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Institute of the Russian
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The fourth MIPT-LPI-UEC Joint Workshop on Atomic, Molecular, Optical Physics

March 25-29, 2017

The University of Electro-Communications
Chofu, Tokyo, Japan

Oral sessions: Room 803, 8th fl. Bldg. E-6

Poster sessions: Room 629, 6th fl. Bldg. E-6

Organizer:

Research Organization for Coherent Photon Sciences, UEC

Support:

Global Alliance Laboratory Office (MIPT-LPI-UEC GAL)

Preface

The fourth MIPT-LPI-UEC Joint Workshop on Atomic, Molecular, Optical Physics will be held at the University of Electro-Communications (UEC) on March 25-29, 2017. Within the international collaboration framework among Moscow Institute of Physics and Technology (MIPT), Lebedev Physics Institute of the Russian Academy of Sciences (LPI) and UEC, a variety of activities, such as reciprocal exchanges of faculties and students and international joint research projects, have been collaboratively conducted in pursuit of educational and academic effects. The joint workshop takes place alternately at MIPT and UEC every year since the first joint workshop held at LPI in 2013. This year marks the fourth anniversary of the joint workshop, and the UEC is ready for hosting scientific programs on its campus including lab tours. We would like to remark that this workshop is promoted by Research Organization for Coherent Photon Science of UEC, newly established in 2016.

This time, 22 oral presentations and plenty of poster presentations will be delivered in the scientific programs. We hope that all the participants will meet advanced research works, in-depth discussions and fruitful communications.

Finally, we sincerely hope that all the participants will enjoy this workshop.

March 2017

Organizing Committee

Digital version is available on the following website until the end of the workshop:

(URL) <http://www.oi.es.uec.ac.jp/MIPT4/>

Scientific Programs

2017.3.27 (Mon.) Scientific Program I

9:30-9:35 Opening Remark: **Wataru Mitsuhashi** (Director of ROCPS, Member of the Board of Directors, UEC)

Session 1. Chairperson: **Masayuki Katsuragawa** (UEC)

9:35-10:15 **Ken-ichi Ueda** (UEC), *plenary talk*: “Heat capacitive active mirror (HCAM) - A new concept of thermal-lens-free solid state laser -”

10:15-10:45 **Masayuki Katsuragawa** (UEC), “Tailored nonlinear optics; Toward pioneering high resolution spectroscopy in the vacuum ultraviolet region”

10:45-11:05 Coffee Break

Session 2. Chairperson: **Ken'ichi Nakagawa** (UEC)

11:05-11:25 **Artem Golovizin** (MIPT), “Theoretical study of 1.14 μm clock transition uncertainties in $T\text{m}^+$ ”

11:25-11:45 **Ilya Semerikov** (MIPT), “On the way to robust laser cooled magnesium ion microwave frequency standard”

11:45-12:05 **Ilya Zalivako** (MIPT), “External Cavity Diode Laser stabilized via an interference filter for precision spectroscopy of He^{+} ”

12:05-13:35 Lunch Break

13:35-14:50 **Poster Session** (Room 629, 6th fl., Bldg. E-6)

Session 3. Chairperson: **Tetsuo Kishimoto** (UEC)

14:50-15:20 **Ken'ichi Nakagawa** (UEC), “Quantum simulator with cold Rydberg atoms”

15:20-15:50 **Haruka Tanji-Suzuki** (UEC), “Few-photon nonlinearity in a cavity QED system with an atomic ensemble”

15:50-16:05 Coffee Break

Session 4. Chairperson: **Artem Golovizin** (MIPT)

16:05-16:35 **Shinsuke Haze** (UEC), “Characterization of charge-exchange collisions between ultracold Li atoms and Ca⁺ ions”

16:35-17:05 **Tetsuo Kishimoto** (UEC), “Towards multi-stage cooling of ⁸⁷Rb atoms by spatial light-shift engineering”

17:05-17:35 **Akifumi Asahara** (UEC), “Time-domain dual-comb spectroscopy for solid state physics”

19:00 Workshop Reception (Committee Meeting)

2017.3.28 (Tue.) Scientific Program II

9:30- 9:35 Opening Greetings

Session 5. Chairperson: **Naruo Sasaki** (UEC)

9:35-10:05 **Sergey Savinov** (LPI), “Pulsed Cathodoluminescence of Solid Oxides”

10:05-10:25 **Evgeniia Varaksina** (MIPT), “Influence of fluorine radicals in organic ligands on photoluminescence properties of Eu (III) 1,3-diketonate compounds”

10:25-10:45 Coffee Break

Session 6. Chairperson: **Sergey Andreev** (LPI)

10:45-11:15 **Inga Tolstikhina** (LPI), “Charge exchange in slow ion-atom collisions. Adiabatic approach”

11:15-11:45 **Naruo Sasaki** (UEC), “Atomic-Scale Control of Friction and Wear of Carbon and Silicon Nanocontacts”

11:45-13:15 Lunch Break

13:15-15:45 Lab Tours

Session 7. Chairperson: **Sergey Yu. Savinov** (LPI)

15:45-16:15 **Sergey Andreev** (LPI), “Investigation of Al plasmas from thin foils irradiated by high-intensity extreme ultraviolet”

16:15-16:35 **Yurina Michine** (UEC), “The development of Ozone Assisted Gas Grating for high energy lasers”

16:35-16:55 **Konstantin Kislov** (MIPT), “Strong-field effects of interaction of ultrashort laser pulses with metallic compound nanoantennas”

16:55-17:10 Coffee Break

Session 8. Chairperson: **Inga Yu. Tolstikhina** (LPI)

17:10-17:40 **Toru Morishita** (UEC), “Atomic and molecular dynamics in intense laser fields”

17:40-18:00 **David Aznaurov** (MIPT), “Quantum focusing of photoelectrons produced by strong circularly polarized laser pulses”

18:00-18:20 **Shun Ohgoda** (UEC), “Photoionization of hydrogen in a strong static electric field”

18:20-18:40 **Pavel Samygin** (MIPT), “Multichannel generalization of the adiabatic theory of ionization of atoms by intense low-frequency laser pulses”

18:40-18:50 Closing Remarks

2017.3.29 (Wed.) Free Discussions

9:30-12:00 Free Discussion 1 (Room 801, 8th fl., Bldg. E-6)

12:00-13:30 Lunch Break

13:30-15:00 Free Discussion 2 (Room 801, 8th fl., Bldg. E-6)

15:00-15:30 Coffee Break (Room 801, 8th fl., Bldg. E-6)

15:30-17:00 Free Discussion 3

Poster Session

2017.3.27 (Mon.) 13:35-14:50

Room 629, 6th fl., Bldg. E-6

List of Poster presentations

- P-01.** C. Zhang, D. Tregubov, K. Yoshii, C. Ohae, M. Suzuki, K. Minoshima, and M. Katsuragawa, “A new optical technology to arbitrarily manipulate amplitudes and phases of a highly discrete broadband spectrum”
- P-02.** T. Gavara, C. Ohae, and M. Katsuragawa, “Study and Development of Continuous-Wave Laser Based 10 THz Molecular Modulator.”
- P-03.** G. Vishnyakova, E. Kalganova, S. Fedorov, A. Golovizin, D. Sukachev, D. Tregubov, A. Akimov, K. Khabarova, N. Kolachevsky, and V. Sorokin, “Investigation of clock transition at $\lambda = 1.14 \mu\text{m}$ in cold Thulium atoms”
- P-04.** I. Semerikov, I. Zalivako, A. Borisenko, V. Sorokin, K. Khabarova, and N. Kolachevsky, “On the way to robust laser cooled magnesium ion microwave frequency standard”
- P-05.** I. Zalivako and A. Ozawa, J. Weitenberg, K. Khabarova, and Th. Udem, “External Cavity Diode Laser stabilized via an interference filter for precision spectroscopy of He^+ ”
- P-06.** N. Watanabe, H. Tamura, M. Musha, and K. Nakagawa, Frequency-comb-referenced widely tunable optical frequency synthesizer for precision spectroscopy of Rb Rydberg states”
- P-07.** H. Tamura, Y. Yamaguchi, T. Yamakoshi, and K. Nakagawa, “Observation of spatial correlations of Rydberg excitations in two-dimensional single atoms arrays”
- P-08.** M. Kamihigashi, M. Koashi, and H. Tanji-Suzuki, “Three-dimensional control of optical dipole trap positions for maximizing photon-atom coupling strength in an optical cavity”
- P-09.** M. Sasakawa, R. Saito, S. Haze, R. Nakai, M. Raoult, H. Da Silva Jr., O. Dulieu, and T. Mukaiyama, “Characterization of ultracold collisions between laser-cooled ^6Li atoms and $^{40}\text{Ca}^+$ ions”

- P-10.** W. Okamoto and T. Kishimoto, “Towards spectroscopic measurements of ^{87}Rb tune-out wavelength using vapor cell”
- P-11.** M. Uchida, T. Kato, Y. Tanaka and K. Minoshima, “Ultrafast three-dimensional measurements using spectral interferometry of chirped optical frequency comb with a fiber bundle”
- P-12.** A. Suemasa, A. Shimo-oku, and M. Musha, “Developments of highly frequency and intensity stabilized lasers for space gravitational wave detector”
- P-13.** Y. Saito, K. Matsusaka, M. Musha, “Developments of optical frequency comb for dual-comb spectroscopy and high precision frequency reference”
- P-14.** E. A. Varaksina, I. V. Taidakov, and S. A. Ambrozevich, “Influence of fluorine radicals in organic ligands on photoluminescence properties of Eu^{3+} β -diketonate compounds”
- P-15.** T. Anzai and V. Vohra, “Towards the fabrication of color-switchable single-pixel hybrid light-emitting devices”
- P-16.** S. Inaba, T. Anzai, and V. Vohra, “Transfer-printing of polymer solar cells with inverted concentration profiles”
- P-17.** R. Shikne, and H. Yoneda, “Early time (< 500 fs) dielectric function dynamics in warm dense bismuth”
- P-18.** T. Suzuki, M. Yamashita, and H. Yoneda, “Ultra-broad band liquid crystal spatial light modulator and compression of super continuum light”
- P-19.** K.S. Kislov, A.A. Narits, and A.D. Kondorskiy, “Strong-field interaction of femtosecond laser pulses with compound nanoantennas”
- P-20.** H. Matsui, O. I. Tolstikhin, and T. Morishita, “Siegert states of a hydrogen atom in the complex field”
- P-21.** D. B. Aznaurov and O. I. Tolstikhin, “Quantum focusing of photoelectrons produced by strong circularly polarized laser pulses”
- P-22.** S. Ohgoda, Oleg I. Tolstikhin, and T. Morishita, “Photoionization of hydrogen in a strong static electric field”
- P-23.** P. K. Samygin and O. I. Tolstikhin, “Multichannel generalization of the adiabatic theory of ionization of atoms by intense low-frequency laser pulses”