VI INTERNATIONAL CONFERENCE

FRONTIERS OF NONLINEAR PHYSICS

PROGRAM

Nizhny Novgorod – St.-Petersburg, Russia
July 17 – 23, 2016

Topical Sections of the Conference

TS 1: General Problems of Nonlinear Dynamics and Nonlinear Wave Phenomena

MS 1.1: Mini-Symposium “Mathematics of Nonlinear Phenomena”

TS 2: Nonlinear Optics and Physics of Extreme Light

WS 2.1: Cremlin Workshop “Novel Applications of Exawatt Laser Sources”

TS 3: Nonlinear Problems in Astrophysics and Geophysics

MS 3.1: Mini-Symposium “From Standard to Superluminous Supernovae and Gamma-Ray Bursts”

MS 3.2: Mini-Symposium “Nonlinear Climate Processes in Polar Regions and Ice Sheet Instabilities”

MS 3.3: Mini-Symposium “Physics of Lightning and High-Energy Processes in the Atmosphere”

TS 4: Nonlinear Processes and Turbulence in Fluids and Plasmas

TS 5: Nonlinearities in Quantum Systems and Quantum Optics

TS 6: New Trends in Material Science

Sunday, July 17
8:00 – 18:00

8:00 – 10:30	**REGISTRATION**		
9:00	**Departure from Nizhny Novgorod**		
9:30 – 10:30	BREAKFAST		
10:30 – 11:00	**OPENING SESSION (Hall A)**		
	PLENARY SESSION 1		
11:00 – 11:30	***G. Mourou*** (Ecole Polytechnique, France). Extreme light. An intense pursuit to fundamental high energy physics		
11:30 – 12:00	***V. Fortov*** (Joint Inst. for High Temperatures, Russia). Extreme states of matter on Earth and in space		
12:00 – 12:30	COFFEE BREAK		
	PLENARY SESSION 2		
12:30 – 13:00	***E. Khazanov*** (Inst. of Applied Physics RAS, Russia). Laser Interferometer Gravitational Wave Observatory (LIGO): Machine review and contribution of the Institute of Applied Physics		
13:00 – 13:30	***C. Keitel*** (MPI for Nuclear Physics (MPIK), Germany). High-energy quantum dynamics with very intense laser pulses		
13:30 – 14:00	***N. Rosanov*** (Vavilov State Optical Inst., Russia). Waves and solitons in dynamic cavities		
14:00 – 15:30	LUNCH		
15:30 – 17:30	**TS1: General Problems of Nonlinear Dynamics and Nonlinear Wave Phenomena** **1.1** *M. Shats* (Australian National Univ., Australia). Particles and quasi-particles in Faraday waves (invited, 25 min.) **1.2** *P. Lushnikov* (Univ. of New Mexico, USA). Formation of limiting Stokes wave from non-limiting Stokes wave: merging of square root branch points from the infinite set of sheets of Riemann surface to form 2/3 singularity of limiting wave **1.3** *E. Kochurin* (IEP, UD RAS, Russia). Nonlinear Evolution of Kelvin-Helmholtz instability suppressed by tangential electric field **1.4** *N. Zubarev* (Inst. of Electrophysics UB RAS, Russia). Exact solutions for the shape of a cylindrical conducting liquid jet in a transverse electric field **1.5** *H. Xia* (Australian National Univ., Australia). Single scale Lagrangian dynamics of 2D turbulence	**TS2: Nonlinear Optics and Physics of Extreme Light** **2.1** *A. Zheltikov* (MSU/TAMU, Russia, USA). *Curiouser and curiouser*, or What the ultrafast found in the middle of the infrared (invited, 25 min.) **2.2** *A. Shkurinov* (Moscow State Univ., Russia). Interaction of high-intense femtosecond radiation with gas media and gas cluster beams (invited, 25 min.) **2.3** *V. Venediktov* (St. Petersburg Electrotechnical Univ. "LETI", Russia). Holographic wavefront sensors for laser applications **2.4** *V. Antonov* (Inst. of Applied Physics RAS, Russia). Ultimate capabilities for ultrashort pulse formation via resonant interaction of XUV radiation with IR-field-dressed atoms **2.5** *I. Ilyakov* (Inst. of Applied Physics RAS, Russia). Terahertz electro-optic sampling based on variations of the energy and ellipticity of femtosecond laser pulses with different spectrum shapes	
17:30 – 18:00	COFFEE BREAK		

18:00 – 20:00		**TS2: Nonlinear Optics and Physics of Extreme Light** **WS2.1: Cremlin Workshop "Novel Applications of Exawatt Laser Sources"** **2.6** *A. Sergeev* (Inst. of Applied Physics RAS, Russia). Review of key technologies and experiments of XCELS project (invited, 25 min.) **2.7** *A. Zigler* (Hebrew Univ. of Jerusalem, Israel). Temporal profile of fast electrons generated during interaction of high intensity laser with structured targets (invited, 25 min.) **2.8** *I. Dancus* (IFIN-HH/ELI-NP, Romania). Extreme Light Infrastructure – Nuclear Physics (invited, 25 min.) **2.9** *I. Shaykin* (Inst. of Applied Physics RAS, Russia). 500 J double nanosecond pulse generation in Nd:glass laser for pumping PEARL OPCPA stages **2.10** *A. Bashinov* (Inst. of Applied Physics RAS, Russia). Radiative trapping in extreme laser fields of different configurations	**TS1: General Problems of Nonlinear Dynamics and Nonlinear Wave Phenomena** **MS1.1: Mini-Symposium "Mathematics of Nonlinear Phenomena"** **1.6** *I. Christov* (Purdue Univ., USA). On PDEs with Hamiltonian structure: From kinks in higher-order field theory to peakompactons **1.7** *A. Dzhamay* (Univ. of Northern Colorado, USA). Schlesinger transformations and difference Painlevé equations **1.8** *V. Pierce* (UT Rio Grande Valley, USA). Continuum limits of generalized Toda lattices, and map enumeration with vertices of odd degree **1.9** *M. García-Ñustes* (PUCV, Chile). Localized patterns supported by an inhomogeneous Gaussian parametric excitation
20:30	**WELCOME PARTY**		

Monday, July 18
8:00 – 18:00

8:00 – 9:00	BREAKFAST		
9:00	**Arrival in Yaroslavl**		
	PLENARY SESSION 3		
9:00 – 9:30	***A. Beklemishev*** (Budker Inst. of Nuclear Physics, Russia). Linear traps for fusion: evolution		
9:30 – 10:00	***J. Fuchs*** (LULI, Ecole Polytechnique, France). Strong magnetization of laser-produced plasmas as a new tool for investigating astrophysics and fusion physics		
10:00 – 10:30	***S. Zilitinkevich*** (Finnish Meteorological Inst., Finland). Order, chaos and its self-control in fluid geospheres		
10:30 – 11:00	***P. Grangier*** (CNRS / Institut d'Optique, France). Quantum communications with Gaussian and non-Gaussian states of light		
11:00 – 14:00	**Yaroslavl city tour**		
14:00	**Departure from Yaroslavl**		
14:00 – 15:30	LUNCH		
15:30 – 17:30	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **3.1** *D. Kondrashov* (Univ. of California, Los Angeles, USA). Data-driven climate modeling and prediction (invited, 25 min.) **3.2** *A. Gritsun* (Inst. of Numerical Mathematics RAS, Russia). Atmospheric model subjected to external forcing: response, unstable periodic orbits, and the fluctuation-dissipation theorem **3.3** *V. Lucarini* (Univ. of Hamburg, Germany). Response and fluctuations in geophysical fluid dynamics **3.4** *E. Morozov* (Shirshov Inst. of Oceanology, Russia). High-amplitude internal tides in the Kara Gates Strait **3.5** *V. Zhmur* (Moscow Inst. of Physics and Technology, Russia). Application of Lagrangian invariants in nonlinear problems of geophysical hydrodynamics **3.6** *G. Golitsyn* (A.M. Obukhov Inst. of Atmospheric Physics RAS, Russia). Influence of viscosity on the diffusion of tracers in the presence of the wind surface waves	**TS 2: Nonlinear Optics and Physics of Extreme Light** **2.11** *D. Bauer* (Univ. of Rostock, Germany). Few-body strong-field physics with natural orbitals (invited, 25 min.) **2.12** *B. Bernhardt* (TUM, Germany). Real-time tracking of multi-electron dynamics in highly excited atoms (invited, 25 min.) **2.13** *Y. Mi* (Max-Planck-Inst. for Nuclear Physics, Germany). Strong-field ionization of H_2 molecules with a two-color laser pulse (invited, 25 min.) **2.14** *V. Strelkov* (General Physics Inst., Russia). High-order optical processes: towards nonperturbative nonlinear optics **2.15** *M. Emelin* (Inst. of Applied Physics RAS, Russia). High harmonic generation in gases with two-color crossed laser fields: species dependence of the yield	**TS6: New Trends in Material Science** **6.1** *S. Sekatskii* (EPFL, Switzerland). Photon Crystal – supported surface electromagnetic waves: A tool to launch blue and UV surface plasmons, plasmons on metals which do not support them, and to study kinetics of receptor-ligand interactions with living bacteria and cells (invited, 25 min.) **6.2** *A. Boltasseva* (Purdue Univ., USA). Enhancing nanophotonics and plasmonics with novel material platforms (invited, 25 min.) **6.3** *D. Radishev* (Inst. of Applied Physics RAS, Russia). Study of the controlled creation of NV^--centers ensembles in CVD diamond by method of delta doping **6.4** *S. Lukishova* (Inst. of Optics, Univ. of Rochester, USA). Nanophotonic advances for room-temperature single-photon sources (invited, 25 min.) **6.5** *V. Kukushkin* (Inst. of Applied Physics RAS and UNN, Russia). Simulation of delta-layer doping profile in CVD diamond providing high carrier mobility
17:30 – 18:00	COFFEE BREAK		

18:00 – 20:00	**TS5: Nonlinearities in Quantum Systems and Quantum Optics** **5.1** *A. Lvovsky* (Univ. of Calgary, Canada and Russian Quantum Center, Russia). Hybrid discrete-continuous tools in quantum optical communications (invited, 25 min.) **5.2** *M. Reid* (Swinburne Univ., Australia). Creating and interpreting Schrodinger's cat (invited, 25 min.) **5.3** *R. Folman* (Ben-Gurion Univ. of the Negev, Israel). Matter waves exposed to the external world: from decoherence to gravity and back (invited, 25 min.) **5.4** *V. Parigi* (Laboratoire Kastler Brossel – Univ. Pierre Marie Curie, France). Ultrafast optical frequency comb for quantum information and quantum metrology (invited, 25 min.) **5.5** *P. Huillery* (Durham Univ., United Kingdom). Strongly interacting photons using Rydberg atoms (invited, 25 min.)	**TS2: Nonlinear Optics and Physics of Extreme Light** **WS2.1: Cremlin Workshop "Novel Applications of Exawatt Laser Sources"** **2.16** *T. Kuehl* (GSI Darmstadt, Germany). Towards ultrahigh-power pulses using stimulated Raman backscattering (invited, 25 min.) **2.17** *T. Gustavsson* (LIDYL, CEA, CNRS, France). New laser-driven secondary sources at the LIDYL laboratory (invited, 25 min.) **2.18** *M. Starodubtsev* (Inst. of Applied Physics RAS, Russia). Recent experimental results on proton acceleration using the high-power PEARL facility (invited, 25 min.) **2.19** *V. Ginzburg* (Inst. of Applied Physics RAS, Russia). Using self-phase modulation for temporal compression of intense laser pulses **2.20** *T. Yu* (NUDT, China). Copious electron-positron pair production in ultra-intense laser cone interaction	**TS1: General Problems of Nonlinear Dynamics and Nonlinear Wave Phenomena** **MS1.1: Mini-Symposium "Mathematics of Nonlinear Phenomena"** **1.10** *E. Pelinovsky* (Inst. of Applied Physics RAS, Russia). KDV-like solitonic gas: interactions, turbulence and rogue waves (invited, 25 min.) **1.11** *T. Talipova* (Inst. of Applied Physics RAS, Russia). Nonlinear internal wave packets: breather dynamics **1.12** *I. Soustova* (Inst. of Applied Physics RAS, Russia). On the possible applications of perturbation theory for the compound soliton of Gardner's equation: Evolution of soliton in the region near the critical point; specific features cylindrically converging and diverging solitons **1.13** *G. Athanassoulis* (NTUA, Greece). Interaction of solitary water waves with uneven bottom using a Hamiltonian-Coupled Mode System
20:00 – 21:00	DINNER		
21:00	EVENING PROGRAM: **Music concert**		

Tuesday, July 19
8:00 – 18:30

8:30 – 9:00	BREAKFAST		
	PLENARY SESSION 4		
9:00 – 9:30	***L. Zelenyi*** (IKI - Space Research Inst., Russia). Space decade (2016-2025): Russian plans for Lunar and Martian investigation		
9:30 – 10:00	***T. Piran*** (The Hebrew Univ., Israel). Emission process in gamma-ray bursts – A short review		
10:00 – 10:30	***M. Ghil*** (Ecole Normale Superieure, France and Univ. of California, USA). The wind-driven ocean circulation and global change		
10:30 – 11:00	COFFEE BREAK		
	PLENARY SESSION 5		
11:00 – 11:30	***I. Kostyukov*** and ***A. Sergeev*** (Inst. of Applied Physics RAS, Russia). Laser-matter interaction at extreme intensities		
11:30 – 12:00	***J. Rocca*** (Colorado State Univ., USA). Advances in compact soft X-ray lasers and bright X-ray generation from relativistic plasmas		
12:00 – 12:30	***L. Butov*** (Univ. of California San Diego, USA). Collective phenomena in quantum systems of indirect excitons		
13:00	**Arrival at Goritsy**		
12:30 – 14:00	LUNCH		
14:00 – 16:00	**Bus tour to Kirillo-Belozersky Monastery**		
16:00	**Departure from Goritsy**		
16:00 – 18:00	**TS5: Nonlinearities in Quantum Systems and Quantum Optics** **5.6** *Y. Shih* (Univ. of Maryland, USA). Quantum noise and nonlocal interference (invited, 25 min.) **5.7** *I. Novikova* (College of William and Mary, USA). Analysis of the spatial mode decomposition of atom-generated squeezed vacuum (invited, 25 min.) **5.8** *S. Shwartz* (Bar-Ilan Univ., Israel). Ghost imaging and ghost diffraction in the X-ray regime (invited, 25 min.) **5.9** *M. Erukhimova* (Inst. of Applied Physics RAS, Russia). Squeezing of thermal fluctuations based on four-waves mixing (invited, 25 min.) **5.10** *R. Shakhmuratov* (Kazan Physical Technical Inst., RAS, Russia). Application of the low finesse frequency comb for high resolution spectroscopy (invited, 25 min.)	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **3.7** *Vl. Kocharovsky* (Inst. of Applied Physics RAS, Russia). Variety of self-consistent magnetic field structures in a collisionless plasma: Exact solutions to a nonlinear many-particle relativistic problem (invited, 25 min.) **3.8** *E. Churazov* (IKI, MPA, Russia). Waves, turbulence and AGN feedback in galaxy clusters (invited, 25 min.) **3.9** *G. Golitsyn* (A.M. Obukhov Inst. of Atmospheric Physics RAS, Russia). Self-similarity of some integral characteristics of galaxies (invited, 25 min.) **3.10** *G. Bisnovatyi-Kogan* (Space Research Inst., Russia). Regular and chaotic dynamics of non-spherical bodies. Zeldovich's pancakes, and emission of very long gravitational waves (invited, 25 min.)	**TS1: General Problems of Nonlinear Dynamics and Nonlinear Wave Phenomena** **MS1.1: Mini-Symposium "Mathematics of Nonlinear Phenomena"** **1.14** *I. Barashenkov* (Univ. of Cape Town, South Africa). Jamming anomaly in PT-symmetric optics and Bose-Einstein condensates (invited, 25 min.) **1.15** *G. Tissoni* (Inst. Non Lineaire de Nice, France). Spatio-temporal extreme events in a laser with a saturable absorber (invited, 25 min.) **1.16** *Y. Joglekar* (IUPUI, USA). PT-breaking transitions in dissipative, two-level, Floquet systems **1.17** *S. Suchkov* (Nonlinear Physics Centre, Australian National Univ., Australia). Frequency combs generation in high Q factor microscopic fiber resonators
18:00 – 18:30	COFFEE BREAK		

18:30 – 20:30	**TS5: Nonlinearities in Quantum Systems and Quantum Optics** **5.11** *K. Hakuta* (UEC Tokyo, Japan). Nanofiber quantum photonics (invited, 25 min.) **5.12** *N. Davidson* (Weizmann Inst., Israel). Narrow spectra and very slow light via electromagnetic induced grating (invited, 25 min.) **5.13** *V. Akulin* (Inst. for Information Transmission Problems RAS, Russia; Laboratoire Aimé Cotton, CNRS, France and Pennsylvania State Univ., USA). Neural control of redundant (abundant) systems as algorithms stabilizing subspaces (invited, 25 min.) **5.14** *E. Mikhailov* (College of William and Mary, USA). Towards active gyroscope in the fast-light regime (invited, 25 min.) **5.15** *R. Okamoto* (Kyoto Univ., Japan). Realization of a quantum shutter enabling closing two slits (invited, 25 min.)	**TS 3: Nonlinear Problems in Astrophysics and Geophysics** **3.11** *T. Piran* (The Hebrew Univ., Israel). Inefficient elliptical accretion in tidal disruption events (invited, 25 min.) **3.12** *E. Kurbatov* (INASAN, Russia). Turbulence in accretion disks: Possible sources and opportunities to observe **3.13** *B. Shustov* (INASAN, Russia). Molecules as witnesses and drivers of star formation (invited, 25 min.) **3.14** *G. Fleishman* (NJIT, USA). Three-dimensional modeling of solar phenomena with nonlinear force-free field reconstructions **3.15** *S. Bogovalov* (National Research Nuclear Univ., Russia). Magnetocentrifugal acceleration of plasma in the pulsar magnetosphere and pulsed VHE gamma-rays (invited, 25 min.)	
20:30 – 21:30	DINNER		
21:30	EVENING PROGRAM		

Wednesday, July 20
8:00 – 15:30

8:30 – 9:00	BREAKFAST		
	PLENARY SESSION 6		
9:00 – 9:30	***S. Blinnikov*** (ITEP/VNIIA/IPMU, Russia). Interacting shells as the source of light in superluminous supernovae		
9:30 – 10:00	***S. Putvinski*** (Tri Alpha Energy, USA). Overview of fusion program at Tri Alpha Energy		
10:00 – 10:30	***V. Zakharov*** (Lebedev Physical Inst., Russia). Weak-turbulent theory of wind-driven sea		
10:30 – 11:00	COFFEE BREAK		
	PLENARY SESSION 7		
11:00 – 11:30	***M. Glyavin*** (Inst. of Applied Physics RAS, Russia). Mastering of THz band: high power sources		
11:30 – 12:00	***V. Rakov*** (Univ. of Florida, USA) and ***E. Mareev*** (Inst. of Applied Physics RAS, Russia). High-speed optical imaging of lightning and sparks: A review of recent results		
12:00 – 14:00	**TS5: Nonlinearities in Quantum Systems and Quantum Optics** **5.16** *N. Kroo* (Hungarian Academy of Sciences, Hungary). From plasmonic electron pairing to dynamic screening in gold films (invited, 25 min.) **5.17** *P. Hemmer* (Texas A&M Univ., USA). Organic nanodiamonds (invited, 25 min.) **5.18** *V. Zadkov* (Inst. of Spectroscopy RAS, Russia). Quantum optics of quantum emitters in the near-field of plasmonic nanostructures (invited, 25 min.) **5.19** *A. Akimov* (TAMU/RQC, USA, Russia). Coupling of single NV center in diamond to optical fiber (invited, 25 min.) **5.20** *I. Zelensky* (Inst. of Applied Physics RAS, Russia). Inversion of optically detected magnetic resonance of NV-centers in diamond under resonant excitation (invited, 25 min.)	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **MS3.1: Mini-Symposium "From Standard to Superluminous Supernovae and Gamma-Ray Bursts"** **3.16** *S. Nagataki* (RIKEN, Japan). Theoretical studies on supernovae and gamma-ray bursts (invited, 25 min.) **3.17** *N. Tominaga* (Konan Univ., Japan). Development of a multidimensional relativistic radiative transfer code (invited, 25 min.) **3.18** *A. Tolstov* (Kavli IPMU, Univ. of Tokyo, Japan). Multicolor light curve and spectrum simulations of superluminous supernovae and hypernovae **3.19** *D. Badjin* (ITEP, VNIIA, Russia). On physical and numerical instabilities arising in simulations of non-stationary radiatively cooling shocks (invited, 25 min.) **3.20** *E. Nerush* (Inst. of Applied Physics RAS, Russia). Electron-positron pair production in relativistic collisionless shocks	**TS4: Nonlinear Processes and Turbulence in Fluids and Plasmas** **4.1** *G. Vekstein* (Jodrell Bank Centre for Astrophysics, Univ. of Manchester, United Kingdom). Taylor's model, plasmoid instability, and fast magnetic reconnection (invited, 25 min.) **4.2** *A. Shalashov* (IAP RAS, Russia). Achievement of 1 keV electron temperature in the large-scale open magnetic mirror GDT (invited, 25 min.) **4.3** *A. Beklemishev* (Budker Inst. of Nuclear Physics, Russia). Nonlinear phenomena in plasmas of linear traps **4.4** *E. Kuznetsov* (P.N. Lebedev Physical Inst. RAS, Russia). Variational approach for mirror structures in a plasma with pressure anisotropy (invited, 25 min.) **4.5** *N. Kleeorin* (Ben-Gurion Univ. of the Negev, Israel). Solar activity (Wolf numbers), based on nonlinear dynamo theory and earth weather **4.6** *S. Gurbatov* (Lobachevsky State Univ. of Nizhny Novgorod, Russia). Self-similarity in acoustical turbulence
14:00 – 15:30	LUNCH		

Wednesday, July 20 (continued)
15:30 – 22:00

15:30 – 18:00	**TS5: Nonlinearities in Quantum Systems and Quantum Optics** **5.21** *A. Kalachev* (Zavoisky Phys.-Tech. Inst., Russia). Developing quantum memories in isotopically pure doped crystals (invited, 25 min.) **5.22** *J. von Zanthier* (Univ. of Erlangen, Germany). Dicke superradiance and Hanbury Brown and Twiss intensity interference: two sides of the same coin (invited, 25 min.) **5.23** *K. Ichimura* (Corporate Research & Development Center, Toshiba Corporation, Japan). Electric-field modulation spectroscopy on a single rare-earth ion in a crystal for a readout of a nuclear-spin qubit (invited, 25 min.) **5.24** *X. Zhang* (Texas A&M Univ., USA). Quantum storage based on controllable frequency comb **5.25** *R. Khabibullin* (IUHFSE RAS, Russia). Design and fabrication of terahertz sources based on multilayer GaAs/AlGaAs heterostructures **5.26** *E. Kuznetsova* (Inst. of Applied Physics; Rzhanov Inst. of Semiconductor Physics SB RAS, Russia). Non-destructive readout of rotational states of polar molecules via interaction with Rydberg atoms	**TS1: General Problems of Nonlinear Dynamics and Nonlinear Wave Phenomena** **1.18** *I. Sibgatullin* (Moscow Univ., Inst. of Oceanology, Russia). Nonlinear interactions in internal wave attractors **1.19** *G. Athanassoulis* (NTUA, Greece). Emergence of limit cycles in the stationary response probability density functions for a class of exactly solvable nonlinear stochastic oscillators (invited, 25 min.) **1.20** *N. Ginzburg* (Inst. of Applied Physics RAS, Russia). Using two-dimensional distributed feedback for generation of spatially coherent millimeter, terahertz and optical radiation **1.21** *T. Kittel* (Potsdam Inst. for Climate Impact Research / Humboldt-Universität zu Berlin, Germany). Timing of transients: quantifying reaching times and transient behavior in complex systems	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **MS3.3: Mini-Symposium "Physics of Lightning and High-Energy Processes in the Atmosphere"** **3.21** *A. Chilingarian* (Yerevan Physics Inst., Armenia). Lightnings and particle fluxes from thunderclouds (invited, 25 min.) **3.22** *D. Iudin* (Inst. of Applied Physics RAS, Russia). Compact intracloud discharges: structural features and evolution **3.23** *S. Davydenko* (Inst. of Applied Physics RAS, Russia). Modeling electromagnetic emission of compact intracloud discharges **3.24** *E. Svechnikova* (Inst. of Applied Physics RAS, Russia). Relativistic feedback discharge in thunderstorm clouds: electron avalanche modeling and cloud structure estimations
18:00	**Arrival at Kizhi**		
18:00 – 20:00	**Walking tour to Kizhi**		
20:00 – 21:00	DINNER		
21:00	EVENING PROGRAM: **Music concert**		
22:00	**Departure from Kizhi**		

Thursday, July 21
8:00 – 14:30

8:00 – 9:00	BREAKFAST		
	PLENARY SESSION 8		
9:00 – 9:30	***V. Shalaev*** (Purdue Univ., USA). Nanophotonics: Quest for new material platforms and metasurface design		
9:30 – 10:00	***R. Miles*** (Princeton Univ., USA). Femtosecond laser E-field probe (FLEP) and femtosecond laser electronic excitation tagging (FLEET): Nonlinear diagnostic processes in air and other gases		
10:00 – 10:30	***A. Feigin*** (Inst. of Applied Physics RAS, Russia). Empirical approach to climate modeling and prognosis		
10:30 – 11:00	COFFEE BREAK		
11:00 – 13:00	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **MS3.2: Mini-Symposium "Nonlinear Climate Processes in Polar Regions and Ice Sheet Instabilities"** **3.25** *I. Esau* (Nansen Environmental and Remote Sensing Centre, Norway). Strong sensitivity of the surface air temperature to atmospheric boundary layer depth in polar climates **3.26** *A. Gavrilov* (Inst. of Applied Physics RAS, Russia). Multidimensional nonlinear dynamical modes expansion of spatially distributed time series **3.27** *E. Loskutov* (Inst. of Applied Physics RAS, Russia). Constructing an embedding for reduced dynamical models of climate variability **3.28** *N. Iakovlev* (Inst. of Numerical Mathematics RAS, Russia). The Arctic Ocean hydro- and sea ice dynamics: Nonlinear physics and numerical modeling **3.29** *S. Kravtsov* (Univ. of Wisconsin-Milwaukee, USA). Multiple climate regimes in an idealized lake–ice–atmosphere model **3.30** *V. Lucarini* (Univ. of Hamburg, Germany). Multistability of the climate system and melancholia states	**TS2: Nonlinear Optics and Physics of Extreme Light** **2.21** *W. Helml* (Technische Univ. München, Germany). Towards attosecond-scale full temporal reconstruction & control of FEL X-ray pulses (invited, 25 min.) **2.22** *C. Ohae* (Univ. of Electro-Communications, Japan). Generation of phase-locked harmonics and its application to ultrafast technology (invited, 25 min.) **2.23** *C. Menoni* (Colorado State Univ., USA). Nanophotonics at extreme ultraviolet wavelengths on a table-top (invited, 25 min.) **2.24** *D. Serebryakov* (Inst. of Applied Physics RAS, Russia). Efficient gamma-ray generation from oblique incident petawatt laser pulses	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **MS3.1: Mini-Symposium "From Standard to Superluminous Supernovae and Gamma-Ray Bursts"** **3.31** *H. Takabe* (Helmholtz-Zentrum Dresden-Rossendorf, Germany). Laboratory astrophysics on collisionless shock and particle acceleration in Universe (invited, 25 min.) **3.32** *E. Derishev* (IAP RAS, Russia). Structure and radiation of relativistic shocks **3.33** *M. Gilfanov* (IKI, Russia). Electromagnetic signatures of progenitors of type Ia supernovae (invited, 25 min.) **3.34** *A. Zhilkin* (INASAN, Russia). New MHD model for strong magnetized astrophysical flows
13:00 – 14:30	LUNCH		

Thursday, July 21 (continued)
14:00 – 20:00

14:00	**Arrival at Svirstroy**
14:30 – 17:30	**Bus tour to Trinity Alexander-Svirsky Monastery**
17:30 – 18:00	COFFEE BREAK
18:00	**Departure from Svirstroy**
18:00 – 19:30	**POSTER SESSION** *I. Abramov* (IAP RAS, Russia). Formation of XUV-radiating strongly non-equilibrium plasma with multiply charged ions in the expanding high-pressure gas jet *S. Anisimov* (GO "Borok" IPE RAS, Russia). Electricity of undisturbed atmospheric boundary layer of middle latitudes: from observations to modeling *S. Bogdanov* (IAP RAS, Russia). Investigation of synthesis and electronic properties of semiconductor CVD diamond with high boron doping level *A. Emelina* (IAP RAS, Russia). Magnetic field-induced modification of the spectral shape of high harmonics in gases driven by mid-IR laser pulses *A. Golovanov* (IAP RAS, Russia). Initiation of Cherenkov superradiance by spontaneous emission of a current pulse edge *I. Khayrulin* (N. Novgorod State Univ., Russia). Transformation of γ-ray photon wave packet in a train of short pulses in optically thick vibrating recoilless resonant absorber *E. Kocharovskaya* (IAP RAS, Russia). Passive mode locking and dissipative solitons in the electron oscillators with a saturable absorber in the feedback loop *M. Lesik* (CNRS, Univ. Paris-Sud, ENS Cachan, Université Paris-Saclay, France). Fabrication of Nitrogen-Vacancy centers for their applications in quantum information and magnetometry *J. Ouyang* (NUDT, China). Coulomb-explosion driven proton focusing In an arched CH target *L. Pastur* (Univ. Paris Sud, France). Lagrangian and Eulerian chaos in confined two-dimensional natural convection *Q. Ripault* (CEA, France). Self-organized reshaping of optical nanoantennas in strong fields *A. Seleznev* (IAP RAS, Russia). Empirical complex-valued ANN-based model for ENSO forecast *F. Shao* (NUDT, China). Numerical investigation of the transverse instability in radiation pressure acceleration *O. Shomina* (IAP RAS, Russia). Wind flow modulation due to variations of the water surface roughness *E. Shurgalina* (IAP RAS, Russia). The role of two-soliton interactions in the process of freak wave formation in solitonic gas *A. Syssoev* (IAP RAS, Russia). Modeling development of negative lightning stepped leader *A. Tsvetkov* (IAP RAS, Russia). Control of THz gyrotrons output parameters in the scope of prospective biomedical and spectroscopy applications *Y. Yin* (National Univ. of Defense Technology, China). Particle simulation of the current filamentation in dense plasmas *O. Zubareva* (Inst. of Electrophysics UB RAS, Russia). Conditions for splitting of an uncharged liquid jet in a transverse electric field
20:00	**DINNER PARTY**

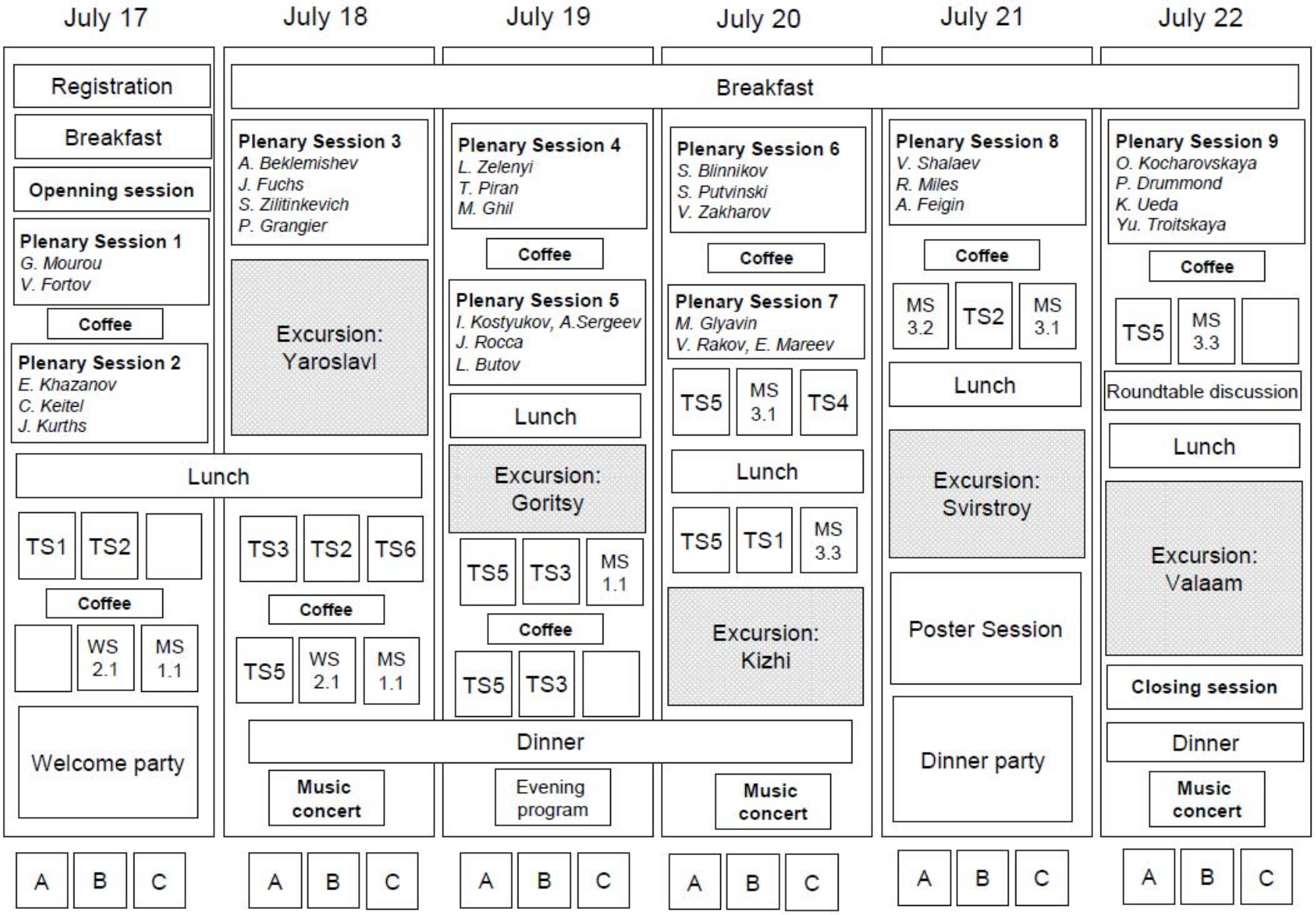
Friday, July 22

8:00 – 9:00	BREAKFAST	
	PLENARY SESSION 9	
9:00 – 9:30	***O. Kocharovskaya*** (Texas A&M Univ., USA and Inst. of Applied Physics RAS, Russia). Towards sub-fs X-ray plasma lasers via optical modulation of operating transition	
9:30 – 10:00	***P. Drummond*** (Swinburne Univ. of Technology, Australia). Critical fluctuations in an optical parametric oscillator: when light meets magnetism	
10:00 – 10:30	***K. Ueda*** (Inst. for Laser Science, Univ. of Electro-Communications, Japan). New approach for thermal-lens-free ceramic lasers	
10:30 – 11:00	***Yu. Troitskaya*** (Inst. of Applied Physic RAS, Russia). Sea spray at strong winds: mechanisms of production and role in a hurricane mechanics and thermodynamics	
11:00 – 11:30	COFFEE BREAK	
11:30 – 13:30	**TS5: Nonlinearities in Quantum Systems and Quantum Optics** **5.27** *A. Turlapov* (Inst. of Applied Physics RAS, Russia). Near-field interference in a chain of fluctuating Bose condensates (invited, 25 min.) **5.28** *M. Baranov* (IQOQI, Austria). Non-Abelian anyons (Majorana fermions) in atomic-molecular systems (invited, 25 min.) **5.29** *S. Tarasov* (Inst. of Applied Physics RAS, Russia). Universal scaling in the critical region of Bose-Einstein condensation: Grand canonical ensemble versus canonical ensemble for an ideal gas **5.30** *D. Makarov* (POI FEB RAS, Russia). Nonlinear dynamics of coherently-coupled two-species Bose-Einstein condensates **5.31** *D. Kobyakov* (Inst. of Applied Physics RAS, Russia). Turbulence in binary Bose-Einstein condensates generated by highly non-linear Rayleigh-Taylor and Kelvin-Helmholtz instabilities **5.32** *E. Kolomeitsev* (Matej Bel Univ., Slovakia). Running condensates in moving superfluids	**TS3: Nonlinear Problems in Astrophysics and Geophysics** **MS3.3: Mini-Symposium "Physics of Lightning and High-Energy Processes in the Atmosphere"** **3.35** *E. Mareev* (Inst. of Applied Physics RAS, Russia). Thunderstorms and lightning in the global electric circuit: recent results (invited, 25 min.) **3.36** *S. Dementyeva* (Inst. of Applied Physics RAS, Russia). Modeling of electric parameters of real thunderstorms in numerical weather prediction models **3.37** *N. Lehtinen* (BCSS, Univ. of Bergen, Norway). Modeling of laboratory streamer discharge features associated with observations of x-ray emissions **3.38** *A. Evtushenko* (Inst. of Applied Physics RAS, Russia). About generation of day and night sprites
13:30 – 14:30	**Roundtable discussion**	
14:30 – 15:30	LUNCH	
15:30 – 19:30	**Tour to the Central Manor of the Monastery of the Transfiguration of the Saviour (Valaam)**	
19:30 – 20:00	**CLOSING SESSION**	
20:00 – 21:00	DINNER	
21:00	EVENING PROGRAM: **Music concert**	

Saturday, July 23

8:00	**Arrival in St.-Petersburg**
7:00 – 9:00	BREAKFAST

Compact Agenda



NOTES

"Nizhny Novgorod"

Deck map