



**The 2<sup>nd</sup> STEPS Symposium**  
**on**  
**Photon Science**

*March 14-16, 2016*

*Hotel New Peterhof*

Organized by: Saint Petersburg State University, Lomonosov Moscow State University and  
School of Science, The University of Tokyo

# The 2<sup>nd</sup> STEPS Symposium on Photon Science

March 14 - 16, 2016

## Program

### March 14 (Mon)

- 10:00 – 12:30      **Laboratory tour**  
12.30 – 13.30      **Lunch**  
18:00 - 20:00      **Welcome dinner**

### March 15 (Tue)

- 9:00 - 9:10          **Opening Remarks**  
Sergey Tunik (Saint-Petersburg State University),  
Kaoru Yamanouchi (The University of Tokyo)

#### Session I: Laser-plasma interaction and optical processes

- 9:10 - 9:30          Alex Andreev (Saint-Petersburg State University)  
*Efficient generation of attosecond pulses from relativistic laser plasmas*
- 9:30 - 9:50          Makoto Takamoto (The University of Tokyo)  
*Turbulent reconnection in relativistic plasmas and effects of compressibility*
- 9:50 - 10:10        Sergey Pulkin (Saint-Petersburg State University)  
*Experimental comb linear and nonlinear comb - spectroscopy of atoms and molecules with increased sensitivity*
- 10:10 - 10:30        Nikolay Timofeev (Saint-Petersburg State University)  
*Light-Induced polariton clusters and their application in optical signal processing*
- 10:30 - 10:50        **Coffee Break**

#### Session II: Photons and light-matter interaction

- 10:50 - 11:10        Olga Kosareva (Moscow State University)  
*Regularized superfilamentation in air*
- 11:10 - 11:30        Kuniaki Konishi (the University of Tokyo)  
*Metamaterial-based circular polarization control*
- 11:30 - 11:50        Junji Yumoto (The University of Tokyo)  
*Coherent photon technology -Light matter interaction*

11:50 - 12:10 Andrey Fedyanin (Moscow State University)  
*Enhanced nonlinear optics in dielectric nanoparticles driven by magnetic Mie-type resonances*

12:10 - 13:30 **Lunch**

### **Session III: Atoms and clusters in light fields**

13:30 - 13:50 Kana Yamada (The University of Tokyo)  
*Selective state formation of  $Ar^{2+}$  in two-photon non-sequential double ionization of Ar*

13:50 - 14:10 Shinichi Fukahori (The University of Tokyo)  
*Energy-resolved photoelectron angular distribution of rare gas atoms by circularly-polarized few-cycle pulses*

14:10 - 14:30 Tamas Szidarovzky (The University of Tokyo)  
*Full-dimensional simulation of alignment dynamics of  $H_2He^+$  in laser fields*

14:30 - 14:50 Alexander Pastor (Saint-Petersburg State University)  
*Study of the two-photon excited xenon clusters: Energy relaxation and ICD-like processes in picosecond time domain*

14:50 - 15:10 **Coffee Break**

### **Session IV: Photons and solids**

15:10 - 15:30 Yuriy Petrov (Saint-Petersburg State University)  
*Helium ion beam induced modification of materials*

15:30 - 15:50 Koji Nakabayashi (The University of Tokyo)  
Functional magnets based on cyanido-bridged metal assemblies

15:50 - 16:10 Alexey Povolotskiy (Saint-Petersburg State University)  
*Femtosecond laser modification of phosphate glasses: ions migration, structural changes*

16:10 - 16:30 Yury Tver'yanovich (Saint-Petersburg State University)  
*Chalcogenide glasses doped with rare earth metals: concentration quenching of luminescence and glass' structure*

16:30 - 16:50 **Coffee Break**

### **Session V: Electron scattering in light fields**

- 16:50 - 17:10 Reika Kanya (The University of Tokyo)  
*Light-dressing effect in atoms and molecules in laser-assisted elastic electron Scattering*
- 17:10 - 17:30 Yuri V. Popov (Moscow State University)  
*Theoretical background of laser-assisted electron momentum spectroscopy*
- 17:30 - 17:50 Konstantin Kouzakov (Moscow State University)  
*(e, 2e) collisions in the presence of laser radiation*
- 17:50 - 20:00 **Dinner**

### March 16 (Wed)

#### Session VI: Photons and molecules

- 9:00 - 9:20 Kaoru Yamanouchi (The University of Tokyo)  
*Ultrafast dynamics of molecules induced by intense laser fields*
- 9:20 - 9:40 Katsunori Nakai (The University of Tokyo)  
*Classical trajectories of neutral H<sub>2</sub> formation and hydrogen atom scrambling in CH<sub>3</sub>CH<sub>3</sub><sup>2+</sup>*
- 9:40 - 10:00 Toshiaki Ando (The University of Tokyo)  
*Pump-probe coincidence momentum imaging of hydrogen migration in methanol induced by few-cycle intense laser pulses*
- 10:00 - 10:20 Andrey Stolyarov (Moscow State University)  
*Molecular dynamic near dissociation threshold*
- 10:20 - 10:40 **Coffee Break**

#### Session VII: Photons and organic compounds

- 10:40 - 11:00 Olesya Tomashenko (Saint-Petersburg State University)  
*A novel heterocyclic framework with tunable absorption/emission properties*
- 11:00 - 11:20 Yulia Shakirova (Saint-Petersburg State University)  
*Dual emission: some cases of organometallic luminophores*
- 11:20 - 11:40 Alexander Konev (Saint-Petersburg State University)  
*Porphirin-fullerene dyads: from charge separation to photocurrent*
- 11:40 - 12:00 Maria G. Khrenova (Moscow State University)  
*Highly efficient FRET-sensors with rationally designed linker structures*
- 12:00 - 13:30 **Lunch**

### **Session VIII: Photons interacting with gasses and clusters**

- 13:30 - 13:50      Nikolay Kuzechkin (Moscow State University)  
*Interaction of high-intense femtosecond radiation with gas cluster beam:  
Terahertz and X-ray emission*
- 13:50 - 14:10      Erik Lötstedt (The University of Tokyo)  
*Ultrafast population inversion in  $N_2^+$  in an ultrashort pulsed intense laser field*
- 14:10 - 14:30      Igor Mashek (Saint-Petersburg State University)  
*Laser-induced microwave discharges in applied aerodynamics*
- 14:30 - 14:50      Kirill Grigoriev (Moscow State University)  
*Transformation and interaction of light beams, containing polarization  
singularities, in three-wave mixing processes in isotropic nonlocal media*
- 14:50 - 15:10      **Coffee Break**

### **Session IX: Photons interacting with liquid, gels, interfaces, and solids**

- 15:10 - 15:30      Alina Manshina (Saint-Petersburg State University)  
*Laser-induced synthesis in liquids, solids, liquid-solid interfaces*
- 15:30 - 15:50      Larisa Gulina (Saint-Petersburg State University)  
*Plasmons in Au and Ag nanoparticles synthesized by successive ionic layer  
deposition method*
- 15:50 - 16:10      Takashi Hiroi (The University of Tokyo)  
*Structural analysis of amphiphilic gels using small-angle X-ray and neutron  
scattering*
- 16:10 - 16:30      Oleg Vyvenko (Saint-Petersburg State University)  
*One dimensional defects in semiconductors as effective light emitters*
- 16:30 - 16:50      **Coffee Break**
- 16:50 - 17:50      **Round Table Discussion**
- 17:50 - 18:00      **Closing Remarks**
- 18:00 - 20:00      **Banquet**