VII INTERNATIONAL CONFERENCE

FRONTIERS OF NONLINEAR PHYSICS

P R O G R A M

Nizhny Novgorod – Saratov – Nizhny Novgorod
June 28 – July 4, 2019

Nizhny Novgorod, Russia
Institute of Applied Physics, Russian Academy of Sciences
2019

Topical Sections of the Conference

TS 1: Nonlinear Wave Phenomena
TS 2: Extreme Light Physics and Nonlinear Optics
TS 3: Terahertz Photonics and Extreme Terahertz Science
TS 4: Geophysical and Climate Phenomena
TS 5: Nonlinear Processes in Astrophysics and Space Plasma
TS 6: Nonlinearities in Quantum Systems and Quantum Optics
Mini-symposium 6.1: Diamond-based quantum optics for bio-sensing and quantum information

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Mega-grant No. 14.W03.31.0032 "Quantum effects in confined intense laser light", Leading Scientist: Gerhard Leuchs.

Mega-grant No. 14.W03.31.0028 "Quantum optical sensing with diamonds", Leading Scientist: Philip Hemmer.

Laser Components

http://lasercomponents.ru

Conference Web site: https://fnp2019.ipfran.ru

FRIDAY, June 28

8:00 – 12:00	**REGISTRATION**		
12:00	**DEPARTURE FROM NIZHNY NOVGOROD**		
9:00 – 10:00	BREAKFAST		
12:30	**OPENING SESSION (Hall A)**		
13:30 – 14:30	LUNCH		
15:00 – 17:00	**PLENARY SESSION 1 (Hall A)** P.1: **M. Scully** *(Texas A&M Univ., USA).* The quantum theory of the laser and its application to: ideal and interacting Bose condensate, Unruh acceleration radiation, and quantum fluctuations in Fröhlich living matter phase transitions P.2: **P. Corkum** *(Univ. of Ottawa, Canada).* High harmonic generation with structured light beams P.3: **A. Sergeev** *(Inst. of Applied Physics RAS, Russia).* Towards the Schwinger field		
17:00 – 17:30	COFFEE BREAK		
	HALL A	**HALL B**	**HALL C**
17:30 – 19:30	**TS 6: Nonlinearities in Quantum Systems and Quantum Optics** 6.1 (invited): **P. Drummond** *(Swinburne Univ. of Technology, Australia)*. Schrodinger cats, time crystals and quantum tunneling 6.2 (invited): **M. Reid** *(Swinburne Univ. of Technology, Australia)*. Testing mesoscopic realism using time 6.3 (invited): **F. Li** *(Xi'an Jiaotong Univ., China)*. Generation of nonclassical states of microwave field via quantum reservoir engineering in superconducting circuit quantum systems 6.4: **M. Erukhimova** *(Inst. of Applied Physics RAS, Russia)*. Corrections to the phenomenological relaxation operator for electron gas in solid 6.5 (invited): **A. Mikhalychev** *(Stepanov Inst. of Physics, NAS of Belarus, Belarus)*. Coherent diffusive photonics for generation of non-classical states	**TS 2: Extreme Light Physics and Nonlinear Optics** 2.1 (invited): **M. Murakami** (*Osaka Univ., Japan).* Generation of ultrahigh field by microbubble implosion and its applications 2.2 (invited): **N. Andreev** *(Joint Inst. for High Temperatures RAS, Russia).* Ultrarelativistic electrons in laser-plasma interactions 2.3 (invited): **A. Savel'ev** *(Moscow State Univ., Russia).* MultiMeV collimated electrons from tailored plasma at relativistic laser-solid interaction 2.4: **A. Korzhimanov** *(Inst. of Applied Physics RAS, Russia)*. Energy scaling of proton sheath acceleration driven by ultra-intense sub-picosecond laser pulses 2.5: **A. Soloviev** (*Inst. of Applied Physics RAS, Russia*). Laser driven electron acceleration at PEARL facility	**TS 1: Nonlinear Wave Phenomena** 1.1 (invited): **Yu. Chashechkin** *(Ishlinsky Inst. for Problems in Mechanics RAS, Russia)*. Surface and internal gravity waves: mathematical and laboratory modelling 1.2 (invited): **Yu. Stepanyants** *(Univ. of Southern Queensland, Australia)*. Nonlinear waves in rotating fluids. Recent achievements and perspectives 1.3: **M. Gorokhovski** *(Ecole Centrale de Lyon, LMFA, Université Claude Bernard Lyon 1, France)*. Intermediate asymptotics from renormalized equation of fragmentation: model of the non-stationary cascade in developed 3D turbulence 1.4: **S. Chefranov** *(Obukhov Inst. of Atmospheric Physics RAS, Russia)*. New exact solution of the Navier-Stokes equations for turbulence in a compressible medium
19:30	WELCOME PARTY		

SATURDAY, June 29

8:00 – 9:00	BREAKFAST		
9:00 – 11:00	**PLENARY SESSION 2 (Hall A)** P.4: **B. Hegelich** *(Gwangju Inst. of Science & Technology, South Korea and Univ. of Texas at Austin, USA)*. Physics at the intensity frontier: ultrahigh intensity laser experiments P.5: **G. Leuchs** *(Max Planck Inst. for the Science of Light, Germany)*. Focusing light P.6: **J. Kurths** *(Potsdam Inst. for Climate Impact Research, Germany)*. Complex network approach reveals global pattern of extreme-rainfall teleconnection		
10:00	Arrival in Kazan		
11:00 – 14:00	**Kazan city tour**		
14:00	Departure from Kazan		
14:00 – 15:00	LUNCH		
	HALL A	**HALL B**	**HALL C**
15:30 – 17:30	**TS 6: Nonlinearities in Quantum Systems and Quantum Optics** 6.6 (invited): **R. Roehlsberger** (DESY, Germany). Nuclear cavity QED: from EIT to collective strong coupling 6.7 (invited): **A. Palffy** *(Max Planck Inst. for Nuclear Physics, Germany)*. Nuclear and plasma physics at extreme light sources 6.8 (invited): **J. Evers** *(Max Planck Inst. for Nuclear Physics, Germany)*. X-ray quantum optics with Mössbauer nuclei 6.9 (invited): **S. Shwartz** *(Bar Ilan Univ., Israel)*. Quantum illumination with X-rays	**TS 2: Extreme Light Physics and Nonlinear Optics** 2.6 (invited): **A. Brantov** *(Lebedev Physics Inst. RAS and Center of Fundamental and Applied Research, VNIIA, ROSATOM, Russia)*. Laser based sources of electrons, protons, neutrons, gammas and THz radiation 2.7 (invited): **S. Neff** *(Facility for Antiproton and Ion Research in Europe, Germany)*. Experimental facilities for high-energy density and warm dense matter experiments at FAIR 2.8: **A. Golovanov** *(Inst. of Applied Physics RAS, Russia)*. Field ionization in extremely intense laser fields 2.9: **E. Anashkina** *(Inst. of Applied Physics RAS, Russia)*. Characterization of optical pulse shape and phase based on SPM spectra measurements in highly nonlinear fibers	**TS 1: Nonlinear Wave Phenomena** 1.5 (invited): **N. Rosanov** *(Vavilov State Optical Inst., Russia)*. Extreme and topological nonlinear optics of dissipative systems 1.6: **A. Safin** (*Kotelnikov Inst. of Radioengineering and Electronics RAS, Russia)*. Mutual synchronization of antiferromagnetic oscillators 1.7: **A. Slavin** *(Oakland Univ., USA)*. Vector Hamiltonian approach for nonlinear dynamics of nanoscale magnetic systems 1.8: **L. Smirnov** *(Inst. of Applied Physics RAS, Russia)*. Solitary synchronization waves in distributed oscillators populations
17:30 – 18:00	COFFEE BREAK		

SATURDAY, June 29

	HALL A	HALL B	HALL C
18:00 – 20:00	**TS 6: Nonlinearities in Quantum Systems and Quantum Optics** 6.10 (invited): **S. Tarasenko** *(Ioffe Inst., Russia)*. Edge photogalvanic effects in topological insulators 6.11 (invited): **A. Knothe** (*National Graphene Inst., Univ. of Manchester, United Kingdom)*. Quantum nanostructures in gapped bilayer graphene 6.12: **V. Kurin** *(Inst. for Physics of Microstructures RAS, Russia)*. Coherent subterahertz radiation of large Josephson junction arrays 6.13: **A. Protogenov** *(Inst. of Applied Physics RAS, Russia)*. New electron phases in topological materials	**TS 2: Extreme Light Physics and Nonlinear Optics** 2.10 (invited): **J. Shao** *(Shanghai Inst. of Optics and Fine Mechanics CAS, China).* Development of high performance dispersion mirrors for ultrafast laser systems 2.11 (invited): **S. Wabnitz** *(Sapienza Univ. of Rome, Italy)*. Hydrodynamic transverse condensation in multimode optical fibers 2.12**: S. Liu** *(Shanghai Inst. of Optics and Fine Mechanics, CAS, China)*. High precision metrology techniques for ultrafast laser optics 2.13: **A. Andrianov** *(Inst. of Applied Physics RAS, Russia)*. Coherent amplification of ultrashort pulses in a multicore fiber amplifier scalable to peak powers exceeding the self-focusing limit 2.14: **E. Anashkina** *(Inst. of Applied Physics RAS, Russia)*. Theoretical study of multi-color lasing in rare-earth-doped soft glass microspheres	**TS 4: Geophysical and Climate Phenomena** 4.1: **S. Kravtsov** *(Inst. of Applied Physics RAS, Russia; Shirshov Inst. of Oceanology RAS, Russia; Univ. of Wisconsin-Milwaukee, USA)*. Singular vortices as building blocks of atmospheric low-frequency variability 4.2: **I. Esau** *(Nansen Center and Univ. in Bergen, Norway)*. The Bjerknes oscillation in very long runs of the CMIP5 climate models 4.3 (invited): **G. Mantica** *(University of Insubria, Como, Italy)*. Extreme value theory in complex dynamical systems with fractal landscapes 4.4: **D. Mukhin** *(Inst. of Applied Physics RAS, Russia)*. Detecting nonlinear modes in mid-latitude atmospheric dynamics
20:00 – 21:00	DINNER		
21:00	**EVENING PROGRAM:** Music concert		

SUNDAY, June 30

8:00 – 9:00	BREAKFAST		
9:00 – 11:00	**PLENARY SESSION 3 (Hall A)** P.7: **A. Zheltikov** *(Moscow State Univ., Russia; Texas A&M Univ., USA; Russian Quantum Center, Russia)*. Fiber-optic quantum biosensing with vacancy centers in diamond P.8: **P. Hemmer** *(Texas A&M Univ.; Zavoisky Physical-Technical Inst., Kazan, USA)*. Quantum enhanced biosensing with diamonds and phosphors P.9: **A. Feigin** *(Inst. of Applied Physics RAS, Russia)*. Data-driven modeling of complex systems: mechanism of the Middle Pleistocene climate change		
11:00 – 11:30	COFFEE BREAK		
11:30 – 13:30	**PLENARY SESSION 4 (Hall A)** P.10: **O. Kocharovskaya** *(Texas A&M Univ., USA)*. Quantum optics with X-rays: dynamical control of resonant interaction P.11: **C. Nam** *(Inst. for Basic Science, Korea)*. Quest for strong field QED experiments with a Multi-PW laser P.12: **A. Golubev** *(NRC "Kurchatov Institute" – ITEP, Russia)*. International project of the Facility for Antiproton and Ion Research in Europe (FAIR)		
14:00 – 15:00	LUNCH		
15:30 – 17:30	**HALL A** **MS 6.1: Mini-Symposium "Diamond-based quantum optics for bio-sensing and quantum information"** 6.14 (invited): **D. Budker** *(Helmholtz Inst. Mainz, Germany and UC Berkeley, USA)*. Recent results on sensing with color centers in diamond 6.15 (invited): **R. Liu** *(The Chinese Univ. of Hong Kong, Hong Kong)*. Scheme and experimental efforts for realizing nanothermometry with $\mu K/Hz^{1/2}$ level sensitivity under ambient conditions 6.16 (invited): **M. Nesladek** *(Univ. Hasselt, Belgium)*. Electrically read diamond qubits: interfacing and upscaling 6.17 (invited): **A. Kalachev** *(Zavoisky Physical-Technical Inst., Kazan Scientific Center RAS, Russia)*. Promising schemes of optical quantum memory in diamond	**HALL B** **TS 3: Terahertz Photonics and Extreme Terahertz Science** 3.1 (invited): **G. Almási** (Inst. of Physics, Univ. of Pécs, Hungary). Generation and applications of extremely high-field near single cycle terahertz pulses 3.2 (invited): **M. Shalaby** *(Paul Scherrer Institut, Switzerland)*. Exceptionally high THz energy densities generated from organic crystals pumped with mid-infrared pulses 3.3: **I. Volkovskaya** *(Inst. of Applied Physics RAS, Russia)*. Nonlinear harmonic generation by Mie-resonant nanoparticles 3.4: **I. Ilyakov** *(Helmholtz-Zentrum Dresden-Rossendorf, Germany)*. Coherent laser-driven excitation of THz emission from ultrathin ferrimagnetic $Mn_{3-x}Ga$ films	**HALL C** **TS 5: Nonlinear Processes in Astrophysics and Space Plasma** 5.1 (invited): **E. Churazov** (*Max Planck Inst. for Astrophysics, Germany andSpace Research Inst. RAS, Russia)*. Internal waves in galaxy clusters 5.2 (invited): **B. Shustov** *(Inst. of Astronomy RAS, Russia).* On formation of mass spectra of astronomical objects 5.3 (invited): **M. Gilfanov** *(Space Research Inst. RAS, Russiaand Max Planck Inst. for Astrophysics, Germany)*. Dichotomy between X-ray spectra of accreting black holes and neutron stars 5.4: **E. Kurbatov** *(Inst. of Astronomy RAS, Russia)*. Possible electromagnetic manifestations of merging black holes
17:30 – 18:00	COFFEE BREAK		

SUNDAY, June 30

	HALL A	HALL B	HALL C
18:00 – 20:00	**MS 6.1: Mini-Symposium "Diamond-based quantum optics for bio-sensing and quantum information"** 6.18 (invited): **R. Kolesov** (*Univ. Stuttgart, Germany*). New playground for diamond quantum optics: 446 nm ODMR-active center of unknown origin 6.19 (invited): **Q. Li** *(The Chinese Univ. of Hong Kong, Hong Kong)*. Investigating deformation of soft materials by diamond quantum sensing 6.20: **S. Bogdanov** *(Inst. of Applied Physics RAS, Russia)*. Investigation of optical properties of different color centers in diamond 6.21: **I. Zelensky** *(Inst. of Applied Physics RAS, Russia)*. Cross-relaxation magnetometry in diamond NV-centers 6.22: **R. Khaibullin** *(Zavoisky Physical-Technical Inst., Kazan Scientific Center RAS, Russia)*. Optical studies of diamonds implanted with helium ions to high fluence	**TS 2: Extreme Light Physics and Nonlinear Optics** 2.15 (invited): **I. Andriyash** *(Weizmann Inst. of Science, Israel)*. Ultra-compact synchrotron radiation sources based on laser plasma accelerators 2.16 (invited): **A. Pirozhkov** *(Kansai Photon Science Inst., QST, Japan).* Control of burst intensification by singularity emitting radiation (BISER) 2.17: **A. Singh** *(National Inst. of Technology, Jalandhar, Punjab, India)*. Second harmonic generation by a self-focused Hermite-Gaussian laser beam in collisionless plasma 2.18: **I. Kostyukov** *(Inst. of Applied Physics RAS and Lobachevsky State Univ. of Nizhny Novgorod, Russia).* Global constant field approximation for radiation reaction in collision of high-intensity laser pulse with electron beam 2.19: **A. Samsonov** *(Inst. of Applied Physics RAS and Lobachevsky State Univ. of Nizhny Novgorod, Russia)*. e^-e^+ cushion formation in the interaction of extremely intensive radiation with solid target	**TS 4: Geophysical and Climate Phenomena** 4.5: **A. Gavrilov** *(Inst. of Applied Physics RAS, Russia)*. Studying surface air temperature variability in 20th century using linear dynamical mode decomposition 4.6: **D. Kondrashov** *(Univ. of California, Los Angeles, USA)*. On data-driven augmentation of low-resolution ocean model dynamics 4.7: **S. Kravtsov** *(Inst. of Applied Physics RAS, Russia; Shirshov Inst. of Oceanology RAS, Russia; Univ. of Wisconsin-Milwaukee, USA).* Climatic effects of mesoscale ocean–atmosphere interaction in an idealized coupled model 4.8: **E. Loskutov** *(Inst. of Applied Physics RAS, Russia).* New dynamical variables for ENSO prediction
20:00 – 21:00	DINNER		
21:00	**EVENING PROGRAM:** Music concert		

MONDAY, July 1

8:00 – 9:00	BREAKFAST		
9:00	Arrival in Saratov		
9:00 – 12:00	**Saratov city tour**		
13:00	Departure from Saratov		
13:30 – 14:30	LUNCH		
15:00 – 17:30	**PLENARY SESSION 5 (Hall A)** P.13: **L. Zelenyi** *(Space Research Inst. RAS, Russia)*. Lunar dusty plasmas: Models and possibilities of "in situ" measurements P 14: **M. Glyavin** *(Inst. of Applied Physics RAS, Russia)*. High-Power THz gyrotrons: progress and challenges P 15: **J. Buechner** *(Center for Astronomy and Astrophysics, Germany)*. Magnetic reconnection in turbulent astrophysical plasmas P 16: **L. Butov** *(Univ. of California at San Diego, USA)*. Quantum systems of indirect excitons		
17:30 – 18:00	COFFEE BREAK		
	HALL A	**HALL B**	**HALL C**
18:00 – 20:00	**TS 6: Nonlinearities in Quantum Systems and Quantum Optics** 6.23 (invited): **R. Kienberger** *(TU Munich, Germany).* Absolute time delay of photoemission from solids 6.24 (invited): **J. von Zanthier** *(Univ. of Erlangen-Nürnberg, Germany)*. Superradiance in free space in the optical and X-ray domain 6.25: **V. Antonov** *(Inst. of Applied Physics RAS, Russia)*. Amplification of attosecond pulse trains in active medium of a plasma-based X-ray laser 6.26: **I. Khairulin** *(Inst. of Applied Physics RAS, Russia).* Towards attosecond plasma-based X-ray laser	**TS 3: Terahertz Photonics and Extreme Terahertz Science** 3.5 (invited): **J. Coutaz** *(Univ. Savoie Mont Blanc, France)*. Kerr-like terahertz generation from metals 3.6 (invited): **A. Shkurinov** *(Moscow State Univ., Russia)*. Terahertz wave generation from liquid nitrogen 3.7 (invited): **C. Hofer** *(Max Planck Inst. of Quantum Optics, Germany)*. Sensitivity of optical field measurements via electro-optic sampling 3.8: **A. Shutov** *(Russian Quantum Center, Russia and Texas A&M Univ., USA).* Bright mm-band-to-THz supercontinua driven by ultrashort mid-infrared laser pulses 3.9: **O. Cherkasova** *(Inst. of Laser Physics SB RAS)*. Application of THz radiation in biology and medicine: our days and future prospects	**TS 5: Nonlinear Processes in Astrophysics and Space Plasma** 5.5 (invited): **S. Kim** *(Kunsan National Univ., Korea)*. Fundamental physics and laboratory astrophysics using intense lasers 5.6 (invited): **A. Beloborodov** (*Columbia Univ., USA)*. Shock waves and strong electromagnetic waves from relativistic explosions 5.7: **M. Garasev** *(Inst. of Applied Physics RAS, Russia)*. Weibel instability and the evolution of magnetic fields in collisionless shocks 5.8: **D. Badjin** *(VNIIA, Russia)*. Physical and numerical instabilities arising in simulations of radiatively cooling supernova remnant shocks in turbulent magnetized interstellar matter
20:00 – 21:00	DINNER		
21:00	**EVENING PROGRAM:** Music concert		

8:00 – 9:00	BREAKFAST		
9:00 – 11:30	**PLENARY SESSION 6 (Hall A)** P.17: **V. Fortov** *(Joint Inst. for High Temperatures RAS, Russia)*. Strongly coupled plasma: correlations and nonideality P.18: **F. Kärtner** (*Center for Free-Electron Laser Science, DESY, Germany)*. Terahertz acceleration P.19: **S. Zilitinkevich** *(Finnish Meteorological Inst., Finland)*. Towards revision of current theory of turbulence in stratified sheared flows P.20: **E. Khazanov** *(Inst. of Applied Physics RAS, Russia)*. Toward the next generation of high-peak-power lasers: compression after compressor approach		
11:30 – 12:00	COFFEE BREAK		
12:00 – 14:00	**HALL A**	**HALL B**	**HALL C**
	TS 6: Nonlinearities in Quantum Systems and Quantum Optics 6.27 (invited): **R. Folman** *(Ben-Gurion Univ. of the Negev, Israel)*. Matter wave interferometers on the atom chip 6.28 (invited**): A. Taichenachev** *(Inst. of Laser Physics SB RAS, Russia)*. Generalized Ramsey methods in high-precision spectroscopy of clock transitions 6.29 (invited): **A. Akimov** *(Texas A&M Univ., USA)*. Deep laser cooling of Thulium atom 6.30: **S. Tarasov** *(Inst. of Applied Physics RAS, Russia)*. Anomalous non-Gaussian statistics of a Bose-Einstein condensate in a flat trap: A crossover from an ideal gas regime to a Thomas-Fermi regime 6.31 (invited): **H. Eleuch** *(Abu Dhabi Univ., UAE)*. Quantum noise and squeezed light by dipolaritons in the nonlinear regime	**TS 3: Terahertz Photonics and Extreme Terahertz Science** 3.10 (invited): **T. Ozaki** *(INRS-EMT, Canada)*. Extreme THz-matter interactions – semiconductors and DNA 3.11: **S. Kozlov** *(ITMO Univ., Russia).* High nonlinearity of refractive index of water in THz spectral range 3.12: **I. Oladyshkin** *(Inst. of Applied Physics RAS, Russia)*. Nonlinear optics of graphene in strong THz field 3.13: **I. Ilyakov** *(Helmholtz-Zentrum Dresden-Rossendorf, Germany and Inst. of Applied Physics RAS, Russia)*. DSTMS and $LiNbO_3$ crystalline structures for high-sensitive broadband terahertz time-domain spectroscopy	**TS 4: Geophysical and Climate Phenomena** 4.9: **S. Badulin** *(Shirshov Inst. of Oceanology RAS, Russia)*. Wave steepness as a predictor of sea state bias in satellite altimetry 4.10 (invited): **P. Fraunié** *(Mediterranean Inst. of Oceanography, France)*. Ocean surface currents climatology in North Western Mediterranean Sea 4.11: **I. Sibgatullin** *(Shirshov Inst. of Oceanology RAS, Russia).* Dynamics of internal and inertial wave attractors 4.12: **A. Slunyaev** *(Inst. of Applied Physics RAS, Russia).* Spectral decomposition of simulated sea waves into free and bound wave components
14:00 – 15:00	LUNCH		
15:00	Arrival in Samara		
15:00 – 18:00	**Samara city tour**		
18:00 – 18:30	COFFEE BREAK		
19:00	Departure from Samara		

18:30 – 20:00	**POSTER SESSION** 1. **I. Abramov** *(Inst. of Applied Physics RAS, Russia)*. Nonlinear absorption of microwaves in bounded plasma flow 2. **E. Anashkina** *(Inst. of Applied Physics RAS, Russia)*. Design and numerical modeling of germanate, tellurite, and chalcogenide whispering gallery mode microresonators for dissipative soliton generation 3. **V. Antonov** *(Inst. of Applied Physics RAS, Russia)*. Modulation induced transparency of a Mössbauer resonant absorber 4. **S. Filatov** *(Inst. of Solid State Physics RAS, Russia)*. Generation of large-scale vortices using weakly noncollinear waves 5. **A. Gavrilov** *(Inst. of Applied Physics RAS, Russia)*. Low-dimensional nonlinear modes in a three-level quasigeostrophic model 6. **N. Gnezdovskaia** *(Moscow State Univ., Russia)*. New approach to the problem of amplification of THz radiation in plasma channel formed in gas by high-intensity laser field 7. **A. Golovanov** *(Inst. of Applied Physics RAS, Russia)*. Simulations of laser-wakefield acceleration in a gas cell 8. **I. Khairulin** *(Inst. of Applied Physics RAS, Russia)*. Slowing gamma-ray photon in optically dense vibrating Mossbauer absorber 9. **A. Kotov** *(Inst. of Applied Physics RAS, Russia)*. Laboratory study of high-power broadband laser pulse amplification based on the Raman self-compression effect 10. **V. Martynov** *(Inst. of Applied Physics RAS, Russia)*. Quantum correlations of solitons in nonlinear Kerr waveguide arrays 11. **T. Medvedeva** *(Saratov State Univ., Inst. of Higher Nervous Activity and Neurophysiology RAS, Russia)*. Evaluation of largest Lyapunov exponent from time series of neuro-oscillators complex network 12. **N. Mikheytsev** *(Lobachevsky State Univ. of Nizhni Novgorod, Russia)*. Highly efficient generation of mid-IR radiation in back-reflection of ultra-intense laser pulse from near-critical density plasma 13. **A. Mishin** (*Inst. of Applied Physics RAS, Russia, Russia)*. Density bump formation at the front of a collisionless shock wave during the expansion of a laser plasma 14. **A. Nechaev** *(Inst. of Applied Physics RAS, Russia)*. Generation of magnetic fields in an expanding laser plasma with hot electrons 15. **S. Perevalov** *(Inst. of Applied Physics RAS, Russia)*. Spectra reconstruction from single-shot two-screen magnetic spectrometer raw data for laser driven electron accelerator 16. **D. Radishev** *(Inst. of Applied Physics RAS, Russia)*. Investigation of NV centers in CVD diamond layers doped by nitrogen and phosphorous 17. **Yu. Sergeev** *(Inst. of Applied Physics RAS, Russia)*. Surface generation of the optical second harmonic in the presence of a strong THz field in silicon 18. **L. Smirnov** *(Inst. of Applied Physics RAS, Russia)*. Localized states in nonlinear topological systems
20:00 – 21:00	DINNER

WEDNESDAY, July 3

7:30 – 8:30	BREAKFAST		
8:00	Arrival in Ulyanovsk		
8:30 – 11:00	**Ulyanovsk city tour**		
11:00	Departure from Ulyanovsk		
11:00 – 11:30	COFFEE BREAK		
11:30 – 14:00	**PLENARY SESSION 7 (Hall A)** P.21: **E. Kuznetsov** (*Landau Inst. for Theoretical Physics RAS, Russia)*. Folding in fluids and MHD P.22: **Yu. Troitskaya** *(Inst. of Applied Physics RAS, Russia)*. Sea spray at high winds: mechanisms of production and role in heat transfer and surface drag at high winds P.23: **N. Berloff** *(DAMTP, Cambridge, UK and Skoltech, Russia)*. Polariton lattices as a paradigm for dynamics of coupled oscillators P.24: **D. Budker** (Helmholtz Inst. Mainz, Germany and UC Berkeley, USA). New results on magnetometry, atomic parity violation, and searches for dark matter with magnetic resonance		
14:00 – 15:00	LUNCH		
15:30 – 17:30	**HALL A**	**HALL B**	**HALL C**
	TS 4: Geophysical and Climate Phenomena 4.13 (invited): **E. Mareev** *(Inst. of Applied Physics RAS, Russia)*. Lightning flashes with extreme currents and their implication in weather forecasting models 4.14 (invited): **L. Cavaleri** *(ISMAR, Italy)*. The October 29, 2018 storm in Northern Italy – an exceptional event and its modelling 4.15: **A. Evtushenko** *(Inst. of Applied Physics RAS, Russia)*. Modeling of sprites global distribution 4.16: **N. Lehtinen** *(Univ. of Bergen, Norway)*. Electric streamers as a nonlinear instability	**TS 3: Terahertz Photonics and Extreme Terahertz Science** 3.14 (invited): **S. Kovalev** *(Helmholz-Zentrum Dresden-Rossendorf, Germany)*. High field Terahertz user facility TELBE: extremely efficient nonlinear THz light control in Dirac materials 3.15 (invited): **L. Yi** *(Chalmers Univ. of Technology, Sweden)*. Coherent diffraction radiation of relativistic terahertz pulses from a laser-driven micro-plasma-waveguide 3.16: **H. Schneider** *(Helmholz-Zentrum Dresden-Rossendorf, Germany)*. Nonlinear dressing of excitons, polaritons, and intersubband transitions using a terahertz free-electron laser 3.17: **A. Bogatskaya** *(Moscow State Univ., Russia)*. New approach to generation of (sub)THz radiation in nonequilibrium plasma of rare gases formed by femtosecond laser pulse	**TS 5: Nonlinear Processes in Astrophysics and Space Plasma** 5.9 (invited): **Vl. Kocharovsky** *(Inst. of Applied Physics RAS, Russia)*. Kinetic nonlinear theory of the current structure of a magnetopause 5.10 (invited): **G. Fleishman** *(New Jersey Inst. of Technology, USA)*. Frontiers in solar physics through naked microwave eyes 5.11: **Ya. Pavlyuchenkov** (*Inst. of Astronomy RAS, Russia)*. Evolution of viscous protoplanetary disk with convective regions 5.12: **M. Viktorov** *(Inst. of Applied Physics RAS, Russia)*. Interaction of counter-streaming supersonic plasma flows in the magnetic arch
17:30 – 18:00	COFFEE BREAK		

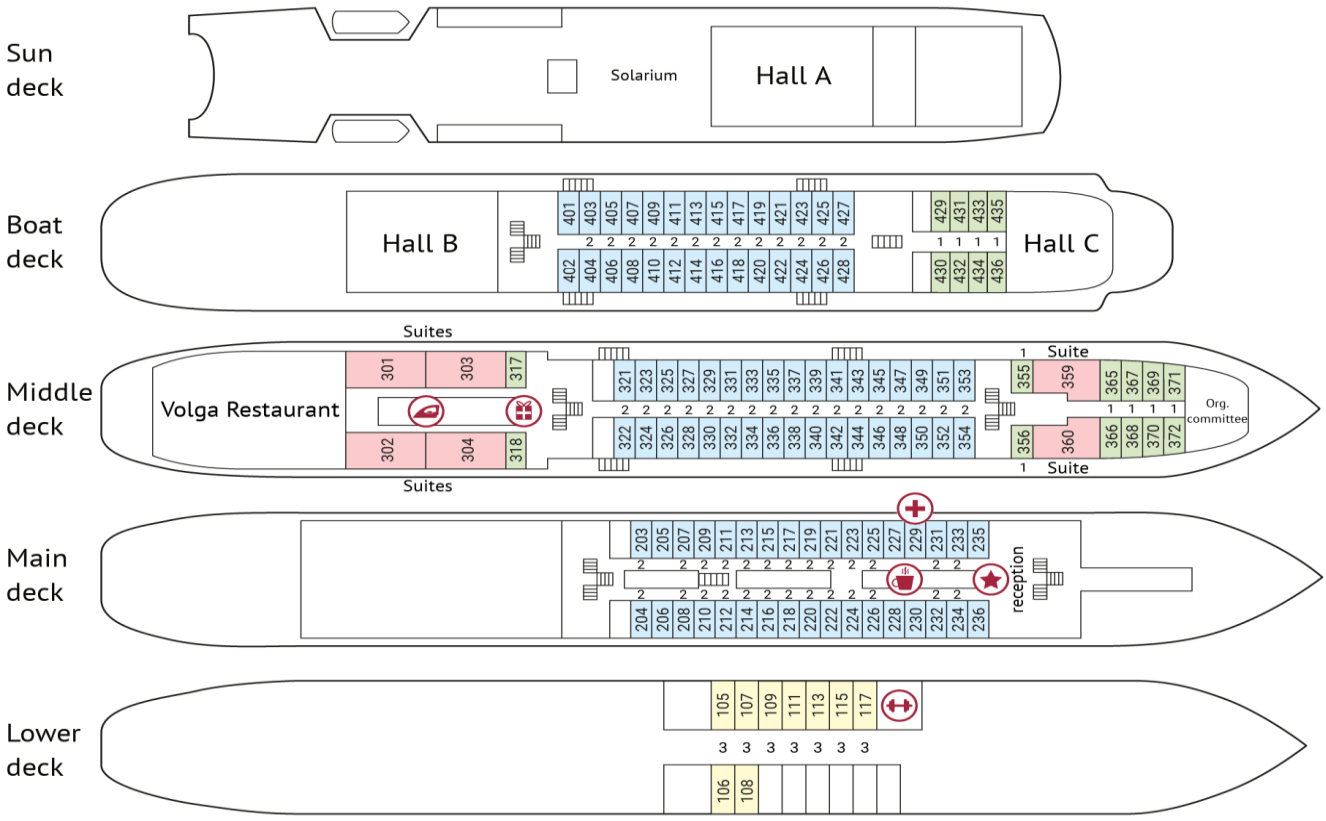
WEDNESDAY, July 3

	HALL A	**HALL B**	**HALL C**
18:00 – 20:00	**TS 6: Nonlinearities in Quantum Systems and Quantum Optics** 6.32 (invited): **B. Garraway** *(Univ. of Sussex, United Kingdom)*. Microwave spectroscopy of radio-frequency dressed states 6.33 (invited): **A. Rebane** *(Montana State Univ., USA)*. Multiphoton spectroscopy tracks intramolecular charge transfer 6.34 (invited): **D. Kurouski** *(Texas A&M Univ., USA)*. Elucidation of tip-broadening effect in tip-enhanced Raman spectroscopy (TERS): A cause of artifacts or potential for 3D TERS 6.35: **S. Pavlov** *(German Aerospace Center, Germany)*. Competing light absorption and light scattering processes in a three-level optically pumped active medium	**TS 1: Nonlinear Wave Phenomena** 1.9 (invited): **D. Skryabin** *(Univ. of Bath, United Kingdom and Russian Quantum Center, Russia)*. Frequency comb generation in microring resonators with quadratic nonlinearity 1.10: **A. Armaroli** *(Univ. of Geneva, Switzerland)*. Breather freezing in nonlinear water waves over an uneven bottom 1.11: **E. Pelinovsky** *(Inst. of Applied Physics RAS, Russia).* Landslide tsunamis: nonlinear theories and reality 1.12: **T. Talipova** (*Inst. of Applied Physics RAS, Russia)*. Breathers in stratified fluids: analytical and numerical results	
20:00	BANQUET		

THURSDAY, July 4

8:00 – 9:00	BREAKFAST
9:00 – 11:00	**PLENARY SESSION 8 (Hall A)** P.25: **C. Keitel** *(Max Planck Inst. for Nuclear Physics, Germany)*. Ultrarelativistic quantum dynamics and QED in extremely intense laser pulses P.26: **A. Pukhov** *(Univ. of Dusseldorf, Germany)*. Extreme regimes of the light-matter interaction P.27: **A. Belyanin** (*Texas A&M Univ., USA*). Optics of Dirac and Weyl semimetals
11:00 – 11:30	COFFEE BREAK
11:30 – 13:30	**PLENARY SESSION 9 (Hall A)** P.28: **X. Ribeyre** *(CELIA, Univ. of Bordeaux, France)*. Extreme laboratory astrophysics using high power lasers: from QED effects to gravitational waves P.29: **A. Slunyaev** *(Inst. of Applied Physics RAS, Russia).* Focusing of solitons and breathers: the rogue wave context P.30: **P. Lushnikov** *(Landau Inst. for Theoretical Physics RAS, Russia)*. Motion of complex singularities and integrability of surface dynamics
14:00 – 15:00	LUNCH
16:00	**CLOSING SESSION (Hall A)**
17:00	COFFEE & LIGHT REFRESHMENT
19:00	**ARRIVAL IN NIZHNY NOVGOROD**

“Konstantin Korotkov” (Deck map)



Conference Timetable

	Friday June 28	Saturday June 29	Sunday June 30	Monday July 1	Tuesday July 2	Wednesday July 3	Thursday July 4
07:30	Registration					Breakfast	
08:00		Breakfast					Breakfast
08:30						Excursion: ULYANOVSK 08:30 –11:00	
09:00		Plenary session 2 09:00 – 11:00 P4, P5, P6	Plenary session 3 09:00 – 11:00 P7, P8, P9	Excursion: SARATOV 09:00 –13:00	Plenary session 6 09:00 – 11:30 P17, P18, P19, P20		Plenary session 8 09:00 – 11:00 P25, P26, P27
09:30							
10:00							
10:30							
11:00	Departure from N.Novgorod 12:00	Excursion: KAZAN 11:00 –14:00	Coffee break			Coffee break	
11:30			Plenary session 4 11:30 – 13:30 P10, P11, P12		Coffee break	Plenary session 7 11:30 – 14:00 P21, P22, P23, P24	Plenary session 9 11:30 – 13:30 P28, P29, P30
12:00					Oral sessions 12:00 – 14:00 TS 6: Hall A TS 3: Hall B TS 4: Hall C		
12:30	Opening session: 12:30						
13:00							
13:30	Lunch 13:30 – 14:30			Lunch 13:30 – 14:30			
14:00		Lunch 14:00 – 15:00			Lunch 14:00 – 15:00		
14:30							
15:00	Plenary session 1 15:00 – 17:00 P1, P2, P3			Plenary session 5 15:00 – 17:30 P13, P14, P15, P16	Excursion: SAMARA 15:00 –18:00		
15:30		Oral sessions 15:30 – 17:30 TS 6: Hall A TS 2: Hall B TS 1: Hall C	Oral sessions 15:30 – 17:30 MS 6.1: Hall A TS 3: Hall B TS 5: Hall C			Oral sessions 15:30 – 17:30 TS 4: Hall A TS 3: Hall B TS 5: Hall C	
16:00							Closing session: 16:00
16:30							
17:00	Coffee break						Coffee & light refreshment
17:30	Oral sessions 17:30 – 19:30 TS 6: Hall A TS 2: Hall B TS 1: Hall C	Coffee break				Coffee break	
18:00		Oral sessions 18:00 – 20:00 TS 6: Hall A TS 2: Hall B TS 4: Hall C	Oral sessions 18:00 – 20:00 MS 6.1: Hall A TS 2: Hall B TS 4: Hall C	Oral sessions 18:00 – 20:00 TS 6: Hall A TS 3: Hall B TS 5: Hall C	Coffee break	Oral sessions 18:00 – 20:00 TS 6: Hall A TS 1: Hall B	
18:30					Poster session 18:30 – 20:00 Hall B		
19:00							Arrival in N.Novgorod 19:00
19:30	Welcome party 19:30						
20:00		Dinner 20:00 – 21:00				Banquet	
20:30							
21:00		Concert	Concert	Concert			