

Annual International Conference

# **Days on Diffraction 2015**

May 25 – 29, 2015

St. Petersburg

**Program**



**8.30 Registration & Coffee**

**10.00 Opening (Main Hall)**

	<i>Asymptotic methods I</i> (Hall 311) Chair: Vassily Babich	<i>Electromagnetics I</i> (Hall 106) Chair: Yakov Bogomolov	<i>Hyperbolic metamaterials I</i> (Main Hall) Chair: Mikhail Lapine
10.10	Anikin A.Yu.: Semi-classical asymptotics for spectral bands of quantum periodic dimers	Goray L.I.: Weak formulation of energy conservation for diffraction by lossy bi-periodic gratings	H. Mehedi, I. Iorsh: Interaction of light with a hyperbolic cavity in the strong-coupling regime with Fano resonance
10.25			Trushkov I., Iorsh I.V.: 2-dimensional hyperbolic medium for electrons and photons based on the array of tunnel-coupled graphene nanoribbons
10.30	Kalyakin L.A.: Fiction asymptotics and justification theorems	Kurseeva V.Yu., Valovik D.V.: Electromagnetic TE wave propagation in a two-layered waveguide with nonlinear permittivity	Rybin M.V., Samusev K.B., Limonov M.F.: Multiscale modeling of all dielectric metamaterials
10.40			A.S. Shalin, P. Ginzburg, A.A. Orlov, I. Iorsh, P.A. Belov, Yu.S. Kivshar, A.V. Zayats: Optical cloaking with spatially dispersive ENZ-metamaterials
10.50	Kordyukova S.A.: Double boundary layer in asymptotics of nonlinear problem	S.B. Glybovski, V.P. Akimov, V.V. Zalipaev: Electromagnetic wave propagation along a thin wire over an arbitrary isotropic interface	
10.55			

**11.10 Coffee Break**

	<i>Asymptotic methods II</i> (Hall 311) Chair: Sergei Dobrokhotov	<i>Waves in crystals</i> (Hall 106) Chair: Maria Perel	<i>Nonlinear metamaterials</i> (Main Hall) Chair: Alexey Yulin
11.30	Minenkov D.S.: Asymptotics for 2D stationary Dirac equation with mass and the Berry phase	Aero E.L., Bulygin A.N., Pavlov Yu.V.: Mathematical methods of realization for nonlinear model of deformation of crystal media with complex lattice	Jung P., Butz S., Koshelets V.P., Marthaler M., Fistul M.V., Ustinov A.V.: Multi-stable switchable metamaterial employing Josephson junctions
11.50	Tatiana Pankratova, Maria Faleeva: An approach to a multi-dimensional tunneling	V.D. Lukyanov, V.P. Pashchenko: Electro-elastic wave scattering matrix on the tunable phoxonic crystal	J.-G. Caputo, I.R. Gabitov, T.R. Kupaev, A.I. Maimistov: Bistability in rf-SQUID based meta-surfaces
12.00			
12.10	A. Badanin, E. Korotyaev: Inverse problems and sharp eigenvalue asymptotics for Euler–Bernoulli operators	Kozar A.V., Marchenko V.F., Shestakov P.Yu.: Velocity of light pulse propagation in a forbidden gap of 1D photonic crystal	
12.30	Sharapov T.F.: On the resolvent of multidimensional operators with frequently changing boundary conditions	Machikhin A.S., Pozhar V.E.: Geometrical conditions of effective acousto-optic diffraction of interference imaging light beams	Dmitry V. Skryabin: Structured polaritonic environment for nonlinear applications
12.50			

**13.00 Lunch**

	<i>Asymptotic methods III</i> (Hall 311) Chair: Brunello Tirozzi	<i>Numerical methods I</i> (Hall 106) Chair: Leonid Goray	<i>Hyperbolic metamaterials II</i> (Main Hall) Chair: Stanislav Maslovski
15.10	Dobrokhotov S.Yu.: Asymptotic solutions to the Cauchy problem with localized initial data for linear strictly hyperbolic systems	Repina A.I., Spiridonov A.O., Karchevskii E.M., Beilina L.: Algorithm for reconstruction of inhomogeneous permittivity in optical fibers using propagation constant measurements	Mikhail Lapine: New aspects of finite discrete metamaterials

15.30	Agissilaos Athanassoulis: Semi-classical limit for the nonlinear Schrödinger equation	Spiridonov A.O., Karchevskii E.M., Nosich A.I.: Analytical regularization of a generalized eigenvalue problem for weakly guiding step-index optical fibers by Muller boundary integral equations	Chebykin A.V., Gorlach M.A., Gorlach A.A., Belov P.A.: Spatial dispersion in metamaterials based on three-dimensional arrays of spheres and disks
15.40			
15.50	Gadyl'shin T.R.: On two-parameter boundary value problem for the Schrödinger operator with fast oscillating and delta-like potentials	Smolkin E.Yu.: On the problem of propagation of nonlinear coupled TE–TM waves in a double-layer nonlinear inhomogeneous cylindrical waveguide	Popov V.V.: Asymmetric hyperbolic metamaterials
15.55			
16.10	Irene Kyza, Theodoros Katsaounis: A posteriori error control and adaptivity for Schrödinger equations	A. Yunakovskiy, N. Sapogova, N. Biturin: Hydrodynamic model for laser swelling of polymer surfaces	E.S. Sedov, A.P. Alodjants, I.V. Iorsh, A.V. Kavokin: Quantum hyperbolic metamaterials with exciton-polaritons in semiconductor Bragg mirrors
16.25			
16.30	Fedotov A.: Stark–Wannier resonances and cubic exponential sums		Mirmoosa M.S., Simovski C.R.: Homogenization of dielectric wire media
16.40			

16.50 **Coffee Break**

	<b>Localized waves I</b> (Hall 311) Chair: Maxim Yavorsky	<b>Waveguides</b> (Hall 106) Chair: Victor Zalipaev	<b>Nanophotonics</b> (Main Hall) Chair: Pavel Belov
17.10	Roger L. Garay-Avendaño, Michel Zamboni-Rached: Superluminal non-diffracting pulses applied to FSO systems: theoretical description	Zakharenko A.D., Kozitskiy S.B., Trofimov M.Yu.: An example of calculations by the ray mode parabolic equation	Marin Soljacic: Nanophotonics in material-systems of large sizes
17.30	Edwin G. P. Pachon, Guillermo Cabrera, Michel Zamboni-Rached: Atom channelling with Bessel–Gauss beams	Petrov P.S., Ehrhardt M.: Transparent boundary conditions for the high-order parabolic approximations	
17.50	Yulin A.V., Skryabin D.V., Taki M.: Resonant scattering of waves on solitons and vector instabilities in fiber cavities	Grigoreva A.A., Tyukhtin A.V., Galyamin S.N.: Mode transformation in circular waveguide with transversal boundary between vacuum and partially dielectric area	Khanikaev A.B., Slobozhanyuk A.P., Kivshar Y.S.: Photonic topological insulators: from theory to practical realization
17.55			
18.10	Vasil'ev V.A., Chernov P.S.: Time-dependent simulations of two-dimensional quantum waveguides of arbitrary shape	Galyamin S.N., Tyukhtin A.V., Vorobev V.V.: Radiation from the open-ended cylindrical waveguide with dielectric filling	A.P. Vinogradov, A.V. Dorofeenko, A.A. Pukhov, A.A. Lisiansky: Is frustrated total reflection really caused by the surface plasmon excitation?
18.25			
18.30	Michel Zamboni-Rached, José Angel Borda Hernández, Ioannis M. Besieris, Amr Shaarawi: Propagation of finite energy Airy pulses in dispersive media		
18.50			
18.55			

	<i>Asymptotic methods IV</i> (Hall 311) Chair: Olivier Lafitte	<i>Numerical methods II</i> (Hall 106) Chair: Ivan Andronov	<i>Photonic crystals</i> (Main Hall) Chair: Mikhail Limonov
9.40			Afinogenov B.I., Bessonov V.O., Fedyanin A.A.: Femtosecond spectroscopy of the electron thermalization in gold in the vicinity of Tamm plasmon resonance
9.50	M.M. Popov: On the computation of the Morse index on rays between the source and observation points by means of Gaussian beam technique	Bogomolov Ya.L., Borodov M.A., Yunakovskiy A.D.: Singular value decomposition in application to a scattering problem in a plane channel with sharp corners	Gulkin D.N., Bessonov V.O., Soboleva I.V., Fedyanin A.A.: Optical Tamm state at the cholesteric liquid crystal/metal interface
9.55			
10.10	Dobrokhotov S.Yu., Shafarevich A.I., Tolchennikov A.A.: Localized vortical solutions of linear and nonlinear shallow water equations	Belyayev Yu.N.: Characteristic matrices of layered periodic structures	Ivanov A.V., Vaskin A.V., Boginskaya I.A., Afanas'ev K.N., Ryzhikov I.A., Lagarkov A.N., Sarychev A.K., Kurochkin I.N.: Electric field enhancement in the surface photonic crystal
10.25			Romodina M.N., Soboleva I.V., Fedyanin A.A.: Magneto-optical switching of Bloch surface electromagnetic waves in magnetophotonic crystals
10.30	Demchenko M.N.: Asymptotic behavior of singular values of the acoustic observation problem	Kabardov M.M., Sharkova N.M.: Numerical simulations of electron transport in nanowires near the thresholds	Frolov A.Yu., Shcherbakov M.R., Fedyanin A.A.: Magnetoplasmonic analog of Borrmann effect
10.40			
10.50	Sergeev S.A.: Dispersion effects in the propagation of long linear water waves over fast oscillating bottom	Zalipaev V.V., Vialov V.A., Matveentsev A.V., Andreev A.Yu.: Iterative approach in asymptotic analysis of electromagnetic scattering from 2D periodic arrays of thin conductors	Gerasimov M.V., Loginov N.N., Logunov M.V., Nikitov S.N., Spirin A.V.: Magneto-optic Fraunhofer diffraction on 2D spatially homogeneous magnetic domain patterns
10.55			

11.10

**Coffee Break**

	<i>Asymptotic methods V</i> (Hall 311) Chair: Mikhail Popov	<i>Numerical methods III</i> (Hall 106) Chair: Yuri Belyayev	<i>Plasmonics</i> (Main Hall) Chair: Andrey Sarychev
11.30	H. Boumaza, O. Lafitte: Explicit transition between classical and semiclassical regimes for a periodic Schrödinger operator with a non $C^1$ potential	Kravchenko V.F., Kravchenko O.V., Churikov D.V.: FIR-filters on basis of atomic functions in problems of boundary value problems of diffraction and signal processing	Alexander Grigorenko: Coupled plasmon resonances and graphene plasmonics
11.50	H. Fadhlou, H. Louati, M. Rouleux: Semiclassical quantization rules for a periodic orbit of hyperbolic type	Kravchenko O.V.: Application of $ch_{a,n}$ atomic basis to solution of scalar hyperbolic equation	Chipouline A.: Nanophotonic components for telecom applications
12.00			
12.10	Reijnders K.J.A.: Caustics in graphene: asymptotic and numerical analysis	Alexandrova I.L.: On proof of the reduction method of an infinite set of linear algebraic equations	
12.30	D. Borisov: Perturbation of threshold of essential spectrum for three-dimensional layer with window	Belov A.A., Kalitkin N.N.: Grid methods for boundary layer problems	Heisler F., Hasan M., Piliugina E., Chervinskii S., Samusev A., Lipovskii A.: Characterization and application of resonant properties of out-diffused silver nanoislands
12.45			

12.50

**Lunch**

	<i>Localized waves II</i> (Hall 311) Chair: Nikolay Rosanov	<i>Heun's equations and their applications</i> (Hall 106) Co-chairs: Alexander Kazakov, Sergey Slavyanov	<i>Plasmonic nanoantennas and nanoparticles</i> (Main Hall) Chair: Alexey Vinogradov
14.55			Kudryashov S.I.: High-throughput femtosecond laser nanofabrication: basic principles and prospective applications
15.00	Alexeyev C.N., Yavorsky M.A.: Vectorial effects in fiber acousto-optics	T.A. Shahverdyan, T.A. Ishkhanyan, A.E. Grigoryan, A.M. Ishkhanyan: Analytic solutions of the quantum time-dependent two-state problem in terms of confluent Heun functions	Makarov S.V., Kuchmizhak A.A., Kudryashov S.I.: Femtosecond laser fabrication of plasmonic nanoantennas
15.20 15.25	Aleksei P. Kiselev, Alexandr B. Plachenov: Laplace–Gauss and Helmholtz–Gauss modes in a medium with a quadratic refraction index	A.Ya. Kazakov: Confluent Heun equation with 2 added apparent singularities	
15.40 15.55	Ducharme R.J.: On the relativistic constraint dynamics of electromagnetic beams	Slavyanov S.Yu.: Antiquantization of deformed Heun class equations	Kuchmizhak A.A., Vitrik O.B., Kulchin Yu.N.: Fabrication of functional plasmonic nanostructures using focused nano- and femtosecond laser pulses
16.00 16.10	Trofimov V.A., Zagursky D.Yu., Zakharova I.G.: Propagation of laser pulse with a few cycles duration in multi-level media	Pelin Aydiner, Tolga Birkandan: Physical problems admitting Heun-to-hypergeometric reduction	Vitrik O.B., Kuchmizhak A.A., Kulchin Yu.N.: A simple analytical model describing a substrate influence on the dipole resonance wavelength of spherical particle
16.20 16.25	Savenko I.G., Flayac H., Möttönen M., Ala-Nissilä T.: Temporal and spatial correlations in semiconductor microcavities	Oleg V. Motygin: On computation of the Heun functions	K.V. Baryshnikova, S.G. Przhibel'skii, T.A. Vartanyan: Lifting and revival of degeneracy of surface plasmons localized in a nanosphere crossing an interface
			Rasskazov I.L., Gerasimov V.S., Karpov S.V., Panasyuk G.Y., Markel V.A.: Propagation of surface plasmon polaritons in chains of non-spherical nanoparticles: the influence of the dielectric substrate

16.40

**Coffee Break**

	<i>Spectral theory methods I</i> (Hall 311) Chair: Andrey Badanin	<i>Exciton optics</i> (Main Hall) Chair: Alexander Poddubny
17.00	Tirozzi B., Nazaykinskiy V.E., Dobrokhotov S.Yu.: Homogenization for the wave equation with rapidly oscillating coefficients and small dispersion effects	Oleg A. Egorov, Shakeeb Bin Hasan, Ehsan Mobini: Strong coupling between excitons and plasmons in a metallic slot waveguide
17.20 17.30	Svetlana E. Pastukhova: On band-gap structure of spectrum in network double-porosity models	Glazov M.M.: Exciton optics in transition metal dichalcogenides monolayers
17.40	Nikita N. Senik: On homogenization for non-self-adjoint periodic differential operators on an infinite cylinder	
18.00	Meshkova Yu.M., Suslina T.A.: Twoparametric operator error estimates for homogenization of elliptic systems	Daniel Lanzillotti-Kimura: Optophononic devices based on semiconductor multilayers
18.20 18.30	Korotyaev E.L., Ryadovkin K.S.: Scattering in the semirestricted cylinder	Morina S., Kibis O.B., Pervishko A.A., Shelykh I.A.: Transport properties of a two-dimensional electron gas dressed by light
18.40 18.45		

**8.15 Departure of the buses from Mathematical Institute (Fontanka 27) to Petrodvorets****9.00 Posters**

**Plenary talk** — Chair: Pavel Belov

**9.50** K. Rustomji, R. Abdeddaim, B. Kuhlmeier, S. Enoch: *Controlling light emission and fields with metamaterials*

**10.30 Coffee Break & Posters**

1. Lutz Angermann, Vasyl V. Yatsyk, Mykola V. Yatsyk: Investigation of nonlinear cubically polarizable layered media with a controllable permittivity.
2. Anufrieva A.V., Tumakov D.N.: On some of the peculiarities of propagation of an elastic wave through a gradient anisotropic layer.
3. Anton A. Anzulevich, Leonid N. Butko, Dmitriy A. Kalganov, Dmitriy A. Pavlov: Calculating of effective permittivity and permeability of metallic and metallized dielectric particles.
4. Baranov D.A., Samusev K.B., Shishkin I.I., Samusev A.K., Bogdanov A.A.: Dark-field spectroscopy of whispering gallery mode cavities.
5. K.V. Baryshnikova, M.I. Petrov, V.E. Babicheva, P.A. Belov: Plasmonic and all-dielectric nanoparticle anti-reflective coatings.
6. Belyayev Yu.N., Gridnev S.O., Dronov A.M.: Coefficients of SH-wave conversion into SV- and P-waves by the crystal layer.
7. Leonid Butko, Anton Anzulevich, Vasiliy Buchelnikov, Aleksandr Fediy: Left-handed wired material.
8. Vitalii N. Chukov: The new laws of the Rayleigh, resonance and diffuse scatterings.
9. Churikov D.V., Konovalov Ya.Yu., Kravchenko O.V., Kravchenko V.F.: Implementation of modified Sinc-collocation method to linear two-point boundary value problem.
10. Derevyanchuk E.D., Smirnov Yu.G., Shutkov A.S.: Inverse problem of the reconstruction of electromagnetic and geometrical parameters of a multi-sectional diaphragm in a rectangular waveguide from the transmission or reflection coefficients.
11. T.A. Derzhavskaya, S.B. Glybovski, A.J.E. Raaijmakers, I.V. Melchakova, C.A.T. van den Berg: Electromagnetic bandgap metasurfaces for decoupling of MRI body coil-array elements at 7 Tesla.
12. Farafonov V.G., Ustimov V.I., Il'in, V.B.: Analysis of the extended boundary condition method in electrostatic problems for non-spherical particles: the region of applicability and the Rayleigh hypothesis.
13. Olga V. Gallyamova, Alexander I. Slepko: Interaction of relativistic electron beam focused by constant magnetic field with microwave field of periodic overmode waveguide.
14. Gerasimov V.S., Rasskazov I.L., Karpov S.V.: Variations in extinction spectra of plasmonic nanoparticle aggregates upon deformation during deposition on planar dielectric substrate.
15. L.A. Glushchenko, A.M. Korzun, V.Ya. Krohalev, V.I. Tupota: Opportunity of reception of the information on an acoustic speech signal on the reflected laser radiation.
16. Glushkov E.V., Glushkov N.V., Miakisheva O.A.: The interaction of sound and ultrasound waves with multilayered elastic plates immersed in acoustic fluid.
17. Golovinski P.A., Astapenko V.A., Manuylovich E.S.: Diffraction of ultrashort pulse on a nanoscale conductive cone.
18. D. Gorbach, A. Slobozhanyuk, A. Bogdanov: Dispersion properties of coated wire medium.
19. Konstantin Greshnevnikov, Georgiy Zhabko, Evgeniy Svechnikov: Study of elastic wave propagation in multilayered structures with uniform cross sections by the reflection coefficients method.
20. Khayrullina D.M., Tumakov D.N.: A neural network technique for reconstruction of a homogeneous dielectric layer's parameters.
21. Kleev A.I., Kyurkchan A.G.: Pattern equation method in the spheroidal coordinate basis.
22. K.L. Koshelev, A.A. Bogdanov: Homogenization of quantum metamaterial.
23. V. Kovalenko, A. Puchkov, V. Vechernin, D. Diatchenko: Restrictions on pp scattering amplitude by the first diffraction minimum TOTEM LHC data.
24. Kozitskiy S.B., Trofimov M.Yu., Zakharenko A.D.: Model of the convection induced vertical microstructure in the ocean.
25. Krasnov I.P.: Kirchhoff formula, its analogs and modifications.
26. Kravchenko V.F., Kravchenko O.V., Churikov D.V.: Construction of filter systems with reference areas of complex geometry in the frequency and time spaces on the basis of R-functions theory.
27. Kravchenko V.F., Kravchenko O.V., Konovalov Y.Y., Churikov D.V.: Generalization of Kravchenko wavelets based on the family of atomic functions  $ch_{a,n}$ .

28. Krevchik V.D., Semenov M.B., Zaitsev R.V., Krevchik P.V., Egorov I.A., Skorosova I.K., Budyansky P.S.: 2D-tunnel bifurcations for interacting quantum molecules in the matrices of metamaterials.
29. Alexander G. Kyurkchan, Nadezhda I. Smirnova: Modified T-matrix method on the basis of continued boundary conditions.
30. Yury Lavrov: Free oscillations of viscous fluid in rectangular volume with elastic wall.
31. Makin V.S., Logacheva E.I., Makin R.S.: Origin of anomalous nanostructures formation under linear polarized femtosecond laser irradiation of condensed matter.
32. Makin V.S., Pestov Yu.I.: Thermocapillary liquid flows under axisymmetric surface laser heating.
33. Malaya A.S.: Direct methods for solving systems of linear algebraic equations with sparse matrices for wave fields modeling by the minimal autonomous blocks method.
34. Maly S.V.: Modelling of long wireless communication channels by the method of minimal autonomous blocks.
35. V.P. Pashchenko: Electrical field tunable acoustic metamaterial.
36. Dmitrii Pavlov: Negative refraction in microwave photonic crystal.
37. Pavlov N.D., Baloshin Y.A.: Electromagnetic properties of liquids at GHz frequencies for medical tasks and metamaterial applications.
38. A.M. Puchkov, V.A. Roudnev, A.V. Kozhedub: Use of oblate spheroidal coordinates for modeling of quantum ring spectra.
39. Redkov A.V., Chervinskii S.D., Reduto I.V., Zhurikhina V.V., Lipovskii A.A.: Plasmonic and diffraction structures via thermal poling of glass.
40. A.S. Rudnitsky, V.M. Serdyuk: Simulation of diffraction image formation processes in optical lithography and evaluation of their quality on the bases of rigorous diffraction theory.
41. Cumali Sabah, M. Mert Taygur, E. Yesim Zoral: Fishnet-based-metamaterial loaded waveguide for sensing applications.
42. E.S. Sedov, M.V. Charukhchyan, S.M. Arakelian, A.P. Alodjants: Atomic Bose–Einstein condensates as a nonlinear hyperbolic metamaterials.
43. Margarita I. Sharipova, Alexander I. Musorin, Tatyana V. Dolgova, Andrey A. Fedyanin: Femtosecond Faraday evolution in one-dimensional photonic structures.
44. I.N. Shchitov: On the high-frequency asymptotic for the solution of hyperbolic systems with multiple characteristics.
45. E.A. Shtager, M.D. Shtager: Calculation of shielding effectiveness by duplex using the method of partial waves.
46. Smirnov Yu.G., Medvedik M.Yu., Moskaleva M.A.: The research of electromagnetic waves diffraction problem on systems of bodies and screens by subhierarchical method.
47. Smirnov Yu.G., Smolkin E.Yu., Tsupak A.A.: Scalar problem of diffraction of a plane wave from a system of two- and three-dimensional scatterers.
48. Spiridonov N.V.: Real-time computer visualization of dynamic fluid jets.
49. Alexander S. Starkov, Oleg V. Pakhomov, Ivan A. Starkov: Asymptotic solution of the heat conduction equation with weak nonlinearity and fast oscillating heat source.
50. Ivan Starkov, Oleg Pakhomov, Alexander Starkov: Diffraction of plane wave on a thin/narrow body: influence of the curvature and torsion.
51. Strepetov A.V., Volkova A.N., Dyakova G.N., Petrov V.E.: On the solution of a mixed system of Laplace equations for convex domains.
52. Utkin A.B.: Spacetime triangle diagram technique for line sources with finite cross section.
53. Valiev F.F.: About the limits of applicability of the model of linear current in gaseous environment.
54. Vavulin D.N., Sukhorukov, A.A.: Quantum walks of photon pairs in twisted waveguide arrays.
55. N.F. Yashina, T.M. Zaboronkova, C. Krafft: Interaction of electromagnetic surface waves guided by dielectric cylinder surrounded by an anisotropic plasma.
56. Yermakov O.Y., Ovcharenko A.I., Bogdanov A.A., Iorsh I.V., Kivshar Yu.S.: New types of surface waves on hyperbolic metasurface.

**Plenary talk** — Chair: Aleksei Kiselev

**12.20** Yuri Bobrovnikskii: *Impedance theory of scattering and absorption of sound*

**13.00**

**Lunch**

**14.00**

**Excursion**

**18.00**

**Picnic party at Peterhof forest**

	<i>Elastic waves</i> Chair: Sergei Gavrilov (Hall 311)	<i>Microwave metamaterials</i> Chair: Sergei Tretyakov (Main Hall)
9.25		A.V. Tyukhtin, S.N. Galyamin, V.V. Vorobev: Concentrated radiation of particle bunches in presence of wire structures and dielectric objects
9.55		Slobozhanyuk A.P., Shchelokova A.V., Poddubny A.N.: Usage of meta-resonators for improvement of magnetic resonance imaging
10.10	Shvartz A.G., Samsonov A.M., Semenova I.V., Dreiden G.V.: Numerical simulation of the bulk strain solitons in cylindrical inhomogeneous shells	Irina Vendik: Flexible high-impedance surfaces and miniature antennas for on-body system applications
10.30	Znak P.E., Kashtan B.M.: Leaking P-SV modes of high-velocity elastic layer embedded in elastic medium	Cumali Sabah, Furkan Dincer, Muharrem Karaaslan, Mehmet Bakir: Sensor application of microwave metamaterial absorber to food products
10.40		
10.50	Gusev V.A.: Nonlinear sound beam propagation in the porous viscoelastic medium	
10.55		M. Song, P. Kapitanova, I. Iorsh, P. Belov: High-Q dielectric resonators for wireless power transfer system

11.10

**Coffee Break**

	<i>Spectral theory methods II</i> (Hall 311) Chair: Michel Rouleux	<i>Electromagnetics II</i> (Hall 106) Chair: Andrei Tyukhtin	<i>Antireflective coatings and light trapping</i> (Main Hall) Chair: Constantin Simovski
11.30	Sergei A. Nazarov: Stabilizing solutions at thresholds of the continuous spectrum and scattering anomalies in a waveguide	Buslov V.A., Eskuzian P.V.: Modeling asymmetric Mössbauer spectra of superparamagnetics	Omelyanovich M., Ovchinnikov V., Simovski C.R.: Light-trapping metamaterial structure for the enhancement of thin-film solar cells
11.45			Victor A. Dmitriev, Marcelino L. C. da Silva Jr., Karlo Q. da Costa: Analysis of plasmonic nanostructures of different geometries in organic solar cells
11.50	Bakharev F.L.: Spectra of open waveguides in some periodic structures	Arlou Y.Y., Tsyantenka D.A., Sinkevich E.V.: Wideband computationally-effective worst-case model of twisted pair radiation	Dmitriev P.A., Baranov D.A., Mukhin I.S., Samusev A.K., Belov P.A., Simovski C.R., Shalin A.S.: Broadband antireflective coatings based on 2D-periodic arrays of subwavelength nanopores
12.00			Voroshilov P.M., Simovski C.R., Belov P.A., Shalin A.S.: All-dielectric nanostructures for enhanced antireflection and light trapping in thin-film silicon solar cells
12.10	Matveenko S.G.: Spectra of 3D cruciform quantum waveguides	Kuzmichev A.N., Kalish A.N., Ignatyeva D.O, Nur-E-Alam M., Vasiliev M., Alameh K., Belotelov V.I.: Gyrotropic plasmonic slot waveguides	Nina A. Zharova, Alexander A. Zharov Jr., Alexander A. Zharov: Controllable coupling of the surface and volume electromagnetic waves in a liquid metacrystal
12.15			Tretyakov S.A.: Nano-absorbers
12.30	Aleksandr Poretskii: A method for computing waveguide scattering matrices of the Maxwell system	Savenko I.G., Flayac H., Rosanov N.N.: Dissipative exciton-polariton solitons in semiconductor microcavities	
12.45			
12.50	Delitsyn A.L., Troshina I.K.: Complex waves and waveguide resonance excitation	A.V. Kudrin, T.M. Zaboronkova, A.S. Zaitseva, C. Krafft: Radiation from a loop antenna located on the surface of an anisotropic plasma cylinder and excited by a wideband signal	
13.10			

13.15

**Lunch**

	<b><i>Water waves</i></b> (Main Hall) Co-chairs: Nikolay Kuznetsov, Oleg Motygin	<b><i>Mechanics of continuum</i></b> (Hall 106) Chair: Yuri Bobrovnikskii	<b><i>Metasurfaces</i></b> (Hall 311) Chair: Stanislav Glybovskiy
15.00	Kouzov D.P., Zhuchkova M.G.: Transmission of a flexural-gravitational wave through an obstacle in an elastic plate floating atop a two-layered fluid. Thin upper layer approximation	Evelina V. Prozorova: Effects of dispersion on models of mechanics	M.R. Shcherbakov, A.S. Shorokhov, P.P. Vabishchevich, E.V. Melik-Gaykazyan, A.A. Fedyanin, D.N. Neshev, B. Hopkins, I. Staude, A.E. Miroshnichenko, Yu.S. Kivshar, I. Brener: Nonlinear dielectric metasurfaces and oligomers: harmonics generation and all-optical switching
15.20	V. Kozlov: On bounds and non-existence in the problem of steady waves with vorticity	Gavrilov S.N., Shishkina E.V.: Scale-invariant initial value problems with applications to the dynamical theory of stress-induced phase transformations	Felbacq D.: Strong coupling in the near field of a resonant meta-surface
15.30			
15.40	G.A. Athanassoulis, Ch.E. Papoutsellis: Nonlinear irrotational water waves over variable bathymetry. The Hamiltonian approach with a new efficient representation of the Dirichlet to Neumann operator	Panov E.Yu.: On decay of periodic entropy solutions to scalar conservation laws	
16.00	Nikolay Kuznetsov: When no axisymmetric modes are trapped by a freely floating moonpool	V. Flambaum, Gaven Martin, Boris Pavlov: A resonance mechanism of earthquakes	Qiong He, Ziqi Miao, Weijie Luo, Wujiong Sun, Lei Zhou, Shulin Sun: Manipulating electromagnetic wave with meta-surfaces
16.20	George V. Filippenko: Axisymmetric vibrations of the semiinfinite cylindrical shell partially submerged into the liquid	Lutz Angermann, Vasyl V. Yatsyk, Mykola V. Yatsyk: Analysis of the generation properties of nonlinear layered media	Zh.O. Dombrovskaya, G.V. Belokopytov, A.N. Bogolyubov, Yu.E. Terkhov: Combination of experimental and analytical approaches in the design problem for metafilms
16.30			
16.40			

16.45

**Coffee break**

	<b><i>Diffraction</i></b> (Main Hall) Chair: Mikhail Lyalinov	<b><i>Mathematical methods in biology</i></b> (Hall 106) Chair: Vladimir Kozlov	<b><i>Hyperlenses and thermal phenomena</i></b> (Hall 311) Chair: Ivan Iorsh
17.00	Babich V.M., Matskovskiy A.A.: An interference head wave and concept of localization	Vladimir P. Golubyatnikov: Oscillations in some gene networks models	Zhukovsky S.V., Repän T., Orlov A.A., Lavrinenko A.V.: Dark-field hyperlens: superresolution microscopy for weak scatterers
17.20	Andronov I.V.: Scattering by a fast moving body	S.Yu. Nikitin, A.V. Priezzhev, A.E. Lugovtsov, Yu.S. Yurchuk, V.D. Ustinov, M.D. Lin: Data analysis in laser diffractometry of red blood cells in shear flow conditions	Kosulnikov S.Yu., Simovski C.R.: Non-regular wire-medium structures as dipole radiator enhancers
17.30			
17.40	Daniil P. Kouzov, Yulia A. Solovyeva: Diffraction of a plane wave with an amplitude linearly varying along its front by wedges	Ludmila A. Dmitrieva, Igor E. Kanunikov, Yuri A. Kuperin: The study of scaling properties of the human brain electrical activity in various states of consciousness	Maslovski S.I.: Enlarging the shadow: getting past Planck's black body limit
17.45			
18.00			
18.15			

19.00

**Concert**

	<b>Mathematical approaches</b> (Hall 311) Chair: Maxim Demchenko	<b>Optical forces</b> (Main Hall) Chair: Alexander Shalin
9.30	Borzov V.V., Damaskinsky E.V.: On representations of the generalized oscillator for two systems of orthogonal polynomials connected by linear relations	Novitsky A.V.: Pulling optical force for anisotropic cylindrical particles
9.40		
9.50	Saburova N.Yu., Korotyaev E.L.: Effective masses for Laplacians on periodic graphs	
10.10	Chugainova A.P.: Spectral stability of special discontinuities	S.V. Sukhov, M.I. Petrov, A.A. Bogdanov, A. Dogariu, A.S. Shalin: Optical forces induced at the metal surface
10.25		Shilkin D.A., Lyubin E.V., Soboleva I.V., Fedyanin A.A.: Optical forces induced by Bloch surface waves on a one-dimensional photonic crystal
10.30	A.S. Mikhaylov, V.S. Mikhaylov: On some application of boundary control method in inverse problems	A.A. Zharov, I.V. Shadrivov, N.A. Zharova, A.A. Zharov Jr.: Opto-mechanical Hall effect for nanoparticles
10.40		A.A. Zharov Jr., I.V. Shadrivov, N.A. Zharova, A.A. Zharov: Sorting of plasmonic nanoparticles with light
10.50	Shanin A.V., Korolkov A.I.: Diffraction by an impedance strip. Embedding formula	
10.55		

11.10 **Coffee break**

	<b>Localized waves III</b> (Hall 311) Chair: Andrey Shanin	<b>All-dielectric Nanophotonics</b> (Main Hall) Chair: Alexander Krasnok
11.30	M.V. Hakobyan, V.M. Red'kov, A.M. Ishkhanyan: The adiabatic regime of the asymmetric diffraction of atoms in the field of a standing wave	Vladimir Dzyuba, Dmitriy Storozhenko, Andrei Amosov, Yurii Kulchin: Theory of nontypical low-threshold optical nonlinearity of a dielectric nanoparticles
11.45		
11.50	Dodonov D.V., Davydova M.D., Kalish A.N., Gusev N.A., Zvezdin A.K., Belotelov V.I.: Surface plasmon-solitons in heterostructures with Kerr nonlinearity	Permyakov D., Sinev I., Markovich D., Ginzburg P., Samusev A., Belov A., Valuckas V., Kuznetsov A., Luk'yanchuk B., Miroshnichenko A., Neshev D., Kivshar Y.: Direct mapping of magnetic and electric optical responses from silicon nanoparticles
12.00		Hopkins B., Miroshnichenko A.E., Kivshar Y.S., Filonov D.S., Poddubny A.N., Glybovski S.B., Kivshar Y.S., Monticone F., Alù A., Hwang Y., Davis T.J.: The nature of Fano resonances in nanoparticle oligomers
12.10	N.N. Rosanov, N.V. Vysotina, L.A. Nesterov, N.A. Veretenov, S.V. Fedorov, A.N. Shatsev: Longitudinal and transverse solitons in a dynamical trap	Savelev R.S., Petrov M.I., Krasnok A.E., Belov P.A., Kivshar Yu.S.: Fano resonance in all-dielectric nanoparticle chains with side-coupled resonator
12.15		
12.30	Bykov D.A., Golovastikov N.V., Doskolovich L.L.: Spatiotemporal field transformation and spatiotemporal Fano lineshape in guided-mode resonant gratings	
12.45		
12.50	E.G. Fedorov, A.A. Matskovskii, N.N. Rosanov: Excitation of electromagnetic waves in a dynamical cavity	
13.00		

13.10 **Lunch**

	<b>Navier–Stokes equations: theory and applications I</b> (Hall 311) Chair: Irina Denisova	<b>Nonlinear optics</b> (Main Hall) Chair: Ildar Gabitov
14.55		Voytova T.A., Krasnok A.E., Yulin A.V., Belov P.A.: The influence of field enhancement and Purcell effect on third harmonic generation
15.00	A. Meirmanov, G. Reshetova, V. Tcheverda: Mesoscopic dynamics of solid–liquid interfaces. A general mathematical model	Storozhenko D.V., Dzyuba V.P., Amosov A.V., Kulchin Yu.N.: Low-threshold nonlinear optical metamaterials. Transmission, reflection, absorption
15.10		A.A. Zyablovsky, A.V. Dorofeenko, A.P. Vinogradov, A.A. Pukhov, E.S. Andrianov, A.A. Lisyansky: Laser with PT-symmetry breaking in a polarization space
15.20	Rozanova-Pierrat A.V.: Approximation of a compressible Navier–Stokes system by models of the non-linear acoustics	
15.25		

15.40	Joanna Renclawowicz: Inflow-outflow nonstationary flow	V.Yu. Shishkov, A.A. Zyablovsky, E.S. Andrianov, A.A. Pukhov, A.P. Vinogradov, A.A. Lisyansky: Distributed feedback laser
15.55		Shorokhov A.S., Fedotova A.N., Melik-Gaykazyan E.V., Shcherbakov M.R., Fedyanin A.A., Lodewijks K., Dmitriev A., Vevellen N., Moshchalkov V.V.: Third harmonic generation spectroscopy of plasmonic meta-atoms in the vicinity of the magnetic dipolar resonance
16.00	Klyueva N.V., Soldatov I.N.: Inertial waves and instability of the Rankine vortex with axial viscous flow	
16.10		E.S. Andrianov, A.A. Pukhov, A.V. Dorofeenko, A.P. Vinogradov, A.A. Lisyansky: Possible realizations of spaser operation
16.20	V.A. Solonnikov: Estimates of the solutions of the Navier–Stokes equations for viscous compressible fluids	
16.25		N.E. Nefedkin, E.S. Andrianov, A.A. Pukhov, A.P. Vinogradov, A.A. Lisyansky: Stochastic resonance in driven spaser

16.40 **Coffee break**

	<i>Navier–Stokes equations: theory and applications II</i> (Hall 106) Chair: Vsevolod Solonnikov	<i>Nanophotonics and quantum plasmonics</i> (Main Hall) Chair: Andrey Novitsky
17.00	Mogilevskiy I.S., Kunik A.M.: A numerical finding of a 2D surface by its mean curvature	A.K. Sarychev, G. Tartakovsky, A. Parfenyev, S. Vergeles: Thermal phenomena in quantum plasmonics
17.20	Denisova I.V.: Global solvability of the problem on two-phase capillary fluid motion in the Oberbeck–Boussinesq approximation	
17.30		Simovski C.R.: Circuit model of plasmon-enhanced fluorescence
17.40 18.00	Belyaeva N.A.: Axisymmetric flows of non-Newtonian fluids	

19.00

**Boat tour**

