XV International Scientific and Technical Conference «Actual Problems Of Electronic Instrument Engineering»

APEIE 21

November 19 to 21, 2021

PROGRAM OF THE CONFERENCE

21

First Day – 19/11/2021					
7.30	Departure from NSTU (Karl Marx Ave., 20, b3)				
9:00	Participants' Registration (Morskaya 3 b1, BORVIKHA HOTEL & SPA)				
10:00	THE APEIE-2021 CONFERENCE OPENING, Hall "Europe"				
10:30	Plenary session, Hall "Europe"				
11:00				Round-Table Discussion, Hall "Premier"	
13:00	Lunch				
14:00	Sections Work:				
	6 section, Hall "Europe"	4 section, Hall "Federation"	5 section, Hall "Premier"	2 section, Hall "Alliance-1"	7 section, Hall "Aristocrat"
17:00	End of Sections Work and Keysight's Measurement Solutions Presentation				
18:00	Dinner				
19:00	Departure to NSTU (Karl Marx Ave., 20 b3)				

Second Day – 20/11/2021					
7.30	Departure from NSTU (Karl Marx Ave., 20 b3)				
9:00	Participants' Registration (Morskaya 3 b1, BORVIKHA HOTEL & SPA)				
10:00	Sections Work:				
	6 section, Hall "Europe"	4 section, Hall "Federation"	3 section, Hall "Premier"	1 section, Hall "Alliance-1"	5 section, Hall "Aristocrat"
13:00	Lunch				
14:00	Sections Work:				
	6 section, Hall "Europe"	4 section, Hall "Federation"	3 section, Hall "Premier"	1 section, Hall "Alliance-1"	5 section, Hall "Aristocrat"
16:00	AWARD CEREMONY				
17:00	Buffet				
20:00	Departure to NSTU (Karl Marx Ave., 20 b3)				

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Plenary Session

November 19, 10:00-13:00, Hall "Europe"
Chair: Sergey V. Brovanov

1. **OPENING – 10:00**

   Andrey A. Travnikov
   Governor of the Novosibirsk Region

   Sergey V. Brovanov
   Conference Chair
   Vice-Rector for Scientific Work of NSTU

2. **Project of the 4th generation synchrotron radiation source "Siberian ring photon source - SKIF" – 10:30**

   Konstantin V. Zolotarev
   Institute of Nuclear Physics of the Siberian Branch of the USSR Academy of Sciences

3. **About IEEE Russia-Siberia Section – 11:00**

   Grigoriy R. Khazankin
   Industry Relations Coordinator

4. **Quantum information with single atoms and photons – 11:10**

   Igor I. Ryabtsev
   Rzhanov Institute of Semiconductor Physics SB RAS

5. **Special Issue: Sensors in Automatic Control Systems – 11:50**

   Vadim A. Zhmud
   Novosibirsk State Technical University

6. **Ultraviolet, telecommunication and sensor systems. Basics of construction and characteristics – 12:00**

   Boris V. Poller
   Institute of Laser Physics SB RAS

7. **Keysight Technologies – 12:30**

   Alexander Shovgenin
   Business Development Manager Education, Keysight Technologies

Round-Table Discussion. New approaches to the creation of synchrotron radiation sources

November 19, 11:00-13:00, Hall "Premier"

MODERATORS.

1. **Kulipanov Gennady Nikolaevich**
   Academician of the Russian Academy of Sciences
   Head of Scientific Direction
   Budker Institute of Nuclear Physics of Siberian Branch Russian Academy 9of Sciences (BINP SB RAS) (moderator)

2. **Bataev Anatoly Andreevich**
   Doctor of Technical Sciences
   Rector of NSTU

3. **Vasiliev Alexey Vladimirovich**
   Minister of Science and Innovation
   Policy of the Novosibirsk Region

4. **Zolotarev Konstantin Vladimirovich**
   Ph.D.
   Deputy Director for Science
   Center for Collective Use "SKIF"

5. **Brovanov Sergey Viktorovich**
   Doctor of Technical Sciences
   Vice-Rector for Scientific Work of NSTU

SPEAKERS.

1. **Sources of SR of the fourth generation: achievements and challenges**

   Evgeniy B. Levichev
   INP SB RAS
   Novosibirsk, Russia

2. **Review and prospects of work carried out in the Siberian center of synchrotron and terahertz radiation in hard X-ray range.**

   Konstantin E. Cooper
   Center for Collective Use SKIF
   Novosibirsk, Russia

3. **Review and prospects of work carried out in the Siberian center for synchrotron and terahertz radiation in the soft X-ray range**

   Anton D. Nikolenko
   INP SB RAS
   Novosibirsk, Russia

4. **Personnel training for the project "New approaches to the creation of synchrotron radiation sources"**

   Alexander B. Berkin
   Novosibirsk State Technical University
   Novosibirsk, Russia

5. **Experience of NSTU in the operation and development of experimental stations of synchrotron radiation sources**

   Ivan A. Bataev
   Novosibirsk State Technical University
   Novosibirsk, Russia

6. **State of work on SR beams to solve problems of RFNC VNIITF**

   Boris P. Tolochko
   Siberian Center for Synchrotron Radiation (SCSI)
   Novosibirsk, Russia

PARTICIPANTS.

1. **Goldenberg Boris Grigorievich**
   Responsible for the laboratory complex of the
   SKIF Center for Collective Use,
   INP SB RAS

2. **Krasnov Alexander Anatolyevich**
   Head of laboratory "Vacuum Systems"
   INP SB RAS

3. **Veselov Sergey Viktorovich**
   Department of Materials Science in
   Mechanical Engineering
   Novosibirsk State Technical University

4. **Ruktuev Alexey Alexandrovich**
   Department of Materials Science in
   Mechanical Engineering
   Novosibirsk State Technical University

5. **Kazmina Anna Sergeevna**
   Department of Electronic Devices
   Novosibirsk State Technical University

Section I. Electronic Devices, Nanotechnology and Microsystem Engineering

November 20, 10:00-16:00, Hall "Alliance-1"
Section Chair: Valery P. Dragunov

1. **Features of Electromechanical Interactions in MEMS with a Solid-State Energy Source**

Rodion E. Sinitskiy
Novosibirsk State Technical University
Novosibirsk, Russia

2. **Strain-Sensing Properties of Chitosan-Based Film Composites**

Vitalii A. Kuznetsov
Novosibirsk State Technical University
Novosibirsk, Russia

3. **Method of Building a Hexagonal Grid**

Nickolay M. Zubashevskiy
Novosibirsk State Technical University
Novosibirsk, Russia

4. **A Comparison of the Mobility Models Defining MOSFET Threshold Voltage for Low Temperatures**

Maksim A. Kuznetsov
Novosibirsk State Technical University
Novosibirsk, Russia

5. **Bipolar Transistor DC LNA Characterization at 77 K**

Dmitri I. Volkhin
Novosibirsk State Technical University
Novosibirsk, Russia

6. Approach to Integration of a Synthesis Tool and PDK for Commercial EDA

Yulia A. Novichkova
Tomsk State University of Control Systems and Radioelectronics
Tomsk, Russia

7. Unit Cells of Flexible Printed Graphene Reflectarray Antenna for Satellite and Microwave Communications

Yury V. Morgachev
Siberian State University of Telecommunications and Information Sciences
Novosibirsk, Russia

8. Correlation of Quasiparticles in the Quantum Hall Effect

Evgeniy A. Krasnopevtsev
Novosibirsk State Technical University
Novosibirsk, Russia

9. The Strain Gauges on the SOI Structures

Igor E. Rudenko
Novosibirsk State Technical University
Novosibirsk, Russia

10. Out-of-plane Gap Closing Electrostatic Vibration Energy Harvester

Konstantin G. Pelmenev
Novosibirsk State Technical University
Novosibirsk, Russia

11. Dielectric Wavelength-Scaled Metalenses Based on an Anomalous Apodization Effect for Photoconductive Optical-to-Terahertz Switches

Igor V. Minin
Siberian State University of Geosystems and Technologies
Novosibirsk, Russia

- online report

12. In-plane Manipulation of Structured Plasmonic Jet and Hook-like Beams at the Nanoscale

Igor V. Minin
Siberian State University of Geosystems and Technologies
Novosibirsk, Russia

13. Memristor's Neuron Model with Hardware Learning

Anastasiya A. Kulakova
Southern Federal University
Rostov-on-Don, Russia

14. The Use of the Sorption-Capacitive Method of Non-Destructive Testing in the Analysis of Humidity of Organic Solvents

Vladimir G. Mazur
Angarsk state technical university
Angarsk, Russia

15. Piezosorption Detector for Organic Solvents in Gases

Vladimir G. Mazur
Angarsk state technical university
Angarsk, Russia

16. Oxygen Concentration Measurement in Flue Gases using Solid Electrolyte Cells

Yuriy A. Lipnin
Angarsk state technical university
Angarsk, Russia

Section II. Medical Electronic Devices

November 19, 14:00-18:00, Hall "Alliance-1"
Section Chair: Liliya I. Lisitsyna, Dmitry I. Zakrevsky

1. **The Spectral Characteristics Research of the Voice-Speech Signal in Dysphonia**

Olga A. Loskutova
Novosibirsk State Technical University
Novosibirsk, Russia

2. **Characteristics Investigation of the Cold Plasma Jet Generation for Minimally Invasive Treatment**

Elena V. Milakhina
Novosibirsk State Technical University
Novosibirsk, Russia

3. **The Development of a Biocalorimeter's Calibration System**

Ilya S. Pisarev
Novosibirsk State Technical University
Novosibirsk, Russia

4. **Utilization of High Frequency Electrical Signal for Biological Tissue Ablation**

Alexander A. Blokhin
Novosibirsk State Technical University
Novosibirsk, Russia

5. **The Use of Empirical Mode Decomposition for Physiological Artifacts Suppression from Electroencephalogram Signals**

Alexey V. Kozin
Novosibirsk State Technical University
Novosibirsk, Russia

6. **Development of a Differential Temperature Sensor for the Implementation of an Exchange Density Measuring Device**

Alina V. Rekhovskaya
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Voice Changes as a Result of Psychoemotional Impact**

Anastasiya V. Nenko
Novosibirsk State Technical University
Novosibirsk, Russia

8. **Human Thermoregulation System: Research of Heat Transfer Processes in Zero Gravity**

Elizaveta V.Belyaeva, Elizaveta P. Chushkina, Elizaveta S. Gagarkina
Novosibirsk State Technical University
Novosibirsk, Russia

9. **The Brain Diagnostic Devices**

Zemfira Kh. Baisheva
Ufa State Aviation Technical University
Ufa, Russia

10. **Application of Support Vector Machines to the Multiclass Classification Electromyography Signal Patterns**

Artemii A. Kabanov
Omsk State Technical University
Omsk, Russia

11. **Optical Circuit Diagram of a Centration Distances Measuring Device and the Automated Measurement Algorithm**

Ekaterina I. Shtanko
Trofimuk Institute of Petroleum Geology and Geophysics of Siberian Branch of the Russian Academy of Sciences
Novosibirsk, Russia

Section III. Electrical Engineering and Power Engineering

November 20, 10:00-16:00, Hall "Premier"

Section Chair: Denis A. Kotin, Gennady S. Zinoviev

1. **An Investigation of the Performance of Single- and Double-Converter Parallel Active Power Filters under Various Modulation Modes**

Vadim G. Tokarev
Novosibirsk State Technical University
Novosibirsk, Russia

2. **Features of Minigrid Operation Control Based on a Small Generation Power Plant with an External Power Grid**

Andrey I. Marchenko
Novosibirsk State Technical University
Novosibirsk, Russia

3. **Investigation of the Parallel Operation Stability of Minigrid Based on Small Generation with an External Electrical Network of the Power System**

Andrey I. Marchenko
Novosibirsk State Technical University
Novosibirsk, Russia

4. **AC Voltage Stabilizer for Overload and Overvoltage in Low-Voltage Networks**

Evgeniy A. Kosykh
Novosibirsk State Technical University
Novosibirsk, Russia

5. **Resonance Structure-based DC Voltage Variable Cascade Converter with Switching Capacitors**

Nikolay V. Nurlatov
Novosibirsk State Technical University
Novosibirsk, Russia

6. **Controllable Rectifiers with Input Power Factor Correction**

Gennady S. Zinoviev
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Lightning Overvoltages Suppression for the 35-kV Cable Section Insulation with the Frequency-Dependent Device**

Oksana O. Emelyanova
Novosibirsk State Technical University
Novosibirsk, Russia

8. **Synthesis of the Control System for the Voltage Stabilization Unit of the Three-Stage Synchronous Generator**

Maksim A. Zharkov
Novosibirsk State Technical University
Novosibirsk, Russia

9. **Energy Efficiency Improvement of Industrial Enterprise based on Machine Learning Electricity Tariff Forecasting**

Pavel V. Matrenin
Novosibirsk State Technical University, Sirius University of Science and Technology
Novosibirsk, Russia

10. **Investigation of the Stability and Frequency Properties of a Generating Complex when Operating on an Autonomous Load**

Ilya A. Ivanov
Novosibirsk State Technical University
Novosibirsk, Russia

11. **DC Power Supply System for Autonomous Objects**

Andrey S. Kharitonov
Novosibirsk State Technical University
Novosibirsk, Russia

12. Verification Modeling of Magnetic Field Influence on Power Transmission Line Losses

Roman A. Nechitaev
Novosibirsk State Technical University
Novosibirsk, Russia

13. Analysis of the Impact of Autonomous Hybrid Power Plants on the Railways Capacity

Eugenie A. Domahin
Novosibirsk State Technical University
Novosibirsk, Russia

14. Improved Dynamic of Engine Generation Set using Energy Storage and the Instantaneous Power Theory

Maksim A. Dybko
Novosibirsk State Technical University
Novosibirsk, Russia

15. Characteristics Research of the Semiconductor Frequency Converter in Matlab Simulink

Danil V. Dorokhov
Altai State Technical University
Barnaul, Russia

16. The Novel Approach to Mechanically Switched Capacitors Sizing for a Longwall Shearer

Vyacheslav A. Voronin
Kuzbass State Technical University
Kemerovo, Russia

17. Research and Analysis of Resonance Phenomena in Two Transformer Substations 10/0.4 kV

Tatiana V. Myateg
Novosibirsk State Technical University
Novosibirsk, Russia

18. Modeling Solar Power Station Based on a Multifunctional Integrated Electromagnetic Component

Regina T. Khazieva
Ufa State Petroleum Technological University
Ufa, Russia

19. Single-Phase Short Circuit Determining Algorithm at Hydroelectric Power Plant Auxiliaries Network

Vyacheslav E. Kozhemyakin
Siberian Federal University
Sayanogorsk, Russia

20. Improvement of Flexibility in the Integrated Energy Systems

Zagdkhorol Bayasgalan
Power Engineering School, MUST
Ulaanbaatar, Mongolia

21. Modeling of a Stand-Alone Photovoltaic System Using an Intelligent Control System Based on Artificial Neural Network

Irina A. Belova
Novosibirsk State Technical University
Novosibirsk, Russia

Section IV. Radio Engineering and Telecommunication Systems

November 19, 14:00-18:00, Hall "Federation"

November 20, 10:00-16:00, Hall "Federation"

Section Chair: Andrey V. Nikulin

FIRST DAY.

1. **Reduction of Computitional Costs when Forming a Matrix of Transition Probabilities in a Cognitive Radio System**

Alexander V. Stenin
Siberian State University of Telecommunications and Information Sciences
Novosibirsk, Russia

2. **The Method of Experimental Evaluation of Noise Immunity and Stealth of Radio Engineering Systems with Polarization Modulation**

Victor S. Nabilkin
Yaroslavl State University
Yaroslavl, Russia

3. **Analysis of Artificial Intelligence Methods for Detecting Drones Based on Radio Frequency Activity**

Nikita N. Mudruk
Southern Federal University
Taganrog, Russia

4. **Investigation of Microwave Filters Based on Multimode Resonators**

Sergey A. Khodenkov
Reshetnev Siberian State University of Science and Technology
Krasnoyarsk, Russia

5. The Software Development for 5G New Radio Coverage Planning

Ruslan V. Akhpashev
Siberian State University of Telecommunication and Information Science
Novosibirsk, Russia

6. Genetic Algorithm for Antenna Array Thinning with Minimization of Side Lobe Level

Alexey S. Karasev
Novosibirsk State Technical University
Novosibirsk, Russia

7. Power-On Reset IC Module with Brownout Detection and Fast Transients Immunity

Maksim S. Karpovich
Sibis LLC
Novosibirsk, Russia

8. Nonlinear Scattering of Narrowband and Ultra-Wideband Signals at Equal Peak Intensity

Edward V. Semyonov
Institute of High Current Electronics, Siberian Branch of Russian Academy of Science
Tomsk, Russia

9. Heterogeneous Radio Communication System Operation Algorithm

Gregory A. Blagodatsky
Kalashnikov ISTU
Izhevsk, Russia

10. Compact GLONASS Band-Pass Filter Based on Waveguide with Resonance Membranes

Yelena A. Litinskaya
Siberian Federal University
Krasnoyarsk, Russia

11. Based Interpolation Channel Estimation for Millimeter-Wave MIMO OFDM Systems with Multibeam Luneburg Antenna

Dmitry. V. Kusaykin
Ural Technical Institute of Communication and Informatics
Ekaterinburg, Russia

12. Base Station Multibeam Antenna for 5G Network Based on the Lunenburg Lens Structure

Dmitry. V. Kusaykin
Ural Technical Institute of Communication and Informatics
Ekaterinburg, Russia

13. Analysis and Synthesis of Metrological Characteristics of Multisensor Transducers

Olga V. Teryaeva
Samara National Research University
Samara, Russia

14. Receiver Differential Code Biases of GLONASS FDMA Signals with the Same Frequency Slot

Dmitry S. Pecheritsa
FSUE «VNIIFTRI»
Moscow, Russia

15. Variance Estimation of the GNSS-Simulator Pseudorange Generation Error

Svyatoslav Yu. Burtsev
FSUE «VNIIFTRI»
Moscow, Russia

16. Wideband High-Gain Dual-Polarized Antenna for 5G Communications

Mikhail S. Shishkin
Ural Federal University named after the first President of Russia B. N. Yeltsin
Ekaterinburg, Russia

SECOND DAY.

1. **SDR Based Evaluation of the Initial Cell Search In 5G NR OpenAirInterface Implementation**

Vera G. Drozdova
Siberian State University of Telecommunication and Information Science
Novosibirsk, Russia

2. **Performance Evaluation of the MU-MIMO Beamforming Using Open Source Channel Model**

Alexander A. Kalachikov
Siberian State University of Telecommunication and Information Science
Novosibirsk, Russia

3. **Matrix Simulator of Echo Signals of Three Antenna Radar Systems**

Timur I. Sabitov
Novosibirsk State Technical University
Novosibirsk, Russia

4. **Simulation of the Soliton Propagation in Optical Fibers with Various Methods of Signal Amplification**

Vladimir Karlin
Siberian State University of Telecommunications and Information Science
Novosibirsk, Russia

5. **Locating an Object inside a Room under Line-of-Sight Conditions between Transmitter and Receiver**

Ilya V. Doshchinsky
Siberian State University of Telecommunications and Information Sciences
Novosibirsk, Russia

6. **Synthesis of a Dual-Band Circular Polarization Antenna for Global Navigation Satellite System GLONASS**

Vadim S. Sokolov
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Improving the Reliability of Data Transmission on the "Spacecraft-Ground " Communication Line. Complexing Mode for Intermittent Radiation with Diversity Receive**

Mikhail Andrianov
Astro Space Center Physical Institute of Russian Academy of Science
Moscow, Russia

8. **Algorithm for the Synthesis of a Film Attenuator with Uniform Power Dissipation**

Denis A. Iuzvik
Novosibirsk State Technical University
Novosibirsk, Russia

9. **Effect of Phase Noise on Pulsed Signals in a DWDM Optical Transmission System using Coherent Detection**

Anatolij Sychuk
Siberian State University of Telecommunications and Information Science
Novosibirsk, Russia

10. **Noise Immunity of Multilevel Pulse-Modulated Signals Propagating along a Dispersive Optical Path**

Anatolij Sychuk
Siberian State University of Telecommunications and Information Science
Novosibirsk, Russia

11. **The Novel Printed Log-periodic Antenna with Dipole-like Radiators Excited by Using the Modified In-phase Power Splitter**

Andrey E. Kolesnikov
Novosibirsk State Technical University
Novosibirsk, Russia

12. **The Effect of Crosstalk due to Path Non-linearity on the OFDM Signal Reception Noise Immunity**

Maxim S. Shushnov
Siberian State University of Telecommunications and Information Sciences
Novosibirsk, Russia

13. The Accuracy Indicators Analysis of GPS and GLONASS Receivers

Roman I. Vorobiev
Siberian State University of Telecommunications and Information Sciences
Novosibirsk, Russia

14. Optimization of Testing Intervals in the Conditions of Optical Fiber Periodic Predictive Control

Irina G. Kvitkova
Siberian State University of Telecommunications and Information Science
Novosibirsk, Russia

15. The Least Squares Method Application for the Global Navigation Satellite Systems Signals Power Measuring

Aleksei S. Zavgorodnii
FSUE «VNIIFTRI»
Moscow, Russia

16. Reliability of Optical Cable under Gradual Failures Taking into Account the Degree of Fiber Degradation

Elena P. Ionikova
Siberian State University of Telecommunications and Information Sciences
Novosibirsk, Russia

17. The Behavioral Models of Suppressors and Devices Based on Them

Larisa G. Rogulina
Novosibirsk State Technical University
Novosibirsk, Russia

18. Transmission of Optical Beams through the Atmospheric Channel

Evgenia S. Abramova
Siberian State University of Telecommunications and Informatics
Novosibirsk, Russia

19. Laser Ionization Channel For The Transmitting Antenna Of The ULF-LF Transmitter

Evgenia S. Abramova
Siberian State University of Telecommunications and Informatics
Novosibirsk, Russia

Section V. Information-Measuring Technologies

November 19, 14:00-18:00, Hall "Premier"

November 20, 10:00-16:00, Hall "Aristocrat"

Section Chair: Viktor A. Trushin, Vadim A. Zhmud

FIRST DAY.

1. Polarization Filter Analysis of Transport Noises

Oksana A. Kopylova

Institute of Computational Mathematics and Mathematical Geophysics SB RAS

Novosibirsk, Russia

2. Knowledge and Data Integration in the Tasks of Technogenic Noise Environmental Monitoring

Oksana A. Kopylova

Institute of Computational Mathematics and Mathematical Geophysics SB RAS

Novosibirsk, Russia

3. Research Complex for Unmanned Autonomous Vehicles Control Systems

Elizavita E. Prishlyak

Institute of Automation and Electrometry of the Siberian Branch of the Russian Academy of Sciences (IA&E SB RAS)

Novosibirsk, Russia

4. Random Error Reduction in Phase Shift Interferometry

Sergey P. Ilinykh

Novosibirsk State Technical University

Novosibirsk, Russia

5. **On the Inapplicability of the Padé Approximation for Controlling Object Consisting of Delay Link and Integrator**

Vadim A. Zhmud
Novosibirsk State Technical University
Novosibirsk, Russia

6. **Monitoring System of Seismo Dynamics of Rocks for Recording Earthquake Precursors**

Vadim A. Zhmud
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Multiple Pseudo-Local Feedbacks for Controlling High-Order Oscillatory Objects**

Oleg V. Stukach
Novosibirsk State Technical University
Higher School of Economics
Moscow, Russia

8. **A Study of the Calibration Method for Receiver's GNSS**

Ekaterina A. Karaush
Federal State Unitary Enterprise "National Research Institute of Physicotechnical and Radio Engineering Measurements"
Moscow, Russia

9. **GLONASS Satellite Pseudorange Errors Mitigation Using Gradient Boosting Machine**

Vladislav O. Zhilinskiy
Federal State Unitary Enterprise "National Research Institute of Physicotechnical and Radio Engineering Measurements"
Moscow, Russia

10. Algorithm for the Camera Scene 3D Model Calculation

Dmitriy A. Mikhaylenko
Novosibirsk State Technical University
Novosibirsk, Russia

11. Some Approaches to the Selection of Predictors of Patient Survival Function for Primary Prevention of Cardiovascular Disease

Alexander A. Zakharov
Tyumen State University
Tyumen, Russia

12. Experimental Evaluation of UWB Local Navigation System Performance Used for Pedestrian and Vehicle Positioning in Outdoor Urban Environments

Vladimir B. Pudlovskiy
FSUE "VNIIFTRI"
Moscow, Russia

13. Neurobayesian Algorithm for Subject's Psychophysiological State Identification

Samal S. Zhumazhanova
Omsk state technical university
Omsk, Russia

14. Methodology and Analysis of SWC Mapping with Scheduling and Safety Requirements in Automotive

Owes Khan
Technische Universita¨t Chemnitz
Germany

15. Comparative Study on The Results of Student Assessment Data Developed by SURE Model

Delgermaa Senden
Mongolian University of Science and Technology
Mongolia

16. Image Processing of Insulator and Vibration Damper by YOLO Algorithm

Chinzorig Sunduijav
Chemnitz University of Technology
Germany

17. Intelligent Mobile Hardware-software Device for Automated Testing and Monitoring of Computer Networks Based on Raspberry Pi

Aizhan T. Zharkimbekova
Karaganda Technical University
Karagandy, Kazakhstan

18. The Mandelstam – Brillouin Backscatter Spectrum Profile Evaluation in Optical Fibers of Various Types

Igor V. Bogachkov
Omsk State Technical University
Omsk, Russia

19. Robotic System of Optical Control and Data Acquisition for Analyzing the Physical Properties of Industrially Produced Mineral Fertilizer Granules

Dmitriy V. Yunovidov
Cherepovets State University
Cherepovets, Russia

SECOND DAY.

1. Multiplied Frequency Measuring System

Dmitry V. Laptev
Novosibirsk State Technical University
Novosibirsk, Russia

2. **Development of the Discrete Algorithm of Stabilizing for «Suspended Load» Model Object**

Galina V. Sablina
Novosibirsk State Technical University
Novosibirsk, Russia

3. **Brillouin Scattering in Optic Fiber and its Application in Distributed Sensors**

Nicolay I. Gorlov
Siberian State University of Telecommunications and Computer Science
Novosibirsk, Russia

4. **Hardware and Software Complex for Monitoring Soil and Climatic Parameters**

Mikhail S. Yuzhakov
National Research Tomsk State University
Tomsk, Russia

5. **Algorithm for Efficient Estimation of the Critical Current of the SIS-type Josephson Junctions**

Anastasia E. Koltakova
Novosibirsk State Technical University
Novosibirsk, Russia

6. **Profiling of Website Visitors Based on Dimensions of User Experience**

Maxim A. Bakaev
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Telling Minds Apart: Classification of EEG Signals Based on Comparison of Brain Activity Maps**

Maxim A. Bakaev
Novosibirsk State Technical University
Novosibirsk, Russia

8. **Discussion of the Parameters of the Distance Learning System in Virtual Reality**

Maxim P. Larin
Novosibirsk State Technical University
Novosibirsk, Russia

9. **Electricity Meters Testing Risks**

Vitaly V. Tretyak
Novosibirsk State Technical University
Novosibirsk, Russia

10. **Estimation of the Power Parameters Measurement Error Resulted by ADC Nonlinearity and Quantization Noise in Case of DFT Application**

Andrey N. Serov
National Research University "Moscow Power Engineering Institute"
Moscow, Russia

11. **The Collection and Processing Specifics of Online Data on Job Vacancies in the Russian Labor Market**

Anna A. Aletdinova
Novosibirsk State Technical University
Novosibirsk, Russia

12. **Computer Simulation of Computational and Measurement Processing of Gravimetric Data**

Oleg Chashchin
Novosibirsk State Agrarian University
Novosibirsk, Russia

13. **Application of the K-Standards Algorithm for the Clustering Problem of Production Batches of Semiconductor Devices**

Ivan P. Rozhnov
Siberian Federal University
Krasnoyarsk, Russia

14. Massive-Parallel Algorithms for Identifying the Production Batches of Semiconductor Devices

Ivan P. Rozhnov
Siberian Federal University
Krasnoyarsk, Russia

15. Methodology for Assessing the Quality of Genomic Assembly Based on the Analysis of K-mers Frequency in a Parallel Sequencing Sequencer

Andrey G. Borodinov
Institute for Analytical Instrumentation Russian Academy of Sciences (IAI RAS)
Saint Petersburg, Russia

16. Quality Control Metrics at Different Stages of Genomic Assembly in the Parallel Sequencing Using the Nanofor SPS

Andrey G. Borodinov
Institute for Analytical Instrumentation Russian Academy of Sciences (IAI RAS)
Saint Petersburg, Russia

Section VI. Mathematical Modeling of Processes and Systems

November 19, 14:00-18:00, Hall "Europe"
November 20, 10:00-16:00, Hall "Europe"
Section Chair: Boris Yu. Lemeshko

FIRST DAY.

1. **Synthesis of the Optimal Scheme Polymer Flooding with Constraints on the Bottomhole Pressure**

Ilya I. Patrushev
Novosibirsk State Technical University
Novosibirsk, Russia

2. **Comparison of Iterative and Direct Solvers for Finite Element Linear Systems in 3D Induction Logging**

Petr A. Domnikov
Novosibirsk State Technical University
Novosibirsk, Russia

3. **Influence Fields Calculation in Problems of Induction Logging by the Finite Element Method**

Petr A. Domnikov
Novosibirsk State Technical University
Novosibirsk, Russia

4. **Synthesis of a Controller for a System with a Delay**

Victor I. Shipagin
Novosibirsk State Technical University
Novosibirsk, Russia

5. **Computational Scheme of Temperature Field Calculation During Modeling Multiphase Flow in Porous Media**

Anastasia S. Ovchinnikova
Novosibirsk State Technical University
Novosibirsk, Russia

6. **Modeling of Gas-liquid Mixture Flow Considering the Processes of Gas Liberation and Dissolution**

Anastasia S. Ovchinnikova
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Creation of a Starting Model of the Reservoir Based on a Set of Well Data**

Alexander M. Grif
Novosibirsk State Technical University
Novosibirsk, Russia

8. **Assessment of the Applicability Gamma Ray Attenuation Method for Measurement of Three-Phase Permeability of Core Samples**

Rinat G. Gorokhovsky
Novosibirsk State Technical University
Novosibirsk, Russia

9. **Improving the Accuracy of 3-D Modeling Electromagnetic Fields in Marine Electrical Prospecting Problems**

Denis V. Vagin
Novosibirsk State Technical University
Novosibirsk, Russia

10. **Resolution Analysis of Airborne Electromagnetic Survey Using Helicopter Platform and UAV**

Denis V. Vagin
Novosibirsk State Technical University
Novosibirsk, Russia

11. Feature Selection for EEG Data Based on Logistic Regression

Anastasiia Yu. Timofeeva
Novosibirsk State Technical University
Novosibirsk, Russia

12. Confidence Intervals for Identification Parameters of Heat Exchange Processes in Aircraft Instrument Compartments

Vladimir N. Nikolaev
FSUE «S.A. Chaplygin Siberian Aeronautical Research Institute»
Novosibirsk, Russia

13. An Approach to UAV Type Estimation on the Bases of Rotating Propeller Signal Analysis

Dmitry A. Zinoview
Yaroslavl State University
Yaroslavl, Russia

SECOND DAY.

1. Effectiveness Research of the Apriori Algorithm Implementations as Part of the Recommendation System

Igor M. Stubarev
Novosibirsk State Technical University
Novosibirsk, Russia

2. Matrix Representation of the Fast Multipole Method of Scalar Boundary Elements

Aleksandr S. Aleksashin
Novosibirsk State Technical University
Novosibirsk, Russia

3. **Information System for Ergonomic Assessment of a Perspective Maneuverable Aircraft Cockpit**

Pavel A. Zhurkin
Novosibirsk State Technical University
Novosibirsk, Russia

4. **Coupling of Vector and Scalar Boundary Element Methods**

Sergey A. Sivak
Novosibirsk State Technical University
Novosibirsk, Russia

5. **Testing Modern Modeling and Simulation Environments on Typical Examples of Hybrid Dynamical Systems**

Yury V. Shornikov
Novosibirsk State Technical University
Novosibirsk, Russia

6. **Solving One Problem of Optimal Production and Material Flow Management of a Garment Manufacturer**

Nina V. Baranova
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Acceptable Variants Formation Methods of Organizational Structure and the Automated Information Security Management System Structure**

Midat M. Maksudov
Siberian State University of Geosystems and Technologies
Novosibirsk, Russia

8. **Development of a Machine Learning Method for Automatic Analysis of Data Processing Quality**

Irina B. Elistratova
Siberian State University of Telecommunications and Informatics
Novosibirsk, Russia

9. Application Problem and Effective Algorithm of the Parallel-Sequential System Schedule Optimization

Yuliya L.Korotkova
Novosibirsk State Technical University
Novosibirsk, Russia

10. Oilfield Classification with Various Neural Networks

Maria A. Sivak
Novosibirsk State Technical University
Novosibirsk, Russia

11. The Program for Finding Alternatives to Managing the Metrological Support of an Enterprise

Elena A. Golovkova
Angarsk State Technical University
Angarsk, Russia

12. Program Module Development for Generation Structural Alternatives Serial-parallel Functional Networks

Svetlana V. Yastrebova
Novosibirsk State Technical University
Novosibirsk, Russia

13. The Features of Production Systems Modeling

Sergey B. Egorov
Moscow state university of technology "STANKIN"
Moscow, Russia

14. Aircraft Heat Exchanger-Condenser: Modeling the Features of Heat Transfer Process

Alexander V. Chichindaev
Novosibirsk State Technical University
Novosibirsk, Russia

Section VII. Optical and Laser Technologies

November 19, 14:00-18:00, Hall "Aristocrat"

Section Chair: Alexander K. Dmitriev

1. **Propagation of Femtosecond Radiation in Air and the Formation of Subdiffraction Divergence Beams**
   invited speaker
   Gennady G. Matvienko
   Institute of Atmospheric Optics SB RAS
   Tomsk, Russia

2. **Propagation Dynamics of Dark Pulses in Optical Fiber Links**
   Igor I. Korel
   Novosibirsk State Technical University
   Novosibirsk, Russia

3. **Supercontinuum Generation in Cascaded Raman Conversion**
   Aleksey V. Ivanenko
   Novosibirsk State University
   Novosibirsk, Russia

4. **Application of Vernier Principle to Photoelectric Autocollimator for Improvement of Accuracy, Angular Range and Speed**
   Andrey V. Golitsyn
   Novosibirsk State Technical University
   Novosibirsk, Russia

5. **Light Shifts in CPT Miniature Atomic Clock on D1 Absopbtion Line of 87Rb with Modulation 6,8 GHz**
   Stepan M. Ignatovich
   Institute of Laser Physics SB RAS
   Novosibirsk, Russia

6. **Development of a Machine Learning Based Algorithm to Identify the Main Types of Optical Signal Transmission Faults Between a Switch and an Optical Transceiver**

Aleksandr A Kashtanov
Novosibirsk State Technical University
Novosibirsk, Russia

7. **Pulse Picker for Generating Femtosecond Radiation with a Selectable Carrier-Envelope Phase**

Konstantin N. Savinov
Novosibirsk State Technical University
Novosibirsk, Russia

8. **Emission Spectrum of a Diode Laser with Microwave Modulation of the Injection Current**

Konstantin N. Savinov
Novosibirsk State Technical University
Novosibirsk, Russia

9. **Spectral Narrowing Techniques for Optical Parametric Oscillators at Near and Mid-IR Region**

Evgenii Y. Erushin
Novosibirsk State Technical University
Novosibirsk, Russia

10. **Modeling of Scattering Spectra of DNA Molecules**

Anastasia A. Kharlamova
Northern (Arctic) Federal University named after M.V. Lomonosov
Arkhangelsk, Russia

11. Simulation of Interference from Two Single-Photon Sources in Scheme of Young's Experiment Using the Coordinate Wave Function of Photon

Alexandr P. Davydov
Nosov Magnitogorsk State Technical University
Magnitogorsk, Russia

12. Polychromatic Diagnostics of Axisymmetric Reacting Jets and Flames Using the Hilbert Optics Methods

Olga S. Zolotukhina
Novosibirsk State Technical University
Novosibirsk, Russia

13. Automatic Correction of Dynamic Errors in Multisensor Transducers for Detecting End Positions of Moving Objects

Olga V. Teryaeva
Samara National Research University named after academician S.P. Korolev
Samara, Russia

14. Experimental Data Processing Language

Oksana G. Mitchenkova
Siberian State University of Telecommunications and Informatics
Novosibirsk, Russia

15. Cloud Infrastructure for Intelligent Decision Support in Titanium Carbide Laser Cladding

Vadim A. Timchenko
Institute of Automation and Control Processes, Far Eastern Branch of the Russian Academy of Sciences
Vladivostok, Russia