrasound tomography problem: simulation with attenuation
13.20	Belishev M.I., Simonov S.A. : On an evolutionary dynamical system of the first order with boundary control
13.40	Maxim Demchenko : Determination of a wave field in a layered medium from boundary data
14.00	Coffee break
	<i>Inverse problems (II)</i> Chair: Mikhail Belishev
14.20	Dmitriev K.V. , Rumyantseva O.D.: Features of the multipole scattering of acoustic field by refractive and absorbing inhomogeneities with small wave size
14.40	Leonid Pestov : An inverse problem for the acoustic wave equation
15.00	Filatova V.M., Sedaikina V.A. : Visualization of complex shape inclusions in the breast ultrasound tomography problem
15.20	Mikhaylov A.S., Mikhaylov V.S. : Toda lattice for semi-bounded initial data and classical moment problem

Wednesday, May 27, 2020

	<i>Asymptotic methods (I)</i> Chair: Ilya Bogaevsky
11.00	Sergey Dobrokhotov: Lagrangian manifolds and a ‘naive’ constructive approach for computing asymptotics via special functions near caustics
11.20	Ekaterina Shchetka: Complex WKB method for difference Dirac operator
11.40	Anatoly Anikin: Semi-classical asymptotics of spectral bands for rotating dimers
12.00	Gaydukov R.K., Fonareva A.V.: Double-deck structure of boundary layers in weakly compressible heat-conducting flows in channels with heated wavy walls
12.20	Coffee break
	<i>Asymptotic methods (II)</i> Chair: Sergey Dobrokhotov
12.40	Ilya Bogaevsky: Two-dimensional Dirac equation: singularities of semi-classical approximations
13.00	Alexander Fedotov, Ekaterina Shchetka: On the density of states of the almost-Mathieu operator in semiclassical situation
13.20	Leonid Kalyakin: Asymptotics of saddle–node bifurcation
13.40	Maria Perel: The case of a transformation of degenerating modes typical for a non self-adjoint Schrödinger-type equation
14.00	Coffee break
	<i>Asymptotic methods (III)</i> Chair: Alexander Fedotov
14.20	Anikin A.Yu., Dobrokhotov S.Yu., Nazaikinskii V.E., Tsvetkova A.V.: Uniform asymptotic solution in the form of an Airy function for semiclassical bound states in one-dimensional problems
14.40	Sergey Sergeev: Asymptotic solution of the Cauchy problem for the wave equation with fast oscillating coefficient and localized initial conditions
15.00	Anton Tolchennikov: Solution of the two-dimensional Dirac equation with a linear potential and a localized initial condition

Thursday, May 28, 2020

	<i>Electromagnetics (I)</i> Chair: Alexei Popov
11.00	Kudrin A.V., Ivoninsky A.V., Ostafiychuk O.M., Zaboronkova T.M. : Resonance scattering of the dipole radiation by a cylindrical density duct in a magnetoplasma
11.20	Yashina N.F., Zaboronkova T.M. , Krafft C.: Propagation of VLF waves guided by plane density trough in the magnetosphere
11.40	Orlov S. , Berškys, J., Laurinavičius, K.: Investigation of geometrical phase elements based on chiral and birefringent clusters of nanoparticles using closed-form Mie theory of vector complex source vortices
12.00	Orlov S. , Baltrukonis J., Nacius E., Gotovski P., Ulčinas O.: Generation of vector Bessel-type beams via geometrical phase elements for transparent material processing applications

12.20 **Coffee break**

	<i>Electromagnetics (II)</i> Chair: Tatiana Zaboronkova
12.40	Popov A., Prokopovich I., Morozov P., Marciniak M. : GPR probing of smoothly layered subsurface medium: 3D analytical model
13.00	Popov A.V. , Garbatsevich V.A., Morozov P.A., Morozov F.P., Prokopovich I.V.: Radiation pattern of borehole GPR slot antenna
13.20	V. Zalipaev , V. Vialov, A. Matveensev: Surface waves generation in Sommerfeld antenna problem for the Earth radiolocation
13.40	Martynova V.Yu. , Moskaleva M.A., Raschetova D.V.: Symmetric guided waves in an isotropic inhomogeneous waveguide

14.00 **Coffee break**

	<i>Localized waves (I)</i> Chair: Nikolay Rosanov
14.20	Fedorov S.V., Rosanov N.N. , Veretenov N.A.: Field structures in a laser with saturable absorption and doughnut aperture
14.40	Kalinovich A.A. , Sazonov S.V., Bryantsev D.S., Komissarova M.V., Zakharova I.G.: Two-component optical vortices at zero group velocity dispersion
15.00	Alexandr B. Plachenov , Aleksei P. Kiselev: Paraxial beams and related solutions of the Helmholtz equation

15.20 **Coffee break**

	<i>Localized waves (II)</i> Chair: Serge Gavrilov
15.40	Shvarev N.G. , Shishkina E.V., Gavrilov S.N.: Localized oscillation in a linear mass-spring chain on an elastic foundation
16.00	Poroshin I.O. , Gavrilov S.N., Shishkina E.V.: Non-stationary excitation of a trapped mode in a string on an elastic foundation with a moving linear oscillator
16.20	Alexeyev C.N., Barshak E.V. , Vikulin D.V., Lapin B.P., Yavorsky M.A.: The Toffoli gate in multihelical optical fibres

Friday, May 29, 2020

	<i>Underwater acoustics</i> Chair: Pavel Petrov
11.00	Kazak M.S. , Petrov P.S.: On the adiabatic sound propagation in a shallow sea with a curved underwater canyon
11.20	Sorokin M.A. , Petrov P.S., Kaplunenko D.D., Stepanov D.V.: Synoptic eddy influence on the accuracy of the solution of the acoustic ranging problems
11.40	Petrov P.S. , Zakharenko A.D.: Variations of normal modes in shallow-water geoacoustical waveguides caused by the bathymetry perturbation
12.00	Sergey Kozitskiy : On the mode parabolic equation method for the elastic media
12.20	Pereselkov S.A. , Rybyanets P.V., Kaznacheeva E.S., Badiey M., Kuzkin V.M.: Broadband sound scattering by intense internal waves
12.40	Kuznetsov G.N. , Kuzkin V.M., Kutsov M.V., Pereselkov S.A., Prosovetskii D.Yu.: Interferometric localization of moving noise source by using of high-frequency signals
13.00	Coffee break
	<i>ODE and dynamics</i> Chair: Alexander Kazakov
13.20	Mikhail Babich : On application of flag coordinates to extension of Lie–Poisson–Kirillov–Kostant structure from general linear group orbits
13.40	Alexey Ivanov : Exponential dichotomy of linear cocycles over irrational rotations
14.00	Oleg Motygin : On regularization of the Heun functions
14.20	Bulygin A.N. , Pavlov Yu.V.: Solution dynamic equations of plane deformation for nonlinear model of complex crystal lattice