

**2018 IEEE Conference of Russian Young Researchers in**

**Electrical and Electronic Engineering**

**(EIConRus)**

**January 29 – February 1, 2018**

**Venue: St.Petersburg Electrotechnical University “LETI”**

**5 Prof. Popov street, St.Petersburg, Russia**

**Conference Program**

**Registration of participants**

**January 29, 2018 9.30 – 10.00 Building 3, Conference Hall**

**Opening, greetings to the Conference**

**Plenary session**

**January 29, 2018 10.00 – 11.00 Building 3, Conference Hall**

**Observation of Gravitational Waves and Development of Optical Gyros**

*Prof. Yury V. Filatov*

**Sociotechnical Aspects and Impact of Modern Cybercrime**

*Prof. Karsten Vandrup*

**Section 1.**

## Communication, Networking & Broadcasting

### Session 1-1. January 29, 2018, 11:10 – 12:00, Room 5205

#### 1. Usage of Game Theory in the Internet Wide Scan

Arzhakov Anton V.

#### 2. Approaches for Adaptive Optimization of Routes in a Distributed Software-defined Infrastructure of a Virtual Data Center

Bolodurina Irina P., Parfenov Denis I.

#### 3. Development of Network Security Models in the Software-defined Infrastructure of Virtual Data Center

Bolodurina Irina P., Parfenov Denis I.

#### 4. Obtaining IMSI by Software-Defined Radio (RTL-SDR)

Bulychev Roman V., Goncharov Dmitry E., Babalova Irina F.

**Session 1-2. January 29, 2018, 12:15 – 14:00, Room 5205**

5. Security of Electronic Digital Signature in Maritime Industry

Chernyi Sergei G., Ali Aslamin Aslamovich, Veselkov Vycheslav V., Titov Ivan L., Budnik Vlad Yu.

6. System Analysis for an Integrated Assessment of the State of Transport Infrastructure Based on the Decomposition of Components

Chernyi Sergei G., Logunova Natalya A., Aleksahina Ludmila V.

7. Methods for Ensuring Fault Tolerance of Equipment Based on Reliability Theory

Chernyi Sergei G.

8. Systems of Identification Authentication and Encoding in Maritime Industry

Chernyi Sergei G., Marley Vladimir E., Lopyrev Sergey S., Bulov Anatoliy A., Bordug Aleksandr S.

9. Detecting and Analysis Malicious Activity on Remote Desktop Protocols Using Integrated Security System

Danchenko Nikita M., Mazurenko Grigoriy A.

10. Security Event Analysis in XBee-based Wireless Mesh Networks

Desnitsky Vasily A., Kotenko Igor V.

11. Investigation of Architecture of Internet Secured Segments

Galkina Natalya A., Frolov Alexey A.

**Session 1-3. January 29, 2018, 15:00 – 17:00, Room 5205**

12. Vulnerability Analysis of the Wifi Spots Using WPS by Modified Scanner Vistumbler

Goncharov Dmitry E., Zareshin Sergey V., Bulychev Roman V., Silnov Dmitry S.

13. Study of Fog Computing Structure

Khakimov Abdukodir, Muthanna Mohammed Saleh Ali

14. Decision Feedback for Channel Estimation in SCMA System with Diversity

Klimentyev Vyacheslav P., Sergienko Alexander B.

15. Advantages of Networking and Distance Learning Use in Maritime Education and Training

Koroleva Elena A., Makashina Irina I., Filatova Evgeniya V., Mamunts David G., Zhukov Vladimir A.

16. The Investigation of the Possibility of Automated Collecting of Information in the Hidden Segment of the Internet

Levin Andrey I., Voronov Igor A.

17. Development of an Automated System for Managing and Optimizing Management Decisions in the Design, Organization and Production of Dredging

Mamunts David, Morozov Sergey A., Gaskarov Vagiz D., Sauchev Aleksander V., Tsvetkov Yuri N.

18. The Use of Authentication Technology Blockchain Platform for the Marine Industry

Mamunts David G., Marley Vladimir E., Kulakov Leonid S., Pastushok Elena M., Makshanov Andrey V.

**Session 1-4. January 30, 2018, 10:00 – 12:00, Room 5205**

19. Performance comparison in network traffic prediction for polynomial regression to P1P versus ARIMA and MWM

Pablo Márquez, David Pinos, Inga-Ortega Juan

20. Estimation of Sea-Wind Parameters Using a Doppler Navigation System

Mikhailov Viacheslav N., Khachaturian Alena B.

21. Investigation of Modern Attacks Using Proxy Honeypot

Mushtakov Ruslan E., Silnov Dmitry S., Tarakanov Oleg V., Bukharov Vladislav A.

22. Development of Intelligent Street Lighting Services Model Based on LoRa Technology

Muthanna Mohammed Manea Ahmed, Muthanna Mohammed Saleh Ali, Khakimov Abdukodir, Muthanna Ammar

23. Analysis of Platform Vulnerabilities for the Virtualization Process

Nyrkov Anatoliy P., Katorin Yuri F., Gaskarov Vagiz D., Brazhnikova Lena S., Vikhrov Nikolai M.

24. Aggregation Process for Implementation of Application Security Management Based on Risk Assessment

Nyrkov Anatoliy P., Katorin Yuri F., Gaskarov Vagiz D., Kosyak Yana V., Sauchev Aleksandr V.

25. Technologies of Safety in the Bank Sphere from Cyber Attacks

Nyrkov Anatoliy P., Abramova Kristina V., Koroleva Elena A., Gaskarov Vagiz D.,  
Sauchev Aleksandr V.

**Session 1-5. January 30, 2018, 12:15 – 14:00, Room 5205**

26. A Method to Detect Internet of Things Botnets

Prokofiev Anton O., Smirnova Yulia S., Surov Vasiliy A.

27. NFV Chaining Technology in Hybrid Computing Clouds

Rovnyagin Mikhail M., Varykhanov Sergey S., Maslov Yury V., Riakhovskaia Iuliia S.,  
Myltsyn Oleg V.

28. Terrestrial Broadcasting Networks and Natural and Climatic Anomalies of the Republic of  
Angola

Santos Vigílio M.J.D., Kovalgin Yuri A.

29. Rank-Order Statistics for the Campus Local Area Network Traffic

*Serdyuk Aleksey D., Viet Nguyen Duc, Markelov Oleg A., Bogachev Mikhail I.*



30. The Automating Process of Information Security Management

Sokolov Sergey S., Alimov Oleg M., Golubeva Mariy G., Burlov Vyacheslav G., Vikhrov Nikolai M.

31. Using Unauthorized Access to Information Based on Applets

Sokolov Sergey S., Alimov Oleg M., Ivleva Lyudmila E., Vartanova Ekaterina Yu., Burlov Vyacheslav G.

32. Providing Security for Virtual Infrastructures Based on an Integrated Mechanism

Sokolov Sergey S., Alimov Oleg M., Trubacheva Yulia A., Katorin Yuri F., Goloskokov Konstantin P.

**Session 1-6. January 30, 2018, 15:00 – 17:00, Room 5205**

33. VANET/ITS Cybersecurity Threats: Analysis, Categorization and Forecasting

Stolyarova Ekaterina S., Shiryayev Denis M., Vladyko Andrei G., Buinevich Mikhail V.

34. Analysis of Modern Intrusion Detection System

Titorenko Aleksey A., Frolov Alexey A.

35. Influence of DoS Attacks on Intrusion Detection Systems

Titorenko Aleksey A., Goncharov Dmitry E.

36. Determining Location of Gateways in Two-Level Data Transfer Networks in Distributed Information Control Systems

Yokhin Mihail N., Stepanov Maxim M.

37. Application of the Successive Concessions Method for Optimizing the Topology of Information Control Systems with Multiple-Bus Architecture

Yokhin Mihail N., Stepanov Maxim M.

38. The Stability of Slow Speed Diesel Engines Under Conditions of Considerable Destabilizing Impact

Zhukov Vladimir A., Tsvetkov Yuri N., Tuzov Leonid V., Bordug Aleksandr S.,  
Zhelezniak Alekssandr A.

## **Section 2.**

### **Components, Circuits, Devices & Systems**

**Session 2-1. January 29, 2018, 11:10 – 12:00, Room 5219**

1. The Reference Spur Reduction Technique for Frequency Synthesizers

Akhmetov Denis B., Korotkov Alexander S.

2. On Minimization of Total Errors in Measurement Systems with Adaptive Commutation

Antonyuk Evgenyi M., Varshavskiy Ilyas E., Minina Anastasyia A., Antonyuk Petr E.

3. Encoders for Flash Analog-to-Digital Converters

Budanov Dmitry O., Pilipko Mikhail M., Morozov Dmitry V.

4. Bifurcation and Recurrent Analysis of Memristive Circuits

Butusov Denis N., Karimov Artur I., Pesterev Dmitriy O., Tutueva Aleksandra V., Okoli Gabriel

**Session 2-2. January 29, 2018, 12:15 – 14:00, Room 5219**

5. Tripping Providing of Electromagnetic Drives of High Voltage Circuit Breakers Using Supercapacitors

Cho Gvan Chun, Gusev Yury P., Smotrov Nickolay N., Kupchinov Alexandr D.

6. Algorithm of Nearest Environment Determination of the Current State in Piecewise Model Order Reduction

Dolinina Anastasiya A., Lantsov Vladimir N., Gerfers Friedel

7. Reversibility Diagrams: a Tool for Finite-Difference Model Study

Goryainov Sergey V., Andreev Valeri S., Kozak Maria N., Kozachek Roman A., Rybin Vyacheslav G.

8. Improving the Reliability of the Electronic Regulators of Aircraft Engines

Grekov Artem V., Tyurin Sergey F.

9. A New Approach to Microstrip Coupled-resonator Bandpass Filter Design

Ivanov Nikita V.

10. Matching of a Magnetron with a Changing Load

Klimov Anton S., Rogozhin Kirill V., Ivanov Vyacheslav A., Sidorenko Dmitriy S.

11. Experimental Investigation of Frequency Characteristics of Bandpass Microwave Filters on Waveguide Slots Membranes with Angular Geometry of Slots

Kopylova Natalia A., Kopylov Alexey F., Salomatov Yuri P.

**Session 2-3. January 29, 2018, 15:00 – 17:00, Room 5219**

12. Studying the Dynamics of Memristive Synapses in Spiking Neuromorphic Systems

Ostrovskii Valerii Y., Butusov Denis N., Belkin Dmitriy A., Okoli Gabriel

13. A Radiation Resistant Voting Circuit

Prokhorov Andrey S., Tyurin Sergey F., Chudinov Maksim A.

14. The Analysis of Safety the Sensor-Oriented Network in Control Systems

Bondarev Sergej J., Chudinov Maksim A, Prokhorov Andrey S.

15. Control Systems Software Implementation Using Open Source SCADA-system  
OpenSCADA

Prokhorov Andrey S., Chudinov Maksim A., Bondarev Sergej J.

16. The Influence of the Leakage Flux of the Transformer on Tthe Welding Current of High  
Frequency Resistance Spot Welding Systems

Sakhno Liudmila I., Sakhno Olga, Radomsky Yuri

17. Numerical Calculation of the Impedance of the Resistance Spot Welding Machines Transformer

Sakhno Liudmila I., Smorygin Nikita

18. Design and Implementation of a Programmable Logic Controller Using PIC18F4580

Sanver Ufuk, Yavuz Erdem, Eyupoglu Can, Uzun Tuncay

19. Investigation of the Design Specifics of Controlled Microwave Chaos Generators Based on the Microwave Diodes

Semernik Ivan V.

20. Approaches for Reducing Power Consumption of the High-Resolution Pipelined Analog-to-Digital Converters

Sidun Aleksandr V., Piatak Ivan M.

**Session 2-4. January 30, 10:00 – 12:00, Room 5219**

21. Statement of the Problem of Finding an Optimal Set of Functionally Complete Tolerant Boolean Functions in the Synthesis of Self-Timed Circuits

Skorhyakova Alexandra Yu.

22. Development of Ground Penetrating Radar System

Tulenkov Nikolay I., Veremyev Vladimir I.

23. Wireless Sensor System Including RFID Tag, Processing Unit with Sensors and RFID/BT Readers

Vendik Irina B., Dudnikov Sergey Yu., Uhov Andrey A., Steblevska Iveta

24. Searching Beacon for Avalanche Victims

Vikhlyantsev Andrey A., Voronov Alexander V.

25. Improved FPGA Logic Elements and their Simulation

Vikhorev Ruslan V.

26. A 10-bit Segmented M-string DAC

Yenuchenko Mikhail S., Pilipko Mikhail M., Morozov Dmitry V.

27. Applications of Non-Foster Negative Reactances to Design Advanced RF and Microwave Devices

Buyantuev Bair S., Kholodnyak Dmitry V.

28. A Non-invasive Optical Technique for the Liquid Level Metering

*Uhov Andrey A., Gerasimov Vladimir A., Kostrin Dmitrii K., Selivanov Lev M., Simon Vsevolod A.*

## **Section 3.**

### **Computing & Processing (Hardware/Software)**

#### **Session 3-1. January 29, 11:10 – 12:00, Room 5405**

1. Security Analysis of Homomorphic Encryption Scheme for Cloud Computing:  
Known-Plaintext Attack

Babenko Mikhail, Chervyakov Nikolay, Tchernykh Andrei, Kucherov Nikolay, Deryabin Maxim,  
Radchenko Gleb G., Navaux Philippe O. A., Svyatkin Viktor

2. Applying Memshift Technology to Increase GPU Performance



Balanyuk Yuri B., Silnov Dmitry S., Goncharov Dmitry E.

3. Identification of Artificial Structures on the Image

Bulyakulov Rifkat R., Volkov Vladimir U.

4. Modeling of Multiscale Rough Surfaces

Bulyakulov Rifkat R., Volkov Vladimir U.

**Session 3-2. January 29, 12:15 – 14:00, Room 5405**

5. The Big Data Analysis

Burunova Anna V.

6. Research of Statistical Safety of Stochastic Transformation Blocks

Chugunkov Ilya V., Gridneva Elena A., Trofimov Fedor A., Bitkina Marina A., Rumyantseva Irina S.

7. Development of the Algorithm for Protection Against DDoS-Attacks of Type Pulse Wave

Chugunkov Ilya V., Fedorov Leonid O., Achmiz Bela Sh., Sayfullina Zarina R.

8. Creation of Datasets from Open Sources

Chugunkov Ilya V., Kabak Dmitry V., Vyunnikov Viktor N., Aslanov Roman E.

9. Research of Mechanisms Counteracting the Distribution of Prohibited Content on the Internet

Frolov Alexey A., Silnov Dmitry S., Geraschenko Yaroslav Yu., Sadretdinov Artem S., Kiamov Amir A.

10. Quasi-Chaotic Mode Detection and Prevention in Digital Chaos Generators

Karimov Timur I., Butusov Denis N., Pesterev Dmitrii O., Predtechenskii Dmitry V., Tedoradze Roman S.

11. Conditions for Parallel Execution of Functions in Data Mining Algorithm

Kholod Ivan I.

12. Intellectual Model for Violations Detection in the Business Process

Kholod Ivan I., Bekeneva Yana A., Novikova Evgenia S., Shorov Andrey V.

**Session 3-3. January 29, 15:00 – 17:00, Room 5405**

13. Accident Predicting Method by Data from Multiple Sensors

Kholod Ivan I., Rukavitsyn Andrey N., Shorov Andrey V.

14. Design of Multipurpose Computational Cluster, Based on ARM Single-Board Computers

Kryuchkov Mikhail E., Orlov Aleksei V., Mazurenko Grigoriy A., Vavrenyuk Aleksandr B., Timofeev Yuriy V.

15. A High-Speed Residue-to-Binary Converter Based on Approximate Chinese Remainder Theorem

Kucherov Nikolay N., Kuchukov Viktor A., Kuchukova Nataliya N., Shangina Anastasia E.

16. Adaptive Encrypted Cloud Storage Model

Lopez-Falcon Esteban, Tchernykh Andrei , Chervyakov Nikolay, Babenko Mikhail, Miranda-López Vanessa, Drozdov Alexander Yu., Radchenko Gleb, Avetisyan Arutyun

17. PRNG Assessment Tests Based on Neural Networks

Maksutov Artem A., Goryushkin Pavel N., Gerasimov Alexey A., Orlov Artem A.

18. Mobile Bootloader with Security Features

Maksutov Artem A., Dmitriev Sviatoslav O., Lysenkov Vladimir I., Valter Dmitrii A.

19. On the Issue of Optimization of Hardware Costs in Infotelecommunication Systems

Malofey Oleg P., Malofey Alexander O., Shangina Anastasia E.

20. Approach for the Analysis of the Contacts of the Critical Infrastructure Employees

Novikova Evgenia S., Bekeneva Yana A., Volkov Alexey A., Shorov Andrey V.

**Session 3-4. January 30, 10:00 – 12:00, Room 5405**

21. Using the ML-Based Architecture for Adaptive Containerized System Creation

Rovnyagin Mikhail M., Guminskaia Anna V., Plyukhin Alexey A., Orlov Aleksandr P., Chernilin Fedor N., Hrapov Alexander S.

22. Cloud Computing Architecture for High-Volume Monitoring Processing

Rovnyagin Mikhail M., Odintsev Viktor V., Fedin Dmitrii Y.

23. Manufacturing Planning Information System Development

Shmeleva Anna G., Ladynin Andrey I., Talanova Yuliya V., Galemina Elena A.

24. Sharing Resources in Heterogeneous Multitasking Computer Systems Based on FPGA with the Use of Partial Reconfiguration

Skvortsov Viacheslav V., Zvyagina Marina I., Skitev Andrey A.

25. FPGA-based Configurable Virtual Stand

Strelets Andrey I., Ivannikov Vladislav S., Yokhin Michael N., Skitev Andrey A.

26. Modern Approaches to Prevent Fraud in Mobile Communications Networks

Tarmazakov Evgeny I., Silnov Dmitry S.

27. Analysis of Secured Distributed Cloud Data Storage Based on Multilevel RNS

Tchernykh Andrei, Babenko Mikhail, Chervyakov Nikolay N., Miranda-López Vanessa, Cortés-Mendoza Jorge M., Du Zhihui, Navaux Philippe O.A., Avetisyan Arutyun

28. Load Balancing in Cloud Computing

Volkova Violetta N., Chernenkaya Liudmila V., Desyatirikova Elena N., Hajali Moussa, Khodar Almothana, Alkaadi Osama

**Session 3-5. January 30, 12:15 – 14:00, Room 5405**

29. A Category Theory Approach to Phytometric System Conceptual Modeling

Yi Wenlong, He Huojiao, Gerasimov Igor V., Kuzmin Sergey A.

30. ASIC-Resistant Hash Functions

Zamanov Ainur R., Erokhin Vladimir A., Fedotov Pavel S.

31. Building a Three-Dimensional Picture of Space Based on the Video of the System of Stereo Pairs

Zamanov Ainur R., Timofeev Yury V., Alexeev Maxim S., Mazurenko Gregory A.

32. High Productivity Numerical Computations for Gas Dynamics Modelling Based on DFT and Approximation

Zhilentov Anton A.

33. Side-Channel Analysis Resistant Implementation of GOST R 34.12-2015

Zvyagina Marina I., Skvortsov Viacheslav V., Skitev Andrey A.

34. High-Quality UHD Demosaicing on Low-cost FPGA

Baranov Pavel S., Ivanov Leonid I.

35. A Method of Cryptostability Analysis of Stochastic Transformations, Based on the Kohonen Self-organizing Maps

Prokofiev Anton O., Chirkin Andrey V., Smirnova Ekaterina S.

36. Methodology for Quality Evaluation of PRNG, by Investigating Distribution in a Multidimensional Space

Prokofiev Anton O., Chirkin Andrey V., Bukharov Vladislav A.

## **Section 4.**

**Engineered Materials, Dielectrics & Plasmas**

**Session 4-1. January 30, 15:00 – 17:00, Room 5405**

1. Characteristics of Building Thermal Insulation

Eyüpoğlu Şeyda, Şanver Ufuk

### 3. Investigation of Electromechanical Parameters of IPMC-sensors

Khmelnitskiy Ivan K., Gorodilov Vitaliy V., Kalyonov Vladimir E., Lagosh Anton V., Broyko Anton P.

### 4. IP<sup>2</sup>C Electromechanical Actuators and Sensors

Khmelnitskiy Ivan K., Luchinin Victor V., Kalyonov Vladimir E., Lagosh Anton V., Broyko Anton P.

### 5. Soft Ionic Electroactive Polymer Actuators and Sensors with Graphene / Polyaniline Nanocomposite Electrodes

Khmelnitskiy Ivan K., Livshitz Alexandra O., Alekseyev Nikolay I., Lagosh Anton V., Dyachkova Tatyana P.

### 6. Application of Side-Illumination Fluorescence Measurement Technique for Monitoring of Quality of Dielectrics Fluids

Kiesewetter Dmitry V., Reznik Alexander S., Zhuravleva Natalia M., Litvinov Danila V., Rutovich Alexandr S.

### 7. A Two-Dimensional Axisymmetric Model of an AC Arc



Obraztsov Nikita V., Frolov Vladimir Ya.

8. Studying of Thin Film Growth and Annealing Processes on Early Stage by Computer Simulation

Tupik Viktor A., Margolin Vladimir I., Chu Trong Su

9. Influence of Microwave Magnetic Dissipation on Dispersion Characteristic of a Magnonic Crystal

Vinogradova Maria V., Drozdovskii Andrey, Ustinov Alexey, Zaretskaya Galina

10. Bipolar Resistive Switching in Al<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> Structure at Low Temperature

Kunitsyn Andrey S., Andreeva Natalia V., Petrov Anatoliy A.

## **Section 5.**

**Fields, Waves & Electromagnetics**

**Session 5-1. January 29, 15:00 – 17:00, Room 3238**

1. Patch Antenna for Satellite System Gonets

Bezgin Alexandr A., Savochkin Alexandr A.

2. The Characteristics of Acoustic Wave Propagation in Rotating Solid-State Media

DurukanYasemin, Lutovinov Andrey I., Peregudov Alexander N., Popkova Ekaterina S., Shevelko Michael M.

3. Simulation of Pulse Magnetic Field Distribution

Evdakova Ekaterina G., Goncharov Vadim D., Yashkardin Rostislav V.

4. Broadband Microstrip Antenna Located on a Cylindrical Surface

Gevorkyan Armen V.

5. Limiting Matching Characteristics Receiving Small Size Frame Antennas Using the Converter Negative Impedance

Golovkov Alexander A., Belenko Denis V., Mozhaeva Ekaterina I.

6. A Radiation Characteristic of Perfect Conducted Cylinder with Non-Linear Loads Covered with a Layer of Metematerial

Gorbatenko Nikolay N., Semenikhina Diana V.

7. The Research and Development of Innovative Cold Crucible Induction Melter for Vitrification of High-level Waste Containing Noble Metals

Lopukh Dmitry B., Skrigan Ilya N., Vavilov Anton V., Martynov Alexander P.

8. A New RFID Architecture Based on Multi-port Reflectometer

Nikolaenko Artem Yu., L'vov Alexey A., Komarov Vyachslav V., L'vov Peter A.

**Session 5-2. January 30, 10:00 – 12:00, Room 5230**

9. Impedance Boundary Problem for Rotating Spherical Cavity

Petrov Boris M., Titova Daria E.

10. Numerical Simulation of The High-Voltage Cable Sleeve Operation for 110 Kv

Seleznev Dmitry A., Obraztsov Nikita V., Kiesewetter Dmitry V.

11. Investigation of Radiation Characteristics of 4-Port Magnetic Antenna with Heterogenic Conformal Core on Large Aircraft

Semenikhin Andrey I., Chernokolpakov Artem I.

12. Radiation Characteristics of T-Shaped Conformal Magnetic Antenna Mounted in Fuselage of Large Aircraft

Semenikhin Andrey I., Chernokolpakov Artem I.

13. Radiation Field of Cylindrical Phased Antenna Array Model on Anisotropic Impedance Metasurface

Semenikhin Andrey I., Chernokolpakov Artem I.

14. Investigation of the Methods for Forming the Output Oscillation Power Spectrum Envelope in Chaotic Generators Based on Microwave Diodes

Semernik Ivan V.

15. Affect of Contact Connection on Vibration Associated with the Electromagnetic Interaction of Conductors with Currents

Sepp Yuyri I., Kosyanov Nikita M., Danilovich Pavel S.

16. Researching of Electrodinamic Systems for Hydrated Micas Microwave Processing

Sherimov Daniyar, Sidorenko Dmitry S., Ivanov Vyacheslav A., Rogozhin Kirill V.

**Session 5-3. January 30, 12:15 – 14:00, Room 5230**

17. K-band Slot Reflectarray Antennas

Sugak Mikhail I., Ballandovich Svyatoslav V., Kostikov Grigory A., Antonov Yuriy G.,  
Liubina Liubov M.

18. Modernized Logarithmic Spiral Antenna with Reduced Sizes

Sugak Mikhail I., Ballandovich Svyatoslav V., Kostikov Grigory A., Antonov Yuriy G.,  
Liubina Liubov M.

19. Driver Beam Stabilization in Rectangular Dielectric Waveguide

Sheinman Iliya L., Tolstoy Alexander L.

20. Numerical Simulation of Induction Through Heating for Forging

Yermekova Madina, Galunin Sergei A.

## **Section 6.**

### **Photonics & Electro-Optics**

**Session 6-1. January 29, 11:10 – 12:00, Room 3238**

1. Integral Active Element for Transmitting Optical Modules

Dem'yanenko Alexander V.

3. A Solid Multifunctional Optoelectronic Device

Dem'yanenko Alexander V.

3. Creation of Complex Topologies for Surface Acoustic Wave Sensors by Laser Ablation Method

Kukaev Alexander S., Shevchenko Sergey Yu., Safronov Daniil V., Lukyanov Dmitry P.

4. Review of Holographic Wavefront Sensors

Matital Rilond Pattia, Gorelaya Alina V., Kukaev Alexander S., Venediktov Vladimir Yu., Fedorov Evgeny A.

**Session 6-2. January 29, 12:15 – 14:00, Room 3238**

5. Formation of a Given Wave Front Shape Using Deformable Mirror

Zhamalatdinov Damir Z., Gorelaya Alina V., Kukaev Alexander S.

6. Evaluation of Sensor Parameters for a Wireless Passive Microaccelerometer on Surface Acoustic

Khivrich Maria A., Shevchenko Sergey Yu., Lukyanov Dmitry P., Kudrashovs Marina S.

7. Features of Surface Acoustic Wave Delay Line Simulation in Inertial Space

*Shevchenko Sergey Yu., Kukaev Alexander S., Yakubovskaya Galina V.*

8. Investigation of a Program-Controlled Process of Impregnation of Porous Semiconductors with Silver Nanoparticles to Create an Electrical Contact

*Permiakov Nikita V., Matyushkin Lev B., Belorus Anton O., Koshevoi Veniamin L.*

## **Section 7.**

### **Power, Energy & Industry Applications**

#### **Session 7-1. January 29, 11:10 – 12:00, Room 5423**

1. Linear Induction Machines with the Opposite Direction Travelling Magnetic Fields for Induction Heating

Abdullaev Zhahongir O., Konyaev Andrey Yu.

2. The Energy Router Based on a Solid-State High-Frequency Transformer

Antipin Aleksandr S., Frizen Vasiliy E., Udintcev Vladimir N., Nazarov Sergey L.

3. Nonlinear and Unbalanced Load as a Basic Factor of a Neutral Conductor Current

Belitskiy Anton A., Rastvorova Irina I., Denisova Olga V.

4. Stability of Ultra Long Distance AC Power Transmission Lines with Controlled Shunt Compensation Devices

Belyaev Andrey N., Izotova Kseniya A., Kashin Ivan V.

5. Methods of Vector Control of Permanent Magnet Synchronous Motors

Bida Vladislav M., Samokhvalov Dmitry V., Al-Makhturi Fuad Sh.

**Session 7-2. January 29, 12:15 – 14:00, Room 5423**

6. Site Selection of Large-Scale Grid-Connected Solar PV System in Egypt

Sultan Hamdy M., Kuznetsov Oleg N., Diab Ahmed A. Zaki

7. Modelling and Performance Evaluation of the Egyptian National Utility Grid Based on Real Data



Sultan Hamdy M., Kuznetsov Oleg N., Diab Ahmed A. Zaki

8. Limiting Dynamic Loads of Electric Drive with Flexible Couplings and Variable Inertia Moment

Blagodarov Dmitriy A., Safonov Yuriy M., Grigorian Diana D., Khramshin Vadim R.

9. Numerical Simulation of MHD Stirrer for 12 Ton Metallurgical Aggregate

Bolotin Kirill E., Frizen Vasily E., Sokolov Igor V., Bychkov Sergei A.

10. Expert System Prototype for Optimal Design of District Heating Systems

*Bratchikov Aleksandr V., Samokhvalov Dmitry V., Belov Aleksandr M., Suldin Ilya Y.*

11. Investigation of Causes of Dry-Type Transformer On-Load Tap-Changer Insulation

Brilinskiy Andrey S., Evdokunin Georgy A., Chudny Vladimir S., Mingazov Radmir I., Ponomarev Timofey A.

12. Operating Condition Analysis of Flexible AC Transmission Lines with Controlled Series and Shunt Compensation Devices

Chernyaev Petr V., Khazov Maxim A., Belyaev Andrey N.

13. Adaptive Model Predictive Based Load Frequency Control in an Interconnected Power System

Diab Ahmed A. Zaki, Abd El-Sattar Montaser

14. Analysis of the Results of Higher Harmonic Modeling in the Electric Networks of the Republic of Tajikistan with Various Voltage Levels

Dzhuraev Shokhin D., Tulsy Vladimir N., Valyanskiy Andrey V., Sultan Hamdy M., Inoyatov Bekhruz J.

**Session 7-3. January 29, 15:00 – 17:00, Room 5423**

15. Nonstationary Mathematical Model of a Magnetic Arc Blast System

Frolov Vladimir Ya., Kvashnin Andrey O., Murashov Iurii V.

16. Identification of the Protection Parameters of the Local Electrical Network Taking into Account the Detuning of the Inrush Current

Frolov Vladimir Ya., Neelov Anatoly A., Zhiligotov Ruslan I., Bystrov Aleksandr V.

17. Assessment of Reliability of Technical Equipment Complex of Electrical Equipment Parameters Monitoring System with Account Reserve Elements

Gasparyan Alexander A., Komarova Galina V.

18. Modeling of IGBT-Converters by Interconnected Subsystems with Considering of Snubber Circuit and Switching Transistor Time

Pronin Michael V., Vorontsov Alexey G., Grigoryan Anait S., Mamutov Asan R., Dikun Irina A.

19. Analysis of Z-source Inverter Control System For Asynchronous Drive for Gas Compressor

Ivanchenko Daniil I., Salov Roman A., Yakovleva Emiliya V.

20. Transformer Fault Analysis Using Instantaneous Symmetrical Components

Ivanchenko Daniil I., Belsky Aleksey A.

21. Simulation of Induction Systems of Complex Configurations for Forging Technologies

Ivanov Alexandr N., Zenkov Alexei E., Bukanin Vladimir A.

22. Method Limiting Dynamic Loads of Electromechanical Systems of Plate Mill Stand

Karandaev Alexander S., Gasiyarov Vadim R., Maklakova Ekaterina A., Loginov Boris M., Khramshina Ekaterina A.

**Session 7-4. January 30, 10:00 – 12:00, Room 5423**

23. Mathematical Modeling Power-Saving Thyristor-Motor Drives of Switching Design

Karandaev Alexander S., Karandaeva Olga I., Maklakov Alexander S., Mugalimov Rif G., Khramshina Ekaterina A.

24. Integral Indicators Improvement (SAIFI) of Power Supply Reliability in Electric Distribution Systems Based on Reclosers Placement Optimization

Karpov Anton I., Akimov Dmitry A.

25. Technical and Economic Model for Evaluating Measures to Limit Short-Circuit Currents

Zagidullin Mihail R., Eroshenko Stanislav A., Egorov Alexander O., Khalyasmaa Alexandra I.

26. The Methodology of Analysis of Technical State Assessment of Circuit Breakers

Khalyasmaa Alexandra I., Senyuk Mihail. D., Eroshenko Stanislav A., Plyusnina Evgenia I.

27. Assessment of the Learning Sample Size and Pattern Impact on the SPS Generation Short-term Forecasting

Eroshenko Stanislav A., Khalyasmaa Alexandra I.

28. Study of Automated No-Pull Control System in the Continuous Mill Train

Khramshin Vadim R., Shubin Andrey G., Karandaev Alexander S., Baskov Sergey N.,  
Voronin Stanislav S.

29. Studying Thermal Dynamic Processes in an Isolated Type Borehole Electrode Heater for  
High-Viscosity Oil Extraction

Kopteva Alexandra V., Malarev Vadim I.

30. Mathematical Modelling of Grounding Systems under Impact of Pulse Currents

Korovkin Nikolay V., Krivosheev Sergey I., Shishiguin Dmitry S., Minevich Tatiana G.,  
Boronin Vitaliy N.

31. Urban Substations Transformers Allowed Loading

Kostin Vladimir N., Minakova Tatyana E.

32. Analysis of Power Supply Systems Reliability for Gas Pumping Compressor Stations

Baburin Sergey V., Kovalchuk Margarita S.

**Session 7-5. January 30, 12:15 – 14:00, Room 5423**

33. The Compatibility Verification of Batteries and Battery Chargers to Ripples in Battery Float Charge Mode

Kupchinov Alexandr D., Smotrov Nickolay N., Gusev Yury P.

34. Development of ESS Virtual Presentation in LabVIEW

Kusakin Anatolii V., Petrochenkov Anton B., Luzyanin Ivan S.

35. Modeling and Intelligent Fault Diagnosis of a Distillation Column

Korablev Juri A., Loseva Daria M.

36. Method to Control the State of IGBT in Voltage Source Inverter

Lukomsky Yuri A., Bubnov Evgeny A., Matus Konstantin I.

37. Grid Power Control by Medium Voltage AC Drives Based on Back-to-Back Converters

Gasiyarov Vadim R., Maklakov Alexander S., Lisovski Roman A.

38. Frequency and Voltage Stability Assessment of a Power System during Emergency Service States

Muzik Vaclav, Vajnar Vladimir

39. Study and Analysis of Power Quality Situation in Electrical Power Network. Case Study: Lattakia-Syria

Nasyrov Rinat R., Aljendy Raseel I., Kherbek Tarek

40. Adaptive PI Controller of Active Power Filter for Compensation of Harmonics and Voltage Fluctuation Based on Particle Swarm Optimization (PSO)

Nasyrov Rinat R., Aljendy Raseel I., Ahmed A. Zaki Diab

41. Comprehensive Comparison between Hybrid Fuzzy-PI and PSO-PI Controllers Based Active Power Filter for Compensation of Harmonics and Reactive Power under Different Load Conditions

Nasyrov Rinat R., Aljendy Raseel I.

42. Modelling of the Mutual Influence of the Parallel AC/DC Circuits on the Hybrid Power Transmission Line

*Nazarcik Tomas, Muzik Vaclav*

**Session 7-6. January 30, 15:00 – 17:00, Room 5423**

43. Study of the Operating Modes of the 0.4 kV Main Distribution Network, in Dushanbe City of the Republic of Tajikistan, with Distributed Solar Generation for Power Losses and Power Quality Estimation

Nazirov Khurshed B., Shvedov Galaktion V., Chorshanbiev Sirojiddin R., Dzhuraev Shokhin D.

44. Heating Stage Diagnostics of the Electric Arc Furnace Based on the Data about Harmonic Composition of the Arc Voltage

Nikolaev Aleksandr A., Tulupov Platon G., Antropova L.I.

45. Development of a Controllable Pulsed Power Source for Excitation of a Gas Discharge

Ramazanov Alexander N., Kostrin Dmitrii K., Vinogradov Maksim L., Lisenkov Alexander A., Uhov Andrey A.

46. Optimization of Induction Devices for Aluminium Casting to Electromagnetic Crystallizer

Rastvorova Irina I., Belitskiy Anton A., Rastvorova Julia V.

47. An Algorithm for Prediction of the DC Link Voltage of the VFD During Voltage Sags

Shklyarskiy Yaroslav E., Dobush Vasilii S., Bardanov Alexey I.



48. Research of Electromechanical Characteristics of a Linear Asynchronous Motor by Numerical Methods Taking into Account end Effects

Shmakov Evgeniy I., Tarchutkin Nikolay V., Smolyanov Ivan A., Sarapulov Fedor N.

49. Impact of Solar Generation Connected to 0.4 kV Grid on the Power losses and the Shape Factor of Load Curve

Shvedov Galaktion V., Chorshanbiev Sirojiddin R., Shvedova Ekaterina V., Nazirov Khurshed B.

50. 3D Numerical Simulation of the Linear Induction Motor, Considering Magnetic Saturation

Shvydkiy Evgeny L., Kolesnichenko Ilya

51. Energy Efficiency Improving of Reactive Power Compensation Devices

Skamyin Aleksandr N., Kovalchuk Margarita S.

52. Power-angle Characteristics of Transmission Line with FACTS Devices

Smolovik Sergey V., Liamov Aleksandr S., Teplukhin Vladislav V., Tupitsina Anna L., Chudny Vladimir S.

**Session 7-7. January 31, 10:00 – 12:00, Room 5205**

53. Influences on Performance of the Linear Induction Motor for the Mining Systems with Different Parameters of the Power Source

Smolyanov Ivan A., Sarapulov Fedor N.

54. Shape Optimization of Laboratory Induction Pump

Smolyanov Ivan A., Kotlan Vaclav, Dolezel Ivo, Karban Pavel

55. The Problem of Determining the Position of the Metal in Levitation Melting

Smolyanov Ivan A., Shmakov Evgeniy I., Tarchutkin Nikolay V.

56. Static Load Characteristics Consideration for Determination of Transmission Line Power Capacity

Solovev Sergey V., Kryltcov Sergei B., Voytyuk Irina N.

57. Modeling of Thermal Operating Modes of a Linear Electrical Machine in a Strong Coupled Task

Tarchutkin Nikolay V., Shmakov Evgeniy I., Smolyanov Ivan A., Sarapulov Fedor N.

58. Electromagnetic Calculation of Induction Motor by "ANSYS Maxwell"

Tikhonova Olga V., Plastun Anatoliy T.

59. Study and Analysis of Power Quality of Electric Power System. Case Study: Republic of Tajikistan

Tulsky Vladimir N., Inoyatov Bekhruz J., Juraev Shokhin J., Tolba Mohamed A.

60. Service Operation of UHVDC Systems with Emphasis on Switching Phenomena

Vajnar Vladimir, Nazarcik Tomas

61. Investigating the Energy Demand, Sustainable Energy Solutions and Search for the Optimum

Wattala Fernando, Naren Gupta, C Süheyl Özveren

62. Investigation of Electrical Characteristics of High-Power Electric Arc Furnaces in the Mode of Stabilizing the Primary Current of the Furnace Transformer by Means the Thyristor Regulator in the Intermediate Circuit

Yakimov Ivan A., Radionov Andrey A., Maklakova Ekaterina A.

63. Developing of Electric Power Quality Indicators Evaluation and Monitoring Intellectual System

Shklyarskiy Andrey Y., Zamyatin Egor O., Rastvorova Yuliya V.

## Section 8.

### Robotics & Control Systems

#### Session 8-1. January 29, 11:10 – 12:00, Room 3107

1. Discrete-Time State Feedback Control Design for Linear Objects with Delay

Abdullin Artur A., Mamatov Aleksandr G., Gorshkov Konstantin S.

2. Movement Kinematics Research Systems. Analysis of Linear Accelerations Signals

Alekseev Vladimir V., Zhurbilo Polina G., Korolev Pavel G., Minchev Nikadim V.

3. Development of an Electric-Driven Shipborne Launching Device

Antoniuk Alexei V., Lukichev Andrey N.

4. Current Stabilizer Based on Molecular Energy Storage

Galiullin Ruslan I., Kryzhanovsky Alexey Yu., Morozov Sergey A., Kopytko Yevgeniy V., Lavrinovskiy Victor S.

5. Accuracy of Dating of Linear Acceleration Measurements

*Gosteva Daria R., Korolev Pavel G., Romantsova Natalia V., Minchev Nicodemus V.*

**Session 8-2. January 29, 12:15 – 14:00, Room 3107**

6. Realization of Acceleration Feedback to Improve Accuracy of Servo Drive with Mechanical Elasticity

Gribanov Pavel S., Lovlin Sergey Yu., Lukichev Dmitry V.

7. Mobile Robot Qualification Metrics

Heikkinen Jani Erik, Minav Tatiana, Serykh Elena V.

8. Acquisition and Processing Data System Based on Technologies of Inertial Capture of the Movement

Ivanov Artem V., Zhilenkov Anton A.

9. The Prospects of Use of Deep Learning Neural Networks in Problems of Dynamic Images Recognition

Ivanov Artem V., Zhilenkov Anton A.

10. The Use of IMU MEMS-Sensors for Designing of Motion Capture System for Control of Robotic Objects

Ivanov Artem V., Zhilenkov Anton A.

11. Control Features of Motion System with Parallel Kinematics

Tiapkin Mikhail G., Elenskiy Dmitriy S., Balokovoy Alexandr P., Tolstykh Oleg A.

12. Control of an Actuator in the Motion Prosthetics Device by Signals of Biological Nervous System

Kotlyarevskaya Maria V., Zhilenkov Anton A., Slepova Liudmila O.

13. Data Preparation for Neural Network Data Analysis

*Koval Stanislav I.*

**Session 8-3. January 29, 15:00 – 17:00, Room 3107**

14. The Use of Neural Networks for Planning the Behavior of Complex Systems

Kozlova Lyudmila P., Belov Aleksandr M., Kozlova Olga A.

15. The Use of Piezoelectric Motors in Miniature Robots

Kozlova Lyudmila P., Belov Aleksandr M., Kozlova Olga A.

16. Algorithm of the System of Laser Automatic Landing of Unmanned Aerial Vehicles

Kuzmenko Ilya K., Livshits Dmitry U., L'vov Aleksey A.

17. Problem of Recognition of Patterns of Signals of an Electroencephalography in Systems of Physical Activity

Kuznetsova Nelli I., Zhilenkov Anton A., Zernov Oleg I.

18. Telecommunication Subsystem Algorithmic Maintenance of a Distributed Measurement System

Lomachenko Anastasia A., Romantsova Natalia V., Tsareva Anna V.

19. Reduction of Dynamic Load of the Hot Plate Stand

Maklakova Ekaterina A., Gasiyarov Vadim R.

20. Adaptive Control of a Multi-Robot System for Transportation of Large-Sized Objects Based on Reinforcement Learning

Manko Sergey V., Diane Sekou A.K., Krivos hatskiy Aleksey E., Margolin Ilan D., Slepynina Evgeniya A..

21. Modes of Failure in Zonal Hydraulics for Construction Machinery

Minav Tatiana, Heikkinen Jani Erik, Devyatkin Aleksey V.

**Session 8-4. January 30, 10:00 – 12:00, Room 3107**

22. The Investigation of Hysteresis Phenomenon Impacting on the Operating Quality of DC Generator with Independent Excitation During Pulse Mode

Mokhova Olga V., Dobroskok Nikita A., Lavrinovskiy Victor S., Morozov Anton V., Galiullin Ruslan I..

23. Principles of SCADA-system Development

Moshko Stanislav V., Stotckaia Anastasiia D.



24. The Synthesis of a Control System of the Active Rectifier

Pavlova Yuliya V., Belskii Grigorii V.

25. Protection Model of PCS of Subway from Attacks type «Wanna Cry», «Petya» and «Bad Rabbit»

Petrenko Alexey S., Petrenko Sergei A., Makoveichuk Krystina A., Chetyrbok Petr V.

26. The IIoT / IoT device control model based on Narrow-Band IoT (NB-IoT)

Petrenko Alexey S., Petrenko Sergei A., Makoveichuk Krystina A., Chetyrbok Petr V.

27. Comparative Analysis of Fuzzy Regulators for Controlling the Movement of an Autonomous Underwater Vehicle

Pham Tuan V., Shpektorov Andrew G.

28. Analysis of Perspective Models of Artificial Neural Networks for Control of Robotic Objects

Popov Alexey V., Sayarkin Konstantin S., Zhilenkov Anton A.

29. The Scalable Spiking Neural Network Automatic Generation in MATLAB Focused on the Hardware Implementation

Popov Alexey V., Sayarkin Konstantin S., Zhilenkov Anton A.

**Session 8-5. January 30, 12:15 – 14:00, Room 3107**

30. Design and Simulation of Automatic Control Valve for Gas Flow Meter Calibrator of Bell Prover

Prakosa Jalu Ahmad, Kozlova Liudmila P.

31. Multi-Criteria Data Processing Algorithms for the Group of Surveillance Robots

Romanov Alexey M., Volkova Maria A.

32. A Novel Approach for Creating Modular Reconfigurable Robots With Distributed Power System

Romanov Alexey M., Mikheenko Ivan S.

33. Spiking Neural Network Model MATLAB Implementation Based on Izhikevich Mathematical Model for Control Systems

Sayarkin Konstantin S., Popov Alexey V., Zhilenkov Anton A.

34. Test Methods and Results of the MEMS Inertial Sensors

Scripal Evgeny N., Ermakov Roman V., Gutcevitich Denis E., L'vov Alexey A., Sytnik Alexander A.

35. Problem of Realization of Interaction of the Sensor with Nervous System in Sensor Prosthetics Systems

Slepova Liudmila O., Zhilenkov Anton A., Zernov Oleg I.

36. Synthesis of Model of Hardware Realization of LIF-model of Biological Neuron on the Basis of FPGA

Slepova Liudmila O., Zhilenkov Anton A.

37. Model Predictive Controller Based on Laguerre Functions for Large Radio Telescope Servo Control System

Tran Huu Phuong, Belov Mikhail P., Tran Dang Khoa

38. Systems Design for Movement Kinematics Research. Determination of Parameters for Describing Linear Movements of the Lower Limbs

Tsareva Anna V., Mikus Oleg A., Kuk Sergei A.

**Session 8-6. January 30, 15:00 – 17:00, Room 3107**

39. Adjustment of Parameters of Autonomous Mobile Robot Speed and Heading Stabilization Subsystem Controllers on the Basis of Pareto-Optimal Solution Construction Process

Tyagunov Oleg A., Teplov Maxim A., Slepynina Evgeniya A.

40. Ways of Forming PWM for the Operation of an Autonomous Voltage Inverter

Zakharov Viacheslav S.

41. Overview of Noninvasive Methods in Indication Human Body Motion Activity via Nervous System Impulses

Zernov Oleg I., Zhilenkov Anton A., Kuznetsova Nelli I., Kotlyarevskaya Maria V.

42. Prospects for the Use of Hybrid Spiking Neural Networks in Biomechatronic Systems

Zernov Oleg I., Zhilenkov Anton A., Kuznetsova Nelli I., Slepova Liudmila O.

43. Synthesis of Model of Hardware Realization of Izhikevich Model of Biological Neuron on the Basis of FPGA

Zhilenkov Anton A., Kotlyarevskaya Maria V.

44. Problem of Automatic Recognition of Physical Activity from Surface Electromyography

Signals

Zhilentov Anton A., Kuznetsova Nelli I., Zernov Oleg I.

45. Problems of a Trajectory Planning in Autonomous Navigation Systems Based on Technical Vision and AI

Zhilentov Anton A., Epifantsev Ignat R.

46. System of Autonomous Navigation of the Drone in Difficult Conditions of the Forest Trails

Zhilentov Anton A., Epifantsev Ignat R.

47. The Use of Convolution Artificial Neural Networks for Drones Autonomous Trajectory Planning

Zhilentov Anton A., Epifantsev Ignat R.

## **Section 9.**

**Signal Processing & Analysis**

**Session 9-1. January 30, 12:15 – 14:00, Conference Hall Building 5**

1. A Technique for Classifying Non-stationary Radio-technical Signals for Selecting the Type of the Space-adaptive

Alekseyev Vladimir V., Zakemovskaya Evgenia Y., Konovalova Vera S., Sedunova Ekaterina N.

2. Comparative Analysis of ECG Signal Processing Methods in the Time-Frequency Domain

Altay Yeldos A., Kremlev Artem S.

3. Analysis and Systematization of Noise Arising by Long-Term Recording of ECG Signal

Altay Yeldos A., Kremlev Artem S.

4. Preprocessing Methods for Runway Pictures Taken in Poor Visibility Conditions

Andreev Denis S., Lysenko Nicolay V.

5. Detection and Classification of Rail Track Flaws Using Inertial and Magnetometric Sensors

Boronakhin Alexander M., Larionov Daniil Yu., Podgornaya Liudmila N., Tkachenko Anna N., Shalymov Roman V.

6. The Research and Implementation of Processing Algorithm for a Non-Stationary Signal with Input Sampled-Data Missing and Intense Impulse Noise

*Drozhhov Kirill A., Ivanov Sergey I.*

7. Some Cases of Optimization Face Detection Methodes on Image (Using the Viola-Jones Method as an Example)

Egorov Alexey D., Divitskii Denis U., Dolgih Anatolyi A., Mazurenko Grigoriy A.

8. Narrow Band Interference Immunity of Correlation Receiver with BOC and MSK-BOC Modulation Type

Feoktistov Denis S, Bondarenko Valeriy N., Garifullin Vadim F., Krasnov Timur V., Bogatyrev Evgenij V.

**Session 9-2. January 30, 15:00 – 17:00, Conference Hall Building 5**

9. Application of Adaptive Matching Based on Wavelets for Spectral Analysis of Signals

Kaplun Dmitry I., Klionskiy Dmitry M., Voznesenskiy Alexander S.

10. Application of Non-Positional Codes for FIR-Filter Implementation Using Computers with CUDA Technology

Kaplun Dmitry I., Voznesenskiy Alexander S., Gulvanskii Vyacheslav V., Bogaevskiy Danil V.

11. Application of Iterative Procedures for Signal Processing

Klionskiy Dmitry M., Geppener Vladimir V.

12. Scalable Distributed Storage for Scientific Data Computing

Kokoulin Andrey N., Kiryanov Dmitriy A., Yuzhakov Aleksandr A.

13. Convolutional Neural Networks Application in Plastic Waste Recognition and Sorting

Kokoulin Andrey N., Tur Aleksandr I., Yuzhakov Aleksandr A.

14. Maximum Likelihood Detection of Rectangle Ultra-Wideband Quasi-Radiosignal with Unknown Duration

Korchagin Yury E., Titov Konstantin D., Kalashnikov Konstantin S.

15. Fire Detection and Alarm Sensor for Avionics Based on Current Loop Circuit

L'vov Alexey A., Komarov Vyachslav V., Kuzin Sergey A., L'vov Peter A.

16. The Processing of Signals from Sensors to Observe Objects in Various Physical Fields

Lutin Vladimir I., Mager Vladimir E., Desyatirikova Elena N., Kuripta Oksana V., Akamsina Nadezhda V.



17. Modeling the Inverse Problem of Knowledge Synthesis for a Flexible Production System

Mager Vladimir E., Belousov Vadim E., Desyatirikova Elena N., Tzaregorodtceva Olga V., Kharitonova Tamara B., Shevchenko Dmitry B.

**Session 9-3. January 31, 10:00 – 12:00, Conference Hall Building 5**

18. Algorithms of Data Collection and Analysis of Biometric Voice Data with the Use of Machine Learning Methods

Maksutov Artem A., Bizhanov Ruslan Zh., Kozlov Valentin K., Antonchenko Artem S.

19. Spectrum of Radio Impulse for the Case when the Period of its Filling is Comparable with the Pulse Duration

Mikhailova Valentina V., Goncharov Vadim D., Yashkardin Rostislav V.

20. Radar Methods of Measurement Bathymetry

Orandarenko Elena D., Veremyev Vladimir I.

21. Structure of Knowledge Base of Methods for Processing Hydroacoustic Signals

Pisarev Ivan A., Kotova Elena E., Pisarev Andrei S., Stash Natalia V.

22. The Performance Measurement Test on Rain Gauge of Tipping Bucket due to Controlling of the Water Flow Rate

Prakosa Jalu Ahmad, Wijonarko Sensus, Rustandi Dadang

23. Time-Frequency Analysis of Non-Stationary Signals

Pukhova Valentina M., Kustov Taras V., Ferrini Gabriele

24. The Effects of Amplitude Randomization on the Mutual Behaviour of Two Correlated Stochastic Signals

Pyko Nikita S., Pyko Svetlana A., Markelov Oleg A., Uljanitski Yuri D., Bogachev Mikhail I.

25. Investigation of the Kalman Filter in Problems of Increasing the Accuracy of Measurements Using MEMS (9 axis) Motion Sensors

Semenov Viktor P., Chernokulsky Vladimir V., Razmochaeva Natalya V., Svertoka Yekaterina S.

26. Mathematical Modeling of the Combined Multiport Correlator

*Semezhev Nickita, L'vov Alexey A., Meschanov Valery P., Melnikova Nina I.*

**Session 9-4. January 31, 12:15 – 14:00**

27. Spectrum Analysis of Wideband Signal by Means of Partitioning of Spectrum

Stepanova Anna A., Voskresensky Dmitry M.

28. Noise Immunity Improvement of DVB-T2 Digital Data Transmission Systems

Svetlov Michael S., Svetlova Marina K., L'vov Alexey A., Klenov Dmitry V., Vagarina Natalia S.

29. Adjustment of Adaptive Digital Filter Coefficients in Modular Codes

Veligosha Alexander V., Kalmykov Igor A., Kaplun Dmitrii I., Bogaevskiy Danil V.,  
Gulvanskiy Vyacheslav V., Voznesenskiy Alexander S.

30. Helicopter Recognition in DVB-T2 Passive Bistatic Radar

Vorobev Evgenii N.

31. Signal Processing and Analysis of the System Detection Unit to Control of Oil-gas-water Mixture in the Pipeline

Voytyuk Irina N., Proskuryakov Ruslan M.

32. Noise Resistance Processing of Speech Signals

Zhumasheva Zhadyra T., Altay Yeldos A., Kremlev Artem S.

## **Section 10.**

### **Biomedical and Environmental Engineering**

#### **Session 10-1. January 30, 15:00 – 17:00, Room 5230**

1. The Modeling of Emergency Oil Spills in GIS

Agadilov Aleksey V., Kurakina Natalia I., Kuzmina Anastasiya D.

2. Implementation of Neural Networks for Blood Pressure Measurement

Anisimov Aleksei A., Skorobogatova Alena I., Sutyagina Anastasiya D.

3. Postural Stress Tests for Evaluation of Pulse Wave Propagation Time Based Method for Indirect Blood Pressure Measurement

Anisimov Aleksei A., Sergeev Timofey V.

4. Designing of Broadband Microwave Applicator for the Bronchial Asthma Diagnosis Device

Dem'yanenko Alexander V., Semernik Ivan V., Nevstruev Yaroslav V.

5. Technology of Manufacturing the Materials for Biomedical Sensors

Denisova Olga V., Belitskiy Anton A., Shelkovnikova Iuliia V.

6. The Digital Recorder of the Human's Body Fast Temperature Oscillations

Kuliabin Konstantin G., Belov Alexandr V., Sergeev Timofey V., Suvorov Nicolay B.

7. Questions of the Environmental Risks Assessment in the Arctic Region

Kurakina Natalia I., Kuzmina Anastasiya D.

**Session 10-2. January 31, 10:00 – 12:00, Room 5230**

8. Design of a Wearable Module for Respiratory Rate Registration Based on Multiply Network

Lyakhova Ekaterina K., Shlyakhotka Anna V., Sutyagina Anastasiya D.

9. The Atrial Fibrillation Episodes Alarm Algorithm for a Remote Monitoring System

Nguyen Trong Tuyen, Yuldashev Zafar M., Anisimov Aleksei A.

10. Device for Non-Invasive Diagnosis of Bronchopulmonary Diseases Based on Microwave Technologies

Semernik Ivan V., Dem'yanenko Alexander V., Topalov Feruz S., Semernik Olga E.,  
Lebedenko Alexander A.

11. Development of Impedimetric Sensor for E.coli M-17 Antibiotic Susceptibility Testing

Sitkov Nikita O., Zimina Tatiana M., Soloviev Alexei V.

12. Increasing the Accuracy of Oscillometric Blood Pressure Measurement

Sutyagina Anastasiya D., Shlyakhotka Anna V., Lyakhova Ekaterina K.

13. A Multilevel System for Diagnosis of Sleep Apnea

Tran Trong Huu, Yuldashev Zafar M., Sadykova Elena V.

14. Microwave Diagnostics of Osteoporosis

Vendik Irina B., Pleskachev Vladimir V., Yakovlev Victor, Tamilova Svetlana

## **Section 11.**

**Industrial Management, Management of Innovations**

**Session 11-1. January 29, 15:00 – 17:00, Room D406**

1. Cloud Technology: Assessment of Use in Russia in Crisis Conditions

Bataev Alexey V.

2. Multi-agent Control Model for IT Services on a Digital Enterprise

Brusakov Michail I.

3. Optimization of Risk Management of Innovation Projects in Civil Engineering

Chernenkaya Liudmila V., Desyatirikova Elena N., Fedosova Svetlana P., Ievleva Anna A.,  
Vertakova Anastasia Yu.

4. Market Research of Mobile Applications in the Field Information on Public Transport

Kamartdinova Karina I., Anfisova Svetlana D., Parahin Anatoliy E., Semenov Viktor P.

5. The Role of the State in the Development of Innovative Activities in the Russian Federation

Korochkina Serafima V., Boyko Svetlana K., Kossukhina Mariia A.

6. The Directions of Regional Innovation Infrastructure Development

Kossukhina Mariia A.

7. Developing University Competitiveness: a Case of the QFD Method Application

Pavlova Xenia L., Shaposhnikov Sergey O.

8. Analysis of Trends and Problems of Technological Potential Increasing in the Russian Industrial Sector

Samonova Christina V.

**Session 11-2. January 30, 10:00 – 12:00, Room D406**

9. Factors and Conditions for Technical Potential Increasing in the Context of Economic Cyclical Nature



Samonova Christina V.

10. Management of the Project Implementation in the Modern High-Tech Production

Samonova Christina V., Pavlov Artem Y.

11. Cluster Model: Microeconomic Approach

Semenov Valeryi P., Garifullin Michael M.

12. Model of Forming Production Program with Heterogeneous Product

Semenov Viktor P., Sokolitsyna Natalya A.

13. Simulation Modeling of a Technological Breakthrough in the Economy

Volkova Violetta N., Loginova Alexandra V., Desyatirikova Elena N., Belousov Vadim E.,  
Chugunov Vadim V.

