The Third STEPS Symposium on Photon Science

March 11-12, 2018

Hotel Korston Moscow

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

The Third STEPS Symposium on Photon Science

March 11 - 12, 2018

Korston Hotel Moscow, Russia

Program

March 10 (Sat) **Arrival**

March 11 (Sun)

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

Session I: Biological applications

9:10 - 9:30 Sergey Tunik (Saint-Petersburg State University)
Phosphorescent Lifetime Imaging (PLIM): History, state of the art, and perspectives

9:30 - 9:50 Takeaki Ozawa (The University of Tokyo)
Opto-bioanalysis: Imaging and controlling protein activities in living cells

9:50 - 10:10 Alexey Povolotskiy (Saint-Petersburg State University)
Molecular-plasmon nanostructures for biomedical application

10:10 - 10:30 Maria G. Khrenova (Moscow State University)
Fluorescent proteins based on flavin and its derivatives

10:30 - 10:50 **Coffee Break**

Session II: Atoms and molecules in laser fields

10:50 - 11:10 Alexei Grum-Ghrzimailo (Moscow State University)
New trends in 'complete' experiment on atomic photoionization

11:10 - 11:30 Elena Gryzlova (Moscow State University)
Effects of hyperfine interactions in atomic photoionization

11:30 - 11:50 Erik Lötstedt (The University of Tokyo)
Coupled electro-nuclear dynamics in laser-driven H_2^+ by a time-dependent multiconfiguration method

11:50 - 12:10 Yuri V. Popov (Moscow State University)
Ionization of H_2O by a strong ultrashort XUV pulse: a model within the single active electron approximation

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

Session III: Laser-plasma interaction and filamentation

13:30 - 13:50 Andrei Savel'ev (Moscow State University)
Controlled femtosecond superfilaments

13:50 - 14:10 Olga Kosareva (Moscow State University)
Polarization control of terahertz radiation from two-color femtosecond gas breakdown plasma

14:10 - 14:30 Aleksandr Ushakov (Moscow State University)
The study of laser-plasma source of terahertz radiation

14:30 - 14:50 Alex Andreev (Saint-Petersburg State University)
Efficient generation of fast particles and attosecond pulses from relativistic laser plasmas

14:50 - 15:10 Takanobu Amano (The University of Tokyo)
Astrophysical coherent radiation and acceleration of cosmic rays

15:10 - 15:30 **Coffee Break**

Session IV: Spectroscopy and interferometry

15:30 - 15:50 Kaoru Yamanouchi (The University of Tokyo)
Intense field molecular dynamics and spectroscopy

15:50 - 16:10 Sergey Pulkin (Saint-Petersburg State University)
Interference femtosecond linear and nonlinear comb-spectroscopy in octave expanded spectral range

16:10 - 16:30 Andrey Stolyarov (Moscow State University)
The molecular spectra sensitivity to possible a variation of the fundamental physical constants in cosmological timescale

16:30 - 16:50 Norikatsu Mio (The University of Tokyo)
Gravitational-wave astronomy by precision laser interferometry

16:50 - 17:00 **Coffee Break**

Session V: Electron scattering in laser fields

17:00 - 17:20 Reika Kanya (The University of Tokyo)
Laser-assisted electron scattering and diffraction

17:20 - 17:40 Konstantin Kouzakov (Moscow State University)
A quasi-Sturmian approach for laser-dressed electron states in a coulomb field

17:40 - 18:00 Takashi Hiroi (The University of Tokyo)
Laser-assisted electron impact ionization

18:00 - 20:00 **Dinner**

March 12 (Mon)

Session VI: Light emission and absorption in novel materials

9:00 - 9:20 Yuri Tver'yanovich (Saint-Petersburg State University)
Decomposition of cobalt (III) nitrotetrazolato amminates under laser illumination

9:20 - 9:40 Elena Grachova (Saint-Petersburg State University)
Molecular emitters based on heavy metal complexes equipped by bipyridine arm: some features of design and photophysical properties

9:40 - 10:00 Yulia Shakirova (Saint-Petersburg State University)
Thermoluminescent materials based on organometallic compounds

10:00 - 10:20 Alexander Konev (Saint-Petersburg State University)
Light-induced processes in porphyrin-fullerene systems

10:20 - 10:40 Mikhail Ryazantsev (Saint-Petersburg State University)
Photochromic compounds for optogenetics: From computational design to biology

10:40 - 11:00 **Coffee Break**

Session VII: Solid-state spectroscopy

11:00 - 11:20 Andrey Fedyanin (Moscow State University)
TBD

11:20 - 11:40 Jun Okabayashi (The University of Tokyo)
Tailoring spins and orbitals in spin-orbitronic film interfaces probed by X-ray spectroscopy

11:40 - 12:00 Kirill Grigoriev (Moscow State University)
Conversions of optical angular momentum in nonlinear coherent processes in the bulk and on the surface of isotropic nonlocal medium

12:00 - 12:20 Andrey Fedotov (Moscow State University)
Nonlinear spectroscopy with few-cycle pulses in mid-Infrared: Mapping the electron band structure by intraband high-harmonic generation in dielectrics

12:20 - 13:40 **Lunch**

Session VIII: Nanostructures and clusters

13:40 - 14:00 Ivan Ignatiev (Saint-Petersburg State University)
Exciton dynamics in semiconductor nanostructures

14:00 - 14:20 Tatsuya Tsukuda (The University of Tokyo)
Chiroptical properties of ligand-protected gold clusters

14:20 - 14:40 Oleg Vyvenko (Saint-Petersburg State University)
Plasmon-enhanced electron scattering in nanostructured thin metal films

14:40 - 15:00 Alina Manshina (Saint-Petersburg State University)
Hybrid metal/carbon flakes in the laser light

15:00 - 15:20 Koji Nakabayashi (The University of Tokyo)
Construction of magnetic metal assemblies with various dimensions

15:20 - 15:40 **Coffee Break**

Session IX: Light propagation in media

15:40 - 16:00 Alexei Balakin (Moscow State University)
Broadband terahertz generation from liquid like media

16:00 - 16:20 Vyacheslav Morozov (Moscow State University)
Picosecond pulsed diode pumped lasers of high peak and average power

16:20 - 16:40 Kuniaki Konishi (The University of Tokyo)
Investigation of laser-ablation mechanism of dielectric materials and application

16:40 - 17:00 Vladimir Makarov (Moscow State University)
Polarization singularities nucleation in the self-focusing of an elliptically polarized laser beam

17:00 - 17:20 Svyatoslav Shlenov (Moscow State University)
Spatio-temporal and spectral transformation of femtosecond pulsed beams with phase dislocation propagating under conditions of self-action in transparent solid-state dielectrics

17:20 - 17:30 **Closing Remarks**
Vladimir Makarov (Moscow State University),
Sergey Tunik (Saint-Petersburg State University)
Kaoru Yamanouchi (The University of Tokyo)

18:00 - 20:00 **Banquet**

March 13 (Tue) Departure