DAYS on DIFFRACTION - 2004

June 29 – July 2, 2004, St.Petersburg, Russia

The Program

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http://math.nw.ru/dd04/Program.pdf

Tuesday, June 29,2004 ***St.Petersburg Branch of Steklov's Math. Inst.***

(27 Fontanka Quay, downtown)

$8^{30} – 9^{30}$ REGISTRATION AND COFFEE **Main Hall**

$9^{30} – 9^{40}$ OPENING ADDRESS **Main Hall**

	ADVANCE TECHNIQUE FOR NONLINEAR WAVES *Chair : Buldyrev V.S.* **Main Hall**		**MATHEMATICAL ASPECTS** *Chair: Kuznetsov N.* **Hall 311**	
$9^{40} – 10^{10}$	**Zeng Y.B.**	***The generalized Darboux transformations for the KP equation with self-consistent sources***	**Palamodov V.**	***Source functions in inhomogeneous medium***
$10^{10} – 10^{40}$	**Tirozzi B., Dobrokhotov S.Yu.**	***Equations of water wind waves over a non uniform bottom and some asymptotic solutions***	**Medina J.M., Cernuschi Frias B.**	***A note on the A.S. convergence of certain random series in $\mathcal{D}'(\mathbb{R}^d)$***

$10^{40} – 11^{00}$ COFFEE BREAK **Main Hall**

	WATER WAVES & TRAPPING ***Chair: Williams P.S.*** **Main Hall**		**WAVEGUIDES (SCATTERING)** ***Chair: Grikurov V.E., Andronov I.V.*** **Hall 311**		**ODE & SPECIAL FUNCTIONS** ***Chair: Slavyanov S.Yu.*** **Hall 203**	
$11^{00} – 11^{30}$	**Andrianov A.I., Hermans A.J.**	***Interaction of free surface waves and floating elastic plates***	**Shen Z., Qian Ch.**	***On the generalized transfer scattering matrix for cascaded waveguide discontinuities***	**Slavyanov S.Yu.**	***Gaussian-like eigenfunctions originated by the Heun's class differential equations***
$11^{30} – 12^{00}$	**Ehrenmark U.**	***Wave trapping on a plane beach and a consequent Green's function for a class of scattering problems***	**Ishio H.**	***Semiclassical analysis of diffraction in electronic transmission through a stepped quantum wire***	**Kazakov A.Ya., Sirota Yu.N.**	***Mobius transform for the linear ordinary differential equations***
$12^{00} – 12^{20}$	**Kuznetsov N.**	***Linear water waves in containers and channels: direct and inverse spectral problems***	**Don N., Kirilenko A., Poyedinchuk A.**	***Analysis of hollow uniform waveguides using unified approach***	**Evstigneev L.A.**	***BARSIC SLEIGN - software for computation of regular and singular Sturm-Liouville problem eigenvalues and eigenfunctions***
$12^{20} – 12^{40}$			**Athanassoulis G.A., Politis K.S.**	***A Gabor-Galerkin approach for solving infinite-energy problems with constrained-at-infinity admissible functions***	**Yatsyk A.**	***Use of GiNaC library in a field of symbolic analysis of differential equations***
$12^{40} - 13^{00}$	**Motygin O.V.**	***Frequency bounds for modes of fluid motion trapped near cylinders and periodic along their generators***	**Bogomolov Ya.L., Semenov E.S., Yunakovsky A.D.**	***Scattering problem for an accelerating part of a linear collider***	**Igotti N.**	***Asymptotic behavior of eigenvalues originated by confluent Heun equation with nearby singularities***

$13^{00} - 15^{00}$ **LUNCH**

	SCATTERING & DIFFRACTION *Chair: Parsaei M.* Main Hall		NONLINEAR WAVES *Chair: Tirozzi B.* Hall 311	
$15^{00} – 15^{30}$	Chandezon J.	*The method C for the study of the diffraction of electromagnetic wave by a surface*	Porubov A.V., Lavrenov I.V., Tsuji H.	*Formation of abnormally high localized water waves due to nonlinear two-dimensional waves interaction*
$15^{30} – 15^{50}$	Chandezon J., Poyedinchuk A., Tuchkin Y.A., Yashina N.P.	*Certain aspects of spectral theory concerning C-method*	Lapin V.G., Yashina N.F.	*Diminishing of the three-wave decay threshold in the presence of long scale correlations*
$15^{50} – 16^{10}$	Acho T.M.	*A parameter expansion method approach for the determination of the potential for the bispherical and toroidal distribution of charge*	Vakulenko S.A.	*Title Complexity of interaction of nonlinear waves*

$16^{10} – 16^{30}$ **COFFEE BREAK** Main Hall

	NON-STATIONARY (MOVING) BOUNDARIES & MEDIA *Chair Zeng Y.B.* Main Hall		NUMERICAL APPROACHES *Chair: Chandezon J.* Hall 311	
$16^{30} – 17^{00}$	Censor D.	*Non-relativistic scattering by time-varying bodies and media*	Alexeyeva A.L., Dadaeva A.N.	*Transient problems of uncoupled thermoelastodynamics for semispace with cylindrical cavities*
$17^{00} – 17^{30}$	Rosanov N.N., Sochilin G.B.	*Acoustic wave propagation through fluids with inhomogeneous velocity distribution*	Basarab M.A., Kravchenko V.F.	*Application of the R-functions technique to solving electromagnetic wave scattering problems by the modified method of discrete sources*
	TRAPPED MODES *Chair: Mel'nyk T.A.* Main Hall		**FLUID DYNAMICS** *Chair: Kouzov D.P.* Hall 311	
$17^{30} – 18^{00}$	Nazarov S.A.	*The new criterion for existence of trapped modes*	Denisova I.V., Indeytsev D.A., Klimenko A.V.	*Stability of an infinite flexible beam under a viscous fluid flow with an exponential profile*
$18^{00} – 18^{30}$	Melnichuk O.P., Popov I.Yu.	*Weakly coupled quantum and dielectric waveguides: variational estimates of the spectrum*	Bora S.N.	*Water wave diffraction by cylindrical structures in finite depth water*

Wednesday June 30, 2004 ***St.Petersburg Branch of Steklov's Math. Inst.***

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	QUANTUM RESONANCES *Chair: Dobrokhotov S.Yu.* **Main Hall**		**ELASTIC WAVES** *Chair: Molotkov L.A.* **Hall 311**	
9^{00} - 9^{30}	**Bludov Y.V.**	***Intrasubband magnetoplasmons in a finite array of quantum wires***	**Cunha P.E.M.**	***A fast "multi-source" reverse time migration (RTM)***
9^{30} - 10^{00}	**Wegrzyn P.**	***Parametric resonance in a vibrating cavity***	**Kiselev Yu.V., Troyan V.N.**	***Numerical study of restoration of local elastic inhomogeneities by iterative approaches based on the diffraction tomography method***
10^{00} - 10^{30}	**Dodonov V.V.**	***Quantum phenomena in cavities with moving boundaries***	**Molotkov L.A.**	***On the wave propagation in fluid and elastic-fluid block media***

10^{30} - 11^{00} **COFFEE BREAK** **Main Hall**

	CONE DIFFRACTION ***Chair: Lyalinov M.A.*** **Main Hall**		**MULTI-RAYS & WAVEGUIDE PROPAGATION** ***Chair: Athanassoulis G.A.*** **Hall 311**	
11^{00} - 11^{30}	**Babich V.M.**	***On electro-magnetic version of P-C ansatz***	**Ouranos I., Papkelis E., Frangos P.**	***An electromagnetic method for calculating radio coverage in urban environments using physical optics and physical theory of diffraction***
11^{30} - 12^{00}	**Lyalinov M.A.**	***On diffraction of acoustic waves by a transparent cone***	**Kudrin A.V., Lyakh M.Yu., Kyriacou G.A., Zaboronkova T.M.**	***Guided modes on radially nonuniform channels in a magnetoplasma***
12^{00} – 12^{20}	**Semenova E.K., Doroshenko V.A.**	***Field behavior near the tip and edges singularities of the slotted cone***	**Philippov V.B., Kirpichnikova N.Ya., Vlasjuk N.G.**	***Combined method of calculation of the field of the point source in a waveguide. (Slightly curved media.)***
12^{20} – 12^{40}	**Merzon A.E.**	***Time-dependent diffraction on a wedge: existence***	**Nerukh A.G., Fedotov F.V., Benson F.V. , Sewell P.**	***Analytic-numerical approach to non-stationary problems in dielectric waveguides***

12^{40} - 14^{30} **LUNCH**

	SPECTRAL ASYMPTOTICS *Chair: Nazarov S.A.* Main Hall		VIBRATION OF PLATES *Chair: Shanin A.V.* Hall 311	
14^{30} - 15^{00}	**Mel'nyk T.A.**	***Eigenmodes and pseudo-eigenmodes of thick multi-level junctions***	**Filippenko G.V., Kouzov D.P.**	***On the vibration of a plate partially protruding above the surface of a liquid***
15^{00} – 15^{20}	**Albeverio S., Dobrokhotov S.Yu., Semenov E.S.**	***On the splitting formulas for high and low energy levels of the multidimensional Shrödinger operator***	**Borovikov V.A., Popov A.L.**	***Diffraction of progressive bending waves of infinite plate by a round inclusion***
15^{20} – 15^{40}	**Poteryakhin M.A.**	***Normal forms in the neighborhood of invariant torus and asymptotic eigenfunctions and eigenvalues of the small diffusion operator***	**Rossikhin Yu.A., Shitikova M.V., Loktev A.A.**	***Impact of a sphere upon a elastic buffer embedded onto a elastic transversely isotropic plate***
15^{40} - 16^{00}	**Pokrovski A.**	***Spectral asymptotics of quantum harmonic oscillator perturbed by almost periodic potential***	**Tkacheva L.A.**	***Floating elastic plate behavior under periodic external load***

16^{00} - 16^{30} **COFFEE BREAK** **Main Hall**

	SOLITONS *Chair: Fortunato D.* Main Hall		MATHEMATICAL ASPECTS *Chair: Wegrzyn P.* Hall 311	
16^{30} - 17^{00}	**Sukhorukov A.A., Kivshar Yu.S.**	***Dynamic band-gap solitons in nonlinear self-induced lattices***	**Nazarov S.A., Slutskij A.**	***Branching periodicity: homogenization of the Dirichlet problem for an elliptic system***
17^{00} – 17^{30}	**Konyukhova N.B., Dyshko A.L., Voronov N.A.**	***Multiple self-similar solitons to the system of nonlinear scalar Higgs fields in the (d+1) - dimensional de Sitter space***	**Pavlov Yu.V.**	***On wave equation in curved space-time***
17^{30} – 18^{00}	**Serikbaev N.S., Zhunussov K.Kh., Rahimov F.K., Koshkinbaev A.D., Myrzakulov R.**	***On some integrable and nonintegrable nonlinear equations of elastic ferromagnets***	**Kirpichnikova A.**	***The uniqueness inverse boundary spectral problem for the second order differential operator on the Riemannain polyhedron***

Thursday July 1, 2004 ***St.Petersburg Branch of Steklov's Math. Inst.***

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	SHOCK WAVES *Chair: Omel'yanov G.A.* **Main Hall**		**NUMERICAL APPROACHES** *Chair: Pastrone F.* **Hall 311**	
9^{00} - 9^{30}	**Shelkovich V.M.**	***The delta-shock front problem***	**Gursky V.V., Kozlov K.N., Samsonov A.M.**	***Combined optimization technique for data fitting***
9^{30} - 10^{00}	**Danilov V.G.**	***Formation and breakup of shock waves for scalar conservation laws***	**Parsaei M.**	***Interaction of the numerical solution of hyperbolic equations with an obstacle in the flow direction***
10^{00} – 10^{30}	**Omel'yanov G.A.**	***The uniqueness problem for shock waves interaction in gases***	**Williams P.S.**	***The computation of the potential of a wave obliquely incident on a plane beach of any angle***

10^{30} - 11^{00} **COFFEE BREAK** **Main Hall**

	NONLINEAR WAVES IN COMPLEX MEDIA *Chair: Samsonov A.M.* **Main Hall**		**MOVING SOURCES** *Chair: Censor D.* **Hall 311**	
11^{00} - 11^{30}	**Casasso A., Pastrone F.**	***Non linear waves in microstructured solids and complex structures***	**Borisov V.V.**	***Solutions of the 3D telegraph equation for circular sources moving with the wavefront velocity***
11^{30} – 12^{00}	**Konyukhova N.B., Sukov A.I., Lima P.M., Chemetov N.V.**	***Analysis and numerical modelling of bubble-type solutions in nonlinear physics***	**Rabinovich V., Sanchez I.M.**	***Propagation of waves in the electron plasma from nonuniformly moving sources***
12^{00} – 12^{30}	**Alexander T.J., Sukhorukov A.A.**	***Stable half-charge vortices in parametric wave mixing***	**Ciarletta M., Iovane G., Nasedkin A.V.**	***Plane waves and fundamental solutions in plane and antiplane problems for anisotropic elastic medium under moving oscillating source***

12^{30} - 14^{30} LUNCH

	SCATTERING & DIFFRACTION *Chair: Zaboronkova T.M.* Main Hall		OPTICS *Chair: Rosanov N.N.* Hall 311	
14^{30} - 15^{00}	Shanin A.V.	*A new symmetry relation for some diffraction problems: a generalization of the reciprocity principle*	Abramochkin E.G., Volostnikov V.G.	*Wavefield stability under Fourier transform*
15^{00} – 15^{20}	Grigoryan E., Melkumyan A.	*On wave diffraction in a piezoelectric medium containing semi-infinite electrode*	Kiselev A.P.	*New structures in paraxial Gaussian-type beams*
15^{20} – 15^{40}	Agayan K., Grigoryan E., Jilavyan S.	*Diffraction of waves in an elastic space with semi-infinite elastic inclusion*	Smotrova E.I., Nosich A.I.	*Spectra and thresholds of the WG modes in a microdisk laser with non-uniform gain area*
15^{40} – 16^{00}	Radchenko V.V.	*Modeling of a dipole antenna on a partially screened double-layer lossy dielectric sphere*	Ledneva H.P., Astafyeva L.G., Korzhov A.V., Katseva I.R.	*Influence of spatial recovering modes of different orders on the lasing in aerosol particle*

16^{00} – 16^{30} COFFEE BREAK Main Hall

	MATHEMATICAL ASPECTS *Chair: Danilov V.G.* Main Hall		PULSES & LOCALIZED SOLUTIONS *Chair: Abramochkin E.G.* Hall 311	
16^{30} – 17^{00}	Brűning J., Geyler V.A.	*Geometric scattering on a hybrid manifold as a model for the spectral theory of automorphic functions*	Lebedev M.K., Tolmachev Yu.A.	*Impulse approach in the diffraction problems: results and comparison with the rigorous diffraction theory*
17^{00} – 17^{30}	Smolyanov O.G., Truman A.	*Large hamiltonian Feynman path integrals via the Chernoff formula and all that*	Kozlov S.A., Petroshenko P.A.	*Self-focusing of few-cycle light pulses of several wave lengths transverse sizes*
17^{30} - 18^{00}	Borzov V.V., Damaskinsky E.V.	*Polynomial based coherent states and related Bargmann spaces*	Lisok A.L., Shapovalov A.V., Trifonov A.Yu.	*On the quasi-energy spectral series of the nonlinear Hartree-type equation with quadratic potential*

Friday July 2, 2004

Inst. on Physics of St.Petersburg Univ.
(Petrodvoretz campus)

Departure of bus to the Petrodvoretz campus: 8^{15}, 27 Fontanka Quay (in front of Math.Inst.)

	PLENARY SESSION **Chair:** ***Babich V.M.***	**Conference Hall**
$9^{30} – 10^{15}$	**Karasev M.**	***Birkhoff resonances and quantum ray method***
$10^{15} – 11^{00}$	**Fortunato D.**	***Solitary waves and electromagnetic fields***

$11^{00} – 12^{00}$ POSTER SESSION AND COFFEE

Entrance Hall

Akhmeteli A.M.	***A Gaussian beam diffracting on a conducting cylinder – exact solutions of the Maxwell equations and their applications***	**Shermenev A., Shermeneva M.**	***Nonlinear acoustic wave equation in cylinder coordinates***
Astafyeva L.G., Zheltov G.I.	***Effect of internal intensity distribution on heating of blood vessel by laser radiation***	**Borisov A.V., Trifonov A.Yu., Shapovalov A.V.**	***On semiclassical solitary waves of the nonlinear Schrödinger equation with an external field***
Balaban M.V.	***Electromagnetic wave diffraction by a perfectly conducting disk***	**Gorbatsevich F., Gillen C.**	***The types of the phenomenon of linear acoustic anisotropic absorption (LAAA)***
Doroshenko V.A.	***Integral transforms in time-domain diffraction problems on unclosed cone structures***	**Yanson Z.A.**	***On intensity of hirh-frequency modes of Rayleigh type in anisotropic elastic media***
Il'chenko V.L.	***On a role of wave processes in geological mediums (experimental data)***	**Vsemirnova E.A.**	***2-D raytracing for the case of curved boundaries between two half-spaces***
Boutko Ya.A.	***Representations of solutions of the Cauchy-Dirichlet problem for the heat equation in a domain of a compact Riemannian manifold and functional integrals***	**Kossovich L.Yu., Kovalev V.A., Taranov O.V.**	***Asymptotic model for far field of Rayleigh in the case of elastic thin-walled cylinder***
Kulakova L.A., Tarasov I.S.	***Surface and bulk sound wave effect on the heterolaser spectral characteristics***	**Kochetkov I.D., Rogacheva N.N.**	***Efficiency of piezoelectric actuator exciting acoustic waves in semi-infinite elastic solid***
Afanas'ev A.A., Mikhnevich S.Yu., Kononenko V.K.	***Spectral and output power characteristics of DFB laser heterostructures***	**Boriskin A.V., Boriskina S.V., Sewell P., Benson T.M., Nosich A.I.**	***Trigonometric-Galerkin discretization of the Muller boundary integral equations with application to dielectric antenna analysis***
Sitnik S.M.	***On unitary transmutations for the Bessel differential operator***	**Yatsyk V.V.**	***Resonant scattering of waves on the nonlinear dielectric layer***
Koposova E.V., Vlasov S.N.	***Vector wave beams. Change of polarization of wave beams of electromagnetic waves at reflection from dielectric plate***	**Yashina N.F., Zaboronkova T.M.**	***Parametric instability of electromagnetic waves guided by the dielectric-anisotropic media boundary***
Dorofeev M.S.	***Boundary conditions at the movable waveguide outlet***	**Lebedev M.K., Tolmachev Yu.A.**	***Diffraction of ultrashort pulse from Gaussian diaphragm***
Borovskikh A.V.	***Eikonal equation for inhomogeneous medium***	**Shvedov V.G.**	***Topological transformations in combined singular beams***
Ruzhytska N., Nerukh A.G., Nerukh D.	***Evolution of non-stationary electromagnetic signal complexity in a modulated medium***	**Farafonov V.G., Il'in V.B.**	***Light scattering methods for Chebyshev particles: convergence in the far-field zone and the Rayleigh hypothesis***
Belov P.A., Simovski C.R.	***Excitation of semi-infinite electromagnetic crystal by plane electromagnetic wave***	**Simonenko I.S.**	***On pulsating solutions of the telegraph equation***
Kytmanov A.	***Impulse approach for solving some emission problems***	**Puchkov A.M.**	***Square integrable solutions of the c-type spheroidal Coulomb equation***

	PLENARY SESSION **Chair:** ***Kiselev A.P.*** **Conference Hall**	
$12^{00} – 12^{45}$	**Belov V.V.,** **Dobrokhotov S.Yu.,** **Tudorovskiy T.Ya.**	***Operator separation of variables and Maslov non-standard characteristics in adiabatic problems***
$12^{45} – 13^{30}$	**Shadrivov I.V., Kivshar Yu.S.,** **Zharov A.A., Zharova N.A.**	***Left-handed metamaterials and negative refraction***
	CLOSING	

13^{30} - 14^{30} LUNCH

14^{30} - 18^{00} EXCURSION **Petrodvoretz Gardens**

18^{00} - ? PICNIC PARTY **Woods near the campus**

AUTHOR INDEX

NOTES