PROGRAM

10th INTERNATIONAL CONFERENCE

«ENGINEERING & TELECOMMUNICATION − En&T-2023»

November 22-23, 2023

Working language of the Conference: Russian and English

November 22, 2023

Campus «FIZTECH. TSIFRA»

10:00-11:00 Registration. **1 floor**

Welcome Coffee **4 floor**

Campus «FIZTECH. TSIFRA». The classroom 4.18

11:00-11:20 Opening Ceremony

Welcome speech by ***Prof. Sergey Garichev, Chairman of the Conference Organizing Committee, Director for Research and Development on Research, Laureate of the Russian Government Prize, MIPT Russia***

Welcome speech by ***Prof. Alexander Dvorkovich, Chairman of the Conference Program Committee, Corresponding Member RAS, MIPT, Russia***

Plenary Session

Moderator:

Prof. Alexander Dvorkovich, Corresponding Member RAS, MIPT, Russia

11:20-11:40 Resource Alloction for THZ Drone Communications with Realistic Antennas and Mobility Patterns

Özgür Gürbüz, Professor, Natural Sciences at Sabanci University, Turkey

11:40-12:00 On AI in Computational Infrastructure of the Next Generation

Ruslan Smelyanskiy, Dr. Sc., Corresponding Member of the Russian Academy of Sciences, Professor, Moscow State University, Russia

12:00-12:20 Providing Low Latencies and Consistently High Data Rates in Wi-Fi 8 Networks

Evgeny Khorov, D.Sc., IEEE Senior Member, Institute for Information Transmission Problems of the Russian Academy of Sciences, Associate Professor, MIPT, HSE, MSU, Russia

12:20-12:40 Modern Radio Mobile Communication Systems in the UHF Frequency Range

Vladimir Kozlov, PhD, Vadim Kuriksha, PhD, PJSC Radiophysics, Russia

12:40-13:00 Autonomous Navigation Systems for Tethered Unmanned Aerial Vehicles

Vladimir M Vishnevsky, Konstantin A. Vytovtov, D.Sc., Associate Professor, Elizaveta A. Barabanova, IPU RAS, Russia

13:00-13:20 Techniques for Passive and Active WiFi Network Surveys Application of Modelms

Dmitriy L. Kovalenko, PhD, Associate Professor, Andrey V. Voruyeu, PhD, Associate Professor, Vladimir N. Kulichenko, Francisk Skorina Gomel State University, Belarus

13:20-13:40 Acousto-Optical Techniques and Instruments for Spectral Analysis and Imaging Spectroscopy

Vitold E. Pozhar, D.Sc., Professor, Moscow Bauman State Technical University, National Research Nuclear University "MEPhI", Alexander S. Machikhi, D.Sc., STC UI RAS, Russia

13:40-14:00 Discussions

14:00-15:00 Break

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15:00-18:00 Round-table **« Development of satellite communication systems »**

Moderator:

Dmitry S. Filonov, PhD, Head of Laboratory, Associate Professor, MIPT, Russia

Novel and prospective wireless communications use higher operational frequencies and wider bands associated with strong signal losses both in the radio channel and inside the antenna hardware. Therefore, more directive antennas are to be used for further capacity enhancement in wireless communication.
Round Table purpose: discuss a way, which helps to resolve the problem of signal losses. There are several ways to solve such problem, i.e. mesh adhoc networks, active antenna arrays, reflective surfacrs and metamaterials utilization. During Round Table, we will discuss such The main trends in the field of satellite systems and technologies today are the deployment of multi–satellite groupings, including low-orbit ones, to provide broadband access and IoT services, the organization of direct subscriber access (personal device) via spacecraft to connected services, increasing the total satellite throughput capacity from 4 Tbit/s to 50 Tbit/s to in 2026, the development of flat antenna systems for users.

Round Table purpose: formation of proposals for the development of satellite communication systems, development of domestic technologies and equipment, identification of promising services.

Discussion points:

1. Prospects for the deployment of domestic satellite systems.
2. Multiservice platforms for satellite communication systems.

3. Approaches to the construction of satellite communications network management.
4. Development of antenna systems for satellite communication terminatives (metamaterials and metasurfaces).
5. Domestic ECB for satellite communication equipment.
6. Services based on satellite communication systems.

Round table language is Russian and English.

15:00-15:10 Introduction in Topic for Discussion
Dmitry S. Filonov, PhD, MIPT, Russia

15:10-15:30 Satellite Communication Systems Developed by the MIPT Scientific Research Center of Telecommunications
Oleg S. Grafodatsky, CEO's counselor, JSC "TsNIIMash, Russia

15:30-15:50 Prospects for the Development of Satellite Communication Systems Within the Framework of the Federal Project «Sphere»
Sergey Yu. Prokhorov, Director of the Department of Advanced Programs and the Sphere Project, Roscosmos, Russia

15:50-16:10 Specifics of Updating the Russian Satellite Constellation in Modern Conditions
Evgeniy V. Buidinov, Development and Operation of Communication Systems, Federal State Unitary Enterprise Space Communications, Russia

16:10-16:30 Discussion time. **Brief summary**

16:30-16:50 Development of the Theory and Practice of Using Modern Information Systems in the Telecommunications Industry
Mikhail Yu. Spodobaev, First Deputy General Director, Federal State Budgetary Institution Research Institute Radio, Russia

16:50–17:10 Specifics of Updating the Russian Satellite Constellation in Modern Conditions
Petr V. Semkin, Head of department, JSC "RESHETNEV", Russia

17:10-17:30 Hybrid Low-Orbit Satellite Communication Systems for Providing Seamless Services - Design Technical Solutions and Problematic Issues
Valentin R. Anpilogov, Ph.D., Associate Professor, Deputy General Director of VISAT-TEL JSC, Russia

17:30-18:00 Question Session and Round-table summary

November 23, 2023

Campus «FIZTECH. ARCTIC»

10:00-19:00 **Session 1. Telecommunication systems and networks**

Moderator:

Prof. Alexander V. Dvorkovich, MIPT, Russia

JAWS-M: a Noise-tolerant Algorithm for Information Hiding in Video Streaming.
Sergey A. Shustov

A Genetic Algorithm-Based Intra Coding Algorithm for H.266/VVC
Ibraheem Murooj Khalid, Al-Khafaji Israa M. Abdalameer, Al-Azzawi Zobeda Hatif Coherent

Numerical Modeling of OSNR Dynamics During a Transient Process in a Fiber-Optic Communication Line with EDFA
Marina O. Zhulidova, Igor I. Shikhaliev, Oleg E. Naniy, Vladimir N. Treshchikov

Study of THz Radiation from Human Skin under the Influence of Mental Stress
Kseniya A. Baksheeva, Yurii V. Zhurin, Roman V. Ozhegov, Nickolay V. Kinev, Anna Kochnev, Betzalel Noa, Ben Ishai Paul, Valery Koshelets, Yuri Feldman, Gregory N. Goltsman

Field Trial of DTMB-A + 5G 8K UHD Integrated Transmission System
Mao Ke, Fang Haidong, Pan Changyong, Li Siyuan, Xu Hui, Tong Lu

Analytical Method for Studying Polling System with Cyclic Polling Order and Batch Gated Service Discipline
Nguyen Van Hieu

The Possibilities of Using Blockchain Technology for Verifying News Materials
Alexey R. Arshanskiy

Analyzing the Impact of Data-Driven Insights on Cyber Attacks: Advanced Mechanisms and Emerging Threats
Nik Aein Koupaei Alireza

A Brief Introduction of Visible Light Communication Technology
Tan Linfeng, Wang Qiying, Duan Bowen, Wang Zihe, Pan Changyong

Resource Reservation Model in Cellular Networks
Nikita V. Nikolaychuk

HPHT and LPLT 5G NR MBS Cooperative Networking Test
Zeng Qingjun, Liang Xiangjun, Xue Kaixin, Pan Changyong

Hardware Optimization of HBF Filters Using MCM И CQA Algorithms
Alexander A. Busse, Nikita V. Bakholdin, Sergey A. Bakhurin, Alexander A. Degtyarev, Dmitry M. Solovev

Study on Cable TV Network Upgrade and Expansion
Anwar Turgun, Ai Sente, Zhang Yan, Tan Linfeng, Pan Changyong

Minimizing the Probability of Error When Receiving a Two-Position Pulse-Code Keying Message in a Weighted Manner under Intersymbol Interference Conditions
Andrey N. Degtyaryov, Svetlana A. Koneva, Gennadiy V. Slyozkin

Network Infrastructure Analysis Using the RIPE Atlas Distributed Measurement Platform
Pavel S. Izyumov, Alexander V. Ivchenko

10:00-19:00 Session 2. Radio communication and radar systems

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Moderator:

Prof. Sergey P. Skobelev, PJSC «Radiophysics», Russia
Prof. Vladimir E. Farber, PJSC «Radiophysics», Russia

Slowing Metal Medium for Broadband Lenses
Vadim A. Kaloshin, Bui Van Chung

Ultra-Band Polyconic Antenna with Gradient Dielectric Lens
Vadim A. Kaloshin, Nguyen The Thanh

Modernization of the Principle of Lengthening the Current Path to Increase the Broadband of Microstrip Antennas
Kirill S. Harlampev, Mihail S. Mihailov, Kiril Yu. Kozhevnikov

Application of Hybrid Projection Method for Analysis of Electromagnetic Wave Scattering by a Magnetic-Dielectric Axisymmetric Mikaelyan Lens
Mikhail M. Kushneryov

Application of a Self-Sufficient Modification of the Method of Surface Integral Equations for Analyzing the Focusing of Waves by Lenses with Positive and Negative Refractive Indices
Dmitrii A. Borisov

Linear Array of Helical Antennas with Sector Radiation Patterns
Kirill M. Sidorov

Array of Circular Planar Antennas with Circular Polarization
Habib Rammah Feras, Mikhail S. Mikhailov, Sergey V. Permyakov

Modeling and Design of a Multilayer Microstrip Antenna-Filter
Dayoub Ali, Aleskey A. Komarov

Optimization of the Geometric Structure of an Extended Antenna Field Using a Genetic Algorithm
Alexey M. Mikhailov, Alexey A. Komarov, Mikhail S. Mikhailov

Application of Probing Signals with Zero Autocorrelation Zone for Suppression of Recurrent Range Noise in SAR
Roman N. Ipanov, Aleksey A. Komarov, Kirill Yu. Kozhevnikov, Sergey V. Permyakov

Estimation of the Required Energy for a Channel for High-Precision Phase Direction Finding of Low-Earth Orbit Space Objects Based on Antenna Field
Alexander I. Baskakov, Aleksei A. Komarov, Pavel E. Shimkin

Verification of DoA Algorithm on the Base of Experimental Data and Numerical Simulations in Automotive Distributed Non-Coherent Multi-Radars System
Igor V. Artyukhin, Alexander G. Flaksman, Alexey E. Rubtsov

The Second-Order Filter with Growing Memory and Range-Doppler Coupling Error
Mariya A. Murzovaa, Vladimir E. Farber

Wireless Modules for Measuring the Time of Arrival of Ultra-Wideband Chaotic Radio Pulses in a Positioning Problem
Vladimir A. Prokhorov, Andrei A. Krivenko, Elena V. Efremova, Lev V. Kuzmin

Model of Spatiotemporal Coherent Summation of Ultra-Wide Band Chaotic Radio Pulses Generated by Independent Emitters
Alexander S. Zubkov, Lev V. Kuzmin

Outdoor and Indoor Attenuation of Ultrawideband Chaotic Radio Signals
Yuri V. Andreyev

10:00-19:00 Session 3. Computing systems and data processing

Session 4. Artificial intelligence systems (AI) in telecommunications

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Moderator:
Prof. Alexander Yu. Drozdov, MIPT, Russia

Automated Design Optimization of the 2-RPR Parallel Robot
Artem Maminov

Development of Optimization Framework for Embedded Software Based on Automatic Tuning of Modern GCC Compiler Via Optimization Phases Reordering
Aleksey I. Otrashchenko, Zakhar D. Akimov, Nikolay N. Efanov

A Multiphase Queueing System with Markovian Arrival Process Input Flow and Common Retrial Orbit
Dang Minh Cong

Search for Potentially Vectorizable Cycles by Solving the CS-Reachability Problem on a Graph-Structured Representation of Programs
Aleksandra R. Ledneva, Nikolay N. Efanov

Multiple Watermarking for Images to Counter Attacks
Anna S. Melman, Oleg O. Evsyutin, Olesya E. Senyukova

RISCV Debug SPEC 1.0 Implementation in GDB
Yuly V. Tarasov, Konstantin I. Vladimirov

Extending Asim Approach by Modeling AXI Protocols Family
Pavel I. Kryukov, Kirill A. Korolev, Oleg I. Ladin

Development of a System for Storing and Distributing Initial Settings of Microprocessor Components
Mark O. Tsoy, Daniil M. Alfonso

Hardware Compression for Processor Networks with Wide Data Channels
Aleksandr V. Surchenko, Yuri A. Nedbailo

Optimizing On-Chip Network Routers to Support Many Virtual Channels
Yuri A. Nedbailo

Stereo Observation as a Method of Radically Reducing the Diameter of the Search Area for a New Space Object in the Next Observation Session
Elena A. Kolessa

Description of the Optimization Method and Challenge of Deep Learning
Al-azzawi Zobeda Hatif, Alexey N. Nazarov, Ibraheem Murooj Khalid

Non-Linear Self-Interference Cancellation on Base of Mixed Newton Method
Alexander A. Degtyarev, Sergey A. Bakhurin

Nature-Inspired Multimodal Quadruped Robot Locomotion
Ekaterina M. Chaikovskaia, Vladimir V. Litvinenko, Egor V. Davydenko, Inna K. Minashina, Roman A. Gorbachev

Vehicle Emission Analysis: Integrating Computer Vision for Co2 Emission Calculation Across Diverse Roadways
Vahid Dastgerdi Masoud, Andrey Leus, Viktor Zuev, Nikita Vodichev, Ivan Kholodnyak, Vladislav Efremov, Daniil Mangazeev

Application of modified Gram-Schmidt algorithm for estimating the calibration characteristics of microwave humidity sensor
Aleksei E. Karelin, Mariya A. Romanova, Anatolii A. Svetlakov, Mark V. Mamchenko

Exploring the Space of Function Level Phase Ordering for Code Size Reduction at Constant Execution Time using Random Optimization Sequences in GCC
Georgiy K. Lebedev, Nikolay N. Efanov

Current Issues of Introducing AI Services into Practice

Viliam K. Sarian, Roman V. Meshcheryakov, Alena A. Zakharova, Dmitry V. Bosomikin

Ballistic Projectile Trajectories Classification Using Machine Learning
Evgenii V. Kovtunov, Nikolai E. Gaiduchenko, Olga V. Vylegzhanina, Alexander A. Pushkov, Yanka I. Malashko

19:00 Conference closing