2021 IEEE 22nd International Conference of Young Professionals in Electron Devices and Materials (EDM 2021)

Souzga, Altai Republic, Russia
30 June – 4 July 2021

IEEE Catalog Number: CFP21500-POD
ISBN: 978-1-6654-3056-2

Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP21500-POD
ISBN (Print-On-Demand):	978-1-6654-3056-2
ISBN (Online):	978-1-6654-1498-2
ISSN:	2325-4173

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

Section I. Semiconductor Physics and Technology

Section Chair: **Nataliya L. Shwartz**

1. **Development of the Dispersion-Geometric Model of MOSFET's Gate Structures for Production In-line Control by Means of Optical Scatterometry** 3
   Ilya Nelyubin, Alexander Volokhovskiy, Anastasya Pavlova
2. **Photoelectromagnetic Phenomena in n-type HgCdTe Heterostructures** 8
   Vadim A. Kuznetsov, Dmitry Yu. Protasov, Vladimir Ya. Kostyuchenko, Vasily S. Varavin, Vladimir V. Vasilyev
3. **GaAs Planar Nanowire Growth on Vicinal GaAs(111)A Substrates** 12
   Anna Spirina, Nataliya Shwartz
4. **InAs Islands Formation on the InP(001) During High-Temperature Annealing in an As Flux** 17
   Danil Kolosovsky, Dmitry Dmitriev, Tatiana Gavrilova, Alexander Toropov, Anton Kozhukhov, Konstantin Zhuravlev
5. **The Thermoelectric Properties of Nanostructured SiGe Phosphorus Doped by Spark Plasma Sintering** 22
   Iurii Kuznetsov, Mikhail Dorokhin, Anton Zdoroveyshchev, Irina Erofeeva, Polina Demina, Aleksandr Zavrazhnov
6. **Experimental and Theoretical Study of Intrinsic Variability in Hafnium Oxide Based RRAM** 26
   Iurii Kuznetsov, Victor I. Korotitsky, Sergei V. Koveshnikov
7. **Shapes of Ge and Si Particles Created on a Si/SiO_2 Substrate by Lift-off Technique** 33
   Dmitriy Utkin, Alexander Shklyaev
8. **Development of Infrared Scene Model in a Wide Wavelength Range** 37
   Alexey V. Zverev, Dmitry E. Ipatov
9. **High-Voltage Picosecond Range Sharpening Diode Commutating "Long" Pulses: Double Avalanche Injection vs. Plasma Extraction** 42
   Mikhail Ivanov, Pavel Rodin
10. **Composite Nanoparticles Based on h-BN and Graphene for 2D Printing** 46
    Dmitriy A. Poteryaev, Nadezhda A. Nebogatikova, Irina V. Antonova
11. **Thermal Hysteresis in the Resistance of In_2Se_3 Film on Si(111) Surface** 50
    Sergei Ponomarev, Dmitry Rogilo, Alexey Mironov, Dmitry Sheglov, Alexander Latyshev
12. **Investigation of the Conductivity of Polycrystalline Silicon under Joule Heating** 54
    Margarita A. Ashikhmina, Gennady N. Kamaev, Alexey S. Cherkaev
13. **Role of Cone-Shaped Contacts in VO_2 Nanoswitches** 58
    Kirill E. Kapoguzov, Sergey V. Mutilin, Victor Ya. Prinz
14. **Conditions for the Formation of Vertical Nanowires and Crystalline Clusters of GaAs during the Self-Catalyzed Growth** 62
    Pavel Zhikharev, Alla Nastovjak, Nataliya Shwartz
15. **Resistive Switching Effect in Thermal SiO_2 Films Treated in Electron-Cyclotron Resonance Hydrogen Plasma** 67
    Ramin Iskhakzay, Vitalii Voronkovskii, Vladimir Aliev, Vladimir Gritsenko
16. **Formation of Chiral Metamaterials by Direct Imprinting of Thin-Film Metal Elements** 71
    Alexey E. Gayduk, Sergey V. Golod, Vitaliy V. Kubarev
17. **Selective Area Deposition of Vanadium Dioxide Films by MOCVD** 75
    Evgeniy K. Bagochus, Vadim N. Kichay, Victor Ya. Prinz
18. **Area-Selective MOCVD Synthesis of VO_2(B) and VO_2(M) Phases on a Si Substrate** 79
    Nikita I. Lysenko, Sergey V. Mutilin, Victor Ya. Prinz, Lyubov V. Yakovkina, Vadim N. Kichay, Vladimir R. Shayapov
19. **Influence of the Elemental Composition on the Surface of the GaN Layer on the Surface Energy in Ammonia MBE** 83
    Yan E. Maidebura, Vladimir G. Mansurov, Timur V. Malin, Denis S. Milakhin, Konstantin S. Zhuravlev
20. **Simulation of a Sensitive Element of a MEMS-based Pressure Sensor Operating on The Thermal Detection Principle** 87
    Gleb D. Demin, Nikolay A. Djuzhev, Mikhail M. Pozdnyakov, Ilya D. Evsikov, Gennady I. Oreshkin
21. **A New Technique of Au Nanopattern Formation for Metal-Assisted Chemical Etching of Silicon** 91
    Vitaliy S. Tumashev, Vladimir A. Seleznev

Section II. Microwave Technology and Telecommunications

Section Chairs: **Svetlana V. Vorobiova**, **Maksim A. Stepanov, Vera G. Drozdova**

1. **Duplexer Based on Volumetric Modular Technology** 97
   Nikolay V. Dudarev, Dmitry G. Fomin, Stanislav N. Darovskikh
2. **Eight-Channel Polychromator for Spectral Measurements in the Frequency Band of 0.1-0.6 THz** 101
   Andrei V. Arzhannikov, Ivan A. Ivanov, Sergei A. Kuznetsov, Denis A. Samtsov, Pavel A. Lazorskiy, Alexander V. Gelfand
3. **Sensorex: The Challenges for Engineering Implementation of Low–Cost Non-Invasive Pulse Oximeter Applicable to Diverse Patient Population** 106
   Daria Lipchak, Alexey Chupov

4. **Improved Permutation-Based Successive Cancellation Decoding of Polar Codes** 110
Mikhail Kamenev
5. **An Effects Set Related to the Radio Signal Propagation in a Moving Reference Frame** 116
Kirill Zeyde
6. **Engineering the Program for Error Reduction in Determining the Location of a Wi-Fi Network Connected Mobile Terminal Indoors** 120
Sergei A. Pashkin, Ilya V. Doshchinsky, Ksenia I. Shurygina
7. **Performance Evaluation of the SRS Based MIMO Channel Estimation on 5G NR Open Source Channel Model** 124
Alexander Kalachikov, Alexander Stenin
8. **Comparison of the Coplanar Waveguide to Microstrip Line Transition Design in the 77 GHz Frequency Range** 128
Victor Chechetkin , Sergey Shabunin
9. **Resonant Cavity Second Order Perturbation by Moving Medium with Stationary Domain** 132
Kirill Zeyde
10. **5G PBCH Reliability Estimation** 137
Vera G. Drozdova
11. **5G System Simulator Development for Scheduler Efficiency Analysis** 141
Ruslan V. Akhpashev, Vera G. Drozdova
12. **Comparing the Estimates of the Radiated Emission from a Structure with Modal Reservation by Two Approaches** 145
Adnan Alhaj Hasan, Talgat R. Gazizov
13. **Estimation of the Radiated Emission from a Single and Coupled Wires with Insulation above the Ground Plane** 149
Adnan Alhaj Hasan, Talgat R. Gazizov
14. **Parametric Optimization of Shielded Multiconductor Modal Filters with Circular Cross Section** 153
Anton Belousov, Natalya Vlasova
15. **Multivariate Analysis of Multiconductor Transmission Lines for Triple Modal Reservation** 158
Evgeniya Chernikova, Anton Belousov, Alexander Zabolotsky
16. **Ultrashort Pulse Decomposition in Hybrid Protection Devices Based on the Cascade-Connected Modal Filter and Meander Line with Broad-Side Coupling** 163
Georgiy Kim, Alexander Nosov, Roman Surovtsev
17. **Studying the Propagation of an Ultrashort Pulse in a Cable Attached to a PCB System with Modal Reservation** 167
Artem V. Medvedev
18. **Printed Radiating and Radiation Pattern – Forming Elements for Digital Antenna Arrays Purposes** 171
Sergey A. Alekseytsev, Anatoly P. Gorbachev, Yuriy N. Parshin
19. **Modal Filters Based on a Microstrip Line with Overhead Conductors Grounded at Both Ends** 176
Indira Y. Sagiyeva, Talgat R. Gazizov, Zarina M. Kenzhegulova , Roman S. Surovtsev
20. **Radiation of Radio Pulses Excited in a Nonlinear Transmission Line with Periodically Arranged Diodes Based on GaAs Structures** 180
Roman R. Khazhibekov, Vladimir Yu. Konev , Ilya V. Romanchenko, Sergey N. Maltsev, Pavel V. Priputnev, Valeriy V. Barmin
21. **Simulation of Helical Antenna with a Resistor for Radiating Powerful Microwave Pulses** 184
Roman R. Khazhibekov, Ilya V. Romanchenko, Vladimir Yu. Konev, Valeriy V. Barmin , Dmitry S. Kokin
22. **Analytical Model and Software for Evaluating the Shielding Materials Properties** 189
Anton A. Ivanov, Aleksey Kvasnikov, Ivan Onishchenko, Alexander Demakov, Sergey Kuksenko
23. **Measurement of Microcontroller Radiated Emissions at Different Operation Modes** 193
Alexander V. Demakov , Artem V. Osintsev, Valerij A. Semenjuk, Maxim E. Komnatnov
24. **Features of Calculating the Noise Immunity of UWB Radiosystems in the INDOOR Mode** 198
Vyacheslav O. Kalinin, Vitaliy A. Karbolin, Vladimir I. Nosov
25. **The Use of Quarter-Wave Resonators to Improve Modal Filters Performance** 204
Yevgeniy Zhechev, Alexander Zabolotsky
26. **The Application of the Method of the Square Four-Point Partially Coherent Model of the Volume Distributed Object Synthesis Based on its Multipoint Model** 208
Artemy Podkopayev , Maksim Stepanov
27. **Simulation of Land Clutter for Surveillance Radar Based on Reflected Power Dataset** 214
Oreshkina Margarita
28. **Investigation and Modeling of the Spatiotemporal Signal Recorded by the Digital Antenna Array** 218
Daria Zima, Alexander Spector, Darya Sokolova
29. **Full-Scale Experiment on Monostatic Radar Sounding of the Non-Reciprocal Object** 222
Aleksey V. Khristenko, Valery A. Khlusov, Mikhail E. Rovkin, Mikhail V. Osipov
30. **Experimental Study of a Nonreciprocal Controllable Device Based on a Split Strip Line Containing a Ferrite Substrate** 227
George A. Malyutin
31. **Experimental Stand to Determine the Scattering Matrix of the Studied Objects in the Impact of Radio Frequency Pulses** 231
Evgeniy I. Trenka, Vladislav S. Pozdnyakov, Anton G. Loschilov, Nickolay D. Malyutin

Section III. X-Ray, Sonic and Ultrasonic Devices: Physics, Electronics, Application
Section Chair: **Vladimir N. Khmelev**

1. **Ultrasonic Non-Contact Diagnostics of the Surface of Burning Aluminum Nanopowder** 239
   Andrei Mostovshchikov, Alexey Soldatov, Andrei Soldatov, Fedor Gubarev, Evgenii Shulgin
2. **Influence of Ultrasonic Treatment on the Microstructure of Particles of Detonation Synthesis Nanodiamonds** 243
   Kristina Elunina, Olga Kudryashova, Eugeny Petrov
3. **Bilateral Filter for Small-Angle Ultrasonic Tomography Using Linear Arrays** 247
   Jianglei Chang, Lin Li, Ahmed Abuellail, Andrey Soldatov, Alexey Soldatov, Maria Kostina
4. **Experimental Studies of Partial Discharges in Bubbles Exposed to X-Ray Radiation** 251
   Sergey Korobeynikov, Aleksandr Ridel, Marina Lyutikova

Section IV. Optoelectronic Devices and Systems: Physics, Electronics, Application
Section Chair: **Eugene V. Sypin**

1. **Experimental Testing of the Complex Method for Increasing Decision-Making Reliability by Electro-Optical Device for Fire Detection on Background of Dynamic Optical Interferences** 257
   Nadezhda Tupikina, Sergey Lisakov, Andrey Kin, Eugene Sypin
2. **Synthesis of Oxide Materials for Electrochromic Panels by Spray Pyrolysis** N/A
   Timur O. Zinchenko , Ekaterina A. Pecherskaya, Vladimir V. Antipenko , Dmitriy V. Artamonov, Artem V. Volik, Yuriy A. Varenik
3. **Metal Vapor Laser Pumping Source with a Multistage Charge of Storage Capacitor** 269
   Konstantin Semenov, Pavel Gembukh, Maxim Trigub
4. **Laser Monitor with Independent Illumination from Capacitive-Discharge-Pumped CuBr Laser for Metal Nanopowder Combustion Study** 273
   Abay S. Moldabekov, Fedor A. Gubarev, Andrei V. Mostovshchikov
5. **Increase of Radiation Pulse Duration of CuBr-Laser in the Train Mode** 279
   Nikolay V. Karasev, Vladimir O. Troitskii, Victor A. Dimaki, Maxim V. Trigub
6. **Influence of the Pretreatment of Lithium Niobate Surface with Plasma and Ultraviolet Radiation on the Proton Exchange in Benzoic Acid Melts** 283
   Sergey Mushinsky, Igor Petukhov, Vladimir Kichigin, Denis Sidorov, Oksana Semenova, Roman Ponomarev
7. **Research on Adaptation of Multi-Criterial Electro-Optical System under Object in the Form of Belt Roadway of Coal Mine for Fire Control** 287
   Sergey Lisakov, Anton Sidorenko, Eugene Sypin
8. **Experimental Study of the Multicriterial Electro-Optical System Operation in Control of Pre-Emergency and Emergency Situations in the Form of Methane Contamination, Dustiness and Fire** 296
   Sergey Lisakov, Anton Sidorenko, Eugene Sypin

Section V. Power Electronics and Power Engineering
Section Chair: **Gennady S. Zinoviev**

1. **Diagnostics of the State of Secondary Power Supplies Input Circuits Parameters Based on Analytical Expressions** 305
   Viktoriya I. Pavlova, Sergey P. Khalyutin
2. **Formation of Thermal Portraits of Electrical Devices Based on the Finite Element Method** 310
   Elena A. Punt, Sergey P. Khalyutin
3. **Development of Energy Efficient Regulators-Compensators for AC Systems** 315
   Evgeniy A. Kosykh, Aleksey V. Udovichenko
4. **Improving the Dynamic Characteristics of the Autonomous Electric Generating Unit** 320
   Sergey V. Kuchak, Petr A. Bachurin, Sergey A. Kharitonov
5. **AC Voltage Regulators Review** 324
   Aleksei V. Udovichenko, Alena D. Kovetskaya
6. **Topology Morphing Control with Soft Transients for Multimode Series Resonant DC-DC Converter** 331
   Vadim Sidorov, Andrii Chub, Dmitri Vinnikov
7. **Optimum Choice of Reactive Elements Parameters for Step-up DC Voltage Capacitor Converter** 337
   Leonid G. Zotov, Ivan M. Bolshakov
8. **Comparative Analysis of DC-DC Boost Converters for Spacecraft Power Supply Systems** 343
   Denis A. Kurochkin, Dmitry A. Shtein, Maksim A. Zharkov, Sergey V. Klassen, Daria A. Arkuzina
9. **Resonant Controllers Design for Frequency-Selective Impedance Controlled DC Microgrids** 348
   Nikita A. Sevostyanov, Roman L. Gorbunov
10. **Solid State Transformer as a Part Electrical Circuit for Data Center Application** 354
    Andrey Sidorov, Gennady Zinoviev, Jürgen Petzoldt

11. **The Investigation of a Hybrid Cascaded Multilevel Matrix Converter** 360
Evgeny Baranov, Vladimir Popov, Dmitriy Kuguchev, Pavel Smirnov
12. **Application of High-Voltage IGBT Modules in Surge Generators** N/A
Alexander Myulbaer, Sergey Zagaynov, Arseniy Morozov
13. **Three-Phase Grid Interface Converter Control System Design to Limit a DC-side Output Impedance** 369
Ivan V. Alexandrov, Roman L. Gorbunov, Oleg V. Nos, Dmitri A. Shtein
14. **Determining Individual Relative Share Contributions of Nonlinear Loads in Overall Distortions of AC Power Line Voltage and Current** 375
Nikolay Lopatkin, Gennady Zinoviev, Aleksey Udovichenko
15. **Pulse Measurements of Samples Frequency-Dependent Devices** 379
Sergey Korobeynikov, Valentin A. Loman

Section VI. Biomedical Electronics and Engineering
Section Chair: **Gennady S. Evtushenko**

1. **Development of a Radiofrequency Ablation Device with Simultaneous Determination of the Transmural Effect Achievement** 385
Vladimir V. Antipenko, Ekaterina A. Pecherskaya, Vladimir N. Kulkov, Svetlana A. Antipenko, Anastasia E. Shepeleva, Olga A. Timokhina
2. **Researches for Primary Reference Bioparticle Polarizability Measurement Procedure Development** 390
Lidiia I. Dmitrieva
3. **OculusGraphy: Filtering of Electroretinography Response in Adults** 395
Aleksei E. Zhdanov, Evdochim Lucian, Vasilii I. Borisov, Xinqi Bao, Anton Yu. Dolganov, Victor N. Kazaijkin
4. **OculusGraphy: Norms for Electroretinogram Signals** 399
Aleksei E. Zhdanov, Evdochim Lucian, Vasilii I. Borisov, Xinqi Bao, Anton Yu. Dolganov, Victor N. Kazaijkin
5. **Non-Thermal Effects of Electromagnetic Radiation on a Living Organism** 403
Vitaly Nevezhin, Anna Busygina
6. **The Efficiency of Use of a Thermal Imager in Telemedicine Planning of Treatment for Venous Patients** 407
Tatyana Rostovskaya, Dmitrii Rosukhovskii
7. **Laboratory Preparation of Biosensor Based on Silicon Nanowire Field-Effect Transistor for Virus Indication** 411
Anastasia Cheremiskina, Dmitriy Shcherbakov, Vladimir Generalov, Iuliia Merkuleva, Aleksander Safarov, Galina Buryak
8. **Application of Neural Networks in the Problem of Indirect Estimation of Blood Pressure According to the Heart Rate Variability Features** 415
Anton Dolganov
9. **Visualization of a Digital Twin of the Heart** 419
Oleg N. Bodin, Sergey V. Chekaikin, Fagim K. Rakhmatullov, Ruslan F. Rakhmatullov, Mikhail N. Kramm, Andrey Yu. Bodin
10. **Optical-Vibration Method for Studying the Process of Agglutination of Red Blood Cells** 424
Aleksandr A. Aristov, Julia A. Rosenbaum, Aryuna A. Banzanova, Natalia A. Firsova, Artem I. Listratov

Section VII. Robotics, Mechatronics, and Automation
Section Chair: **Oleg V. Nos**

1. **Torque Ripple Reduction of Permanent Magnet Synchronous Motor Using Proportional-Integral-Resonant Controller with Delay of Control Response Compensation** 431
Egor A. Ignatev, Oleg V. Nos
2. **Application of the Least Squares Method to Estimate the Gain of the Mathematical Model of the Aircraft Structure Strength Test Bench** 436
Valery D. Yurkevich, Maksim V. Trubin, Vitaliy G. Trubin
3. **A Method for Suppressing Industrial Noise During Voice Control of an Industrial Robot** N/A
Andrew N. Spirkin, Oleg N. Bodin
4. **Electric Flying Wing Design** 445
Vitaliy P. Kharkov, Oleg A. Ovodkov, Olga S. Khalyutina, Albert O. Davidov, Aleksey V. Altukhov
5. **Identification of the DC Discharge Model of a Lithum-ion Battery Using the Potential Streaming Method and Scilab** 450
Igor E. Starostin, Sergey P. Khalyutin, Albert O. Davidov, Yuliya E. Ovchinnikova, Anastasiya M. Volkova
6. **Development and Operation of Software for Controlling the Components of a "Digital" Recloser** 456
Stanislav V. Ponomarev
7. **Development of a Hybrid Method for Planning the Movement of a Group of Marine Robotic Complexes in a Priori Unknown Environment with Obstacles** 461
Andrey Maevskiy, Artem Gorelyi, Roman Morozov

Section VIII. Software Engineering and Cyber-Physical Systems
Section Chair: **Vladimir E. Zyubin**

1. **Platform-Independent Client Applications for Working with Industrial Controllers** 469
   Eugene Romanov, Nikolai Gervas
2. **Application of the Metric Learning for Security Incident Playbook Recommendation** 475
   Irina Kraeva, Gulnara Yakhyaeva
3. **Research and Development of the Convolutional Neural Network for Pneumonia Recognition in Radiographs** 480
   Konstantin O. Antonov, Olga K. Alsova
4. **Proving Reflex Program Verification Conditions in Coq Proof Assistant** 485
   Ivan Chernenko, Igor Anureev, Natalya Garanina
5. **Development and Research of Multifactor Ensemble Models for Forecasting the Time Series of Electricity Prices** 489
   Alexander Peshkov, Olga Alsova
6. **Towards the Translation of Reflex Programs to Promela: Model Checking Wheelchair Lift Software** 493
   Anna A. Ponomarenko, Natalia O. Garanina, Sergey M. Staroletov, Vladimir E. Zyubin
7. **Checking Robustness of Web Services based on Solving Automata Equations** 499
   Anton Kolomeets, Ekaterina Shirokova, Maxim Gromov, Nina Yevtushenko
8. **RIDE: Theia-Based Web IDE for the Reflex Language** 503
   Ilya Gornev, Tatiana Liakh
9. **A System for Visualizing the Three-Dimensional Spherical and Elliptic Spaces** 507
   Denis Migranov
10. **Developing Reflex IDE Kernel with Xtext Framework** 511
    Alena Bastrykina, Vladimir Zyubin, Andrey Rozov
11. **Methods for Developing Digital Twins of Roles Based on Semantic Domain-Specific Languages** 515
    Dmitry Palchunov, Anna Vaganova
12. **PoST2ST: a Web Service for Translating poST Programs to the IEC 61131-3 Structured Text** 520
    Vladislav Bashev, Andrei Rozov, Vladimir Zyubin
13. **Using Convolutional Neural Networks to Restore Audiosignals** 524
    Kristina Morozova, Anton Rakitskiy
14. **Development and Verification of Smart-Contracts for the ScientificCoin Platform** 528
    Evgenii Zhdarkin, Igor Anureev
15. **Time Series Forecasting Method Based on Finite State Machine** 533
    Ulyana Pavlova, Anton Rakitskiy
16. **Development of Automated Methods for the Domain Ontology Population with the Help of a Virtual Assistant** 537
    Andrey Orlovsky, Dmitriy Palchunov
17. **Gaussian Based Active Learning Algorithm for Image Classification Problem** 542
    Andrey Shcherbin, Gulnara Yakhyaeva
18. **System Architecture for Reading and Interpreting Physical Printouts of Medical Forms** 547
    Ekaterina Snegireva, Grigory R. Khazankin, Igor Mikheenko
19. **Development of an Application for Audio-Visual-Tactile Brainwave Entrainment in Patients with Affective and Psychosomatic Disorders** 551
    Vadim A. Korshunov, Grigory R. Khazankin, Dmitry S. Ivanishkin
20. **The Use of Model-Theoretical Methods for Automated Knowledge Extraction from Medical Texts** 555
    Ruslan S. Pogodin, Dmitry Palchunov

Section IX. History and Prospects for the Informatics and Electronics Development in the Context of Humanitarian Problems of Society Solving
Section Chair: **Alexander N. Savostyanov**

1. **Building the Ontology of Cognitive Functions** 563
   Marina Murtazina, Alexandra Pustovalova, Tatiana Avdeenko
2. **Using Ontologies for the Development of the University Educational Ecosystem** 568
   Natalya Pustovalova, Tatiana Avdeenko, Alexandra Pustovalova
3. **Information Technologies in Evidence-Based Education** 572
   Anna Popova, Ekaterina Borisova, Natalya Mikidenko, Svetlana Storozheva, Alena Borisova
4. **Use of Computer Methods for Analyzing Brain Signals to Assess the Success of Adaptation of Labor Migrants to Extreme Climate Conditions** 577
   Nataliya Milakhina, Tatiana Astakhova, Alexandra Karpova, Alexander Savostyanov
5. **EEG Data Preprocessing for Assessing the Degree of Connectivity of Areas of the Human Brain Under Resting Conditions and their Application to the Diagnosis of Socially Significant Diseases** 582
   Evgeny Zavarzin, Pavel Rudych, Natalya Milakhina, Alexander Savostyanov