



CONFERENCE PROGRAM

«PHOTONICS OF VORTEX LIGHT: PROBLEMS AND PERSPECTIVES 2023»

23.10 (Monday) 10:00 – 16:00 – registration of conference participants

24.10 (Tuesday)

09:00 – 10:00 – registration of conference participants

10:00 – 10:20 – Grand opening of the conference

Section Singular optics

10:20 – 11:20 **V.A. Soifer**¹ (¹ Samara National Research University (Samara University), Samara, Russia). **Advanced development trends in optical computing**

11:20 – 11:40 **V.V. Kotlyar**^{1,2}, **E.S. Kozlova**^{1,2}, **A.G. Nalimov**^{1,2}, **S.S. Stafeev**^{1,2} (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia; ² Samara National Research University (Samara University), Samara, Russia). **Measurement of the thin films characteristics by the optical sensor based on a spiral zone plate**

11:40–12:00 **V.V. Kotlyar**^{1,2}, **A.G. Nalimov**^{1,2}, (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia; ² Samara National Research University (Samara University), Samara, Russia). **Determining topological charge, wavelength, and polarization state using metasurface components**

12:00 – 12:20 - coffee break

12:20 – 12:40 **V.V. Kotlyar**^{1,2}, **A.A. Kovalev**^{1,2} (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia; ² Samara National Research University (Samara University), Samara, Russia). **Hall effect in a paraxial laser beam with many polarization singularities**

12:40 – 13:00 **A.A. Kovalev**^{1,2}, **E.S. Kozlova**^{1,2}, **A.A. Savelyeva**^{1,2}, (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia; ² Samara National Research University (Samara University),

Samara, Russia). **Topological charge of an axial and an off-axis superposition of optical vortices**

13:00 – 14:00 – dinner

14:00 – 14:20 V.V. Kotlyar^{1,2}, **S.S. Stafeev**^{1,2} (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia; ² Samara National Research University (Samara University), Samara, Russia). **Optical Hall effect in tight focus**

14:20 – 14:40 N.A. Ivliev¹, S.N. Khonina¹, **A.P. Porfirev**¹, (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia). **q-plates for laser material processing of polarization sensitive materials**

14:40 – 15:00 V.V. Kotlyar², S.S. Stafeev², **V.D. Zaitsev**¹, (¹ Samara National Research University (Samara University), Samara, Russia; ² Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia). **Sharp focusing of Poincaré beams**

Poster reports:

- H.S. Haydarov¹, F.R. Ismailov¹, M. Khasanov¹, L.M. Sabirov¹, D.I. Semenov¹ (¹ Institute of Engineering Physics, Samarkand State University, Samarkand, Uzbekistan). **Nano-Scale Structural Processes in Aqueous Solutions of Non-Electrolytes in the Singular Point Vicinity**
- Ya.E. Akimova¹, M.V. Bretsko¹, Yu. A. Egorov¹, S.E. Khalilov¹, A.V. Vol'yar¹ (¹ V.I. Vernadsky Crimean Federal University, Simferopol, Russia). **Fine Structure of Optical Vortices in Linearly Polarized Laguerre–Gaussian Beams**
- Ya.E. Akimova¹, M.V. Bretsko¹, Yu. A. Egorov¹, S.E. Khalilov¹, A.V. Vol'yar¹ (¹ V.I. Vernadsky Crimean Federal University, Simferopol, Russia). **Experimental Study of Astigmatic Invariance Conditions for Structured Laguerre–Gaussian Beams**
- I.P. Lukin¹ (¹ V.E. Zuev Institute of Atmospheric Optics SB RAS, Tomsk, Russia). **Propagation of partially coherent vortex Bessel-Gaussian beams in a turbulent atmosphere**
- A. Absanov¹, A. Jumabaev¹, B. Khudaykulov¹ (¹ Samarkand State University, Samarkand, Uzbekistan). **Manifestation of intermolecular interactions in acetonitrile and its various solutions in Raman, FTIR spectra**

25.10 (Wednesday)

09:00 – 10:00 – registration of conference participants

Section Informational optics

10:00 – 10:40 E.N. Bashmakova¹, T.Yu. Golubeva¹, E.A. Vashukevich¹ (¹ Saint Petersburg State University, Saint-Petersburg, Russia). **Light with orbital angular momentum for quantum information schemes** (invited)

10:40 – 11:20 E.N. Bashmakova¹, T.Yu. Golubeva¹, E.A. Vashukevich¹ (¹ Saint Petersburg State University, Saint-Petersburg, Russia). **Two-qubit quantum logical gates based on QND interaction between twisted light and atomic ensemble** (invited)

11:20 – 11:40 **V.P. Lukin** (Institute of Atmospheric Optics V.E. Zuev SB RAS, Tomsk, Russia). **Influence of amplitude fluctuations on phase measurements and correction in a turbulent atmosphere**

11:40 – 12:00 - coffee break

Section Singular optics

12:00 – 12:40 G.K. Kostyuk¹, A.A. Petrov¹, V.A. Shkuratova¹, **V.P. Veiko**¹ (¹ ITMO University, St. Petersburg, Russia). **Compressed laser-induced micro-plasma as an effective tool for fabrication of phase optical elements** (invited)

12:40 – 13:00 **V.Yu. Venediktov**^{1,2} (¹ Laser Measurement and Navigation Systems Department, Electrotechnical University “LETI”, St.-Petersburg, Russia; ² St.-Petersburg State University, Faculty of Physics, St.-Petersburg, Russia). **Interference systems as the source of optical vortices**

13:00 – 13:20 **L.I. Bakirova**¹, R.V. Kutluyarov¹, V.S. Lyubopytov¹, I.V. Stepanov¹, G.S. Voronkov¹ (¹ Federal State Budgetary Educational Institution of Higher Education «Ufa University of Science and Technology», Ufa, Russia). **Microring resonator-based Tunable Vortex Beam Emitter with the phase change materials**

13:20 – 13:40 Yu.Yu. Choporova¹, V.V. Gerasimov^{1,2}, B.A. Knyazev⁴, V.D. Kukotenko¹, **N.D. Osintseva**¹, V.S. Pavelyev³, (¹ Budker Institute of Nuclear Physics of Siberian Branch Russian Academy of Sciences (BINP SB RAS), Novosibirsk, Russia; ² Novosibirsk State University, Novosibirsk, Russia; ³ Samara National Research University, Samara, Russia; ⁴ 11230, USA, Brooklyn, NY). **Hermite-Gaussian and Bessel mode identification of high-power terahertz beams by diffractive optical elements at Novosibirsk Free Electron Laser**

13:40 – 14:00 E.P. Grakhova¹, V.S. Lyubopytov¹, R.V. Kutluyarov¹, **I.V. Stepanov**¹ (¹ Federal State Budgetary Educational Institution of Higher Education «Ufa University of Science and Technology», Ufa, Russia). **Integrated Transceiver of Optical Vortex Signals with Mode Division Multiplexing**

14:00 – 15:00 – dinner

15:00 – sightseeing tour of Samarkand

26.10 (Thursday)

Section Singular optics

10:00 – 10:20 **A.V. Volyar**¹ (¹ V.I. Vernadsky Crimean Federal University, Simferopol, Russia). **General Astigmatism of Structured LG Beams: Evolution and Transformations of the OAM Super-Bursts**

10:20 – 10:40 E.G. Abramochkin², Ya.E. Akimova¹, **M.V. Bretsko**¹, Yu.A. Egorov¹, S.E. Khalilov¹, A.V. Volyar¹ (¹ V.I. Vernadsky Crimean Federal University, Simferopol, Russia; ² Samara Branch of Lebedev Physical Institute of Russian Academy of Sciences, Samara, Russia). **Astigmatic-Invariant Structured Singular Beams**

10:40 – 11:00 **S.A. Degtyarev**^{1,2}, S.N. Khonina^{1,2} (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia; ² Samara National Research University (Samara University), Samara, Russia). **Diffraction optical element for vector beams generation**

Section Diffraction optics, optical technology

11:00 – 11:20 E.A. Bezus¹, **D.A. Bykov**¹, L.L. Doskolovich¹, A.I. Kashapov¹, V.A. Soifer¹ (¹ Image Processing Systems Institute of the RAS - branch of the Federal Research Center “Crystallography and Photonics” RAS, Samara, Russia). **Generation of spatiotemporal optical vortices using metal–dielectric layered structures**

Section Holography, Coherent Optics and Photonics

11:20 – 11:40 **A.V. Ivchenko**¹, A.I. Zhuzhukin¹ (¹ Samara National Research University (Samara University), Samara, Russia). **The Interferograms Improvement Strategy for Full-Scale Objects Registration by the Noise-Proof Digital Speckle Pattern Interferometer**

11:40 – 12:00 A.V. Chernykh¹, A.O. Georgieva¹, **N.V. Petrov**^{1,2} (¹ ITMO University, St. Petersburg, Russia; ² Qingdao Innovation and Development Center, Harbin Engineering University, Qingdao, 266000 Shan-dong, China) **On quantization of phase distributions accuracy at phase modulation by DMD and Lee computer holography**

12:00 – 12:20 M. G. Burdanova³, **A.V. Chernykh**¹, A. S. Ezerskii¹, G. M. Katyba³, D. V. Krasnikov², N.V. Petrov¹, A.V. Radivon³, N. I. Raginov², E. G. Tsiplakova¹ (¹ ITMO University, St. Petersburg, Russia; ² Skolkovo Institute of Science and Technology, Moscow, Russia; ³ Center for Photonics and 2D Materials, Moscow Institute of Physics and Technology, Dolgoprudny, Russia) **Formation of Terahertz Vortex Beams through Single-Walled Carbon Nanotubes Spiral Zone Plates**

12:20 – 12:40 A. V. Chernykh¹, **A.S. Ezerskii**¹, N. V. Petrov¹, (¹ ITMO University, St. Petersburg, Russia) **Filtering of axial holograms obtained in a digital holographic microscope based on a geometric phase lens and a polarizing camera.**

12:40 – 13:40 – dinner;

14:00 – Closing of the conference

18:00 – banquet