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**DAY on DIFFRACTION - 2002**  
*June 5 -- 8, 2002, St.Petersburg, Russia*  
**The Program**

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<b>WEDNESDAY, JUNE 5, 2002</b>	<b>ST.PETERSBURG BRANCH OF STEKLOV'S MATH. INST.</b>	<b>3</b>
SPECTRAL ASYMPTOTICS (I)		3
IRREGULAR WAVEGUIDE PROBLEMS (I)		3
PARABOLIC EQUATION TECHNIQUE		3
FLUID DYNAMICS		3
MATHEMATICAL ASPECTS OF WAVE PROPAGATION		4
ELASTIC AND ACOUSTIC WAVES (I)		4
SOLITARY WAVES		4
NAVIER-STOKES EQUATION		4
<b>THURSDAY JUNE 6, 2002</b>	<b>ST.PETERSBURG BRANCH OF STEKLOV'S MATH. INST.</b>	<b>5</b>
MODERN NUMERICAL APPROACHES		5
SPECTRAL ASYMPTOTICS (II)		5
ELASTIC AND ACOUSTIC WAVES (II)		5
SCATTERING & DIFFRACTION		5
DIFFRACTION IN ANGULAR DOMAINS		6
PLATES, SHELLS & VIBRATION		6
NON-STATIONARY WAVES & PHENOMENA (I)		6
NONLINEAR WAVES (I)		6
<b>FRIDAY JUNE 7, 2002</b>	<b>ST.PETERSBURG BRANCH OF STEKLOV'S MATH. INST.</b>	<b>7</b>
SCATTERING BY PARTICLES		7
ELASTIC AND ACOUSTIC WAVES (III)		7
WAVEGUIDES & RESONATORS		7
EXPERIMENTS & APPLICATION OF WAVE PHENOMENA		7
GRATINGS AND "WIRE-MEDIA"		8
NON-STATIONARY WAVES & PHENOMENA (II)		8
IRREGULAR WAVEGUIDE PROBLEMS (II)		8
NONLINEAR WAVES (II)		8
<b>SATURDAY JUNE 8, 2002</b>	<b>INST. ON PHYSICS OF ST.PETERSBURG UNIV.</b>	<b>9</b>
POSTER SESSION		9
PLENARY SESSION		10
PLENARY SESSION		10

Wednesday, June 5, 2002

St.Petersburg Branch of Steklov's Math. Inst.

(27 Fontanka Quay, downtown)

8<sup>30</sup> - 9<sup>15</sup> REGISTRATION AND COFFEE

Main Hall

9<sup>15</sup> - 9<sup>30</sup> OPENING V.S.Buldyrev, I.V.Andronov

Main Hall

SPECTRAL ASYMPTOTICS (I) Chair: V.S.Buldyrev Main Hall		IRREGULAR WAVEGUIDE PROBLEMS (I) Chair: Ya.L.Bogomolov Hall 311	
9 <sup>30</sup> - 10 <sup>00</sup>	Dobrokhotov S.Yu., <i>Explicit formulas for action-angle variables near isotropic tori and their applications in asymptotic spectral problems</i>	Kostuk L.Y., Mescheryakov V.A., Mudrov A.E.	<i>Method of the own waves for modeling of the electromagnetic processes in structure with filling biisotropic medium</i>
10 <sup>00</sup> - 10 <sup>30</sup>	Nazarov S.A. <i>Uniform asymptotics of eigenvalues for a thin elastic plate</i>	Kutikov A., Kuchinsky S., Golyatin V., Pearsall T.P., Nedeljkovic D.	<i>Numerical method for calculation of coupling between photonic crystal waveguides</i>
10 <sup>30</sup> - 11 <sup>00</sup>	Gadyl'shin R.R. <i>On local perturbations of Schrodinger operator at the axis</i>	Kudrin A.V., Kurina L.E., Lyakh M.Yu., Zaboronkova T.M.	<i>Guided modes on a cylindrical channel in a collisional anisotropic plasma</i>

11<sup>00</sup> - 11<sup>30</sup> COFFEE BREAK

Main Hall

PARABOLIC EQUATION TECHNIQUE Chair: S.Yu.Slavyanov Main Hall		FLUID DYNAMICS Chair: S.Yu.Dobrokhotov Hall 311	
11 <sup>30</sup> - 12 <sup>00</sup>	Kazakov A.Ya. <i>Special function related to the concave-convex boundary problem of the diffraction theory</i>	Semenov E.C.	<i>The eikonal equation and Hugoniot-Maslov conditions for the vortical singular solutions to the system of the shallow water equations</i>
12 <sup>00</sup> - 12 <sup>30</sup>	Popov A.V., Kopeikin V.V., Zhu N.Y., Landstorfer F.M.	Andrianov A.I., Hermans A.J.	<i>Diffraction of surface waves by VLFP on infinite, finite and shallow water</i>
12 <sup>30</sup> - 13 <sup>00</sup>	Sofronov I.L. <i>Fast method to implement non-local discrete transparent boundary condition for the Schrodinger equation</i>	Tkacheva L.A.	<i>Surface wave scattering by floating elastic plate</i>

13<sup>00</sup> - 15<sup>00</sup> LUNCH

MATHEMATICAL ASPECTS OF WAVE PROPAGATION Chair: M.Berry Main Hall		ELASTIC AND ACOUSTIC WAVES (I) Chair: G.I.Mikhasev Hall 311	
15 <sup>00</sup> - 15 <sup>30</sup>	Dudnikova T.V., Komech A.I., Mauser N.	Kovalev V.A., Wilde M.V.	<i>Approximate description of whispering gallery waves resonances in scattering of acoustic waves by elastic cylinders and spheres</i>
15 <sup>30</sup> - 16 <sup>00</sup>	Khekalo S. <i>The gauge relation of differential operators and Huygens' principle</i>	Andronov I.V.	<i>Radiation and scattering of flexural waves by circular body</i>
16 <sup>00</sup> - 16 <sup>30</sup>	Borzov V.V., Damaskinsky E.V.	Borovikov V.A., Fradkin L.	<i>Scatter of an elastic wave by a rough crack edge</i>

16<sup>30</sup> - 17<sup>00</sup> COFFEE BREAK

Main Hall

SOLITARY WAVES Chair: A.S.Kovalev Main Hall		NAVIER-STOKES EQUATION Chair: S.A.Nazarov Hall 311	
17 <sup>00</sup> - 17 <sup>30</sup>	Pelinovsky D. <i>Matrix stability theory for incoherent optical solitons</i>	Videman J.H.	<i>Steady flows of Jeffrey-Hamel type in a Navier-Stokes fluid</i>
17 <sup>30</sup> - 18 <sup>00</sup>	Gorbach A.V., Kovalev A.S.	Specovius-Neugebauer M.	<i>Optimal convergence of the pressure stabilization method for viscous flow problems</i>

Thursday June 6, 2002

St.Petersburg Branch of Steklov's Math. Inst.

(27 Fontanka Quay, downtown)

MODERN NUMERICAL APPROACHES <i>Chair: I.V.Andronov</i> <b>Main Hall</b>		SPECTRAL ASYMPTOTICS (II) <i>Chair: R.R.Gadyl'shin</i> <b>Hall 311</b>	
9 <sup>00</sup> - 9 <sup>30</sup>	Kravchenko V.F., Basarab M.A.	<i>An algebraic method based on r-functions for reconstructing tomographic images in complex-shaped domains and its application in wave diffraction problems</i>	Borisov D.I. <i>Asymptotics for eigenvalues of two-dimensional Laplacian with nonperiodic frequent change of type of boundary conditions</i>
9 <sup>30</sup> - 10 <sup>00</sup>	Bouche D., Bonnaud G., Ramos D.	<i>Numerical schemes and generalized Airy functions</i>	Oleinik V.L., Sibirev N.V. <i>Asymptotics of localized spectral bands of the periodic waveguide</i>
10 <sup>00</sup> - 10 <sup>30</sup>	Acho T.M., Makinde D.O.	<i>Modern shape approximation technique for complicated convex bodies - case study of bispherical and hyperboloidal coordinates</i>	Albeverio S., Dobrokhotov S.Yu., Poteryakhin M.A. <i>On quasimodes of small diffusion operators corresponding to stable invariant tori with nonregular neighborhoods</i>

10<sup>30</sup> - 11<sup>00</sup> COFFEE BREAK

Main Hall

ELASTIC AND ACOUSTIC WAVES (II) <i>Chair: G.Korvin</i> <b>Main Hall</b>		SCATTERING & DIFFRACTION <i>Chair: D.Bouche</i> <b>Hall 311</b>	
11 <sup>00</sup> - 11 <sup>30</sup>	Parker D.F.	<i>Diffraction and guiding for surface acoustic waves</i>	Kolomiets S.M. <i>Laser beam diffraction at thin phase grid (Fresnel diffraction)</i>
11 <sup>30</sup> - 12 <sup>00</sup>	Tokmakova S.P.	<i>Negative Poisson's ratio in crystals</i>	Fedoseyev V.G. <i>Reflection of an electromagnetic wave beam with the helical wave front at a plane interface</i>
12 <sup>00</sup> - 12 <sup>30</sup>	Molotkov L.A.	<i>On effective models describing the elastic media with three systems of fractures</i>	Arablouei R., Ghorbani A. <i>An improved model based on UTD for multiple diffractions by buildings</i>

12<sup>30</sup> - 14<sup>30</sup> LUNCH

DIFFRACTION IN ANGULAR DOMAINS <i>Chair: M.A.Lyalinov</i> <b>Main Hall</b>		PLATES, SHELLS & VIBRATION <i>Chair:</i> <b>Hall 311</b>	
14 <sup>30</sup> - 15 <sup>00</sup>	Borovikov V.A.	<i>Diffraction by polyhedral angle: field in vicinity of singular ray</i>	Ul'yanov S.V. <i>The correlation and dynamic properties of smectic-A films on a substrate</i>
15 <sup>00</sup> - 15 <sup>30</sup>	Kurokhtin A.N., Popov A.V.	<i>Diffraction by a trihedral angle: full-wave numerical solution</i>	Kaplunov J.D., Kossovich L.Yu. <i>Transient waves in viscoelastic rods: an asymptotic approach</i>
15 <sup>30</sup> - 16 <sup>00</sup>	Babich V.M., Borovikov V.A., Fradkin L., Gridin D., Kamotski V., Samokish B.A., Smyshlyaev V.P.	<i>Scattering of plane and Rayleigh waves by an elastic wedges</i>	Mikhasev G.I. <i>Localized waves in medium length, rotating thin laminated cylindrical shell under wind load</i>

16<sup>00</sup> - 16<sup>30</sup> COFFEE BREAK

Main Hall

NON-STATIONARY WAVES & PHENOMENA (I) <i>Chair: V.V.Borisov</i> <b>Main Hall</b>		NONLINEAR WAVES (I) <i>Chair: D.F.Parker</i> <b>Hall 311</b>	
16 <sup>30</sup> - 17 <sup>00</sup>	Kiselev A.P.	<i>New explicit solutions of the wave equation</i>	Khartsiev V.E. <i>The generalized and new types of nonlinear wave equations of mathematical physics connected with dissipation</i>
17 <sup>00</sup> - 17 <sup>30</sup>	Gavrilov S.N., Indeitsev D.A.	<i>On the evolution of a trapped mode of oscillation in system "A string on an elastic foundation - moving inertial inclusion"</i>	Porubov A.V., Pastrone F., Shevchenko D.V. <i>Influence of microstructures on the evolution of nonlinear strain waves</i>
17 <sup>30</sup> - 18 <sup>00</sup>	Gernets A.A., Makarets M.V.	<i>First approach for electromagnetic emission during fracturing of piezoelectric</i>	Konyukhova N.B., Dyshko A.L. <i>The systems of nonlinear wave equations in the inflationary cosmology and their multiple self-similar solutions of the string- and monopole-type</i>

Friday June 7, 2002

St.Petersburg Branch of Steklov's Math. Inst.

(27 Fontanka Quay, downtown)

SCATTERING BY PARTICLES		ELASTIC AND ACOUSTIC WAVES (III)		
Chair: V.G.Faraonov		Chair: V.A.Borovikov		
Hall		Hall		
		311		
9 <sup>00</sup> - 9 <sup>30</sup>	Babenko V.A., Petrov P.K.	Calculation of electromagnetic fields inside the spheroidal particles	Duchkov A.A., Goldin S.V.	Calculation of the third and higher travel-time derivatives in heterogeneous medium
9 <sup>30</sup> - 10 <sup>00</sup>	Ledneva H.P., Katseva J.P.	The scattering field of a femtosecond pulse by the droplet	Oleschko K., Korvin G.	Fractal scattering from porous medium
10 <sup>00</sup> - 10 <sup>30</sup>	Faraonov V.G., Il'in V.B., Prokopjeva M.S., Zinov'ev A.B.	Scattering of electromagnetic radiation by multilayered axisymmetric particles	Soukina S.M., Gajewski D., Kashtan B.M., Tessmer E.	Linearized quasi-shear wave inversion using QI-approximation

10<sup>30</sup> - 11<sup>00</sup> COFFEE BREAK

Main Hall

WAVEGUIDES & RESONATORS		EXPERIMENTS & APPLICATION OF WAVE PHENOMENA		
Chair: L.Yu.Kossovich		Chair:		
Main Hall		Hall 311		
11 <sup>00</sup> - 11 <sup>30</sup>	Radin A.M., Plachenov A.B., Kudashov V.N.	Optical resonators with bidirectional and unidirectional stability	Habib K.	Optical interferometry as electrochemical emission spectroscopy of copper alloys in seawater
11 <sup>30</sup> - 12 <sup>00</sup>	Kirillova I.V., Avdonin A.S., Bogomazova E.Yu.	Some asymptotic expansions of the dispersion relations for a composite wave-guide with thin elastic walls	Umnov A.L., Yashnov V.A.	Spectrum of signals reemitted by an array of nonlinear scatterers in the presence of dielectric and conducting objects
12 <sup>00</sup> - 12 <sup>30</sup>	Türetken B., Alkumru A.	Plane wave diffraction by a dielectric loaded open parallel thick plate waveguide	Shishkina O.D.	Experimental study of the influence of background internal waves on the wake structure past a vertical cylinder

12<sup>30</sup> - 14<sup>30</sup> LUNCH

GRATINGS AND "WIRE-MEDIA"		NON-STATIONARY WAVES & PHENOMENA (II)		
Chair:		Chair: A.P.Kiselev		
Main Hall		Hall		
		311		
14 <sup>30</sup> - 15 <sup>00</sup>	Belov P., Tretyakov S.A.	Analytical study of dispersion and reflection properties of an artificial 2D crystal formed by rectangular lattice of ideally conducting cylinders	Rosonov N.N., Sochilin G.B.	Relativistic scattering of electromagnetic radiation on inhomogeneities of medium's velocity
15 <sup>00</sup> - 15 <sup>30</sup>	Nefedov I.S., Tretyakov S.A.	Properties of waveguides and transmission lines containing artificial wire media	Borisov V.V.	On spherical harmonic representation of transient waves in dispersive media
15 <sup>30</sup> - 16 <sup>00</sup>		Reserved	Simonenko I.I.	On transient electromagnetic waves produced by a source on pulsate spherical surface

16<sup>00</sup> - 16<sup>30</sup> COFFEE BREAK

Main Hall

IRREGULAR WAVEGUIDE PROBLEMS (II)		NONLINEAR WAVES (II)		
Chair: T.M.Zaboronkova		Chair: S.A.Kozlov		
Main Hall		Hall		
		311		
16 <sup>30</sup> - 17 <sup>00</sup>	Bogomolov Ya.L., Yunakovskiy A.D.	Scattering problem for radial irregular channels of a supercollider	Kuperin Yu.A., Pyatkin D.A.	Operator approach to stochastic control of chaos: Baker map
17 <sup>00</sup> - 17 <sup>30</sup>	Al-Arja O.A., Lavrov Yu.A., Lukyanov V.D.	On sound transmission through an elastic partition dividing waveguide of rectangular cross-section	Kozlov S.A., Berkovsky A.N., Petroshenko P.N., Shpolyanskiy Yu.A.	Electrical field and spectral dynamics of few-cycle light pulses in transparent nonlinear media with dispersion
17 <sup>30</sup> - 18 <sup>00</sup>	Vlasjuk N.G., Kirpichnikova N.Ya., Philippov V.B.	On the combined method of calculation of the field of a point source in a wave guide	Kulagin D.A., Omelianov G.A.	Kink's interaction to the equation $\epsilon^2(U_{tt} - U_{xx}) + F'_v(U) = 0$

Saturday June 8, 2002

Inst. on Physics of St.Petersburg Univ.  
(Petrodvoretz campus)Departure of bus to the Petrodvoretz campus:  
8<sup>30</sup>, 27 Fontanka Quay (in front of Math.Inst.)10<sup>00</sup> – 10<sup>40</sup> POSTER SESSION AND COFFEE

Entrance Hall

1	Astafyeva L.G.	<i>Effect on radiation on microparticles</i>	10	Grikurov V.E., Plamenevskii B.A.	<i>On spectrum of surface waves in diffraction gratings</i>
2	Aref'ev A.A.	<i>The generalization of normal waves method for nonstationary acoustic waveguide</i>	11	Kamotski V.	<i>Diffraction by an elastic wedge: existence and uniqueness</i>
3	Blagovestchenskii A.S., Novitskaya A.A.	<i>On asymptotic behavior of solutions of the wave equation at infinity</i>	12	Konyukhova N.B., Sukov A.I.	<i>On singular problem for the third-order nonlinear ODE arising from hydrodynamics</i>
4	Buslov V.A.	<i>Enlarging of states by graph methods</i>	13	Ledneva H.P., Korzhev A.V.	<i>Intensity and frequency bistability in aerosol microlaser</i>
5	Craster R.V., Doubravskii E.M., Shanin A.V.	<i>Embedding formulae and short-wave approximations</i>	14	Mescheryakov V.A., Mudrov A.E., Redkin G.A., Gukov A.A.	<i>Solution of the wave equations for biisotropic medium in form of general power-mode serieses</i>
6	Dmitriev V.J., Frolova T.V.	<i>Hierarchical genetic algorithm and computing of a diffractive beam shaper</i>	15	Planida M.Yu.	<i>Complete asymptotics for an eigenvalue of Laplace operator in a cylinder with change of boundary conditions on a narrow strip</i>
7	Dmitrieva L.A., Kuperin Yu.A., Soroka I.V.	<i>Nonlinear dynamics and neural networks in analysis of financial time series</i>	16	Radin A.M.	<i>Integral equations of the first kind with a difference kernel on a finite interval. Build-up of the explicit solutions.</i>
8	Farafonov V.G., Il'in V.B., Prokopjeva M.S.	<i>Quasistatic approximation for multilayered ellipsoids: generalization of Rayleigh and Rayleigh-Gans approximations</i>	17	Starkov A.S.	<i>Solution of a difference equations system</i>
9	Farafonov V.G., Il'in V.B., Vsemirnova E.A., Zinov'ev A.B.	<i>Scattering of electromagnetic radiation by an ensemble of multilayered axisymmetric particles</i>	18		

10

**PLENARY SESSION**

Chair: V.M.Babich

Conference Hall

10 <sup>40</sup> – 11 <sup>20</sup>	Berry M.	<i>Deconstructing shadows: Sommerfeld's halfplane and beyond</i>
11 <sup>20</sup> – 12 <sup>00</sup>	Slavyanov S.Yu., Dosch H.	<i>Inverse problems in X-ray scattering</i>

12<sup>00</sup> – 13<sup>20</sup> LUNCH**PLENARY SESSION**

Chair: V.M.Babich

Conference Hall

13 <sup>20</sup> – 14 <sup>00</sup>	Kovalev A.S., Gerasimchuk I.V.	<i>Nonlinear localization in modulated and self-modulated systems</i>
14 <sup>00</sup> – 14 <sup>40</sup>	Shanin A.V.	<i>Further progress in the "coordinate" equations theory</i>

14<sup>40</sup> - 15<sup>00</sup> COFFEE

Entrance Hall

15<sup>00</sup> - 18<sup>00</sup> EXCURSION (whilst poster session continued)

Petrodvoretz Gardens

18<sup>00</sup> - ? PICNIC PARTY

Woods near the campus

## AUTHOR INDEX

Acho T.M.	5	Gadyl'shin R.R.	3	Kudrin A.V.	3	Pyatkin D.A.	8
Al-Arja O.A.	8	Gajewski D.	7	Kulagin D.A.	8	Radin A.M.	7, 9
Albeverio S.	5	Gavrilov S.N.	6	Kuperin Yu.A.	8, 9	Ramos D.	5
Alkumru A.	7	Gerasimchuk I.V.	10	Kurina L.E.	3	Redkin G.A.	9
Andrianov A.I.	3	Gernets A.A.	6	Kurokhtin A.N.	6	Rosanov N.N.	8
Andronov I.V.	4	Ghorbani A.	5	Kutikov A.	3	Samokish B.A.	6
Arablouei R.	5	Goldin S.V.	7	Landstorfer F.M.	3	Semenov E.C.	3
Aref'ev A.A.	9	Golyatin V.	3	Lavrov Yu.A.	8	Shanin A.V.	9, 10
Astafyeva L.G.	9	Gorbach A.V.	4	Ledneva H.P.	7, 9	Shevchenko D.V.	6
Avdonin A.S.	7	Gridin D.	6	Lukyanov V.D.	8	Shishkina O.D.	7
Babenko V.A.	7	Grikurov V.E.	9	Lyakh M.Yu.	3	Shpolyanskiy Yu.A.	8
Babich V.M.	6	Gukov A.A.	9	Makarets M.V.	6	Sibirev N.V.	5
Basarab M.A.	5	Habib K.	7	Makinde D.O.	5	Simonenko I.I.	8
Belov P.	8	Harmans A.J.	3	Mausner N.	4	SLAVYANOV S.YU.	10
Berkovsky A.N.	8	Il'in V.B.	7, 9	Mescheryakov V.A.	3, 9	Smyshlyaev V.P.	6
Berry M.	10	Indeitsev D.A.	6, 9	Mikhasev G.I.	6	Sochilin G.B.	8
Blagovestchenskii A.S.	9	Kamotski V.	6	Molotkov L.A.	5	Sofronov I.L.	3
Bogomazova E.Yu.	7	Kaplunov J.D.	6	Mudrov A.E.	3, 9	Soroka I.V.	9
Bogomolov Ya.L.	8	Kashan B.M.	7	Nazarov S.A.	3	Soukina S.M.	7
Bonnaud G.	5	Katseva J.P.	7	Nedeljkovic D.	3	Specovius-Neugebauer M.	4
Borisov D.I.	5	Kazakov A.Ya.	3	Nefedov I.S.	8	Starkov A.S.	9
Borisov V.V.	8	Khartsiev V.E.	6	Novitskaya A.A.	9	Sukov A.I.	9
Borovikov V.A.	4, 6	Khekalo S.	4	Oleinik V.L.	5	Tessmer E.	7
Borzov V.V.	4	Kirillova I.V.	7	Oleshko K.	7	Tkacheva L.A.	3
Bouche D.	5	Kirpichnikova N.Ya.	8	Omelianov G.A.	8	Tokmakova S.P.	5
Buslov V.A.	9	Kiselev A.P.	6	Parker D.F.	5	Tretyakov S.A.	8
Craster R.V.	9	Kolomiets S.M.	5	Pastrone F.	6	Turetken B.	7
Damaskinsky E.V.	4	Komech A.I.	4	Pearsall T.P.	3	Ul'yanov S.V.	6
Dmitriev V.J.	9	Konyukhova N.B.	6, 9	Pelinovsky D.	4	Umnov A.L.	7
Dmitrieva L.A.	9	Kopeikin V.V.	3	Petroshenko P.N.	8	Videman J.H.	4
Dobrokhotov S.Yu.	3, 5	Korvin G.	7	Petrov P.K.	7	Vlajuk N.G.	8
Dosch H.	10	Korzhev A.V.	9	Philippov V.B.	8	Vsemirnova E.A.	9
Doubravskii E.M.	9	Kossovich L.Yu.	6	Plachenov A.B.	7	Wilde M.V.	4
Duchkov A.A.	7	Kostuk L.Y.	3	Plamenevskii B.A.	9	Yashnov V.A.	7
Dudnikova T.V.	4	Kovalev A.S.	4, 10	Planida M.Yu.	9	Yunakovskiy A.D.	8
Dyshko A.L.	6	Kovalev V.A.	4	Popov A.V.	3, 6	Zaboronkova T.M.	3
Farafonov V.G.	7, 9	Kozlov S.A.	8	Popov A.V.	3	Zhu N.Y.	3
Fedoseyev V.G.	5	Kravchenko V.F.	5	Porubov A.V.	6	Zinov'ev A.B.	7, 9
Fradkin L.	4, 6	Kuchinsky S.	3	Poteryakhin M.A.	5		
Frolova T.V.	9	Kudashov V.N.	7	Prokopjeva M.S.	7, 9		

## NOTES