

The 4th International Conference "Quantum Optics and Photonics 2021" Riga, 22–23 April 2021

Agenda

APRIL 22

09.00–09.30 Welcome words from the organizers and invited guests

09.30 – 10.40 Plenary session I "Progress in quantum sciences and space sciences at the NSP FOTONIKA-LV".

Chair: Rashid Ganeev

09.30 - 10.00 Arnolds Ūbelis, *University of Latvia*, National Science Platform FOTONIKA-LV - dynamics of growth and future prospects.

10.00 - 10.20 Aigars Atvars, *University of Latvia*, The progress of the ERDF project "The Development of Quantum Optics and Photonics at the University of Latvia"

10.20 - 10.40 Kalvis Salmins, *University of Latvia*, Space sciences and technologies at NSP FOTONIKA-LV

10.40 – 10.50 Break

10.50 – 12.20 Plenary session II "Future challenges in photonics and laser spectroscopy". Chair: Arnolds Ūbelis

10.50 – 11.20 Sune Svanberg, *South China Normal University, Lund University*, Laser spectroscopy applied to the environmental, ecological, and agricultural areas

11.20 – 11.50 Lorenzo Pavesi, *University of Trento*, Quantum silicon photonics

11.50 – 12.20 Henrik Hartman, *Malmö University*, High-accuracy laboratory atomic astrophysics

12.20 - 13.20 Break

13.20 – 15.25 Session "Advances in photonics" Chair: Aigars Atvars

13.20 – 13.40 Katarina Svanberg, *South China Normal University, Lund University*, Laser spectroscopy to meet some challenges in medicine

13.40 – 14.00 Natalia V. Kamanina, *Vavilov State Optical Institute, Russian Academy of Sciences*, Nanotechnology in optics, electronics and biomedicine: Advantages of the optical materials surface structuration with the carbon nanotubes

14.00 – 14.20 Emilio Fiordilino, *University of Palermo*, Testing quantum mechanics foundations with a laser field

14.20 – 14.35 Break

14.35 – 14.55 Ivan A. Shuklov, *Moscow Institute for Physics and Technology*, Chalcogenide colloidal quantum dots of lead and mercury for near-/mid-IR-applications

14.55 – 15.25 Dag Hanstorp, *University of Gothenburg*, Photodetachment studies of negative ions

15.25 – 15.40 Break

15.40 – 16.40 Session "Developments in nonlinear optics I" Chair: Rashid A. Ganeev

15.40 – 16.00 Rashid A. Ganeev, *University of Latvia*, Resonance processes during high-order harmonics generation in atomic and molecular plasmas

16.00 – 16.20 Pavel V. Redkin, *Changchun Institute of Optics, Fine Mechanics and Physics*, Coupled oscillations in enhancement of high-order harmonics generation

16.20 – 16.40 Vyacheslav V. Kim, *American University of Sharjah*, Investigating laser plasma dynamics with high-order harmonics generation in carbon-containing nanomaterials

16.40 – 16.55 Break

16.55 – 17.35 Poster session I. Chair: Jānis Alnis

16.55 – 17.05 Jānis Blahins, *University of Latvia*, Technological challenges for next generation boron ion implantation device

17.05 – 17.15 Artūrs Ciniņš, *University of Latvia*, Two-photon selection rules of HF structure for Rydberg atomic states

17.15 – 17.25 Inga Brice, *University of Latvia*, Whispering gallery mode silica microsphere resonator applications for biosensing and communications

17.25 – 17.35 Jānis Blahins, *University of Latvia*, Small size Boron ion implanter concept

APRIL 23

09.00 – 10.00 Session “Developments in nonlinear optics II” Chair: Rashid A. Ganeev

09.00 – 09.20 Helmut Zacharias, *University of Münster*, Control of quasi-phase-matched high harmonic generation in structured plasmas

09.20 – 09.40 Sergey Y. Stremoukhov, *Lomonosov Moscow State University*, Quasi-phase matching of high-order harmonics in mid-IR laser fields

09.40 – 10.00 Elena Anashkina, *Institute of Applied Physics, Russian Academy of Sciences*, Nonlinear optical and laser effects in microresonators based on silica and non-silica tellurite and chalcogenide glasses

10.00 – 10.15 Break

10.15 – 11.35 Session “Quantum processes in optics” Chair: Aigars Atvars

10.15 – 10.35 Jānis Alnis, *University of Latvia*, From ultra-stable laser resonators for atomic spectroscopy and fiber-based femtosecond optical frequency combs to whispering-gallery-mode microresonator sensors and microsphere optical frequency combs for telecommunication data transfer

10.35 – 10.55 Arseny Sorokin, *Institute of Applied Physics, Russian Academy of Sciences*, Theoretical analysis of limiting factors for quantum noise squeezing of ultrashort pulses in optical fibers

10.55 – 11.15 Aigars Atvars, *University of Latvia*, TRIZ forecast of the development of research on optical microresonators

11.15 – 11.35 Kaspars Mičulis, *University of Latvia*, The Optimal (Tom and Jerry) pairs of cold Rydberg atoms in Penning Ionization processes

11.35 – 13.15 Break

13.15 – 14.55 Session “Spectroscopy and space sciences” Chair: Arnolds Ūbelis

13.15 – 13.35 Arnolds Ūbelis, *University of Latvia*, Spectroscopy of atomic Boron

13.35 – 13.55 Uldis Bērziņš, *University of Latvia*, Oscillator strengths of arsenic resonance lines

13.55 – 14.15 Javed Iqbal, *Institut National de la Recherche Scientifique, Canada*, Laser induced breakdown spectroscopy as an emerging technique for mineral and space exploration

14.15 – 14.35 Vidvuds Beldavs, *NGO Riga Photonics Centre*, Moon-Earth: A concept for building a space-resources based economy

14.35 – 14.55 Ilgmārs Eglītis, *University of Latvia*, Some results of three projects of the Institute of Astronomy of UL

14.55 – 15.10 Break

15.10 – 16.30 Session “Practical aspects of photonics” Chair: Uldis Bērziņš

15.10 – 15.30 Anna Bulycheva, *Baltic Scientific Instruments, Ltd.*, Radiation detection materials and detector technologies for radiation detectors

15.30 – 15.50 Petro Smertenko, *Institute of Semiconductor Physics, National Academy of Sciences of Ukraine*, Towards energy-efficient technologies with smart optical sensing and shape-assistant trapping of infrared emission

15.50 – 16.10 Serhii Pohuliai, *Baltic Scientific Instruments, Ltd.*, Monitoring of radioactive waste on nuclear industry

16.10 – 16.30 Boriss Janins, *SLICKER.LTD*, Small form-factor supermultiview 3D display using Gabor superlens

16.30 – 16.45 Break

16.45 – 18.05 Poster session II Chair: Jānis Alnis

16.45 – 16.55 Janis Braunfelds, *Riga Technical University*, FBG sensors for structural health monitoring of road infrastructure

16.55 – 17.05 Kristians Draguns, *University of Latvia*, Dispersion engineering of whispering gallery mode resonators

17.05 – 17.15 J. R. Ek-Ek, *Instituto Politecnico Nacional, Mexico*, Optical fibre taper simulation and manufacture: from standard to micro size

17.15 – 17.25 Lāse Mīlgrave, *University of Latvia*, Liquid whispering gallery mode humidity sensor and its applications

17.25 – 17.35 Toms Salgals, *Riga Technical University*, Microsphere-based OFC-WGMR multi-wavelength source and its applications in telecommunications

17.35 – 17.45 Viesturs Silamiķelis, *University of Latvia*, Development of next generation technology for ultra purity crystal growth based on MHD semi levitation

17.45 – 17.55 Kaspars Zaķis, *Riga Technical University*, Modelling of cladding-pumped erbium/ytterbium Co-doped fibre amplifier for C-band operation

17.55 – 18.05 Roberts Berķis, *University of Latvia*, Wavelength measuring for optical telecommunications, using tapered fiber, image analysis and PMMA WGM micro resonators

18.05 – 18.10 Concluding comments Rashid Ganeev