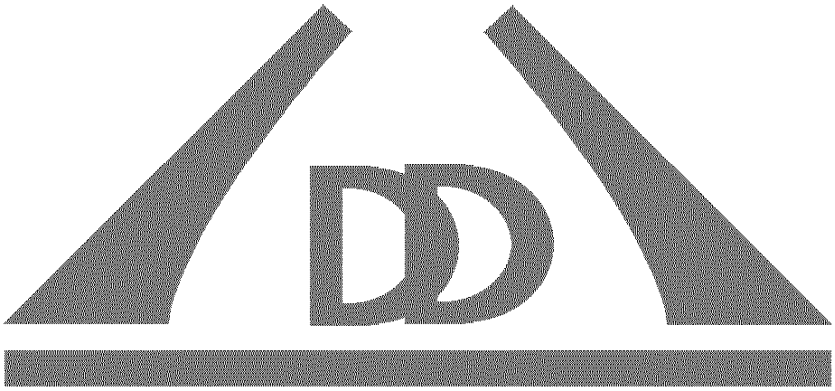

Annual International Conference

Days on Diffraction 2009

May 26 – 29, 2009

St.Petersburg

Program

8.30 **Registration & Coffee**

9.15 **Opening (Main Hall)**

	Diffraction I (Main Hall) Chair: V.M.Babich	***Nonlinear phenomena*** (Hall 311) Chair: A.S.Katchalov
9.30	**A. V. Osetrov**, E. Chilla, B. Steiner, R. Grünwald, A. Jaffer, A. G. Hodkin Diffraction of surface acoustic waves within interdigital transducers	**K. R. Khusnutdinova**, A. M. Samsonov, A.S.Zakharov Nonlinear strain waves in layered elastic waveguides: models, classical and generalized solitary waves and wave scattering
9.50	**Y. A. Antipov**, V. V. Silvestrov Diffraction by a right-angled electrically-resistive wedge	**A. M. Samsonov**, G.V.Dreiden, I. V.Semenova, K.R. Khusnutdinova On fission of strain solitons in delaminated bars
10.10	**Wonju Jeon** Edge diffraction and generalized gamma function	**V. M. Shelkovich** Delta-shocks and transport of mass, momentum and energy in multidimensional zero- pressure gas dynamics
10.30	D. P. Kouzov, **J. A. Solovyeva** Diffraction on a hard half-infinite screen of non-stationary wave with linearly changing along the front amplitude	E. L. Aero, A. N. Bulygin, **Yu. V. Pavlov** New approach to solution of generalized (3+1) sine-Gordon equation

10.50 **Coffee Break**

	Elastic and porous media (Main Hall) Chair: J.R.Willis	***Wavelets I*** (Hall 311) Chair: M.Skopina
11.20	**Aleksei P. Kiselev**, Graham A. Rogerson Laterally dependent surface and interfacial waves in a layered elastic structure with a general depth dependence	**Mikhal Altaisky**, Elena Popova, Denis Saraev Application of orthogonal wavelets for the stochastic wavelet-Galerkin solution of the Kraichnan-Orszag system
11.40	**Stephan V. Joubert**, Michael Y. Shatalov, Charlotta E. Coetzee The influence of damping and internal prestress on Bryan's effect in vibrating and rotating bodies	
11.50		**Keijo Ruotsalainen** Adaptive wavelet method for time-fractional diffusion
12.00	**Atul Bhaskar** Wave speed-porosity scaling in cellular solids	
12.20	**M. I. Belishev**, A. L Pestov Forward problem for two-velocity dynamical system (Timoshenko beam)	**Maria V. Perel** Decompositions of solutions of the wave equation in terms of the spatio-temporal wavelets

12.40 **Lunch**

	Wave beams and packets (Main Hall) Chair: A.M.Samsonov	***Wavelets II*** (Hall 311) Chair: M. Altaisky
14.40	**Ya. L. Bogomolov**, E. S. Semenov, A.D.Yunakovsky On stability of a standing wave arising in the paraxial region of a quasi-optical electron accelerator	**Maria Skopina** p-Adic pseudo-differential equations and wavelets
15.00	**Omar El Gawhary**, Sergio Severini Degree of paraxiality and pseudo-nondiffracting beams	
15.20	**Azat M. Tagirdzhanov**, Alexander S. Blagovestchenskii, Aleksei P. Kiselev ”Complex source” in real space	**Aleksey Kudreyko** Wavelet approach towards solution of the Fredholm type integral equations
15.40	Vladlen Shvedov, **Yana Izdebskaya**, Andrei Rode, Anton Desyatnikov, Wieslaw Z. Krolikowski, Yuri Kivshar Generation of optical bottle beams	
15.50		**Teresa Reginska** Application of wavelets to regularization of Cauchy problems for the Helmholtz equation
16.00	**A. Torre** Separable solutions of the wave equation from a general type of solutions of the paraxial equation	

16.20 **Coffee Break**

	Scattering and Diffraction (Main Hall) Chair: I.V.Andronov	***Wavelets III*** (Hall 311) Chair M.V.Perel
16.50	**George V. Filippenko** The energy analyses of the shell vibrations problem. Shell is partially submerged into the liquid	**Victor F. Kravchenko**, Oleg V. Kravchenko, Ansar R. Safin Kravchenko-Rvachev atomic distributions in diffraction theory
17.10	A. Haki, M. Doosti, **A. Ghorbani**, Ayat Ghorbani Vegetation clutter modeling in mono-static wideband radars	Victor F. Kravchenko, **Aleksey V. Yurin** Galerkin-Petrov variational principles based on Rvachev functions and wavelets in the boundary value problems of electrodynamics
17.30	**Mahshid Zoyousefein**, Ayaz Ghorbani A propagation model for designing an emission-security standard	Victor F. Kravchenko, **Dmitry V. Churikov** New constructions of Kravchenko-Kotel’nikov-Chebyshev-Legendre spectral kernels in time-and-frequency distributions; Digital signal and image processing on basis of orthogonal Kravchenko wavelets
17.50 - 18.00	**M. A. Galin**, A. N. Reznik Diffraction problem of near-field microwave location of a spherical object	

	Seismic and inverse problems, Chair: M.M.Popov (Main Hall)	***Water waves and flows I***, Chair: N.G.Kuznetsov (Hall 203)	***Metamaterials Electrodynamics*** Chair: A.Sarychev (Hall 311)
9.00	**L. A. Molotkov**, A. A. Mukhin Dispersion curves of normal waves in a porous layer surrounded by elastic halfspaces	**Andrey Badanin**, E. Korotyaev, M. Klein Spectral problems associated with periodic Boussinesq's equation	**V. G. Veselago** The transport of energy, linear momentum and mass by radiation in negative refraction materials
9.20	**A. S. Serdyukov** Optimal parameterization in the inverse kinematics problem	**Oleg V. Motygin** On unique solvability for problems of surface-wave theory describing wave–body interaction	
9.30			**S.N.Galyamin**, T.Yu.Alekhina, A.V.Tyukhtin, E.G.Doil'nitsina Radiation of a charge passing from vacuum into the left-handed medium
9.40	**German A. Maximov** Account of resonance relaxation in the framework of double phase continuum mechanics for sound description in a liquid with air bubbles	**Serguei A. Nazarov** Water-waves in canals: exotics in the spectra	
9.45			**A. Sihvola**, I. V. Lindell The DB boundary condition and applications in electromagnetics
10.00	**P. G. Malischewsky** Connections between seismology, wave-guide physics and	**S. Yu. Dobrokhotov** Explicit description near focal points of asymptotic solutions to the Cauchy problem for the linearized shallow water equations with initial localized perturbations	
10.15			**A. P. Balmakov**, I.V.Semchenko Absorption selectivity of electromagnetic waves of visible and ultraviolet range by a thin film of DNA
10.20	F. D. Edemskii, **A. V. Popov**, S.A.Zapunidi, B.R.Pavlovskii A model inverse problem of subsurface sensing	S. Ya. Sekerzh-Zenkovich, B.I.Volkov Modeling of unusual tsunami directivity with elementary functions	

10.40 **Coffee Break**

	Asymptotic methods Chair: A.V.Popov (Main Hall)	***Water waves and flows II,*** Chair:S.Yu.Dobrokhotov (Hall 203)	***Subwavelength imaging I***, Chair: P.Verma (Hall 311)
11.10	**A. Katchalov** Geometric ideas and Gaussian beams	**Mats D. Lyberg** Integration of the flow equations for internal flows	**Stanislav I. Maslovski** Subwavelength imaging without negative index metamaterials
11.30	**V. V. Belov**, E. I. Smirnova, A.Yu.Trifonov Semiclassical 2-component solitontype solutions of the Gross–Pitaevskii equation	**V.I. Bronnikov**, M.M.Kalugin Fluid flow velocity field measurement along probing radiation beam using frequency spectrum of dynamic speckle-pattern	
11.40			**Constantin Simovski** Subwavelength imaging based on metasurfaces
11.50	**Andrei I. Shafarevich** Semiclassical asymptotics for Schrodinger equations on graphs and decorated graphs.	**Serguei A. Nazarov** An elementary approach to detect trapped surface	
12.10	**I. V. Andronov** Diffraction by strongly elongated spheroid	**Tatiana I. Khabakhpasheva**, Aleksander A. Korobkin Effect of aeration on fluid-structure interaction	**A. A. Orlov**, A.V.Chebykin, P. A. Belov Strong spatial dispersion effects in multilayered metal-dielectric nanostructures

12 30 **Lunch**

	Mathematical methods (Main Hall) Chair: S.A.Nazarov	***Radiophysics*** (Hall 203) Chair: M.A.Lyalinov	***Subwavelength imaging II,*** (Hall 311) Chair C.Simovski
14.30	**P. A. Krutitskii** Properties of a solution to the Dirichlet problem for the Helmholtz equation in a planar domain with cracks	**S. A. Manenkov** Diffraction of eigenmode of circular waveguide on the obstacle inside the waveguide	**Prabhat Verma**, Atsushi Ono, Satoshi Kawata Plasmonic nanolens for subwavelength color imaging
14.50	**S. Khekalo** Analog of the Darboux transformation for the ordinary differential operators of high orders	A.V. Kudrin, E.Yu. Petrov, **T.M. Zaboronkova** Electrodynamic characteristics of strip antennas in resonant anisotropic media	
15.00			**P. A. Belov**, G. Palikaras, Y. Zhao, C. Simovski Hyperlens formed by array of metallic rods
15.10	P. A. Eminov, S. V. Nikolaev Adiabatic approximation in formalism of functional integral	**V.N. Chukov** Rayleigh wave scattering by deterministic cylindrical roughness with spatial statistical symmetry of an arbitrary order	
15.30	S. F. Dolbeeva, E.A.Rozhdestvenskaya On the asymptotics of the solutions for the second order difference equation with a small	**D.Yu.Zaika**, M.V.Perel, I.V.Andronov Asymptotic analysis of the interaction of creeping waves on the anisotropic impedance surface	**D. Felbacq**, B. Guizal, G.Bouchitté, C. Bourel Wave transport in metamaterials and photonic crystals
15.50	V. V. Borzov, E. V. Damaskinsky Dixotomic realization of harmonic oscillator via generalized Laguerre oscillator		

16 10 **Coffee Break**

	Waveguides and resonators (Main Hall) Chair: A.I.Shafarevich	***Microwave metamaterials*** (Hall 311) Chair G.Palikaras
16.40	Alexander I. Slepkov, **Olga V. Gallyamova** On features of Smith-Purcell radiation resonant regimes in relativistic diffractional generator	F. Aznar, A. Vélez, **M. Gil**, M. Durán-Sindreu, J.Bonache, F. Martin Recent progress on modelling and conceptions of resonant type metamaterial transmission lines
17.00	A. B. Plachenov, V. N. Kudashov, A. M. Radin Modes of two-mirror cavity with non-coinciding main curvature directions	
17.10		**George K. Palikaras**, Clive G. Parini, Yang Hao Low-profile high-directivity reconfigurable metamaterial hybrid antennas
17.20	**M. D. Kovalev** The number of optical TE-modes in a planar waveguide	
17.40	**Georgi Nikolov Georgiev**, Mariana Nikolova Georgieva-Grosse The Z (c, n) numbers and their application in the theory of waveguides	**Alain Priou**, Habiba Ouslimani L and millimeter bands metamaterial antennas
17.55		**M. Durán-Sindreu**, F. Aznar, A. Vélez, J. Bonache, F.Martin Artificial transmission lines exhibiting left handed and right handed wave propagation and implemented by means of open split ring resonators (OSRRs) and open complementary split ring resonators (OCSRRs)
18.00		
18.10		**M. Khodzitsky** Stop bands in magneto-photonic crystal and surface states in the photonic crystal/magnetic layer in the millimeter waveband

	Mathematical methods (Main Hall) Chair: A.V.Shanin	***Homogenezation I***, (Hall 311) Chair A. Priou
9.00	**Leonid I. Goray**, Gunther Schmidt Integral-equation conical solver: some formulas and numerical experiments	**D. Felbacq**, G. Bouchitte, C. Bourel Homogeneous properties of dielectric metamaterials
9.20	**Sergey Sadov** Eigenvalue distribution of matrices approximating integral transformations	
9.30		**Constantin Simovski** Locality of material parameters for Drude transition layers at metamaterial surfaces
9.40	B. A. Samokish, A. O. Rodnikov Difference method for solving diffraction problem in the half plane with a cut	
10.00	A. A. Korshunova, O. S. Rozanova The Riemann problem for the stochastically perturbed inviscid Burgers equation	V. G. Baryshevsky, **Y. A. Hurnevich** Long-wave approximation in the theory of dynamic diffraction of waves in photonic crystals formed by metallic threads
10.15		**I. Gabitov** Coherent amplification of optical pulses in doubly-resonant optical metamaterials
10.20	**A.M.Il'in** Conditions of solvability of the boundary problem for the second order differential equation	

10 40 **Coffee Break**

	Waveguides and resonators (Main Hall) Chair: O.El.Gawhary	***Homogenezation II*** (Hall 311) Chair D. Felbacq
11.10	**V. M. Babich** On a new class topographic waveguides	**Alain Priou**, Habiba Ouslimani From conducting or dielectric loaded composite materials to electronic aggregate composite materials and metamaterial structures and theirs applications
11.30	**M. M. Popov**, V. V. Zalipaev Gaussian beams summation in quantum problems of electronic motion in magnetic field	
11.40		P. Tassin, **N. Dalarsson**, M. Dalarsson, Z. Jaksic General analytical treatment of the graded interfaces with negative-index nanocomposites
11.50	**A. V. Shanin** High frequency modes in 2D rectangular "room" with windows	
12.10	**G. L. Zavorokhin** On the Rayleigh wave propagation along the boundary of an inhomogeneous anisotropic porous Biot medium	**Denis Lafarge** Homogenization of acoustic metamaterials made of compressible fluid and rigid solid

12.30 **Lunch**

	Quantum effects (Main Hall) Chair: V.P.Smyshlyaev	***Spectral theory I*** (Hall 203) Chair: A.M.Il'in	***Photonic crystals*** (Hall 311) Chair: A. Alu
14.30	**R.V. Nekrasov** Tunneling between two close quantum wires in a magnetic field	M. Sh. Birman, **V. A. Sloushch** Two-sides estimates for trace of pair semi-groups difference	**M. F. Limonov** Opal-based photonic crystals
14.50	A.Bensouissi, **Michel Rouleux** Andreev reflection and the semiclassical Bogoliubov-de Gennes hamiltonian	**K. S. Shaposhnikov** On eigenfunctions of integral operator with weakly singular kernel	
15.00			**A. K. Samusev**, A. V. Baryshev, V. A. Kosobukin, M. F. Limonov, A. V. Moroz, M. V. Rybin, K. B. Samusev Three-dimensional Bragg diffraction from opal-based photonic crystals
15 10	Ya. A. Butko, O. G.Smolyanov Feynman formulae for quantum evolution of quasiparticles with position-dependent mass	**M. N. Demchenko** On a partially isometric transform of divergence free vector fields	
15.15			**M. V. Rybin** Fano resonance involving Bragg - scattering in photonic crystals with inherent disorder

15.30	**V. V. Zalipaev**, F.V.Kusmartsev Localized states of electrons and holes in a finite crystal resonator in electrostatic and magnetic fields magnetic fields	N. Filonov, **I. Kachkovskiy** Absolute continuity of the spectrum of the Schr.odinger operator in a multidimensional cylinder	**V. G. Fedotov**, A. V. Sel'kin On modeling of multiple Bragg diffraction of light in opal-like photonic crystals
15.45			**A. V. Dorofeenko**, A. P. Vinogradov, A. M. Merzlikin, A. A. Lisyansky, A. B. Granovsky, Yu. E. Lozovik Control of the energy distribution in 1D photonic crystals
15.50	G. P. Miroshnichenko, I.Yu.Popov, A. I. Trifanov Three qubit operation in the five level optical medium	**Nikolai Veniaminov** Remainder estimate for the Weyl spectral asymptotics of the Maxwell operator in Lipschitz domains	

16.10 **Coffee Break**

	Beams and packets (Main Hall) Chair: ATorre	***Spectral theory II*** (Hall 203) Chair: I.Yu.Popov	***Optical & plasmonic metamaterials***, Chair M.Limonov
16.40	R.Mahillo-Isla, **M.J.González-Morales**, C.Dehesa-Martínez, R.delaRosa-Steinz Scattering by a perfect conductorhalf-plane under 2D complex beams incidence: progress on the geometrical and diffraction contributions	**D. B. Davletov** Asymptotics of eigenvalues of the Dirichlet boundary value problem for the Lame operator in a three-dimensional domain with a small cavity	**A. K. Sarychev** Optics of active metamaterials
17.00	**Anna Vozianova**, Alexander Nerukh Surface plasmon polaritons in non-stationary problems	**V. F. Guilimshina** On decay of solution of non–uniformly elliptic equation	
17.10			**A.M.Merzlikin**, A.P.Vinogradov, A.V.Dorofeenko, T.Goto, A.V.Baryshev, M.Inoue, A.A.Lisyansky, A.B.Granovsky, S.I.Tarapov, M.K.Khodzitsky, S.V.Chernovtsev, D.P.Belozorov Tamm states in photonic crystals
17.20	**I. Thompson**, C M Linton Surface waves on a lattice of spheres	Vladimir Lotoreichik, Jussi Behrndt, Igor Lobanov, Igor Yu. Popov Essential spectrum of a leaky wire in R^2	
17.30			V. Khardikov, **K. Yarko**, S. Prosvirnin Trapped-mode resonances in optic planar structures with complex metal elements
17.40	**VictorV. Borisov** Transient waves produced by Gaussian's transverse sources in a dispersive medium	**Vladimir E. Nazaikinskii** Asymptotic estimates for the number of states in a system of particles	
17.45			**Andrea Alù**, Nader Engheta Guided modes and power relationships for linear arrays of plasmonic nanoparticles
18.00 - 18.15			**Andrea Alù**, Nader Engheta Resonances and bandwidth issues in finite arrays of coupled plasmonic nanoantennas

18.30 **Boat excursion**

9.00 Departure of the buses from Mathematical Institute to Petrodvorets

	Plenary Session, Chair: P.Belov	(Conference Hall)
10.20	**Andrea Alù** Plasmonic and metamaterial cloaking: fundamental principles, salient features and future	

11-00 ***Poster session and coffee***

1) D. V. Alexandrov,M. Yu. Lazarkov,B. M. Kashtan,A.V.Derov, G.A.Maximov Verification of the boundary condition on the hydrofracture edge at slow mode generation by external seismic field
2) Vitalii N. Chukov On violation of Rayleigh law of scattering
3) Alexandr S. Slusarenko, Galina N. Dyakova Metrological aspects of hardware-software complexes of recognition of signals in radionavigating systems
4) A. P. Krauklis, P. V. Krauklis, V. L. Ustinov Hazard precursor while drilling
5) V. I. Storozev, R. P. Moiseyenko Antiplane wave scattering on tunnel cylindrical void with hard inclusions of radial cross-section in straight-line orthotropic body
6) O. I. Paseka,V.E.Lobanov, A.P.Sukhorukov Compression of quadratically phase-modulated few-cycle pulses in dispersive medium
7) I. Yu. Popov, E. S. Trifanova Asymptotics of resonances for curved coupled waveguides
8) Valery Yu. Valyaev, Andrey V. Shanin Spectral equation for a strip/slit diffraction problem: numerical algorithm
9) Z. A. Yanson The asymptotics of whispering gallery waves for crystal groups with even order axes of symmetry
10) Alexander G. Kyurkchan, Nadezhda I. Smirnova Wave scattering by bodies with inhomogeneous absorbing coating
11) A. G. Demidov,E.Yarevsky Adaptive finite element method based on superconvergence
12) K. N. Bayramkulov The modeling of fragment of area with magnetic field by Kirchhoff electric circuit network
13) M. V. Ivakhnychenko, E. I. Veliev,T. M.Ahmedov Boundary conditions with fractional derivates in diffraction problems
14) Valeriy. A. Abdulkadyrov, Galina N. Gestrina Electromagnetic wave diffraction on the set of periodic shields located above the sheilded magnetic environment
15) Ya. L. Bogomolov, R. V. Kashitsin, A.D.Yunakovsky Numerical methods for 2D nonlinear Schroedinger equation
16) A.I.Esina Quasiclassical spectrum of Schrodinger operator with complex potential
17) T.Filatova The semiclassical spectral series of Schr.odinger operator with the delta potential
18) T. V. Kochubey The method of eddy currents computation on median surface of multiconnected plate with anisotropic heteregeneous conductivity
19) Vasyl V. Yatsyk The generation of harmonics on multiple frequencies at the problem of diffraction of electromagnetic wave on nonlinear dielectric layered structure
20) Vladimir Il'in, Nikolai Zavyalov, Victor Farafonov, Alexander Vinokurov New approach to light scattering problem solutions using field expansions in terms of wave functions
21) M. P. Kutovenko Finite-difference modelling of Gaussian beam propagation in complex geological media

22) N. F. Yashina, T. M. Zaboronkova Nonlinear interaction of the electromagnetic waves guided by anisotropic plasma cylinder
23) F. F. Valiev Application of the retarded potential for the description of electromagnetic field produced by current's pulse, running along the line segment
24) M. Khodzitsky, A. Shirinya "Tamm states" and left-handed transmission in the structure of photonic crystal/array of magnetic microwires in the millimeter waveband
25) E. Chernjakov, M. Kukhtin, A. Nerukh, M. Khodzitsky, S. Tarapov, L. Lisetski, A. Cocherzin Magnetic features of nematic liquid crystals in the millimeter waveband
26) M. V. Golovkina The electromagnetic wave amplification in two-layered waveguide with superconducting film
27) D. O. Saparina, A. P. Sukhorukov Nonlinear optical interactions of surface and bulk waves on metamaterial- dielectric interface
28) Olga V. Kostylyova, Alexey A. Girich, Mikhail K. Khodzitsky, Oksana V. Shramkova, Alexey A. Bulgakov, Sergey I. Tarapov Transmission spectrum peculiarities of the magneto-photonic crystal bounded with the semiconductor
29) V. F. Marchenko, A. P. Sukhorukov, I. G. Zakharova Spatial structure of modulated light beams under Bragg diffraction in photonic crystals
30) N.E. Kaputkina and M.V. Astakhov Absorption and shape transformation of pulse of electromagnetic radiation due to interaction with nanoparticle materials
31) Andrei B. Utkin Undistorted progressive waves resulting from separation of variables in some orthogonal curvilinear coordinate systems
32) OlgaV.Borovkova, Anatoly P. Sukhorukov Managed discrete diffraction on cascade-induced optical 2D arrays
33) Anton A. Tolchennikov Kernel and trace formula for the exponential of the Laplace-Beltrami operator on a decorated graph

	Plenary Session, Chair: A.P.Kiselev (Conference Hall)
12.10	V. Kozlov, **N. Kuznetsov** On the Benjamin–Lighthill conjecture for steady water waves
12.50	**J. R. Willis** Effective constitutive relations for waves in composites and metamaterials

13.30 **Lunch**

15.00 **Excursion to Peterhof Gardens**

18.00 **Picnic**