

# *The scientific program of MNNSI-2021*

## 12.11.2021 Friday

14<sup>00</sup> – 16<sup>00</sup> – *Hotel checking in and conference registration at the Levitan's reception*

16<sup>00</sup> – 19<sup>00</sup> – *Poster session at Veranda hall. Local beverages and snack party*

A poster list:

- A1.** High-contrast zero-field level-crossing resonances in cesium vapors under elliptically polarized light wave for atomic magnetometry applications
- A2.** Synthesis and Spectral-Luminescent Properties of Optical Ceramics on the Basis of One-and-a-half Oxide Y<sub>2</sub>O<sub>3</sub> Doped with Ions Er<sup>3+</sup>
- A3.** AI-acceleration enabled by nanoelectronic memristive devices
- A4.** The destruction reason for materials obtained by the cold gas dynamic spraying method during its operating in vacuum
- A5.** Deflection of particles of a laser erosion plume under the action of a high-voltage electrostatic field during ablation processing of titanium.
- A6.** Investigation of material heating under the action of ultrashort laser pulses
- A7.** Investigation of the dependence of the reflection coefficient on the modulation parameters and defects of the fiber Bragg gratings
- A8.** Influence of laser-induced plasma parameters on the formation of LIPSS during astigmatic beam treatment
- A9.** Distribution of laser radiation in opaque porous media
- A10.** LIBS as a method of surface condition monitoring in the process of laser surface cleaning of aluminum alloys
- A11.** Research of the physical and mechanical properties of AISI 321 steel manufactured by selective laser melting
- A12.** Light enhanced conductivity in hybrid metal-carbon films
- A13.** Observation of laser-induced effects in low-dimensional media
- A14.** Fabrication of hydrophobic surfaces on aluminum composites under nanosecond pulsed laser field action
- A 15.** Laser processing of colloids in a flow cuvette

## 13.11.2021 Saturday

7<sup>00</sup> – 9<sup>00</sup>      *Breakfast at the Panorama restaurant*

9<sup>00</sup> – 9<sup>10</sup>      *Opening ceremony at the Banquet*

### **“Nanophotonics and metamaterials”**

**Chairman prof. A. Shkurinov**

9<sup>10</sup> – 9<sup>50</sup>      *“Nanophotonics with Transition Metal Dichalcogenides”*  
prof. Valentin Volkov, MIPT, Russia

9<sup>50</sup> – 10<sup>30</sup>      *“Photonics of single semiconductor quantum dots”*  
prof. Andrey Naumov, ISAN, Russia

10<sup>30</sup> – 11<sup>10</sup>      *“Topological photonics – 4D-laser technologies for nanoelectronics on new physical principles to create the element base of next generation”*  
prof. S. Arakelian, Vladimir State University, Russia

11<sup>10</sup> – 11<sup>30</sup>      coffee break

### **“Nanophotonics and metamaterials”**

**Chairman Prof. S. Arakelian**

- 11<sup>30</sup> – 12<sup>10</sup> “*Ultrafast multi-scale electron and lattice dynamics during femtosecond-laser microinscription in diamond*”  
prof. Sergey Kudryashov, P.N. Lebedev Physical Institute of RAS, Russia  
**online talk**
- 12<sup>10</sup> – 12<sup>50</sup> “*Nanotechnologies for adaptive optics*”  
prof. Julia Sheldakova, IDG RAS, Russia
- 12<sup>50</sup> – 13<sup>30</sup> “*Bound states in the continuum in dielectric photonic structures*”  
prof. Michael Rybin, ITMO University, Russia
- 13<sup>30</sup> – 14<sup>30</sup> lunch at the Panorama restaurant

### **“THz photonics and new laser sources”**

**Chairman Prof. A. Naumov**

- 14<sup>30</sup> – 15<sup>10</sup> “*Features of nonlinear optical phenomena in the terahertz frequency domain*”  
prof. Alexander Shkurinov, MSU/ ILIT RAS Branch of FSRC Crystallography and Photonics" RAS, Russia
- 15<sup>10</sup> – 15<sup>40</sup> “*Terahertz technology in diagnosis of glioma molecular markers*”  
prof. Olga Cherkasova, Institute of Laser Physics SB RAS, Russia
- 15<sup>40</sup> – 16<sup>10</sup> “*The activation function of a photonic neuron on the example of thin films of phase-changing GST material*”  
Dr. Michael Pankov, ILIT RAS Branch of FSRC Crystallography and Photonics" RAS, Russia  
**online talk**
- 16<sup>10</sup> – 16<sup>30</sup> coffee break

### **“Novel diagnostics of nanoobjects”**

**Chairman prof. J. Sheldakova**

- 16<sup>30</sup> – 17<sup>10</sup> “*Zero-field level-crossing resonances in a small low-temperature cesium vapor cell for atomic magnetometry applications*”  
Dr. Denis Brazhnikov, Institute of laser physics, Russia
- 17<sup>10</sup> – 17<sup>40</sup> “*Modulation Bandwidth in Injection Lasers with Nanosized Active Regions*”  
Dr. Levon Asryan, Virginia Polytechnic Institute and State University, USA  
**online talk**
- 17<sup>40</sup> – 18<sup>10</sup> “*Control of environment in scanning probe microscopy*”  
Dr. Stanislav Leesment, NT-MDT, Russia
- 18<sup>10</sup> – 18<sup>30</sup> “*Ostec Modern Equipment for Raman Microscopy*”  
Dr. Vasilii Pribora, Ostec corporate group, Russia

## **14.11.2021 Sunday**

- 7<sup>00</sup> – 9<sup>00</sup> breakfast at the Panorama restaurant

### **“Quantum computing and quantum simulations”**

**Chairman Prof. V. Volkov**

- 9<sup>00</sup> – 9<sup>40</sup> “*Superfluid transition in disordered dipolar Fermi gases*”  
prof. G. Shlyapnikov, RQC, Russia
- 9<sup>40</sup> – 10<sup>20</sup> “*Probing non-Markovian dynamics of NISQ systems*”  
prof. Alexey Fedorov, RQC, Russia
- 10<sup>20</sup> – 11<sup>00</sup> “*One-qubit quantum gates with single rubidium atoms in optical dipole traps*”  
prof. Igor Ryabtsev, Rzanov Institute of semiconductors physics, Russia.  
**online talk**
- 11<sup>00</sup> – 11<sup>30</sup> coffee break

### **“Quantum computing and quantum simulations”**

**Chairman Prof. A. Fedorov**

- 11<sup>30</sup> – 12<sup>10</sup> “*Qubits based on circular currents of exciton polaritons*”  
prof. Alexey Kavokin, Westlake University&RQC, China&Russia online talk
- 12<sup>10</sup> – 12<sup>40</sup> “*Lab classes platform on quantum communications and computing*”  
Dr. Vadim Rodmin, RQC, Russia
- 12<sup>40</sup> – 13<sup>10</sup> “*Towards ion quantum computer with five qubits/qudits*”  
Iliy Zalivako, P.N. Lebedev Physical Institute of RAS, Russia online talk
- 13<sup>10</sup> – 13<sup>40</sup> “*Machine learning for achieving Bose-Einstein condensation of thulium atoms*”  
Dr Daniil Pershin, P.N. Lebedev Physical Institute of RAS, Russia
- 13<sup>40</sup> – 14<sup>30</sup> lunch at the Panorama restaurant

### **“Nonlinear optics and spectroscopy”**

**Chairman Dr. Brazhnikov**

- 14<sup>30</sup> – 15<sup>10</sup> “*Magneto-luminescent nanocomposites for living system applications*”  
prof. Anna Orlova, ITMO University, Russia online talk
- 15<sup>10</sup> – 15<sup>50</sup> “*Hybrid nanostructures based on optical heaters and luminescent thermometers*”  
prof. Alexey Povolotskii, Sankt-Peterburg State University, Russia online talk
- 15<sup>50</sup> – 16<sup>20</sup> “*Photoluminescence of guest particles in transparent media*”  
Dr. Maxim Gladush, ISAN, Russia
- 18<sup>00</sup> – 21<sup>00</sup> *conference banquet*

## **15.11.2021 Monday**

- 7<sup>00</sup> – 9<sup>00</sup> *breakfast at the Panorama restaurant*

### **“Quantum computing and quantum simulations”**

**Chairman Dr. Vadim Rodmin**

- 9<sup>00</sup> – 9<sup>40</sup> “*Magneto-optical imaging and excitation of coherent spin dynamics in magnetic dielectrics*”  
prof. Vladimir Belotelov, RQC, Russia online talk
- 9<sup>40</sup> – 10<sup>10</sup> “*Quantum magnonics*”  
Dr. Yury Bunkov, RQC, Russia
- 10<sup>10</sup> – 10<sup>40</sup> “*Topological devices based on conducting Möbius stripes*”  
Dr. Sevak Demirchyan, RQC, Russia
- 10<sup>40</sup> – 11<sup>10</sup> “*Artificial Gauge Field for Photons Under the Strong Light-Matter Coupling Conditions*”  
Dr. Igor Chestnov, Westlake University&Vladimir State University, China&Russia
- 11<sup>10</sup> – 11<sup>40</sup> coffee break

### **“Low-dimensional materials and its applications”**

**Chairman Prof. O. Cherkasova**

- 11<sup>40</sup> – 12<sup>20</sup> “*Role of water in graphene-based carbon nanoparticles and its hybrids preparation*”  
prof. Natalia Rozhkova, Karelian Research Centre RAS , Russia
- 12<sup>20</sup> – 12<sup>50</sup> “*Penetration of In-Sn plasma through protective SWCNT membranes*”  
Mr. Vladimir Gubarev, Institute of Spectroscopy RAS (ISAN), Russia online talk
- 12<sup>40</sup> – 13<sup>10</sup> “*Oxygen-sensitive films of natural graphene-based carbon*”  
Anna Koval’chuk, Karelian Research Centre RAS, Russia online talk
- 13<sup>10</sup> – 13<sup>40</sup> “*Laser synthesis of plasmonic gold nanoparticles*”  
Anastasia Morozova, ITMO University, Russia online talk

13<sup>40</sup> – 14<sup>30</sup> *lunch at the Panorama restaurant*

15<sup>00</sup> – 18<sup>00</sup> *the pedestrian excursion*

## **16.11.2021 Tuesday**

7<sup>00</sup> – 9<sup>00</sup> *breakfast at the Panorama restaurant*

### **“Light-matter interactions in solids”**

**Chairman Dr. S. Demirchyan**

9<sup>00</sup> – 9<sup>30</sup> *“Features of the formation of bound states of optical phonons in nanostructures – the role of anharmonism”*

prof. Mileta Arakelian, Erevan State University, Armenia

**online talk**

9<sup>30</sup> – 10<sup>00</sup> *“The synthesis of copper nanoparticles by laser ablation”*

Dr. Alexander Antipov, ILIT RAS Branch of FSRC Crystallography and Photonics" RAS, Russia

10<sup>00</sup> – 10<sup>30</sup> *“The birefringent tuner for narrowband alexandrite laser”*

Alexey Putilov, ILIT RAS Branch of FSRC Crystallography and Photonics" RAS, Russia

10<sup>30</sup> – 11<sup>00</sup> *“Production of Cast Aluminum Matrix Composites with Boron Carbide for Atomic Industry”*

Dr. Evgeny Prusov, Vladimir State University, Russia

**Closing session**