Annual International Conference

Days on Diffraction 2013

May 27 – 31, 2013

St. Petersburg

Program

8.30 **Registration & Coffee**

10.00 **Opening (Main Hall)**

	Diffraction I (Main Hall) Chair: Vassily Babich	***Numerical methods I*** (Hall 106) Chair: Leonid Goray	***Hyperbolic media*** (Hall 311) Chair: Arkadi Chipouline
10.10	Alexei Popov: Radiation from a convex equiphase surface: Malyuzhinets' parabolic equation		L.V. Panina, M. Ipatov, V. Zhukova, A. Zhukov: Studies of magnetically soft ferromagnetic wires and tuneable composite materials containing wire inclusions
10.30	Kirpichnikova N.Ya., Popov M.M.: On some problems in application of short-wave theory of diffraction by prolate bodies of revolution	Belyayev Yu.N.: Symmetric polynomials in the transfer matrix scaling	
10.40			A. Talaat, V. Zhukova, M. Ipatov, M. Churyukanova, S. Kaloshkin, A. Zhukov: GMI effect in nanocrystaline magnetic wires
10.50	Shanin A.V., Korolkov A.I.: Diffraction of high-frequency grazing wave on grating with screens of different height	A.G. Kyurkchan, N.I. Smirnova: The T-matrix method on the basis of modified null-field method	
10.55			A.N. Poddubny, P.A. Belov, Yu.S. Kivshar: Purcell effect for electric and magnetic dipole emission in wire medium
11.10	Godoy E., Durán M., Nédélec J.-C.: An impedance boundary condition in elastodynamics and existence of surface waves	Kravchenko V.F., Churikov D.V.: The new modified kernels and weight functions in the generalized Kravchenko–Kotelnikov sampling theorem	Slobozhanyuk A.P., Melchakova I.V., Kozachenko A.V., Belov P.A., Simovski C.R.: Improving sensitivity of magnetic resonance imaging with highly anisotropic metamaterials
11.25			Klimov V.V.: Radiative and non-radiative channels of molecule fluorescence near hyperbolic metamaterials
11.30	Andronov I. V.: Problems of diffraction and scattering by strongly elongated bodies	Karchevskiy E.M., Spiridonov A.O.: Projection methods for computation of spectral characteristics of weakly guiding optical waveguides	
11.40			A.V. Chshelokova, P.V. Kapitanova, A.N. Poddubny, D.S. Filonov, P.A. Belov, Yu.S. Kivshar: Hyperbolic metamaterials with topological transitions
11.50			

11.55 **Coffee Break**

	Parabolic equation approaches (Main Hall) Chair: Mikhail Popov	***Numerical methods II*** (Hall 106) Chair: Alexander Kyurkchan	***Nonlinear phenomena*** (Hall 311) Chair: Yuri Kivshar
12.10	Petrov P.S.: Asymptotic solution for the problem of acoustic waves propagation in a penetrable truncated wedge	Smirnov Yu.G., Derevyanchuk E.D., Shestopalov Yu.V.: Permittivity determination of thin multi-sectional diaphragm in a rectangular waveguide	Anatoly P. Sukhorukov: Nonlinear interactions in media with managed dispersion and diffraction
12.30	Kozlov A.V., Mozhaev V.G.: Optimal way to derive parabolic equation for bulk-acoustic-wave beams in anisotropic media	Wangtao Lu, Ya Yan Lu: New boundary integral equation methods for optical waveguides with corners	
12.40			Sukhorukov A.A., Solntsev A.S., Kruk S.S., Neshev D.N., Kivshar Yu.S.: Coupled-mode theory for nonlinear metamaterials with loss and gain
12.50	Trofimov M.Yu., Kozitskiy S.B., Zakharenko A.D.: A ray mode parabolic equation for shallow water acoustics propagation problems	E.Yu. Smol'kin, Yu.G. Smirnov, D.V. Valovik: Problem of electromagnetic TE wave propagation in a inhomogeneous nonlinear two layered dielectric waveguide	
13.10	Aizenberg A.M., Serdyukov A.S.: Approximate paraxial solution of the Helmholtz equation, based on lateral diffusion concept	Kravchenko O.V., Pustovoit V.I.: Numerical algrorithm of 1D dusty void model formation	E.A. Mamonov, I.A. Kolmychek, V.K. Valev, T. Verbiest, T.V. Murzina: Optical second harmonic generation in G-shaped metamaterials
13.30			

13.40 **Lunch at *Dom Aktyora* restaurant**

	Dynamical problems in mathematical biology I (Main Hall) Chair: Lev Beloussov	***Nonlinear and tunable metamaterials I*** (Hall 311) Chair: Stanislav Maslovski
15.30	Rukolaine, S. A., Samsonov, A. M.: A model of diffusion, based on the equation of the Jeffreys type	I. Gabitov, Zh. Kudyshev, N. Litchinitser, A. Maimistov: Nonlinear phenomena in transitional metamaterials
15.50	Kozlov K.N., Surkova S.Yu., Myasnikova E.M., Samsonova M.G.: Modeling of gap gene expression in Drosophila Kruppel mutants	
16.00		I.V. Shadrivov, M. Liu, Y. Sun, D.A. Powell, Y.S. Kivshar, M. Lapine, R.C. McPhedran: Nonlinear response of torsional metamaterials
16.10	Duk M.A., Samsonov A.M., Samsonova M.G.: Early stage dynamics modeling of the feed-forward loops with miRNA	
16.30	Gula I.A., Samsonov A.M.: The gene expression model based on Jeffreys type equation	Kapitanova P.V., Slobozhanyuk A.P., Belov P.A., Shadrivov I.V., Kivshar Yu.S.: Competing nonlinearities with metamaterials
16.45		

16.50 **Coffee Break**

	Dynamical problems in mathematical biology II (Main Hall) Chair: Aleksander Samsonov	***Nonlinear and tunable metamaterials II*** (Hall 311) Chair: Stanislav Maslovski
17.20	S.Yu. Nikitin, M.A. Kormacheva, A.V. Priezzhev, A.E. Lugovtsov, V.D. Ustinov: Laser diffractometry and evaluation of statistical characteristics of inhomogeneous ensembles of red blood cells	A.B. Ustinov: Nonlinear spin wave processes in ferrite films, magnonic crystals, and multiferroics
17.40	Lev V. Beloussov: Models of scaling and shapes complication in biological morphogenesis	
17.50 18.20		Arkadi Chipouline: Qualitative models in nanophotonics: scientific and educational aspects

	Recent advances in metamaterials (Main Hall) Chair: Pavel Belov
9.00	Kivshar Yu.S.: Control of waves with metamaterials: from microwaves to optics
9.45	Klimov V.V.: Energy sinks in optics of metamaterials
10.15	Zharova N.A., Zharov A.A. Jr., Zharov A.A.: Perfect non-magnetic invilibility cloak

10.45 **Coffee Break**

	Spectral theory methods I (Hall 311) Chair: Tatiana Suslina	***Numerical methods III*** (Hall 106) Chair: Yuriy Belyayev	***Opto-mechnical phenomena*** (Main Hall) Chair: Vasily Klimov
11.00	E.L. Korotyaev: Inverse spectral theory and Minkowski problem for surface of revolutions	Kyurkchan A.G., Sukov A.I.: Scattering of waves by periodic surface: modified null-field method	P. Ginzburg, A. Krasavin, A.N. Poddubny, A.S. Shalin, P.A. Belov, Yu.S. Kivshar, A.V. Zayats: Quantum opto-mechanical phenomena on the nano-scale
11.20	Saburova N.Yu., Korotyaev E.L.: Discrete Schrödinger operators on periodic graphs	Ya.L. Bogomolov, M.A. Borodov, A.D. Yunakovsky: Method of discrete sources vs. plane scattering problem with singularities	
11.30			Stanislav I. Maslovski, Mário G. Silveirinha: Electromagnetic quantum friction on monomolecular layers
11.40	A. Badanin, E.L. Korotyaev: Trace formulas and sharp asymptotics for the fourth order operators	Leonid I. Goray: Solution of 3D scattering problems from 2D ones in short waves	
12.00	V. A. Sloushch: Discrete spectrum of periodic Schrödinger operator with non-constant metric in the case of non-negative perturbations	Kravchenko V.F., Konovalov Y.Y.: Weight functions based on the convolutions of atomic functions	A.A. Zharov, A.A. Zharov Jr.: Liquid meta-crystals in ac/dc electromagnetic fields: theoretical treatment
12.20	Prokhorov A.O.: On absolute continuity of spectrum of the periodic Maxwell operator in a cylinder		
12.30			A. Shalin, P. Ginzburg, P. Belov, Yu. Kivshar, A. Zayats : New approach to nonlinear modulation of light
12.40			

12.45 **Lunch at *Dom Aktyora* restaurant**

	Spectral methods in homogenization (Hall 311) Chair: Michel Rouleux	***Non-linear phenomena*** (Hall 106) Chair: Alexey Porubov	***Nanoplasmonics*** (Main Hall) Chair: Alexey Vinogradov
14.30	T.A. Shaposhnikova: Homogenization of nonlinear Robin boundary conditions for cavities and associated spectral problem	Porubov A.V., Bouche D., Bonnaud G.: Suppression of the scheme dispersion for coupled nonlinear equations	Alexey A. Orlov, Ivan V. Iorsh, Pavel A. Belov, Yuri S. Kivshar: Effect of losses in nonlocal metal-dielectric multilayers
14.45			Alexander Petrov, Slawa Lang, Manfred Eich: Near infrared hyperbolic metamaterial with thin gold layers
14.50	Meshkova Y.M.: Homogenization in the Sobolev class $H^1(\mathbb{R}^d)$ of the Cauchy problem for a parabolic equation with rapidly oscillating coefficients	Vladimir Gusev: Nonlinear acoustic waves near the boundary of media with gas bubbles	
15.00			Chervinskii S., Reduto I., Sevriuk V., Lipovskii A.: Metal nanoisland films for plasmonics
15.10	Kukushkin A. A.: Homogenization of high order elliptic systems with periodic coefficients	Aero E.L., Bulygin A.N., Pavlov Yu.V.: Nonlinear Klein–Fock–Gordon equation and Abelian functions	
15.15			Ghazaleh Kafaie Shirmanesh, Elahe Yarmoghaddam, Amin Khavasi, Khashayar Mehrany: Circuit model in design of transparent electrodes based on metallic fishnet metamaterials
15.30	Suslina T. A.: Homogenization of the Neumann problem for an elliptic system with periodic coefficients	Ivanushkin E.A., Korshak B.A.: Nonlinear generation of surface acoustic waves at solid-liquid interface	M.A. Kaliteevski, A.A. Lazarenko: Reduced absorption of light by metallic intra-cavity contacts: Tamm plasmon based laser mode engineering
15.45			

15.50 16.10	Senik N. N.: On homogenization for periodic elliptic second order differential operators in an infinite rectangular cylinder	Evelina V. Prozorova: Influence dispersion in mathematical models of mechanics	

Coffee Break

	Water waves (Hall 311) Chair: Nikolay Kuznetsov	***Electromagnetics*** (Hall 106) Chair: Tatiana Zaboronkova	***Nanophotonics*** (Main Hall) Chair: Andrey Sarychev
16.40	Tadeusz Kulczycki: On high spots of the fundamental sloshing eigenfunctions in axially symmetric domains	V.A. Es'kin, A.V. Kudrin, T.M. Zaboronkova, C. Krafft: Electromagnetic wave scattering by an array of axially magnetized parallel plasma columns	Seppo Honkanen: Application of atomic layer deposition in nanophotonics
17.00 17.10	Nikolay Kuznetsov: Steady water waves with vorticity: spatial Hamiltonian structure	Victor G. Lapin, Pavel A. Yashnov: The perturbation action optimization of the powerful electromagnetic wave in the ionospheric plasma	Sinev I.S., Petrov M.I., Samusev A.K., Rutckaia V.V., Lipovskii A.A.: Nanoscale patterning of metal nanoparticles distribution in glasses
17.20 17.25	O.V. Motygin: On evaluation of Green function for 3D ship wave problem	A.N. Reznik, E.V. Demidov, M.A. Galin: The theory of near-field microwave microscopy of plain-layered media: Application for semiconducting films characterization	Moiseev S.G.: Plasmonic nanocomposites for functional optical layers and surfaces
17.40 18.00 18.10		V. Rabinovich: Time-frequency integrals and quaternionic analysis in problems of wave propagation in chiral media	A.Yu. Frolov, V.V. Komarova, P.P. Vabishchevich, M.R. Shcherbakov, T.V. Dolgova, A.A. Fedyanin: Femtosecond nanoplasmonics in metamaterials

	Elastic waves I (Hall 311) Chair: Ivan Andronov	***Dielectric nanoparticles I*** (Main Hall) Chair: Alexander Krasnok
9.00	Filippenko G.V.: Wave phenomena in the periodic beam	Vladimir P. Dzyuba, Valentin A. Milichko, Yurii N. Kulchin: Photo-induced nonlinear-optical response of dielectric nanoparticles
9.20	German A. Maximov: Application of the generalized variational principle for description of sound propagation in non newtonian fluids	
9.30		Evlyukhin A.B., Reinhardt C., Zywietz U., Chichkov B.N.: Optical resonant properties of Si nanoparticles
9.40	Ivanova E. A.: Description of electro-mechanical processes by means of Cosserat continuum	
10.00	Stekhina K.N., Tumakov D.N.: Diffraction of an elastic wave by the jump inhomogeneity in the elastic layer	Miroshnichenko A. E.: Magnetic light: Optical magnetism of dielectric nanoparticles
10.20	Lyes Dib, Samia Bouhedja : Theoretical calculations of reflection coefficient for poroelastic media	
10.30		Savelev R.S., Belov P.A., Kivshar Yu.S.: Complex eigenmodes of an infinite chain of dielectric nanoparticles
10.40		

10.45 **Coffee Break**

	Elastic waves II (Hall 311) Chair: Vladimir Mozhaev	***Dielectric nanoparticles II*** (Main Hall) Chair: Andrey Miroshnichenko
11.00	Kachalov A.P., Kachalov S.A.: Computation of Rayleigh waves in layered anisotropic media	Nicolas Bonod: Optical antennas for manipulating light-matter interaction at the nanoscale
11.20	Gavrilov S.N.: Oscillation of a punch moving on the free surface of an elastic half space	
11.30		Alexander E. Krasnok, Dmitry S. Filonov, Alexey P. Slobozhanyuk, Constantin R. Simovski, Pavel A. Belov, Yuri S. Kivshar: Superdirective magnetic nanoantennas with effect of light steering
11.40	Anufrieva A.V., Kipot V.L., Tumakov D.N.: Peculiarities of propagation of a plane elastic wave through a gradient layer	
11.45		Rybin M.V., Semouchkina E., Kivshar Yu.S., Limonov M.F.: Towards all-dielectric metamaterials: Cascades of Fano resonances in the Mie scattering by dielectric rods
12.00	B. Erbaş, O. Şahin, D.A. Prikazchikov: An approximate solution of the 3D moving load problem for an elastic half space based on the explicit model for the Rayleigh wave	Shishkin I.I., Rybin M.V., K.B. Samusev, V.G. Golubev, Yu.S. Kivshar, M.F. Limonov Multiple Bragg diffraction in synthetic opals: spectral and spatial dispersion
12.15		Khardikov V.V., Prosvirnin S.L.: Enhancement of the luminescence of the quantum dot layer hybridized with high-Q all-dielectric metamaterial
12.20	Aleksei P. Kiselev, Azat M. Tagirdzhanov: Paradoxical wavefield in the elastic Green tensor	
12.40		

12.45 **Lunch at *Dom Aktyora* restaurant**

	Asymptotic Methods I (Hall 311) Chair: Sergey Dobrokhotov	***Terahertz metamaterials*** (Main Hall) Chair: Ilya Shadrivov
14.30	Grushin V.V., Dobrokhotov S.Yu., Sergeev S.A.: Homogenization and “anomalous” dispersion for the wave equation with the fast-oscillating velocity and spatially localized source	Andryieuski A., Malureanu R., Zalkovskij M., Zhukovsky S., Gritti C., Jepsen P.U., Lavrinenko A.V., Novitsky A., Markovich D., Chigrin D.: Terahertz wave manipulation with metamaterials based on metal and graphene
14.50	Michel Rouleux: Hyperbolic Hamiltonian flows and the semi-classical Poincaré map	
15.00		Fel’shtyn M.L., Golubok A.O., Hor’kov D.P., Lyutetsky A.V., Matveyev B.A., Pikhtin N.A., Samoylov L.L., Sapozhnikov I.D., Tarasov I.S., Trukhin V.N.: Features of terahertz emission interaction with “probe-object” system in terahertz apertureless near-field microscope
15.10	D.S. Minenkov: Semiclassical asymptotics and density of states for 2D Schrodinger and Dirac equations with a tip-like potential	

15.15		Atrashchenko A.V., Ulin V.P., Adomavičius R., Krotkus A., Belov P.A., Evtikhiev V.P.: Giant enhancement of terahertz emission from highly anisotropic metamaterials
15.30	Danilov V.G., Gaydukov R.K.: Oscillations in classical boundary layer for flow with double-deck boundary layers structure	I.V. Iorsh, P.I. Buslaev, P.A. Belov, I.V. Shadrivov, Yu.S. Kivshar: Plasmons and magnetoplasmons in single-, double- and multilayer graphene structures
15.45		G. Naumenko, A. Potylitsyn, M. Shevelev, V. Soboleva, V. Bleko: Vavilov–Cherenkov radiation in materials in millimetre wavelength region
15.50	Nazarov S.A.: TBA	
16.10		

16.15 **Coffee break**

	Asymptotic Methods II (Hall 311) Chair: Alexandr Fedotov	***Wire medium*** (Main Hall) Chair: Constantin Simovski
16.40	Dobrokhotov S.Yu., Nazaikinskii V.E.: On a new representation of the Maslov canonical operator and its application to waves in graphene	Tuniz A., Kaltenecker K. J., Fischer B. M., Walther M., Fleming S. C., Argyros A., Kuhlmey B. T.: Sub-diffraction imaging in the THz using wire array metamaterial fibres
17.00	Reijnders K.J.A., Tudorovskiy T.Ya., Katsnelson M.I.: Semiclassical theory of potential scattering for massless Dirac fermions	
17.10		Nefedov I.S., Melnikov L.A.: Wave properties of asymmetric hyperbolic media
17.20	Rudnev V.Yu.: Asymptotic solution of the phase field system in the case of the high thermal conductivity and the small coefficient of the velocity of the free boundary	
17.25		
17.40		Dubrovka R., Martynyuk S., Belov P.: Practical antenna application of extremely anisotropic materials: reality or fiction?
18.10		Vorobev V.V., Tyukhtin A.V.: Radiation of charged particle bunches moving along boundary of a wire metamaterial
18.25		

18.30 **Boat tour**

	Diffraction II (Main Hall) Chair: Mikhail Lyalinov	***Spectral and scattering problems for nanosystems I*** (Hall 106) Chair: Igor Popov	***Quantum plasmonics*** (Hall 311) Chair: Alexander Poddubny
9.00			I. Fedorov, A. Bogdanov, A.N. Lagarkov, G. Tartakovsky, A.K. Sarychev: Quantum plasmonics
9.20	Sergei Grudsky: Fox–Li operator, laser theory and Wiener–Hopf theory	Melikhov I.F.: Particle storage in a nanolayer: Hartree–Fock approximation	
9.30			Pukhov A.A., Andrianov E.S., Dorofeenko A.V., Vinogradov A.P., Lysansky A.A.: Spectrum of surface plasmons excited by spontanneous transitions in quantum dot
9.40	Zakirov A.V., Levchenko V.D.: The program code for FDTD modelling of very large size problems	B. Pavlov, N. Bagraev, G. Fursey, G. Martin, A. Yafyasov: The dispersion functions of quasi-2D periodic structures via Dirichlet-to-Neumann map	
9.45			Andrianov E.S., Pukhov A.A., Dorofeenko A.V., Vinogradov A.P., Lysansky A.A.: Deformation of the mollow triplet by influence of a plasmonic nanoparticle
10.00	Sukhorukov A.P., Savochkin I.V.: Discrete diffraction of light beams in two-dimensional sinuous structures	T. Pogosian, S. Chivilikhin: Instability of nanocluster shape	A.P. Vinogradov, E.S. Andrianov, A.A. Pukhov, A.V. Dorofeenko, A.A. Lysansky: Spontaneous radiation of a two-level system placed near metal nanosphere with $\varepsilon = -1$
10.20	Andrey Gitin: The Huygens–Feynman–Fresnel principle and its applications	N.T. Bagraev, G.J. Martin, B.S. Pavlov, A.M. Yafyasov, L.I. Goncharov: Conductance in the sandwich structures	
10.30			A.A. Zyablovsky, A.V. Dorofeenko, A.P. Vinogradov, A.A. Pukhov, A.A. Lisyansky: Pseudo-Hermiticity in optics
10.40			

10.45 **Coffee break**

	Localized waves (Main Hall) Chair: Alexei Popov	***Spectral and scattering problems for nanosystems II*** (Hall 106) Chair: Boris Pavlov	***Nanophotonics*** (Hall 311) Chair: Pavel Ginzburg
11.00	Fialkovsky I.V., Perel M.V., Plachenov A.B.: Exact localized astigmatic solutions for Klein–Gordon–Fock and Dirac equations	S. Flach, V. Kruglov, G. Martin, B. Pavlov: Mobility of a cluster	Fyodorov I.A., Sarychev A.K.: Quantum theory of the plasmonic nanolaser
11.15			Maloshtan A., Kremers C., Chigrin D.: Dynamics of quantum emitters in structured enviroment
11.20	A.M. Tagirdzhanov, A.P. Kiselev: Non-stationary 'complex source' wavefields in real space	S. Chivilikhin: Light scattering in the medium with nanosize inhomogeneities	
11.30			Albooyeh M., Morits D., Tretyakov S.A., Helgert C., Etrich C., Kruk S., Simovski C.R.: Electric and magnetic resonances of metasurfaces: impact of randomization
11.40	Kaplunov J., Prikazchikov D.A., Rogerson G.A.: Explicit formulation for the bending edge wave	Anikevich A.S.: Negative eigenvalues of Laplacian for the Y-bent chain of weakly coupled conglobated resonators	
12.00	L.S. Konev, Yu.A. Shpolyanskiy: Error of unidirectional approximation in simulation of intense few-cycle femtosecond pulses propagating in single-mode optical fiber		Butz S., Jung P., Ovchinnikova E., Vidiborskij A., Shitov S.V., Ustinov A.V.: Tunable metamaterials using superconducting circuits with Josephson junctions
12.20 12.30			

Lunch at *Dom Aktyora* restaurant

	Mathematical approaches (Main Hall) Chair: Danila Prikazchikov	***Homogenization*** (Hall 311) Chair: Igor Nefedov
14.30	Kamalov T.F.: Ostrogradski's high-order derivative formalism and the foundation of quantum mechanics	Semchenko I.V., Khakhomov S.A.: Electromagnetic waves in artificial helically structured systems with optimum parameters
14.50	Dominik Jüstel, Gero Friesecke, R.D. James: Classification and x-ray analysis of molecular structures with certain non-translational symmetries	
15.00		Krylova A.K., Lapine M., Belov P.A., Poulton C.G., McPhedran R.C., Kivshar Y.S.: Anisotropic diamagnetic metamaterial based on closed rings
15.10	Borzov V.V., Damaskinsky E.V.: Realization of the Hamiltonian of bivariate Chebyshev–Koornwinder oscillator by differential operators	
15.15		Yagupov I.V., Slobozhanyuk A.P., Filonov D.S., Kapitanova P.V., Belov P.A., Lapine M., Simovski C.R., Kivshar Y.S.: Broadband μ-near-zero metamaterial
15.30	Christian Gérard: Scattering theory for Klein–Gordon equations with non-positive energy	L.N. But'ko, A.P. Anzulevich, I.V. Bychkov, V.D. Buchelnikov: Effective dynamic permittivity and permeability of composite media and metamaterials
15.45		Kadochkin A.S., Shalin A.S., Sukhov S.V.: Non-absorbing metamaterial film with dispersion of effective refractive index
15.50 16.00		

Coffee break

	Asymptotic Methods III (Main Hall) Chair: Vladimir Danilov
16.20	Fedotov A.A., Smirnov A.B.: Waves in adiabatic quantum films
16.40	Natalie E. Firsova: Asymptotic behavior of scattering data and conductivity for small Fermi energy in monolayer graphene
17.00	Tudorovskiy T.Ya., Kuhl U., Stöckmann H.-J.: Singular statistics revised
17.20	Brunello Tirozzi: TBA

8.00 **Departure of the buses from Mathematical Institute (Fontanka 27) to Petrodvorets**

9.00 **Posters**

Plenary talk
Chair: Pavel Belov

9.50 Younes Ra'di, Viktar Asadchy, Sergei A. Tretyakov
Thin composite layers for arbitrary transformations of plane electromagnetic waves

10.40 **Coffee Break & Posters**

1. Lutz Angermann, Vasyl V. Yatsyk: Multifunctionality models of resonant scattering and generation of oscillations for nonlinear layered media.
2. A.P. Anzulevich, L.N. But'ko, S.G. Moiseev, V.D. Buchelnikov, I.V. Bychkov: Modeling of electromagnetic wave absorption by powder composite.
3. Babenkov M.B., Ivanova E.A.: Heat wave propagation processes in a layer with regard to the heat flux relaxation constant.
4. Bakhmat J.N.: The method of discrete singularity in problems of diffraction by a system of closed cylindrical surfaces.
5. Samia Bouhedja, Farah Hamdi: Structural study of a cracked porous surface by using acoustic microscopy.
6. Vitalii N. Chukov: On the new laws of the Rayleigh scattering.
7. Farafonov V.G., Sokolovskaya M.V., Il'in V.B.: Limited applicability of the extended boundary condition method to layered spheroidal scatterers.
8. Golub M.V., Shpak A.N., Buethe I., Fritzen C.-P., Jung H., Moll J.: Continuous wavelet transform application in diagnostics of piezoelectric wafer active sensors.
9. Ivanova A.: Investigation of nanotube vibrations in the liquid.
10. Umida Jurayeva: Carleman's functions for the polygarmonious functions in unbounded subdomains of even-dimensional Euclidean space.
11. Somayeh Kazemi Najafabadi, Seyed Mostafa Nargesi Khorramabadi, Ayaz Ghorbani: Heart and respiration rate estimation in the radar doppler health monitoring system using of Wigner–Ville distribution method.
12. A.V. Kondrashov, A.B. Ustinov, and B.A. Kalinikos: Spin wave chaos in resonant rings based on metalized ferrite films.
13. Kostenko O. V.: A mathematical model of electromagnetic wave diffraction on a lattice of the special form: frequency analyze and loss.
14. Krasnov I.P.: Special solutions of Maxwell equations.
15. T. Kumar, T. Saastamoinen, J. Turunen, J. Tervo: Characterization of binary gratings using scatterometry.
16. A.G. Kyurkchan, S.A. Manenkov: The application of the method of continued boundary conditions to the problem of wave diffraction on an impedance screen.
17. Ladutenko K.S., Belov P.A., Markovich D.L.: Performance of FDTD method CPU implementations for simulation of electromagnetic processes.
18. Maly S.V., Malaya A.S., Rudnitsky A.S.: Modeling of acoustic processes in structurally nonuniform mediums by the method of minimal autonomous blocks.
19. E.A. Marennikova, D.V. Valovik: The problem of surface electromagnetic TE wave propagation in an inhomogeneous plane layer dielectric waveguide.
20. Andrey A. Matskovskiy: Buldyrev-type interference head wave in diffraction by inhomogeneous halfspace.
21. Nesvit K.V.: Discrete mathematical model of TM wave diffraction on pre-Cantor impedance strips on a shielded dielectric layer.
22. H. Nihei, A. Okamoto: Estimation of quantum storage effects in logic gate operation inside photonic crystals.
23. Noskov R.E., Smirnova D.A., Kivshar Y.S.: Dynamical metamorphoses in arrays of nonlinear plasmonic nanoparticles.

24. Dmitry V. Permyakov, Ivan S. Mukhin, Ivan I. Shishkin, Anton K. Samusev: Three-dimensional reconstruction of electromagnetic field distribution in the vicinity of subwavelength hole in thin metal film.
25. Puchkov A.M.: Square integrable solutions of spheroidal Coulomb equation of the imaginary variable.
26. Sharapov A.A., Noskov R. E., Belov P.A.: Control of near field localization in silver nanotrimers.
27. Slusarenko A.S., Dyakova G.N.: On processing and recognition of radionavigation signals in control of orbital complex.
28. A.B. Ustinov: Secondary self-modulation instability of microwave spin waves in ferromagnetic films.
29. V.D. Ustinov, S.Yu. Nikitin, A.V. Priezzhev, A.E. Lugovtsov: Effect of particle size distribution on the parameters of the diffraction pattern obtained by laser diffractometry technique.
30. Utkin A.B.: Generation of superluminal sources for localized waves: a realizable approach.
31. Valiev F.F.: Electromagnetic fields formed by ionization of the gas environment by hard nuclear radiation.
32. M.V. Vesnik: Analytical heuristic solution for the problem of elastic wave diffraction by a polygonal flat 3D scatterer.
33. V.V. Vitko, A.A. Nikitin, A.B. Ustinov, A.A. Semenov: Electrical tuning of planar thin film ferrite-ferroelectric resonator.
34. Elizaveta A. Yankovskaya, Alexey A. Orlov, Yuri S. Kivshar, Pavel A. Belov: Magnetism in optical domain using metal-dielectric multilayers.
35. Z.A. Yanson: Non-stationary waves with a complex eikonal near the boundary of an elastic medium.
36. Elahe Yarmoghaddam, Ghazaleh Kafaie Shirmanesh, Amin Khavasi, Khashayar Mehrany: Circuit model for periodic array of metallic slits with multiple propagating diffracted orders.
37. N. F. Yashina, T. M. Zaboronkova, A. N. Yashina: Instability of electromagnetic waves supported by the composite cylinder with dielectric covering.
38. Zevalev D. S., Noskov R. E., and Belov P. A.: Fano resonance in bimetallic dimers and trimers.
39. Pavel Znak, Boris M. Kashtan: Near field influence on Green's function retrieval in seismic interferometry (wave equation case).
40. Zverev D.M., Lobanov V.E., Sukhorukov A.P.: Cascaded interaction of laser pulsed beams in quadratic nonlinear media.

Plenary talk
Chair: Alexei Kiselev

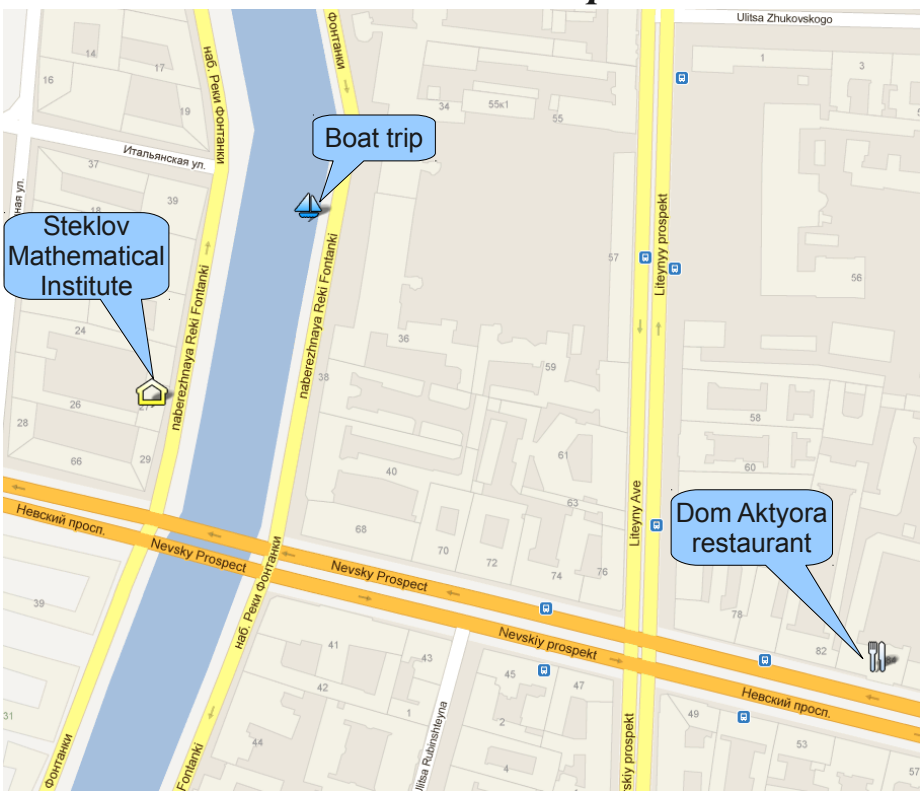
12.10 P.A. Belov, A.N. Poddubny, I.V. Iorsh, Yu.S. Kivshar
Unusual properties of hyperbolic media

13.00 **Lunch**

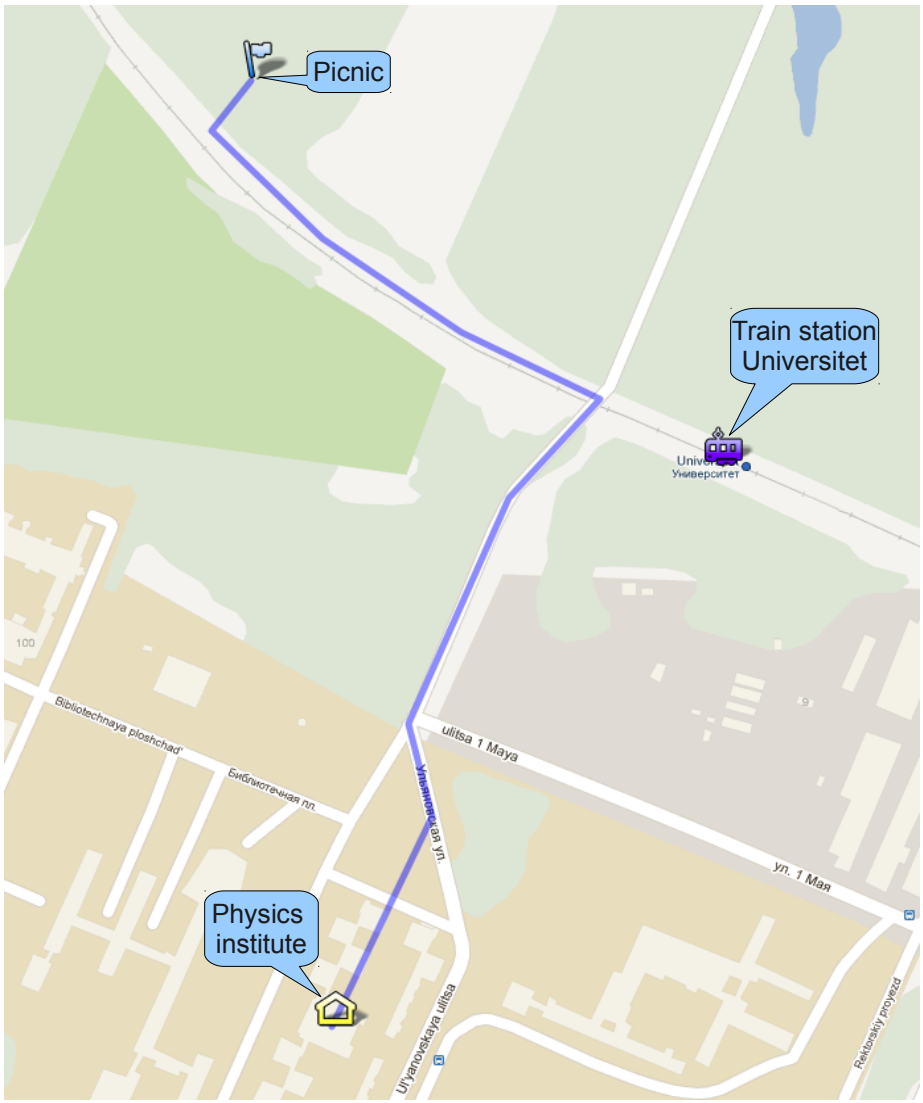
14.00 **Excursion**

18.00 **Picnic party at Peterhof forest**

PDMI area map



Map of the picnic area



(see other maps of conference events at http://www.pdmi.ras.ru/~dd/)