

## October,27

### Opening Session (10:30 — 12:30, Big Conference Hall of Presidium of NASB)

Conference Opening

- Claude Fabre Characterizing the quantum properties of a highly multimode quantum frequency comb  
Ulrik Andersen Parametrically generated  
Controlling a mechanical oscillator by squeezed light  
Marc Cheneau Atomic Hong-Ou-Mandel Experiment  
Natalia Korolkova Gaussian quantum discord and the entangling power of a beamsplitter

### Lunch (12:30-14:00)

### Quantum simulations of manybody systems (14:00 - 14:50, Big Conference Hall of Presidium of NASB)

- Daniel Barredo Gonzalez Quantum simulation of spin systems using 2D arrays of single Rydberg atoms  
Bruno Peaudecerf Single-atom imaging of fermions in a quantum-gas microscope

### Photonic QIP Tools (14:50 - 16:05, Big Conference Hall of Presidium of NASB)

- Clement Sayrin A nanofiber-coupled atomic ensemble for the realization of a nanophotonic optical isolator and a fiber-integrated optical memory  
Oliver Barter Photonic Quantum Logic with Atom-Cavity Photons  
Celso Villas-Boas Electromagnetically Induced Transparency in Optical Cavities: Classical Analog and Applications in Quantum Information Theory

### Photonics with nanostructures (14:00 - 16:05, Small Conference Hall of Presidium of NASB)

- Nika Akopian Quantum optics with quantum dots, nanowires and atomic systems  
Igor Bondarev Excitons, Plasmons and Excitonic Complexes in quasi-1D Semiconductors for Nanooptoplasmonics Applications. Theory and Perspectives  
Marcelo Pereira de Almeida Solid-state Single-photon Sources for Quantum Technologies  
Yury Rakovich Quantum Optics with Hybrid System of Metal Nanoparticles and J-aggregates: Study of Strong Exciton-Plasmon Coupling  
Sergey Maksimenko Electromagnetic effects in nanocarbon: modelling and device applications

### Light-matter interaction (14:00 - 16:00, Conference Hall of Institute of Physics)

- Carl-Michael Weitzel Photoionization yields in intense fs-laser fields – a systematic investigation of chirp effects  
Yury Vainer Spectroscopy of single upconversion NaYF<sub>4</sub> nanoparticles doped by rare-earth lanthanide ions  
Maxim Gladush Maxwell-Bloch equations for light emitters in a weakly absorbing dielectric  
Ilya Feranchuk Relaxation in the three-level system out of framework of the rotating wave approximation  
Alexander Starukhin Photophysical study of Mg, Zn and Pd complexes of porphyrazines: Implication for TAA based fluorescence upconversion  
Mikhael Korolkov On the control of product yields in the photofragmentation of deuteriumchlorid ions.

### POSTER SESSION & Coffee break, (16:00 - 16:50, Presidium of NASB)

### Quantum communications (16:50 - 18:30, Big Conference Hall of Presidium of NASB)

- Alexander Holevo Optimal communication rates of quantum Gaussian channels  
Siddarth Joshi Clock Synchronization in Long Distance QKD  
Eric Cavalcanti The Two Bell's Theorems of John Bell and Causal Emergence  
Ekaterina Moreva Experimental demonstration of dualism in entanglement through the Bell measurements

### Quantum motional states in ion traps (16:50 - 18:30 Small Conference Hall of Presidium of NASB)

- Joseba Alonso Fast quantum control and light-matter interactions at the 10,000 quanta level  
Dzmitry Matsukevich Phonon down conversion in the linear Paul trap

### Qubits in waveguides

Jibo Dai Rabi oscillation in a quantum cavity and nonlinear light transport in 1D waveguides  
Maxim Makhonin Spin transfer in integrated quantum optical circuit

## WELCOME PARTY

### October, 28 (Nesvizh)

#### Q-measurements (10:00 - 11:15)

Igor Dotsenko Past quantum state of trapped light  
Sebastien Gleyzes Quantum Zeno dynamics of a Rydberg atom  
Ralf Blattmann Conditioned quantum dynamics on a 1D chain

#### Coffee-break (11:15 - 11:45)

#### Weak measurements and entanglement (11:45 — 13:00)

Hagai Eisenberg Knitting entanglement: assembling photonic states with delay lines  
Marco Barbieri Weak measurements and the joint estimation of phase and phase diffusion  
Ivo Degiovanni Weak values and the measurement of incompatible observables  
Barbara Kraus Some aspects of multipartite entanglement

#### Lunch (12:40-14:00)

#### NV and other solid-state sources of light (14:00 — 16:50)

Christian von Borczyskowiak Optical Detection Schemes for Single Semiconductor Quantum Dots: From Spectroscopy to High Resolution Microscopy  
Alexei Trifonov Sensitivity improvement of quantum phase sensing with a single solid state spin via spin-to-charge state mapping  
Dmitry Krimer Non-Markovian Quantum Dynamics in the Strong-Coupling Limit of Cavity QED  
Heng Fan Entanglement-enhanced quantum metrology in solid state  
Thierry Debuisschert NV centers based Wide-field Magnetic Imager with application to microelectronics and spectral analysis  
Ilya Fedotov Fiber-optic neurointerfaces: Quantum technologies for neurophotonics  
Junko Ishi-Hayase Spatially selective creation of nitrogen-vacancy centers with preferential orientation in an isotopically-purified diamond thin film  
Alexander Nizovtsev Hybrid electron-nuclear spin systems in diamond for spintronics: Ab initio computer simulation and experimental data

#### Excursion

#### CONFERENCE DINNER (17:30 - 19:30)

### October, 29 (Hotel Belarus)

#### Dynamical control, adaptive measurements (9:00-10:05)

Tsubasa Ichikawa Composite Pulses in Quantum Information Processing and Nuclear Magnetic Resonance  
Aleksei Taichenachev Manipulating single-atom q-bit by composite pulses with applications to quantum metrology  
Alexander Mikhalychev Bayesian adaptive data pattern tomography

#### CQED (10:05 - 11:00)

Yuri Ozhigov Ensembles of two level atoms in optical cavities  
Nikolay Larionov Single-emitter laser in the presence of external atom  
Elena Yakshina RF-assisted Förster resonances and Jaynes-Cummings dynamics in mesoscopic ensembles of the interacting Rydberg atoms

#### Coffee-break (11:00-11:25)

### **Quantum memory (11:25 - 13:00)**

Yuri Golubev Manipulations with quantum states on the tripod atomic configuration in on-resonant approximation  
Ivan Sokolov Quantum states control in spatially multimode quantum memories  
Sergey Moiseev Photon/spin echo quantum memory in QED cavity  
Tatiana Golubeva High-speed resonant quantum memory on the base of thermal atomic ensemble

### **Lunch (13:00-14:00)**

### **Atomic ensembles (14:00 - 16:10)**

Dmitriy Kupriyanov Light emission under conditions of radiation trapping in an inhomogeneous and disordered system of cold atoms  
Alice Sinatra Thermal blurring of a coherent Fermi gas  
Igor Sokolov Light localization in a cold and dense atomic ensemble in a magnetic field  
Clemens Gneiting Incoherent evolution of the ensemble average in the Anderson model  
Denis Ivanov A new algorithm for collective cooling of particles via feedback  
Oxana Mishina Squeezing of a collective atomic motion

### **Coffee-break (16:10-16:30)**

### **Quantum correlations, stochasticity and thermodynamical analogies (16:30 - 18:05)**

Subhash Chaturvedi Application of phase space methods to quantum heat engines  
Karen Hovhannisyan Extractable work from correlations  
Yuri Vainer On the validity of the standard model of low-temperature glasses: anomalous dynamics in real systems  
Ting Gao Permutationally Invariant Part of a Density Matrix and Nonseparability of N-Qubit States  
Fengli Yan Two local observables are sufficient to characterize maximally entangled states of N qubits

### **THEATRE (19:00)**

## **October, 30 (Hotel Belarus)**

### **Non-classical states of light (9:00-11:15)**

Konrad Banaszek Restoring quantum enhancement in two-photon interferometry  
Mikhail Fedorov Azimuthal entanglement of noncollinear biphoton states  
Aurelian Isar Generation of quantum correlations in two-mode Gaussian systems in a thermal environment  
Giuseppe Patera Temporal imaging with squeezed light  
Dmitri Horoshko Single-cycle squeezed states of light  
Polina Sharapova Giant twin-beam generation in bright squeezed vacuum states of light in terms of Schmidt modes.  
Konstantin Katamadze Preparation of broadband biphotons in the single spatial mode

### **Coffee-break (11:15-11:40)**

### **Spectral and temporal manipulations with quantum states of light (11:40 - 12:50)**

Michal Karpinski Active spectral manipulation of non-classical light  
Almut Beige Scattering light through optical cavities and cavity-fiber networks  
Anton Kozubov Theoretical investigation of the correlation between perturbations of linear quantum optical circuit parameters and its performance

### **Lunch (13:05-14:00)**

**QKD (14:00 - 16:00)**

Vladyslav Usenko	Towards continuous-variable quantum key distribution with macroscopic states of light
Artur Gley	Subcarrier Quantum Key Distribution over a 42 dB Optical Fiber Channel with strong reference protocol
Constantin V. Usenko	Complexity of Measurement as the Basis of Quantum Channel Security
Boris Veklenko	Superluminal Signals in Quantum Optics
Krzysztof Lorek	Ideal clocks - a convenient fiction
Yury Kurochkin	Floating basis quantum cryptography with decoy states

**Conference Closing****POSTER SESSION (October, 27):**

Nadezda Borshchevskaia	Three-Photon Generation in Third Order Spontaneous Parametric Down-Conversion
Vyacheslav Chizhevsky	Experimental study of statistical properties of polarization noise in a multimode VCSEL
Rafal Czerwieniec	Absolute and relative measurements of quantum yields of fluorescence for the metallocomplexes of porphyrins at ambient temperature
Dmitry Filimonenko	Manufacture of fiber optic elements using CO2 laser installation
Eugene Garusov	Multimode entanglement of two-level atoms from dissipative non-Markovian dynamics
Aleksei Gorshchev	Zero-phonon line excitation saturation parameters of single terrylene molecules in frozen hexadecane: nanoscale mapping to the structure of the sample
Dmitri Horoshko	Full-response characterization of afterpulsing in single-photon detectors
Ilya Karuseichyk	Analysis of optical states, created by means of small cross-Kerr nonlinearities and probabilistic entanglement enhancement
Mikhael Korolkov	Femtosecond interferometry as a tool for optimal control of DCI+ photofragmentation.
Vladimir Kurochkin	Ultra long distance QKD
Semeni Kuten	Non-flipping $^{13}\text{C}$ nuclear spins in NV diamond: Hyperfine and spatial characteristics from DFT simulation of NV hosting H-terminated cluster $\text{C}_{510}[\text{NV}]\text{H}_{252}$
Alexander Nizovtsev	Effective microwave-induced coherent manipulation of $\text{C}_{13}$ nuclear spin state in hyperfine-coupled NV- $\text{C}_{13}$ spin systems in diamond
Vladimir Potkin	Structure and spin properties of tetrahedron-shaped fullerene-ferrocene- and fullerene-nickelocene-dicarboxylic acids conjugates: DFT simulation
Aleksei Pozdnyakov	Investigation of the molecular mechanisms of thermal stability of polymer-nanocarbon composites
Alexander Pushkarchuk	Quantum chemical designing of set of cholesterol containing endohedrally doped fullerenols as qubit candidates
Vadim Pushkarchuk	Model for surface "reporter" spin in a single-NV-based magnetometer: DFT simulation of cluster $\text{C}_{64}[\text{NV}]\text{H}_{68+11\text{H}}$ having dangling bond on the (100) surface
Vadim Reut	Representation of quantum states of electromagnetic field using discrete basis of coherent projectors
Anton Sakovich	Periodic coherent pump as nonclassicality protector in the systems with nonlinear coherent loss and linear dissipation
Andrei Soldatov	Fullerene based derivative metallocenes as perspective materials for quantum optics devices
Alexander Starukhin	Fine line structure in the Soret band in spectra of metallocomplexes of porphine
Vladislav Stefanov	Single atom laser: quantum dynamics under continuous measurement
Oleg Zhikol	Neutral oxygen-vacancy color center in diamond for spintronic applications: Simulation of electronic and spin properties