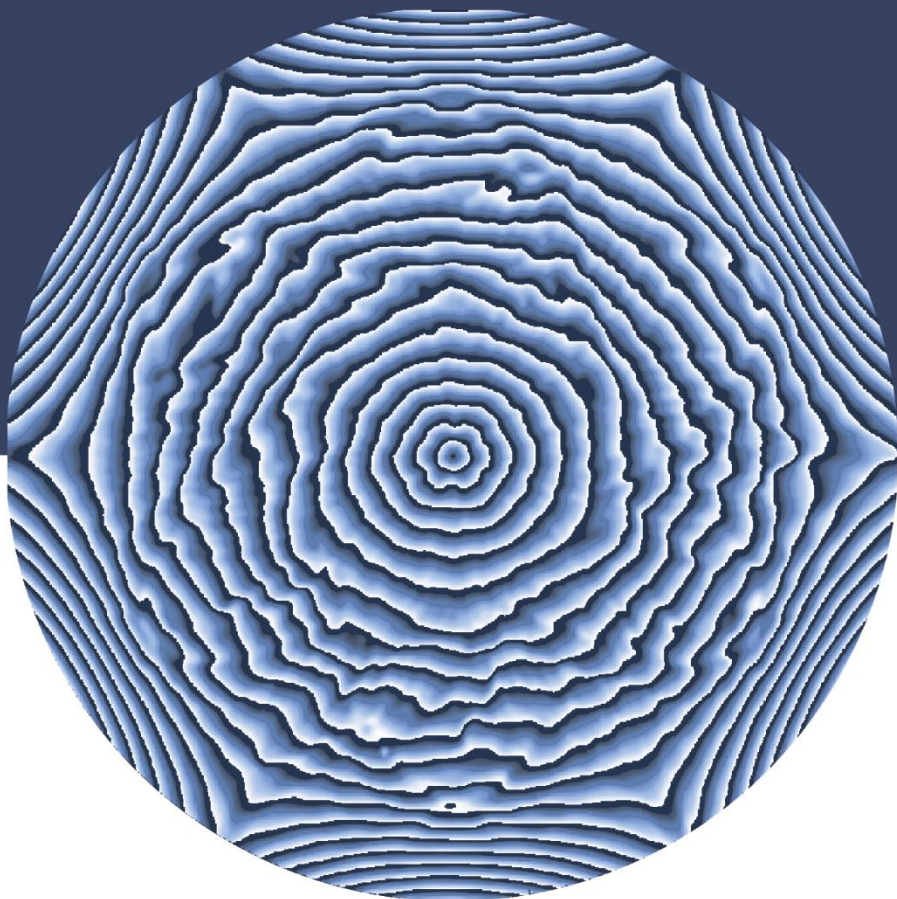


17 - 21 APRIL SAMARA, RUSSIA

PROGRAM OF ITNT

2023



The IX International Conference
on Information Technology
and Nanotechnology

The IX International Conference on Information Technology and Nanotechnology (ITNT-2023) is held online from April 17th to 21th, 2023. The Conference is intended to provide a forum for leading scientists from all over the world to discuss the latest advances in the basic and applied research in the field of Information Technology, Nanotechnology, and Artificial Intelligence, attract young people to advanced scientific research, and share the latest trends in training and research programs for future ITNT specialists.

Organizers



Samara National Research University



Image Processing Systems Institute –
Branch of the Federal Scientific Research
Centre “Crystallography and Photonics” of
the Russian Academy of Sciences (IPSI
RAS- branch of FSRC "Crystallography
and Photonics" RAS)

Partners



IEEE



Photonics



Media partners

Photonics Russia



Computer Optics

Conference Venue

The ITNT-2023 is held in the 15th building of the Samara University.

Address: 34, Moskovskoye shosse, Samara, 443086, Russia.

In 2023, **ITNT moved to online**. Additional details on the [Website](#).

Conference topics

Section 1 “Computer Optics and Nanophotonics”

- Diffractive Optics (Design, Simulation and Manufacturing of Diffractive Optical Elements, Applications);
- Planar Optical Structures (Waveguides, Photonic Crystals, Resonance Structures, Bragg Gratings);
- Hyperspectral Systems (Optical Schemes, Dispersive Elements, Spectral Filters);
- Nanophotonics (Design, Simulation and Manufacturing of Elements of Nanophotonics, Plasmonics, Metasurfaces);
- Optical Sensing Systems, Information Transmission and Processing (Optical Calculations, Modeling of Optical Imaging Systems, Optical Neural Networks, Fiber Optics, Information Transfer in Free-space);
- Singular Optics (Generation and Registration of Optical Vortices, Propagation and Focusing of Optical Vortices, Cylindrical Vector Beams, Spin-Orbital Conversion).

Section 2 “Information technology in Earth remote sensing”

- Information Technology in Design of Earth Remote Sensing Spacecraft and Payload;
- Software and Mathematical Solutions for Motion Control of Observation Spacecraft;
- Software and Hardware for Receiving, Processing and Analyzing Data Received from Earth Remote Sensing Spacecraft;
- Mathematical Modeling of the Processes of Earth Remote Sensing Spacecraft Performance;
- Modern Design Solutions for the Development of Earth Remote Sensing Spacecraft and their Constellations, Including CubeSat;
- UAV-based Remote Sensing Systems.

Section 3 “Digital Image Processing, Analysis and Pattern Recognition”

- Mathematical Methods of Digital Image Processing and Pattern Recognition (Filtering, Enhancement, Color Mapping, Reconstruction, Compression, Spectral Transformations and Invariants, Mathematical Morphology, Segmentation, Images Mosaicing, Feature Extraction and Selection, Descriptors, Dimensionality Reduction, Image Retrieval);
- 3D Vision (Photogrammetry, Shape or Scene Reconstruction, Registration, Geometry Transformation, Point Cloud Processing; Scene Analysis; Structure from Motion);
- Image-Based Biometric Systems (Face, Fingerprints, Retina, Gesture and Action Recognition; Object Detection and Tracking; Motion Analysis);

- Geoinformation Systems and Technologies (Vectorization, Tracing, Geospatial Analysis and Modeling; Geometric and Radiometric Correction; Data Fusion, Spectral Unmixing, Change and Anomaly Detection,);
- Multimedia Protection and Verification (Watermarking, Forgery Detection, Steganography, Steganalysis).

Section 4 “Artificial Intelligence”

- New Approaches, Trends and Fundamental Results in the Field of Artificial Intelligence and its Applications to Pattern Recognition and Image Analysis, Text Processing, Speech Information;
- Neural Network Methods and Deep Learning: New Architectures, Neural Models, Teaching Methods, Multimodal Intelligent Systems, New Approaches to Solving Applied Problems, Preparing Data for Training, Forming Datasets;
- Applied Artificial Intelligence Technologies in Image Processing, Unmanned Vehicles, Industrial and Agricultural Applications, Medical Applications, Ecology, Environmental Monitoring and Others;
- Software Technologies for Solving Problems of Artificial Intelligence – Frameworks, Libraries, Open Initiatives and Communities;
- Multidisciplinary Aspects of Artificial Intelligence and Machine Learning: Ethical and Ontological Aspects of Artificial Intelligence, Systems of Trusted Artificial Intelligence.

Section 5 “Data Science”

Computer Science:

- Data Engineering: Data Preprocessing, Validation and Augmentation;
 - Data Visualization;
 - Mathematical Methods of Data Analysis;
 - Software Platforms and Libraries for Data Processing;
 - Hardware for Data Storage and Processing;
 - High-performance, Parallel and Cloud Computing, Big Data Technologies;
 - Databases, Tools and Languages for Working with Databases.
- Data Mining Applications:
- Solution of Urgent Applied Problems: Time Series Analysis;
 - Natural Language Processing;
 - Video Data Streams Analysis;
 - Diagnostic Data Analysis.

Section 6 “Information technologies in biomedicine”

- Mathematical methods for processing biomedical data, signals, images, biomedical visualization;
- Intelligent analysis of biomedical data, clinical decision support systems;
- Artificial intelligence in biomedical data processing, neural networks and deep learning in biomedical applications;
- Augmented and virtual reality (AR/VR) in biomedical applications;
- Medical information systems, remote interaction and monitoring systems, telemedicine, Internet medicine;
- Therapeutic and diagnostic systems, implants, artificial organs, biomedical sensors, medical equipment, internet of medical things (IoMT);
- Mathematical modeling of biophysical processes.

Programm Committee

Programm Committee Chair

Soifer V.A. – academician of RAS, Prof., President of Samara National Research University, Samara, Russia.

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Tic S.N. – Dr., Samara National Research University, Samara, Russia;
Yashina V.V. – Dr., Federal Research Center “Computer Science and Control” of
the Russian Academy of Sciences.

Conference Schedule

Time zone: Samara (GMT +4)

17 April		18 April		19 April		20 April		21 April	
		09:30-11:15	Plenary Session	09:30-11:15	Plenary Session	09:30-11:15	Plenary Session	09:30-11:15	Plenary Session
10:00-10:10	Opening Ceremony	11:15-11:25	Break	11:15-11:25	Break	11:15-11:25	Break	11:15-11:25	Break
10:10-11:55	Plenary Session	11:25-12:55	Oral Session	11:25-12:55	Oral Session	11:25-12:55	Oral Session	11:25-12:55	Oral Session
11:55-12:05	Break	12:55-13:25	Lunch Break	12:55-13:25	Lunch Break	12:55-13:25	Lunch Break	12:55-13:25	Lunch Break
12:05-13:35	Oral Session	13:25-14:55	Oral Session	13:25-14:55	Oral Session	13:25-14:55	Oral Session	13:25-14:55	Oral Session
13:35-14:05	Lunch Break	14:55-15:05	Break	14:55-15:05	Break	14:55-15:05	Break	14:55-15:05	Break
14:05-15:35	Oral Session	15:05-16:50	Plenary Session	15:05-16:50	Plenary Session	15:05-16:35	Poster Session	15:05-16:35	Oral Session
15:35-15:45	Break	16:50-17:00	Break	16:50-17:00	Break			16:35-16:45	Break
15:45-17:30	Plenary Session							16:45-17:00	Closing Ceremony

The Plenary Session talks, as well as the talks from Oral Sections, will be available for discussion during their presentation according to the Conference Schedule.

The BigBlueButton platform is used for remote participation in the Conference. We ask you to carefully check the Program. Below are the parameters for connecting to online sessions.

You can look through the talks posted as Posters at Telegram Web during the whole time of the Conference. If you want to ask the authors, please, follow the links and put your question in the comments. You can also use the [feedback form](#) on our Website.

BBB-0	
Room title:	ITNT-2023 Plenary Session
Link:	https://bbb0.ssau.ru/b/9pf-mph-avu-0v2

BBB-1	
Room title:	ITNT-2023 Oral Session – Section 1 “Computer Optics and Nanophotonics”
Link:	https://bbb0.ssau.ru/b/cd2-zth-sfa-45z

BBB-2	
Room title:	ITNT-2023 Oral Session – Section 2 “Information technology in Earth remote sensing”
Link:	https://bbb0.ssau.ru/b/2td-0he-z0q-3fk

BBB-3	
Room title:	ITNT-2023 Oral Session – Section 3 “Digital Image Processing, Analysis and Pattern Recognition”
Link:	https://bbb0.ssau.ru/b/6dr-e6k-msb-gbb

BBB-4	
Room title:	ITNT-2023 Oral Session – Section 4 “Artificial Intelligence”
Link:	https://bbb0.ssau.ru/b/ypp-26j-9ul-vsk

BBB-5	
Room title:	ITNT-2023 Oral Session – Section 5 “Data Science”
Link:	https://bbb0.ssau.ru/b/mnt-cup-uzv-yfu

BBB-6	
Room title:	ITNT-2023 Oral Session – Section 6 “Information technologies in biomedicine”
Link:	https://bbb0.ssau.ru/b/g3u-mke-jxf-pxd

Poster Session	
ITNT-2023 Poster Session – Section 1	https://t.me/itnt2023_section1
ITNT-2023 Poster Session – Section 2:	https://t.me/itnt2023_section2
ITNT-2023 Poster Session – Section 3:	https://t.me/itnt2023_section3
ITNT-2023 Poster Session – Section 4:	https://t.me/itnt2023_section4
ITNT-2023 Poster Session – Section 5:	https://t.me/itnt2023_section5
ITNT-2023 Poster Session – Section 6:	https://t.me/itnt2023_section6

**Program of the IX International Conference on Information Technology and
Nanotechnology (ITNT-2023)**

17 April (Monday)

Time zone: Samara (GMT +4)

10:00-10:10	Opening Ceremony <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	
10:10-11:55	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	
11:55-12:05	Break	
	Oral Sessions	
12:05-13:35	Section 1 "Computer Optics and Nanophotonics" <i>BoilingPoint (Conference room "Union")-15 (online BBB-1)</i>	Section 5 "Data Science" <i>406-15 (online BBB-5)</i>
13:35-14:05	Lunch Break	
	Oral Sessions	
14:05-15:35	Section 1 "Computer Optics and Nanophotonics" <i>BoilingPoint (Conference room "Union") (online BBB-1)</i>	Section 5 "Data Science" <i>406-15 (online BBB-5)</i>
15:35-15:45	Break	
15:45-17:30	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	

**Program of the IX International Conference on Information Technology and
Nanotechnology (ITNT-2023)**

18 April (Tuesday)

Time zone: Samara (GMT +4)

09:30-11:15	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	
11:15-11:25	Break	
	Oral Sessions	
11:25-12:55	Section 1 "Computer Optics and Nanophotonics" <i>406-15 (online BBB-1)</i>	Section 3 "Digital Image Processing, Analysis and Pattern Recognition" <i>BoilingPoint (Conference room "Union")-15 (online BBB-3)</i>
12:55-13:25	Lunch Break	
	Oral Sessions	
13:25-14:55	Section 1 "Computer Optics and Nanophotonics" <i>406-15 (online BBB-1)</i>	Section 3 "Digital Image Processing, Analysis and Pattern Recognition" <i>BoilingPoint (Conference room "Union")-15 (online BBB-3)</i>
14:55-15:05	Break	
15:05-16:50	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	

**Program of the IX International Conference on Information Technology and
Nanotechnology (ITNT-2023)**

19 April (Wednesday)

Time zone: Samara (GMT +4)

09:30-11:15	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>		
11:15-11:25	Break		
	Oral Sessions		
11:25-12:55	Section 2 "Information technology in Earth remote sensing" <i>BoilingPoint (Hall "Buran")-15 (online BBB-2)</i>	Section 3 "Digital Image Processing, Analysis and Pattern Recognition" <i>BoilingPoint (Conference room "Union")-15 (online BBB-3)</i>	Section 4 "Artificial Intelligence" <i>406-15 (online BBB-4)</i>
12:55-13:25	Lunch Break		
	Oral Sessions		
13:25-14:55	Section 2 "Information technology in Earth remote sensing" <i>BoilingPoint (Hall "Buran")-15 (online BBB-2)</i>	Section 3 "Digital Image Processing, Analysis and Pattern Recognition" <i>BoilingPoint (Conference room "Union")-15 (online BBB-3)</i>	Section 4 "Artificial Intelligence" <i>406-15 (online BBB-4)</i>
14:55-15:05	Break		
15:05-16:50	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>		

**Program of the IX International Conference on Information Technology and
Nanotechnology (ITNT-2023)**

20 April (Thursday)

Time zone: Samara (GMT +4)

09:30-11:15	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>		
11:15-11:25	Break		
	Oral Sessions		
11:25-12:55	Section 1 "Computer Optics and Nanophotonics" <i>BoilingPoint (Hall "Buran")-15 (online BBB-1)</i>	Section 6 "Information technologies in biomedicine" <i>BoilingPoint (Conference room "Union")-15 (online BBB-6)</i>	Section 4 "Artificial Intelligence" 406-15 <i>(online BBB-4)</i>
12:55-13:25	Lunch Break		
	Oral Sessions		
13:25-14:55	Section 1 "Computer Optics and Nanophotonics" <i>BoilingPoint (Hall "Buran")-15 (online BBB-1)</i>	Section 6 "Information technologies in biomedicine" <i>BoilingPoint (Conference room "Union")-15 (online BBB-6)</i>	Section 5 "Data Science" 406-15 <i>(online BBB-5)</i>
14:55-15:05	Break		
15:05-16:35	Poster Session		

**Program of the IX International Conference on Information Technology and
Nanotechnology (ITNT-2023)**

21 April (Friday)

Time zone: Samara (GMT +4)

09:30-11:15	Plenary Session <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	
11:15-11:25	Break	
	Oral Sessions	
11:25-12:55	Section 5 "Data Science" <i>BoilingPoint (Conference room "Union")-15 (online BBB-5)</i>	Section 6 "Information technologies in biomedicine" <i>406-15 (online BBB-6)</i>
12:55-13:25	Lunch Break	
	Oral Sessions	
13:25-14:55	Section 4 "Artificial Intelligence" <i>BoilingPoint (Conference room "Union")-15 (online BBB-4)</i>	Section 6 "Information technologies in biomedicine" <i>406-15 (online BBB-6)</i>
14:55-15:05	Break	
	Oral Sessions	
15:05-16:35	Section 4 "Artificial Intelligence" <i>BoilingPoint (Conference room "Union")-15 (online BBB-4)</i>	
16:35-16:45	Break	
16:45-17:00	Closing Ceremony <i>BoilingPoint (Hall "Vostok-1")-15 (online BBB-0)</i>	

Plenary Session

17 April (Monday)

Time zone: Samara (GMT +4)

BoilingPoint (Hall “Vostok-1”) -15

(online: [BBB-0](#))

Chair: Academician of RAS, Prof. Victor Soifer

Secretary: Dr. Andrey Kuznetsov

10:10	Prof. Evgeny Burnaev Applied AI Center by Skoltech, Russia <i>Topology strikes back: everything you always wanted to know about the shape of your data, but were afraid to ask</i>
10:45	Prof. Zumrat Gaibnazarova Tashkent State University of Economics, Uzbekistan <i>Prospects for improving the forecasting of the gross domestic product of regions based on mathematical models.</i>
11:20	Academician of RAS Kalyaev Igor Southern Federal University, Russia <i>What is artificial intelligence and how to measure it?</i>

Chair: Prof. Alexey Kovalev

Secretary: Dr. Elena Kozlova

15:45	Prof. Alexander Volyar V.I. Vernadsky Crimean Federal University <i>General Astigmatism of Structured Beams: Suppression of Gigantic OAM Bursts, its Invariants and Geometry of the Beam Dynamics</i>
16:20	Prof. Alexey Kudryashov Institute of Geosphere Dynamics, Russia <i>Real-time adaptive optics for high-power laser beam correction in the strong turbulence</i>
16:55	Prof. Vladimir Lukin V.E. Zuev Institute of Atmospheric Optics Russian Academy of Sciences, Siberian Branch <i>Modern technologies for measuring, predicting and correcting turbulent distortions in optical waves</i>

18 April (Tuesday)
Time zone: Samara (GMT +4)
BoilingPoint (Hall “Vostok-1”)-15
(online: [BBB-0](#))

Chair: Prof. Vladislav Sergeev
Secretary: Ulyana Obruchnikova

09:30	Prof. Lyudmila Manilo Saint Petersburg Electrotechnical University <i>Recognition of biosignals with chaotic properties based on entropy characteristics</i>
10:05	Prof. Yury Obukhov Kotel'nikov Institute of Radio Engineering and Electronics of RAS <i>Wavelet Ridges in EEG Diagnostic Features Extraction: Epilepsy Long-Time Monitoring and Rehabilitation after Traumatic Brain Injury</i>
10:40	Prof. Alexandr Reznik Institute of Automation and Electrometry of the Siberian Branch of the Russian Academy of Sciences <i>Intellectual Software Support in Problems of Digital Registration of Random Point Structures</i>

Chair: Prof. Vladislav Sergeev

15:05	Prof. Alexandr Tashlinsky Ulyanovsk State Technical University <i>Stochastic identity-free image registration algorithms: synthesis, analysis, modeling</i>
15:40	Dr. Svitlana Liubartseva CMCC Foundation - Euro-Mediterranean Center on Climate Change, Italy <i>Big data in modeling the marine pollution</i>

19 April (Wednesday)
Time zone: Samara (GMT +4)
BoilingPoint (Hall “Vostok-1”)-15
(online: [BBB-0](#))

Chair: Prof. Alexander Kupriyanov
Secretary: Kirill Galanov

09:30	Prof. David Asatryan Russian-Armenian University, Armenia <i>Comparative quality analysis of image global binarization procedures</i>
10:05	Corresponding member of RAS, Prof. Vladimir Zaitsev Institute of Applied Physics of the Russian Academy of Sciences <i>Visualization of strains and material elasticity in optical coherence tomography for biomedical applications</i>
10:40	Prof. Maria Antonietta Pascali Institute of Information Science and Technologies - ISTI CNR Pisa <i>Analysis of sea surface temperature maps via Topological machine learning</i>

Chair: Prof. Artem Nikonorov
Secretary: Nikita Firsov

15:05	Prof. Guohan Gao Institute of Optics and Electronics Chinese Academy of Science <i>Diffraction telescope system development in IOE</i>
15:40	Prof. Oksana Mandrikova Institute of cosmophysical research and radio wave propagation FEB RAS, Russia <i>Intelligent methods for detecting anomalies in natural data</i>
16:15	Dr. Yury Koush Yale University, United States <i>Regulation of emotion networks using connectivity-based functional MRI neurofeedback, implications for major depressive disorder</i>

20 April (Thursday)
Time zone: Samara (GMT +4)
BoilingPoint (Hall “Vostok-1”)-15
(online: [BBB-0](#))

Chair: Prof. Sergey Stafeev
Secretary: Nikita Demin

09:30	Dr. Andrey Pryamikov Prokhorov General Physics Institute, Russia <i>Vortex properties of modes of micro — structured optical fibers</i>
10:05	Prof. Kehar Singh Indian Institute of Technology Delhi, Delhi, India <i>Hybrid Cryptography Using Radon Transform and Polarization Techniques</i>
10:40	Prof. Hakimjon Zaynidinov Tashkent University of Information Technologies named after Muhammad Al-Khwarizmi <i>Application of machine learning methods for signal processing in piecewise-polynomial bases</i>

21 April (Friday)
Time zone: Samara (GMT +4)
BoilingPoint (Hall “Vostok-1”)-15
(online: [BBB-0](#))

Chair: Dr. Aleksey Porfirev
Secretary: Kseniya Tomnikova

09:30	Dr. Maxim Trigub Tomsk Polytechnic University, V.E. Zuev Institute of Atmospheric Optics Russian Academy of Sciences, Siberian Branch <i>VIS-NIR Imaging systems based on high-speed brightness amplifiers.</i>
10:05	Prof. Nikolay Petrov ITMO University, Russia <i>Analog-to-Digital Information Conversion in Display Holography</i>
10:40	Prof. Anatoly Nemirko Saint Petersburg Electrotechnical University <i>Automatic analysis of ECG signals, achievements and prospects</i>

Oral Session – Section 1 “Computer Optics and Nanophotonics”

17 April (Monday)

Time zone: Samara (GMT +4)

BoilingPoint (Conference room “Union”)-15 (online: [BBB-1](#))

Chair: Dr. Vladimir Podlipnov

Secretary: Elena Kadomina

12:05	Dmitrij Belousov, Roman Kuts, Victor Korolov <i>Optimization of the dual-layer Ti-Si film parameters for the thermochemical laser writing of diffractive structures</i>
12:20	Dmitry Lebedev, Daria Shishkina, Ivan Shishkin, Victor Chepurnov, Sergei Nefedov, Vadim Taneev Growth Features of 3C-SiC/Si Films Fabricated by HTCVD
12:35	Nikita Zhogal, Anna Solomnikova, Vasily Zubkov <i>Measurements of the conductivity of diamond doped with boron, on direct and alternating current</i>
12:50	Anna Romanova, Semyon Rudyi, Anton Starovoytov <i>Quantum dots desorption via high-power Nd:YAG laser pulses</i>
13:05	Fedor Sidorov, Alexander Rogozhin <i>Simulation of sinusoidal holographic grating fabrication by thermostimulated e-beam lithography</i>

Chair: Prof. Alexey Kovalev

Secretary: Dr. Elena Kozlova

14:05	Artem Kashapov, Evgeni Bezus, Dmitry Bykov, Leonid Doskolovich <i>Generation of spatiotemporal optical vortices using Kretschmann geometry</i>
14:20	Elena Kozlova, Victor Kotlyar, Sergey Stafeev <i>The high-order Hall effects at the tight focus of the hybrid vector beams</i>
14:35	Victor Kotlyar, Alexey Kovalev, Elena Kozlova, Alexandra Savelyeva <i>Investigation of the total topological charge of the superposition of parallel identical Laguerre–Gaussian beams with a single ring</i>
14:50	Vladislav Zaitsev, Sergey Stafeev, Victor Kotlyar <i>Hall effect for beams with circular polarization</i>
15:05	Alisa Selezneva, Sergey Degtyarev <i>Simulation of polarization, phase and amplitude transformations with ray tracing method</i>
15:20	Dmitry Savelyev <i>The optical vortices diffraction on the subwavelength elements with a nonlinear dependence of the refractive index change</i>

18 April (Tuesday)
Time zone: Samara (GMT +4)
406-15 (online: [BBB-1](#))

Chair: Prof. Vladimir Pavelyev
Secretary: Maxim Markushin

11:25	Renat Trofimov, Natalia Konobeeva, Mikhail Belonenko <i>Maximum Permissible Pulses in an Optically Anisotropic Medium with Carbon Nanotubes with Inclusion of Ions and Pump Fields</i>
11:40	Elkhan Khamzin, Dmitry Nesterov, Natalya Latukhina, Omar Khalmetov <i>Investigation of current transport processes in electroluminescent structures of porous silicon doped with erbium ions</i>
11:55	Oleg Ermishev, Maksim Smirnov, Albert Khairullin, Narkis Arslanov <i>Broadband quantum states of light in lithium niobate nanowaveguides</i>
12:10	Andrey Tarasov <i>Stimulated Emission Mechanisms in Large Diameter ZnO Microrods with Whispering Gallery Modes</i>
12:25	Yuliya Kharlamova, Narkis Arslanov, Sergey Moiseev <i>Storage and retrieval of photon wave packet in a resonator-waveguide system in the non-adiabatic regime</i>
12:40	Yuliana Tsykareva <i>The quantum entanglement of monochromatic and non-monochromatic photons on a waveguide beam splitter</i>

Chair: Prof. Victor Kotlyar
Secretary: Dr. Elena Kozlova

13:25	Dmitrij Belousov, Victor Korolkov, Roman Kuts, Vadim Cherkashin, Anton Kachkin <i>Calibration of the digital cameras for the precision diffractometry</i>
13:40	Vladimir Toporovsky, Ilya Galaktionov, Alexander Alexandrov, Alexis Kudryashov, Pavel Romanov <i>Semi-automatic system with 4 mirrors for high-power laser beam alignment</i>
13:55	Grigory Stepanenkov, Darya Vakorina, Bogdan Reznikov <i>Features of express control of volatile hydrocarbon media and their mixtures in visible light</i>
14:10	Anastasia Sokolova, Vadim Davydov <i>Method for Quality Control of the Diode Grid of a Silicon Wafer for Near-IR Night Vision Devices</i>
14:25	Pavel Gembukh, Dmitriy Shiyanov, Maxim Trigub <i>Brightness amplifiers for imaging systems in the visible and near-IR ranges of the spectrum</i>
14:40	Konstantin Semenov, Nikolai Vasnev, Pavel Gembukh, Maxim Trigub <i>Dependence of the image numerical features formed in a laser monitor on the pump pulses parameters stability</i>

20 April (Thursday)
Time zone: Samara (GMT +4)
BoilingPoint (Hall “Buran”)-15
(online: [BBB-1](#))

Chair: Dr. Andrey Pryamikov

Secretary: Dr. Sergey Stafeev

11:25	Pavel Mokshin, Dmitry Golovashkin, Vladimir Pavelyev <i>Modeling of photonic crystal and planar waveguide coupling</i>
11:40	Maksim Abelmas, Oleg Ivanov <i>Modeling the distribution of the surface electromagnetic field of modes of a coreless optical fiber</i>
11:55	Ilya Kozlov, Vadim Davydov <i>Development of a photodetector for an analog extended fiber-optic communication line</i>
12:10	Linar Akhmetov <i>Recognition of two-mode vortex beams using neural networks</i>
12:25	Sergey Stafeev, Andrey Pryamikov, Grigory Alagashev, Victor Kotlyar <i>Cylindrical beam of the second order in a microstructured waveguide</i>
12:40	Valerij Ivakhnik, Elena Vorobeva, Darkhan Kapizov <i>Characteristics of a four-wave radiation converter in a multimode waveguide with resonant nonlinearity</i>

Chair: Prof. Dmitry Bykov

Secretary: Dr. Nikita Golovastikov

13:25	Evgeni Bezus, Dmitry Bykov, Elena Kadomina, Leonid Doskolovich <i>Total absorption of light in metal-dielectric-metal structures integrated into a slab waveguide</i>
13:40	Dmitry Bykov, Evgeni Bezus, Leonid Doskolovich <i>Resonant effects in subwavelength diffraction gratings with varying period</i>
13:55	Tanmay Bhowmik, Bhairav Kr. Bhowmik, Pranav Kr. Pandey, Gagan Kumar, Debabrata Sikda <i>Epsilon-Near-Zero Material based Dual-Polarization On-Chip Electro-Optic Modulator</i>
14:10	Elena Kozlova, Sergey Stafeev, Victor Kotlyar <i>Investigation of the sensitivity of an aluminum aperture cantilever to the polarization of incident radiation</i>
14:25	Anton Kharitonov, Aidar Minibaev, Sergey Kharintsev <i>Plasmonic nanostructures with local temporal response: a platform for time-varying photonics</i>
14:40	Anton Nalimov, Victor Kotlyar, Sergey Stafeev <i>Metalens as a polarisation detector</i>

Oral Session – Section 2 “Information Technologies for Earth Remote Sensing and Image Processing”

19 April (Wednesday)
Time zone: Samara (GMT +4)
BoilingPoint (Hall “Buran”)-15
(online: [BBB-2](#))

Chair: Dr. Ivan Tkachenko
Secretary: Ekaterina Khnyryova

11:25	Mukesh Singh Boori, Komal Choudhary, Rustam Paringer, Alexander Kupriyanov, Youngwook Kim <i>Wheat yield estimation and prediction via machine learning</i>
11:40	Komal Choudhary, Alexander Kupriyanov, Mukesh Singh Boori, Ayrat Valiev <i>Land sustainability evaluation using remote sensing techniques with Google Earth Engine</i>
11:55	Olga Kalinkina, Tatiana Ivanova, Elizaveta Letova <i>Analysis of scattering spot offset impact on wavefront reconstruction</i>
12:10	Vladimir Pashintsev, Dmitry Mishin, Mark Peskov, Stanislav Koval <i>A method for assessing the characteristics of small-scale ionospheric inhomogeneities based on gps monitoring results</i>
12:25	Alexandr Eremenko, Anton Doroshin <i>Investigation of the attitude dynamics of a composite nanosatellite with a gravitational damper on circular orbits</i>
12:40	Olga Starinova, Ivan Tkachenko, Roman Khabibullin, Данхе Чень, Maksim Ivanushkin, Irina Chernyakina <i>Algorithms of the control programs formation for the Earth remote sensing spacecraft</i>

Chair: Dr. Ivan Tkachenko
Secretary: Ekaterina Khnyryova

13:25	Anna Tertychnaya, Korney Tertychniy, Alexandr Khoperskov <i>Method for determining the coastlines of water bodies based on the processing of remote sensing data from the Landsat project</i>
13:40	Anastasiia Krestina, Maksim Ivanushkin, Sergey Safronov, Maksim Korovin, Ivan Kaurov, Ivan Tkachenko <i>Development of the information-logical scheme for Earth remote sensing small spacecraft</i>

13:55	Mikhail Kovalev, Vladimir Zelenskiy, David Ovakimyan, Tatiana Starostina <i>Development of a quadrocopter control scheme in free hover mode</i>
14:10	Maksim Ivanushkin, Ivan Tkachenko <i>Efficiency assessment of a multi-satellite Earth remote sensing space systems</i>

Oral Session – Section 3 “Digital Image Processing, Analysis and Pattern Recognition”

18 April (Thursday)

Time zone: Samara (GMT +4)

BoilingPoint (Conference room “Union”)-15

(online: [BBB-3](#))

Chair: Prof. Anton Agafonov

Secretary: Daniil Kozlov

11:25	V. Dementev, P. Burankina, A. Sergeev <i>Driver action monitoring based on convolutional neural network algorithms</i>
11:40	E. Kozhina <i>Experimental studies of a modified algorithm for selecting objects with a moving image sensor</i>
11:55	P. Zhgutov <i>Comparison of object detection algorithms in the problem of estimating the density of automobile flows</i>
12:10	E. Mikhailova, V. Abrosimov <i>Formation of spatio-temporal swarm clusters of small objects</i>
12:25	A. Sokolova, A. Savchenko <i>Effective face recognition based on anomaly image detection and sequential analysis of neural descriptors</i>
12:40	A. Makovetskii, S. Voronin, V. Kober, A. Voronin <i>Algorithm to generate a 3D model from a sequence of scans</i>

Chair: Prof. Mikhail Gashnikov

Secretary: Vitaly Konovalov

13:25	O. Evsutin, A. Melman, D. Podbolotov, A. Stankevich <i>An improved video watermarking algorithm with extraction using a mobile device camera</i>
13:40	A. Kovalenko, Y. Demyanenko <i>Images color rendering accuracy analysis after applying noise reduction models</i>
13:55	A. Pogadaev, D. Reutskij, E. Ershov, D. Vladimirov <i>Finding spectral filters to improve hyperspectral image reconstruction</i>
14:10	D. Shapiro, V. Fedoseev <i>Hyperspectral images as a container for embedding hidden information</i>
14:25	Alexander Tashlinskii, Radik Ibragimov, Galina Safina <i>Noise resistance of stochastic image binding algorithms on the base of mutual information</i>

19 April (Wednesday)
Time zone: Samara (GMT +4)
BoilingPoint (Conference room “Union”)-15
(online: [BBB-3](#))

Chair: Prof. Evgeny Myasnikov
Secretary: Aleksey Borisov

11:25	D. Makienko, I. Seleznev <i>Construction of texture feature profiles via whole core images</i>
11:40	M. Nikitina <i>Evaluation of neural network for automated classification of plant component on histological section</i>
11:55	S. Ignateva, R. Bogush <i>Two-step CNN training using images augmentation for person re-identification</i>
12:10	M. Lange, S. Paramonov <i>On combining discriminant functions to increase an accuracy of data classification</i>

Chair: Prof. Viktor Fedoseev
Secretary: David Shapiro

13:25	A. Novikov, A. Pronkin <i>Application of vector masks in digital image processing</i>
13:40	A. Sergeev <i>Two- and four-level quasi-orthogonal Mersenne matrices structured by Walsh</i>
13:55	V. Antsiperov <i>Novel retinex-type images enhancement method based on sampling representations</i>
14:10	A. Filin, A. Kopylov, I. Gracheva <i>Method for remove haze from images, captured under a wide range of lighting conditions</i>
14:25	N. Lomov, O. Seregin, D. Liakhov, O. Kushnir <i>Constraints for Jaccard index-based rotational symmetry focus position in binary images</i>

Oral Session – Section 4 “Artificial Intelligence”

19 April (Wednesday)

Time zone: Samara (GMT +4)

406-15 (online: [BBB-4](#))

Chair: Prof. Sergey Popov

Secretary: Vladimir Procenko

11:25	Nikita Lushnikov, Albina Ismagilova <i>Designing of encrypting system for biometric data user</i>
11:40	Andrey Tarasov, Michail Nikiforov <i>System for detecting and tracking moving objects</i>
11:55	Ildar Aglyukov, Dmitry Antonov, Sergey Sukhov <i>Spiking generative neural networks modeling</i>
12:10	Dmitry Kurilo, Vadim Moshkin, Ilya Andreev, Nadezhda Yarushkina <i>Interpreting the definition of time series anomalies using fuzzy ontologies</i>
12:25	Valery Zasov, Kristina Busargina <i>On the possibilities of a population optimization algorithm by a swarm of fireflies under the influence of interference</i>

Chair: Prof. Sergey Popov

Secretary: Vladimir Procenko

13:25	Yuliya Khitskova, Irina Astakhova, Katerina Makoviy, Olga Efimova <i>Choosing a strategy for participation in public procurement using forecasting</i>
13:40	Dmitry Shamaev, Vitaliy Zayac, Sergey Orlov <i>Healthcare AI Platforms and Ecosystems</i>
13:55	Alina Shutova, Egor Ershov, Andrey Sobolevsky <i>Properties of Wasserstein distance approximations</i>
14:10	Nataliia Limanova, Konstantin Markov, Galina Platova <i>Intelligent Medical Information System Based on Genetic Algorithm</i>
14:25	Nikita Dorodnykh, Olga Nikolaychuk, Aleksandr Stolbov, Aleksandr Yurin <i>An intelligent assistant for decision support in the case of aircraft troubleshooting</i>

20 April (Thursday)
Time zone: Samara (GMT +4)
406-15 (online: [BBB-4](#))

Chair: Prof. Dmitry Nikolaev
Secretary: Nikita Firsov

11:25	Irina Misyurina, Pavel Yakimov <i>Detection of the road surface damage in the video stream of car DVR</i>
11:40	Vladimir Gridin, Ivan Novikov, Basim Salem, Vladimir Solodovnikov <i>Classification of the most common conditionally pathogenic microorganisms on SEM images with YOLO model</i>
11:55	Artem Pirogov, Artem Nikonorov, Artem Muzyka, Andrey Makarov, Darya Ryskova, Nikolay Ivliev, Vladimir Podlipnov, Nikita Firsov, Pavel Boriskin <i>Hyperspectral images neural network analysis of unstained micropreparations</i>
12:10	Darya Ryskova, Artem Pirogov, Artem Muzyka, Andrey Makarov, Nikita Firsov, Nikolay Ivliev, Vladimir Podlipnov, Roman Skidanov, Artem Nikonorov <i>Neural network analysis of hyperspectral images of soil</i>
12:25	Gennady Algashev, Andrey Korepanov, Artem Nikonorov <i>Modern Approaches to Recognizing Human Emotions Using Deep Neural Networks</i>
12:40	Andrey Telepnev, Tatyana Avdeenko <i>Modeling the Cognitive Processes of Emotion Recognition</i>

21 April (Friday)
Time zone: Samara (GMT +4)
406-15 (online: [BBB-4](#))

Chair: Prof. Artem Nikonorov

Secretary: Nikita Firsov

13:25	Elena Simonova, Petr Skobelev, Aleksey Tabachinskiy, Oleg Goryanin, Julia Zhuravel, Gennady Myatov, Vasily Ermakov <i>Development of a digital twin of plant based on the principles of emergent intelligence</i>
13:40	Lev Shepelev, Arina Chumachenko, Ivan Ermakov, Egor Ershov <i>How to use color vignetting to increase the quality of color reproduction?</i>
13:55	Sergey Korchagin, Ekaterina Zaychenkova, Denis Sharapov, Egor Ershov, Yury Butorin, Yury Vengerov <i>Algorithm for determining blood groups from images of serological plates</i>
14:10	Mikhail Sergeev, Marina Bastrakova, Vsevolod Vozhakov, Igor Solovyov <i>Optimization of bipolar pulse sequences for the implementation of quantum operations using the AlphaZero algorithm</i>
14:25	Anna Glazkova, Dmitry Morozov <i>Multi-task fine-tuning for generating keyphrases in a scientific domain</i>
14:40	Mostafa Abotaleb, Tatiana Makarovskikh <i>The development of unsupervised Seq2Seq based LSTM Network algorithm for forecasting infectious disease</i>

Chair: Prof. Artem Nikonorov

Secretary: Nikita Firsov

15:05	Alexander Dyrnochkin, Vadim Moshkin <i>The use of fuzzy ontologies in the clustering of bibliographic information</i>
15:20	Nikita Andriyanov, Danila Andriyanov <i>Recognition of speech messages of radio traffic by deep learning methods with pre-filtering</i>
15:35	Alexey Kolosov, Archil Maysuradze <i>Improving the quality of vector representations of words by using multiple sources of representations</i>

Oral Session – Section 5 “Data Science”

17 April (Monday)

Time zone: Samara (GMT +4)

406-15 (online: [BBB-5](#))

Chair: Dr. Egor Goshin

Secretary: Daria Arkhipova

12:05	Oksana Mandrikova, Yuri Polozov <i>Optimizing the process of construction of NARX neural network model for time series of complicated structure based on threshold wavelet filtering</i>
12:20	Daria Galushkina, Anastasia Kuvshinova, Julia Tsyganova <i>Numerical identification of boundary conditions for reaction-diffusion model</i>
12:35	Dmitry Prodan <i>Mathematical modeling of the current-voltage characteristic of the memristor with respect to its inhomogeneity</i>
12:50	Alexey Golubkov, Julia Tsyganova, Andrey Tsyganov <i>A square-root algorithm for calculating the likelihood ratio in the problem of detecting change and identifying the motion mode</i>
13:05	Aleksey Edelev, Sergey Gorsky, Alexander Feoktistov, Igor Bychkov <i>Organization of high-performance computing for the energy infrastructure resilience research</i>
13:20	Boris Likhttsinder, Victor Moiseev, Alexander Privalov <i>Second moments of queue in queuing systems with group Poisson flows</i>

Chair: Dr. Egor Goshin

Secretary: Daria Arkhipova

14:05	Andrey Tsyganov, Julia Tsyganova, Alexey Golubkov <i>Identification of parameters of the discrete-time stochastic systems models with multiplicative and additive noises</i>
14:20	Elena Chernyh, Petr Golubtsov, Natalia Shapkina <i>Prediction of meteorological quantities using a hybrid time series processing method</i>
14:35	Bogdana Mandrikova, Oleg Esikov <i>Method for analyzing non-stationary signals based on data decomposition and wavelet transform</i>
14:50	Marina Shugurova, Andrey Tsyganov <i>Construction and parameter identification of a discrete stochastic model of the annual variation of air temperature</i>

20 April (Thursday)
Time zone: Samara (GMT +4)
406-15 (online: [BBB-5](#))

Chair: Dr. Rustam Paringer
Secretary: Dr. Yulia Pchelkina

13:25	Mikhail Geraskin <i>Statistical analysis of trends in dynamics of large social groups of volunteers</i>
13:40	Dmitriy Bakanov, Alexander Kupriyanov <i>Designing an algorithm for annotating Russian-language text data of social media using transfer learning</i>
13:55	Viktoriya Latypova <i>Reviewer assignment decision support in an academic journal based on multicriteria assessment and text mining</i>
14:10	Natalya Pustovalova, Tatiana Avdeenko <i>Analysis of the Influence of Psychological Characteristics and Their Combinations on the Students' Academic Performance</i>
14:25	Konstantin Nikolaev, Olga Nevzorova <i>Annotation of mathematical formulas in PDF documents</i>
14:40	Elizaveta Agafonova, Alexandr Belousov <i>Comparison of the effectiveness of machine learning methods in the task of real estate valuation</i>

21 April (Friday)
Time zone: Samara (GMT +4)
BoilingPoint (Conference room “Union”)-15
(online: [BBB-5](#))

Chair: Dr. Evgeniy Minaev
Secretary: Gennady Algashev

11:25	Petr Golubtsov <i>Efficient Distributed Processing of Big Data Based on the Smallest Information Space</i>
11:40	Niyaz Sharifyanov, Viktoriya Latypova <i>A method of filling missing values in data using data mining</i>
11:55	Kirill Galanov, Alexander Kupriyanov <i>Preparing Data for a Time Series Forecasting Problem</i>
12:10	Valentina Sulimova, Михаил Курбаков <i>Fast SVM-based One-Class Classification in Large Training Sets</i>
12:25	Gleb Masliakov, Elena Djukova, Anastasia Djukova <i>On the logical classification of integer data</i>
12:40	Valery Zasov, Maksim Romkin <i>Algorithm for detecting and extracting signals in highly noisy data streams</i>

Oral Session – Section 6 “Information technologies in biomedicine”

20 April (Thursday)

Time zone: Samara (GMT +4)

BoilingPoint (Conference room “Union”)-15 (online: [BBB-6](#))

Chair: Prof. Valery Zakharov

Secretary: Irina Matveeva

11:25	Valentin Yunusov, Sergey Demin <i>Multiparameter analysis of statistical memory effects and spectral characteristics in bioelectric signals while performing cognitive tasks</i>
11:40	Svetlana Shipko, Oleg Frolov, Elena Timchenko, Pavel Timchenko, Irina Bazhutova, Larisa Volova <i>Extended comparative spectral analysis of various biomaterials using mathematical processing methods</i>
11:55	Anastasia Kharlamova <i>Calculation of the interference coefficient of the polyatomic molecular structure of DNA</i>
12:10	Elena Petrunina, Tatiana Istomina, Elena Kopylova, Elmin Bayramov, Denis Pechersky <i>Biocontrol Monitoring Methods for Robotic Wheelchairs</i>
12:25	Oleg Senko, Anna Kuznetsova <i>Using Machine Learning Methods to Assess the Severity of COVID-19</i>
12:40	Boris Grechkin, Vseslav Vinokurov, Irina Matveeva <i>Neural network classifier of hyperspectral images</i>

Chair: Prof. Valery Zakharov

Secretary: Irina Matveeva

13:25	Aleksandra Shchegoleva, Mark Polyak <i>Application of Analytical Design of Aggregated Regulators Method to Nutrient-Phytoplankton-Zooplankton Models</i>
13:40	Rodion Ukolov, Maxim Zhuravlev, Anastasia Runnova <i>Development of software for sleep detection in rodents based on parallel computing technology</i>
13:55	Dmitry Shamaev, Elena Iomdina, Petr Luzhnov <i>Electronic contact lenses as a 3P medicine tool</i>
14:10	Nikita Demin, Natalya Ilyasova, Rustam Paringer <i>Automatic selection of the optimal zone for laser exposure according to the fundus images for laser coagulation</i>
14:25	Ivan Stepanov, Evgeny Talynev, Anton Ivanov, Elizaveta Grakhova, Ruslan Kutluyarov <i>Photonic integrated circuit with built-in trigger and tunable reference path for optical coherence tomography</i>
14:40	Ksenia Verzunova, Anton Gryaznov, Galina Motova <i>Effect of zinc oxide in calcium phosphate coatings on physico-chemical and bactericidal properties</i>

21 April (Friday)
Time zone: Samara (GMT +4)
406-15 (online: [BBB-6](#))

Chair: Dr. Ivan Bratchenko

Secretary: Elena Bataeva

11:25	Nikita Demin, Natalya Ilyasova, Evgeny Surovtsev, Alexander Kapishnikov <i>Possibilities of MRI texture analysis of brain images in differential diagnosis of primary extracerebral tumors</i>
11:40	Ivan Kershner, Yury Obukhov, Mikhail Sinkin, Irina Okuneva <i>The wavelet spectrogram ridges application in detection of diagnostic indicators of delayed cerebral ischemia after subarachnoid hemorrhage in the data of long-term monitoring of electroencephalograms</i>
11:55	Arseniy Afanasenko, Anna Kordyukova, Daniil Shevyakov, Evgeny Logachev, Elena Denisova, Vadim Davydov <i>Algorithms for isolating cardiocycles for ultra-high resolution electrocardiography</i>
12:10	Leonid Sidorov, Archil Maysuradze <i>Graph neural networks applications to multivariate time series for new functional patterns discovery in neurophysiology</i>
12:25	Dmitry Artemiev, Ludmila Bratchenko, Victoria Evtiforova, Vladimir Kukushkin, Dmitry Lystsev, Tatiana Fedorova, Vladimir Zuev <i>Analysis of surface-enhanced Raman scattering of blood plasma of patients with endometrial diseases</i>
12:40	Vladimir Kukushkin, Dmitry Artemyev, Lyudmila Bratchenko, Fidan Aliyeva, Farah Aliyeva, Dmitry Bryunin, Vladimir Zuev <i>Investigation of SERS spectra of peritoneal fluid from patients with external genital endometriosis</i>

Chair: Prof. Zaphar Yuldashev

Secretary: Dr. Ivan Bratchenko

13:25	Sahar AL-Sammarraie, Lyudmila Bratchenko, Elena Typikova, Peter Lebedev, Valery Zakharov, Ivan Bratchenko <i>Human blood analysis based on silver nanoparticles Substrate under 785 nm laser excitation</i>
13:40	Yaroslav Mayunov <i>Development of a user monitoring device in extreme conditions</i>
13:55	Anagheem Ibrahim, Housam Hasan Bou Issa, Zafar Yuldashev <i>An algorithm for assessing spine distortion during walking</i>
14:10	Andrey Spirkin, Tatyana Istomina, Alexander Beloglazov, Stanislav Suvorov, Roman Myasoedov, Lilia Beloglazova <i>Development of the structure of a robotic complex for the rehabilitation of a patient with amputation of the lower limbs</i>

14:25	Angelina Buchneva, Dmitry Shevchenko <i>Development of a device for noninvasive registration of biomedical signals in rats (<i>Rattus norvegicus domestica</i>)</i>
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Poster Session – Section 1 “Computer Optics and Nanophotonics”

20 April (Thursday)

Time zone: Samara (GMT +4)

15:05-16:35 (online [Section 1](#))

ID 2: Lyubov’ Dubman

Study of the formation and propagation of contour beams of a given shape

ID 6: Atiq Ur Rehman, Yousuf Khan, Muhammad Irfan, Sergey Fomchenkov, Muhammad Ali Butt

Design and Analysis of Even-Positioned Cavity- Based Optical Amplification Device in Dielectric Metasurface

ID 9: Anna Dubman

Simulation of diffraction of vortex beams on curvilinear diffraction gratings

ID 11: Maria Yakusheva, Roman Davydov, Daria Isakova, Souhair Msokar

New sensor for pulse wave registration in the far peripheral and methodology for its processing

ID 15: Diana Dmitrieva, Roman Davydov

Features of analog signals transmission via FOCL under the γ -radiation influence

ID 17: Lyubov' Khismatullina

Research of astigmatic transformation of polynomial Legendre beams

ID 18: Anna Skidanova

Formation of a set of axial optical bottles due to annular screening of the binary axicon

ID 36: Alexander Bagrov, Evgeniy Bashkirov

Instant death of entanglement in the three-qubit Tavis-Cummings model

ID 41: Gumir Ishchanov

Influence of defocusing on the correctness of detection of wavefront aberrations using a matched filter

ID 43: Andrey Ustinov, Anna Skidanova

Changing the intensity on the caustic of autofocusing chirp beams depending on the amplitude of the incident beam

ID 44: Ilya Galaktionov, Alexander Nikitin, Vladimir Toporovsky, Julia Sheldakova, Alexis Kudryashov

Automated adaptive optical system for laser beam shaping using spatial light modulator

ID 53: Pavel Khorin, Alexey Dzyuba, Nikolay Petrov

Comparative analysis of the interferograms sensitivity to wavefront aberrations recorded with plane and cylindrical reference beams

ID62: Daniil Provodin, Vadim Davydov, Artemiy Gol'dberg, Igor Kochetkov

Geometric-optical (beam) approach for describing the change in the trajectory of the laser beam axis in the Anderson differential cuvette for determining the optimal parameters of the refractometer

ID 73: Serguei Murzin, Maksim Blokhin

Synthesis of quasi-one-dimensional nanomaterials and heterostructures based on zinc and copper oxides

ID 83: Maria Bamburova

Calculation and modeling of optical elements for the formation of polygonal beams

ID 88: Sergei Sharangovich, Victor Dolgirev

Electrically controlled optical spectral filters for WDM communication networks based on multilayer inhomogeneous holographic diffraction structures

ID 90: Ekaterina Gryaznova, Ekaterina Semicheva, Vadim Davydov

A system with a fiber-optic communication line for measuring the parameters of active phased antenna arrays in the far zone in landfill conditions

ID 92: Aleksandr Isupov, Dmitriy Andreev, Elena Andreeva

The broadband light source modeling using the optical fiber nonlinearity

ID 96: Maria Karpova, Mikhail Kirilenko

3D Modeling of Hermite-Gaussian Modes Propagation

ID 100: Daniil Gorelykh, Mikhail Kirilenko

Simulation of rotating Gauss-Laguerre beams in an imaging system with an obstacle

ID 112: Artyom Shavshin, Vadim Davydov

Modernization of automatic control of the optical signal gain in the atomic frequency

ID 114: Alla Rusetskaya

Comparative study of power-law apodizing functions when encoding the wavefront in order to increase the depth of focus

ID 122: Elizaveta Yarunova, Anton Krents, Nonna Molevich

Study of the influence of the Henry factor on the dynamics of wide-aperture VCSEL

ID 124: Vadim Davidov, Dmitry Titov, Bogdan Reznikov

Development of a simulator for testing methods for generating analog signals in the form of a sequence of command codes in an optical communication channel

ID 125: Alexey Bekhterev

Investigation of the influence of the training data set on the accuracy of recognition of optical Laguerre-Gauss modes

ID 135: Oleg Radaev, Ilya Frolov, Viacheslav Sergeev

Measurement of the cutoff frequency of the electroluminescence of LEDs at low currents

ID 136: Victor Kotlyar, Sergey Stafeev, Alexey Kovalev, Vladislav Zaitsev

Investigation of a vectorial Gaussian beam with higher-order cylindrical polarization near the tight focus: spin Hall effect

ID 142: Yaroslav Volokitin, Yuriy Egorov, Mikhail Bretsko, Yana Akimova, Alexander Rubass, Alexander Volyar

Singular beams passing through gyroanisotropic crystals

ID 166: Serguei Murzin

Thermochemical processes of laser-matter interaction as a mean for creating quasi-one-dimensional nanomaterials

ID 173: Valentin Logachev

Simulation of the vortex beams formation during diffraction by a thin square contour-like aperture

ID 175: Kseniya Nazarova, Vadim Davydov

Development of an automatic system for adjusting the position of the laser radiation axis for an air communication channel

ID 182: Nikolai Vasnev, Trigub Maxim

Formation of signals with an adjusted contrast using optical systems

ID 199: Mikhail Bretsko, Yana Akimova, Alexander Volyar, Server Khalilov, Yuriy Egorov, Arina Ivakhnenko

Stability of structured Laguerre-Gauss beams to astigmatic transformation

ID 218: Server Khalilov, Mikhail Bretsko, Yana Akimova, Alexander Volyar, Arina Ivakhnenko

Determination of the vortex spectrum of vector LG beams by the method of moments of intensity

ID 221: Ravshanjon Nazarov, Zarina Sadrieva

Optical bio and chemical sensor in a one-dimensional photonic structure with bound states in the continuum

ID 254: Victor Kotlyar, Sergey Stafeev, Vladislav Zaitsev, Alexey Telegin

Poincare beams in tight focus

ID 265: Victor Kotlyar, Sergey Stafeev, Alexey Kovalev, Vladislav Zaitsev

Hall effect near a sharp focus of cylindrical vector beams with negative order

ID 271: Елизавета Долгова

Sharp focusing of beams with circular-radial polarization

ID 279: Dmitriy Andreev, Mikhail Orlov, Elena Andreeva

Influence of External Effects on the Characteristics of the Optical Fiber

ID 284: Grigory Stepanenkov, Darya Vakorina, Vadim Davydov, Dmitry Isaenko, Sergey Rodin, Bogdan Reznikov

Features of long-range telemetry transmission using analogue fibre optic links in complex electromagnetic environments

ID 289: Никита Казаков

Sharp focusing of beams with sector-azimuth polarization

ID 297: Stanislav Sergunin, Svetlana Khonina

Diffraction of a linearly polarized Gaussian beam on elliptical plates

ID 312: Victor Danilov

Formation of material structures with improved properties by laser irradiation using diffractive optics

ID 314: Victor Danilov

Synthesis of porous and oxide nanostructures by the method of laser irradiation using computer optics elements

ID 316: Maksim Pomeshchikov

Analysis of the impact of aberrational distortions on the intensity pattern of vortex beams of various orders

ID 325: Lyudmila Yablokova, Irina Vetlova, Alexander Dmitriev, Vladimir Prokofiev, Denis Yablokov

DOERIS system. Micro-optics elements calculation

ID 336: Sergey Degtyarev, Sergey Silifonkin

The passage of rays through second-order surfaces taking into account polarization

ID 355: Vladimir Sokolov

30th anniversary of Image Processing Systems Institute of the RAS

ID 358: Varvara Fadeenko, Daria Ryzhova

Fiber-optic system development for the output frequency setting of a voltage-controlled generator at the radar station antenna complex

Poster Session – Section 2 “Information technology in Earth remote sensing”

20 April (Thursday)

Time zone: Samara (GMT +4)

15:05-16:35 (online [Section 2](#))

ID 84: Roman Aleshko, Vladimir Berezovsky, Ksenia Shoshina, Irina Vasendina, Roman Vorontsov, Tatyana Desyatova

Development of a methodology for determining the volume of timber using an unmanned aerial vehicle

ID 200: Sergey Zraenko

Integration of spectral channels in the classification of coniferous and deciduous vegetation from satellite images

ID 264: Ekaterina Khnyryova, Vladislav Pelevin

Estimation of the angular velocity of rotation of the small Earth remote sensing spacecraft “Aist-2D” according to the measurement data of the Earth's magnetic field induction vector

ID 299: Valeriya Serdakova

Estimation of maximum temperature deformations of solar panels of Earth remote sensing small satellite “Aist-2D”

ID 318: Roman Aleshko, Vladimir Saetchnikov, Vladimir Berezovsky, Ksenia Shoshina, Vsevolod Krekhalev, Ponomarev Alexander

Analysis of the Influence of Space Weather Factors on the Telemetry Parameters of Small Spacecraft in Low Earth Orbit

ID 321: Vladislav Ivanov, Ivan Abdreev, Ekaterina Lopukhova, Ivan Stepanov, Elizaveta Grakhova, Igor Kuznetsov

Evaluation of group signal transformation efficiency for Earth remote sensing systems

ID 328: Denis Orlov, Anastasia Taneeva, Ekaterina Khnyryova, Aleksandra Nikolaeva, Maria Bratkova

Developing an algorithm for unloading a flywheel engine using magnetic actuators

Poster Session – Section 3 “Digital Image Processing, Analysis and Pattern Recognition”

20 April (Thursday)

Time zone: Samara (GMT +4)

15:05-16:35 (online [Section 3](#))

ID 4: Mikhail Gashnikov, Aleksey Maksimov

Generalization of machine learning-based image compression methods for video compression

ID 21: Mikhail Gashnikov, Ruslan Yuzkiv

Orthogonalization and parameterization of convolutional kernels in machine learning for image and video compression

ID 23: Monitoring of reintroduced rare plants using UAV data

A. Denisova, V. Fedoseev, L. Kavelenova, L. Gorodetskaya, A. Pomogaybin, I. Ruzaeva

ID 42: Anton Agafonov, Evgeniya Efimenko

Connected vehicles travel time prediction in a scenario with adaptive traffic light control

ID 58: Maria Chubar, Mikhail Gashnikov

Deep contextual video compression based on machine learning

ID 59: Maksim Yakubenko, Mikhail Gashnikov

Entropy modeling in video compression based on machine learning

ID 61: Yuliya Kozlova, Vladislav Myasnikov

Head model reconstruction and animation method using rgbd image

ID 82: Ksenia Shoshina, Irina Vasendina, Alexei Shoshin

Development of a methodology for estimating the heat loss of buildings based on neural networks

ID 93: Roman Kovalenko, Alexander Tashlinskii, Ivan Ilin

The effect of entropy order in image alignment by maximum mutual information criterion

ID 107: Anton Agafonov, Alexander Yumaganov, Vladislav Myasnikov

Efficiency of adaptive traffic signal control in a partially connected vehicle environment

ID 132: Anna Denisova

Source camera identification using neural networks

ID 137: Alexander Tashlinskii, Radik Magdeev, Galina Safina

Analysis of the influence of background areas on the registration efficiency of multiple images bridge structures

ID 188: Vitaly Konovalov

Method for automatic cartoon colorization

ID 189: Alexander Yumaganov, Anton Agafonov, Vladislav Myasnikov

Cooperative application of vehicular traffic rerouting method and adaptive traffic signal control method

ID 191: Vasily Rodin, Aleksey Maksimov

Style transfer effectiveness for forensic sketch and photo matching

ID 198: Alina Bavrina

Method for frame removal detection in static camera surveillance video

ID 227: Dmitry Murashov, Yury Obukhov, Ivan Kershner, Mikhail Sinkin

An Algorithm for Detecting Artifacts in Video Recordings of Long-Term Video-EEG Monitoring Data for the Diagnostics of Delayed Cerebral Ischemia

ID 229: Nikita Andriyanov

Detection of prohibited baggage objects based on computer vision methods

ID 257: Evgeny Myasnikov

Visualization of feature spaces based on spectral and texture characteristics

ID 274: Yegor Goshin, Daria Arkhipova

Investigation of a denoising method based on sparse representation

ID 277: Yegor Goshin, Ksenia Zatsepina

Using a smoothed continuous function as a replacement for a histogram of oriented gradients

ID 280: Evgeny Myasnikov, Vitaly Konovalov

Method for detection of adversarial attacks on face detection networks

ID 292: Ludmila Gorodetskaya, Anna Denisova, Ludmila Kavelenova, Alexander Pomogaybin, Irina Rusaeva, Victor Fedoseev

Monitoring of reintroduced rare plants using UAV data

Poster Session – “Section 4 Artificial Intelligence”

20 April (Thursday)

Time zone: Samara (GMT +4)

15:05-16:35 (online [Section 4](#))

ID 7: Rustam Ginnyatulin, Ekaterina Pechenina, Vadim Pechenin

Compressor impeller interference prediction model

ID 45: Vadim Kolodin, Dmitry Savelyev,

Features of using convolutional neural networks for human age estimation from a face image

ID 50: Maxim Petrov, Pavel Serafimovich

Few-parameter color correction in diffractive optical imaging systems

ID 60: Daniil Kozlov, Vladislav Myasnikov

Ensemble Method for Reinforcement Learning Algorithms Based on Hierarchy

ID 70: Aleksandra Zhdanova, Aleksandr Kupriyanov, Anastasiya Golova, Aleksei Bulgakov, Dmitrii Bakanov

Usage recurrent neural networks for sentiment analysis of social media users' comments

ID 85: Irina Vasendina, Ksenia Shoshina, Vladimir Berezovsky, Roman voroncov, Tatyana Desyatova, Roman Aleshko

Development of a methodology for calculating carbon units of heterogeneous territories based on machine learning

ID 102: Ruslan Zulkashev, Mark Polyak

Automatic analysis of face images for college degree verification

ID 138: Viktoriia Evdokimova, Artem Nikonorov

Study of meta-learning approach for image reconstruction in diffractive optical systems

ID 153: Larisa Zherdeva, Evgeniy Minaev, Nikita Firsov

Building surface damage recognition based on synthetic data

ID 283: Aleksey Bulgakov, Anastasiya Golova, Elena Sopchenko

Development of an automated system for predicting changes in the cost of housing

ID 315: Andrey Sitnikov

Investigation of the possibility of using methods based on convolutional neural networks for eye tracking

ID 317: Evgeniy Minaev, Evgeniy Kurkin, José Gabriel Quijada-Pioquinto, Andrey Gavrilov

Technique of the identification, quantification and measurement of carbon short-fibers using the instance segmentation

ID 335: Madina Zaynullina, Vladimir Mokshin

Application of the XGBoost model for processing patient data

Poster Session – Section 5 “Data Science”

20 April (Thursday)

Time zone: Samara (GMT +4)

15:05-16:35 (online [Section 5](#))

ID 144: Yulia Pchelkina, Rustam Paringer, Alexander Kupriyanov

The active contours method analysis in solving cephalometry problems

ID 164: Maksimilian Khotilin

Technology of Automated Intelligent Selection of Informative Features for the Problem of Classifying Fields of Natural Hyperspectral Images

ID 180: Kirill Ivanenko, Dmitry Borzov, Irina Chernetskaya, Dmitry Tsukanov

Application of Planning and Quality Evaluation Devices in Matrix Multiprocessor Systems of High Availability

ID 197: Oleg Golovnin, Irina Dubinina, Anton Ivaschenko, Arkadiy Krivosheev, Pavel Sitnikov

Social Climate Analysis based on Open Data

ID 230: Igor Kartashevsky, Vladimir Osanov

Theoretical algorithm for traffic decorrelation in fog computing

ID 343: Elena Nelyubina, Vladimir Ryazanov, Alexander Vinogradov

Using Some Features of Wavelets in the Search for Regularities in Applied Data

ID 359: Rail Gabbasov, Rustam Paringer

Method of Temporal Interpolation of the Corroding Gas Pipeline Wall Thickness Values Coordinated with a Physical Model

ID 367: David Asatryan, Mariam Haroutunian, Grigor Sazhumyan, Alexander Kupriyanov, Rustam Paringer, Dmitriy Kirsh

Comparative Quality Analysis of Image Global Binarization Procedures

Poster Session – **Section 6 “Information technologies in biomedicine”**

20 April (Thursday)

Time zone: Samara (GMT +4)

15:05-16:35 (online [Section 6](#))

ID 3: Sergey Demin, Valentin Yunusov, Alexander Elenev, Alexander Minkin, Dmitry Averkiev

The study of spatiotemporal scaling features and correlations in complex biomedical data

ID 12: Sergey Demin, Dmitry Averkiev, Valentin Yunusov, Natalya Demina

Correlations and statistical memory effects as markers of age-related changes in complex systems of living nature

ID 29: Elena Porfiryeva, Vadim Davydov, Roman Davydov, Daria Isakova

Features of the application of the esCCO method for the diagnosis of human condition

ID 75: Gleb Bondarenko

Adjustment of intraoperative monitoring methods and equipment requirements

ID 76: Gleb Bondarenko

Analysis of statistically significant indicators for the 4 types of surface EMG

ID 86: Lyudmila Bratchenko, Sahar AL-Sammarraie, Elena Tupikova, Ivan Bratchenko

Recognition of surface-enhanced Raman spectra of organic media based on deep learning

ID 156: Tatiana Avdeenko, Anastasiia Timofeeva, Marina Murtazina

Robust correlation analysis between resting state EEG connectivity and intelligence

ID 161: Alexander Elenev, Sergey Demin, Oleg Panishev

Auto- and cross-correlation patterns in the diagnosis of obsessive-compulsive disorder using electroencephalogram analysis

ID 162: Vladimir Mokshin, Alina Faskhutdinova, Bulat Garafutdinov, Daria Grigorieva

Investigation of machine learning methods for stroke prediction

ID 172: Vladimir Mokshin, Daria Grigorieva, Alina Faskhutdinova, Bulat Garafutdinov

Researching machine learning methods for preventing cardiovascular diseases

ID 203: Oleg Bodin, Mikhail Kramm, Andrey Bodin, Natalya Kruchinina, Natalya Serzhantova

improving the efficiency of noninvasive electrocardiography screening system

ID 228: Dmitry Averkiev, Oleg Panishchev, Sergey Demin

Analysis the effects of synchronization of human neuromagnetic responses in response to flickering light stimuli

ID 237: Ramil Rakhmatulin, Oleg Gerasimov, Oscar Sachenkov, Elena Semenova

Determination of effective properties of inhomogeneous materials according to computed tomography

ID 261: Victoria Deriugina, Irina Matveeva

Classification of dermatoscopic images by convolutional neural network

ID 262: Yulia Khristoforova, Ivan Bratchenko, Lyudmila Bratchenko, Valery Zakharov, Maria Skuratova, Elena Lebedeva

Raman spectroscopy to analyze skin spectral features of patients with chronic heart failure

ID 296: Anastasia Lee, Victor Lee

CDSS for patients with chronic diarrhea. ER model

ID 323: Elena Sorokina, Yulia Khristoforova, Irina Matveeva

MCR-analysis of the Raman spectra of the skin of different parts of the body

ID 348: Andrey Trubnikov, Dmitry Saveliev

The use of neural networks for the classification of anomaly blood cells

ID 365: Ksenia Tomnikova, Irina Matveeva, Yulia Khristoforova

MCR analysis of Raman spectra of the skin of patients with chronic heart failure



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