

Institute of Radio and Information Systems (IRIS)
Institute of Electrical and Electronics Engineers (IEEE)
Media Publisher Ltd

International Scientific Conference

**«2021 SYSTEMS OF SIGNALS GENERATING
AND PROCESSING IN THE FIELD
OF ON BOARD COMMUNICATIONS»**

(IEEE Conference # 51389)

16-18 March 2021

CONFERENCE PROGRAM

**Moscow
2021**

CONFERENCE ORGANIZERS

INSTITUTE OF RADIO AND INFORMATION SYSTEMS (IRIS)
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
MEDIA PUBLISHER LTD

CONFERENCE SECTIONS *

1. Antennas and Radio Waves Propagation.
2. Navigation and Mathematical Algorithms of an Object Space Orientation.
3. Radiofrequency Applications.
4. Wire and Optical Communication and Control Systems.
5. Intelligent Transport Systems
Sub-section 1: Use of digital ITS infrastructure in telematic control systems on urban passenger transport
Sub-section 2: Peculiarities of data exchange in cooperative ITS
Sub-section 3: Theoretical Aspects of Artificial Intelligence Systems Development for Transportation Engineering
Sub-section 4: Test methods of motor vehicles integrated into an intelligent transport environment
6. Digital signal processing in on-board radio systems

* The reports in the program inside the sections are listed in alphabetical order by the name of the first author. By agreement with the chairman of the section, the order of reports may be changed
(Доклады в программе внутри секций перечислены в алфавитном порядке по фамилии первого автора. По согласованию с председателем секции порядок следования докладов может быть изменен).

CONFERENCE SCHEDULE

16 March 2021

- 10-00 — 10-30** **Registration of participants** (*регистрация участников*)
- 10-30 — 10-45** **Opening remarks of the conference organizers**
(*вступительное слово организаторов конференции*)
- 11-00 — 18-45** **Conference section 4** (*работа секции 4*)
- 11-00 — 14-15** **Conference section 5 (sub-section 1)**
(*продолжение работы секции 5: подсекция 1*)
- 14-30 — 16-30** **Conference section 5 (sub-section 2)**
(*продолжение работы секции 5: подсекция 2*)
- 11-00 — 18-00** **Conference section 6** (*работа секции 6*)

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- 10-00 — 11-45** **Conference section 1** (*работа секции 1*)
- 12-00 — 13-30** **Conference section 2** (*работа секции 2*)
- 13-45 — 18-00** **Conference section 3** (*работа секции 3*)
- 10-00 — 15-30** **Conference section 5 (sub-section 3)**
(*продолжение работы секции 5: подсекция 3*)
- 15-30 — 18-00** **Conference section 5 (sub-section 4)**
(*продолжение работы секции 5: подсекция 4*)
- 10-00 — 17-45** **Conference section 6** (*продолжение работы секции 6*)
- 18-00 — 18-30** **Conference results and laureates announcement**

March 17, 2021

SECTION 1
Antennas and Radio Waves Propagation

SECTION CHAIRMEN: Vadim A. Kaloshin, *Doctor of Sciences (Engineering),
IEEE Region 8, Chair of AP Moscow Chapter,
Vice-chair of MTT/ED/AES Moscow Chapter,
IEEE Senior Member*

10-00 – 10-15

Vadim A. Kaloshin, *IEEE Senior Member*

Kotelnikov Institute of Radio-Engineering and Electronics of Russian Academy of Sciences, Moscow, Russia

Pham Van Chung

Moscow Institute of Physics and Technology (NIU), Dolgoprudny, Russia

ULTRA WIDE BAND FOUR RIDGE METAL- DIELECTRIC FEED HORN

10-15 – 10-30

Sergey Yu. Kazantsev, *IEEE Member*

Moscow Polytechnic University, Moscow, Russia

Pavel A. Titovets, Alexander S. Brusentsev, Angela I. Sattarova

Moscow Technical University of Communications and Informatics

LASER CONTROLLED LOOP ANTENNA

10-30 – 10-45

Andrew S. Kryukovsky

Russian New University, Moscow, Russia

Boris G. Kutuza, *IEEE Member*

Kotelnikov Institute of Radioengineering and Electronics (IRE) of Russian Academy of Sciences, Moscow, Russia

Dmitry S. Lukin, Yulia I. Bova, Dmitry V. Rastyagaev

Russian New University, Moscow, Russia

**STUDY OF THE EFFECT OF THE EQUATORIAL IONOSPHERE ANOMALY
ON THE POLARIZING CHARACTERISTICS OF HF RADIO WAVES**

10-45 – 11-00

Ilia W. Peshkov, Natalya A. Fortunova, Irina N. Zaitseva

Bunin Yelets State University, Yelets, Russia

Yury B. Nechaev

Voronezh State University, Voronezh, Russia

THE RESEARCH OF DIGITAL ANTENNA ARRAYS WITH DIRECTIVE RADIATORS FOR INTERFERENCE AND NOISE CANCELLATION IN AZIMUTH AND ELEVATION

11-00 – 11-15

Chorshanbe B. Ravshanov, Dilshod Ch. Ravshanov, IEEE Member,

Abdulmusavvir A. Karimov

Tajik Technical University named after academician M.S. Osimi, Dushanbe, Tajikistan

INVESTIGATING A MINIATURIZATION APPROACH FOR POWER DIVIDERS

11-15 – 11-30

Amir I. Sulimov, IEEE Member, Arkadiy V. Karpov

Kazan Federal University, Kazan, Russia

SIMULATION OF SPATIAL CORRELATION OF POLARIZATION CHARACTERISTICS FOR METEOR RADIO REFLECTIONS

11-30 – 11-45

Dmitry V. Fedosov, Andrey V. Kolesnikov

HF Communication, Omsk, Russia

Alexey V. Nikolaev

Institute of Machines Science named after A.A. Blagonravov of the Russian Academy of Sciences, Moscow, Russia

Alexandr V. Starchenkov

Radio plant named after A.S. Popov, Omsk, Russia

Pavel A. Titovets

Moscow Technical University of Communications and Informatics, Moscow, Russia

CALORIMETRIC METHOD FOR MEASUREMENT OF ELECTRICALLY SMALL ANTENNAS EFFICIENCY

March 17, 2021

SECTION 2.
Navigation and Mathematical Algorithms
of an Object Space Orientation

SECTION CHAIRMEN: Vadim A. Kaloshin, *Doctor of Sciences (Engineering),
IEEE Region 8, Chair of AP Moscow Chapter,
Vice-chair of MTT/ED/AES Moscow Chapter,
IEEE Senior Member*

12-00 – 12-15

Alexander A. Chugunov, Roman S. Kulikov, *IEEE Member*, **Vladimir B. Pudlovskiy,
Nikita I. Petukhov, Natalia V. Masalkova**

National Research University MPEI, Moscow, Russia

**MODELING AND COMPARISON OF TRAJECTORY FILTERING
ALGORITHMS IN MLAT SYSTEMS**

12-15 – 12-30

Andrei G. Erokhin, Margarita F. Vanina

Moscow technical university of communications and informatics, Moscow, Russia

**INVESTIGATION OF THE IMPACT OF RANDOM DISTRIBUTION LAWS
ON THE CHARACTERISTICS OF ON-BOARD SERVICE USING QUEUING
MODELS**

12-30 – 12-45

Svetlana F. Gorgadze, Tatiana M. Gut, Danil V. Dzhurin

Moscow Technical University of Communications and Informatics, Moscow, Russia

**MULTI-STATION ACCESS BASED ON SIGNALS WITH NON-HARMONIC
SUBCARRIERS**

12-45 – 13-00

Zoya V. Ilyichenkova, Svetlana M. Ivanova

MIREA – Russian Technological University, Moscow, Russia

Andrey I. Volkov

Moscow Technical University of Communications and Informatics, Moscow, Russia

Alla Yu. Ermakova

MIREA – Russian Technological University, Moscow, Russia

**THE AUTONOMOUS OBJECT TRAJECTORY CORRECTION USING
NEURAL NETWORKS**

13-00 – 13-15

**Roman S. Kulikov, IEEE Member, Natalia V. Masalkova, Oleg V. Glukhov,
Alexander A.Chugunov, Nikita I. Petuhov**

National Research University MPEI, Moscow, Russia

USING NEURAL NETWORKS TO NAVIGATE ROBOTS AMONG OBSTACLES

13-15 – 13-30

Evgeniy A. Voronin, Sergey V. Kozlov

*Federal Research Center “Computer Science and Control” of Russian Academy
of Sciences, Moscow, Russia*

Alexander N. Kubankov

Moscow Technical University of Communications and Informatics, Moscow, Russia

**INTEGRATED CONTROL OF ECONOMIC SECURITY BY MACHINE
LEARNING IN THE INFORMATION SPACE OF THE DIGITAL ECONOMY**

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**SECTION 3.
Radiofrequency Applications**

SECTION CHAIRMEN: Roman Yu. Ivanyushkin,

*PhD, Associate Professor of Moscow Technical University of Communications and Informatics. Branch Director of the IEEE Worldwide Limited in the Russian Federation.
Chair of Russian (Moscow) IEEE Circuits and Systems (CAS04) Chapter, IEEE Member*

13-45 – 14-00

Daniil D. Chirkov, Artur K. Gaysin, Ivan P. Ashaev,

Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan, Russia

LTE CELL LOAD ESTIMATION BASED ON DCI MESSAGE DECODING

14-00 – 14-15

Alexander E. Denisov, Dmitry P. Danilaev, German I. Il'in

Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan, Russia

PARAMETERS AND PROPERTIES OF DIGITAL SIGNAL RECEIVER WITH A LARGE DYNAMIC RANGE

14-15 – 14-30

Victor N. Gromorushkin

Moscow Technical University of Communications and Informatics, Moscow, Russia

HIGH EFFICIENTCY 1.5 KW LDMOS HF BROADBAND RADIO TRANSMITTER

14-30– 14-45

Alexander G. Ilyin, Ali Salah Mahdi Khafaga, Valentina Yunusova

Kazan National Research Technical University – KAI, Kazan, Russia

MODELING THE NARROWBAND AND WIDEBAND NOISE AT THE OUTPUT OF NONLINEAR CONVERTERS

14-45 – 15-00

Vladimir V. Ionov, Alexander V. Pestryakov

Moscow Technical University of Communications and Informatics, Moscow, Russia

COMPARATIVE ANALYSIS OF SUBSCRIBER DEVICES OF SPACE MONITORING SYSTEMS

15-00 – 15-15

Roman Y. Ivanyushkin, IEEE Member, Nikita D. Shmakov

Moscow Technical University of Telecommunications and Informatics, Moscow, Russia

RESEARCH OF THE INFLUENCE OF NONLINEARITY OF CAPACITANCE-VOLTAGE CHARACTERISTICS OF FIELD-EFFECT TRANSISTORS ON NONLINEAR DISTORTIONS IN DISTRIBUTED AMPLIFIERS

15-15 – 15-30

Alexey A. Lavrov, Igor K. Antonov, Vladimir G. Ovchinnikov

BG-Optics, Moscow, Russia

Alexey V. Nikonenko, Denis S. Chirov, IEEE Member

Moscow Technical University of Communications and Informatics, Moscow, Russia

THE CONCEPT OF A MULTI-BEAM RADAR IN THE SMART CITY AIR TRAFFIC CONTROL SYSTEM

15-30 – 15-45

Vladislav I. Lipatkin, Evgeniy M. Lobov, Elizaveta O. Lobova,

Nikolai A. Kandaurov

Moscow Technical University of Communications and Informatics, Moscow, Russia

CRAMER-RAO BOUNDS FOR WIDEBAND SIGNAL PARAMETERS JOINT ESTIMATION IN IONOSPHERIC FREQUENCY DISPERSION DISTORTION CONDITIONS

15-45 – 16-00

Ivan V. Malygin, Dmitry A. Artemasov,

Ural Federal University, Yekaterinburg, Russia

MODELING AND RESEARCHING A SLIDING CORRELATOR

16-00 – 16-15

Alexey Yu. Miroshnichenko, Maxim A. Chernyshev

Yuri Gagarin State Technical University of Saratov, Saratov, Russia

INVESTIGATION OF THE ELECTRODYNAMIC CHARACTERISTICS OF A THREE-GAP KLYSTRON RESONATOR WITH A STRIP LINE ON A SUSPENDED DIELECTRIC SUBSTRATE

16-15 – 16-30

Sergey S. Pechnikov, Sergey A. Sherstukov

Voronezh Institute of the Russian Ministry of the Interior, Voronezh, Russia

TRANSFORMING THE STRUCTURE OF SPECTRALLY EFFECTIVE RADIO SIGNALS FOR AMPLIFICATION IN NONLINEAR POWER AMPLIFIERS

16-30 – 16-45

Natalya P. Kravchenko, IEEE Member, Alexandr D. Kasatkin,

Semyon A. Presnyakov

HSE University, Moscow, Russia

Sergey V. Mukhin, Moscow, Russia

SIMULATION ANALYSIS OF INTERACTION IN O-TYPE DEVICES WITH CRL TYPE SLOW-WAVE STRUCTURES

16-45 – 17-00

Alexander G. Samoylov, Inas Anuar Al Tahar

Vladimir State University named after Alexander and Nikolay Stoletovs, Vladimir, Russia

METHODOLOGY FOR EVALUATING THE PROBABILITY OF COMMUNICATION DISCONNECTION IN RADIO CHANNELS OF THE SYSTEMS WITH SPACE-TIME CODING OF SIGNAL

17-00 – 17-15

Sergey A. Samoylov, Alexander G. Samoylov

Vladimir State University named after Alexander and Nikolai Stoletovs, Vladimir, Russia

Samah Abbas Nasir, Inas Anuar Al Tahar

Iraqi Technological University, Baghdad, Iraq;

Vladimir State University named after Alexander and Nikolai Stoletovs, Vladimir, Russia

INTERFERENCE COMPENSATOR FOR COMMUNICATION SYSTEMS WITH SPACE-TIME CODING

17-15 – 17-30

Elena P. Stroganova, Sergey E. Grychkin

Moscow Technical University of Communications and Informatics, Moscow, Russia

ESTABLISHMENT OF ESTIMATED PARAMETERS LIMITS FOR ON-BOARD RADIO ELECTRONIC EQUIPMENT

17-30 – 17-45

O.V. Varlamov, IEEE Member, D.C. Nguyen, S.E. Grychkin

Moscow Technical University of Communications and Informatics, Moscow, Russia

SIMULTANEOUS APPLICATION OF SEVERAL SYNTHETIC METHODS FOR HIGH EFFICIENCY RADIOFREQUENCY AMPLIFICATION

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SECTION 4.

Wire and Optical Communication and Control Systems

SECTION CHAIRMEN: Sergey N. Stepanov, *Doctor of Sciences (Engineering), Professor of Moscow Technical University of Communications and Informatics. Moscow, Russia*

11-00 – 11-15

Artyom S. Adzhemov, *IEEE Member*, **Anastasiya Yu. Kudryashova**

Moscow Technical University of Communications and Informatics, Moscow, Russia

FEATURES OF CONVERTING SIGNALS TO BINARY AND MINIMIZING DISTORTION

11-15 – 11-30

Timur A. Agliullin, *IEEE Member*, **Robert R. Gubaidullin**, *IEEE Member*,

Airat Zh. Sakhabutdinov, *IEEE Member*

Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan, Russia

MULTI-SENSORY STRAIN MEASUREMENT USING ADDRESSED FIBER BRAGG STRUCTURES IN LOAD SENSING BEARINGS

11-30 – 11-45

Olga V. Biryukova, **Irina V. Koretskaya**

National Research University "Moscow Power Engineering Institute", Moscow, Russia

SIGNAL RECORDING SYSTEM CONTROL

11-45– 12-00

Vladimir A. Dokuchaev, **Victoria V. Maklachkova**, **Sergey V. Pavlov**

Moscow Technical University of Communications and Informatics, Moscow, Russia

Sergey S. Mytenkov

HSE University, Moscow, Russia

COMPARISON OF THE SPECTRAL AND HIERARCHY ANALYSIS METHODS APPLICABILITY FOR TECHNICAL SYSTEMS CHOOSING

12-00– 12-15

Yuri L. Leokhin, **Timur D. Fatkhulin**

Moscow Technical University of Communications and Informatics, Moscow, Russia

EVALUATION OF SERVICE AVAILABILITY IN SOFTWARE-DEFINED OPTICAL NETWORK

12-15– 12-30

Denis V. Gadasin, Anastasia V. Koltsova,

Moscow Technical University of Communications and Informatics, Moscow, Russia

Daniil D. Gadasin

Municipal educational institution Tomilinskaya SES № 19, Moscow, Russia

**ALGORITHM FOR BUILDING A CLUSTER FOR IMPLEMENTING
THE "MEMORY AS A SERVICE" SERVICE IN THE IOT CONCEPT**

12-30– 12-45

Vladimir V. Goncharov, Alexander V. Goncharov, Sergey S. Shavrin,

Nadezhda A. Shishova

Moscow Technical University of Communications and Informatics, Moscow, Russia

**THE CYBER ATTACK ON THE CORPORATE NETWORK MODELS
THEORETICAL ASPECTS**

12-45– 13-00

Robert R. Gubaidullin, IEEE Member, Timur A. Agliullin, IEEE Member,

A. Zh. Sahabutdinov

*Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan,
Russia*

FIBER OPTIC TIRE SPEED SENSOR

13-00– 13-30 Coffee break

13-30– 13-45

Mehman Huseyn Hasanov, IEEE Member

Azerbaijan Technical University, Baku, Azerbaijan

**RESEARCH INDICATORS NONLINEAR EFFECTS IN FIBRE OPTIC
COMMUNICATION LINES IN USE WDM AND DWDM TECHNOLOGIES**

13-45– 14-00

B. G. Ibrahimov, IEEE Member, M. H. Hasanov, IEEE Member

Azerbaijan Technical University, Baku, Azerbaijan

**RESEARCHES METHODS FOR INCREASING THE THROUGHPUT
OF FIBER-OPTICAL COMMUNICATION NETWORKS
BASED ON OPTICAL SPECTRAL TECHNOLOGY**

14-00– 14-15

Vladimir L. Karyakin, *IEEE Member*

Povolzhskiy State University of Telecommunications and Informatics, Samara, Russia

**TECHNIQUES FOR IPTV NETWORK QUALITY ASSESSMENT
BY BER COEFFICIENT WITHOUT DISABLING TV SIGNAL**

14-15– 14-30

Vladimir N. Korshunov, **Sergey S. Shavrin**

Moscow Technical University of Communications and Informatics, Moscow, Russia

Irina A. Ovchinnikova

RRDI for Cable Industry, Moscow, Russia

Nadezhda A. Shishova

Moscow Technical University of Communications and Informatics, Moscow, Russia

Peter A. Semenov

RRDI for Cable Industry, Moscow, Russia

**CAPACITY AND SPATIAL EFFICIENCY OF MULTICHANNEL
OPTICAL FIBERS**

14-30– 14-45

Gilles Kundimana, **Augustin Vyukusenge**,

Moscow Technical University of Communications and Informatics, Moscow, Russia

Alexander Tsym

FSUE ZNIIS, Moscow, Russia

NETWORKS MODERNIZATION USING SDN AND NFV TECHNOLOGIES

14-45– 15-00

Artem A. Kuznetsov

Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan, Russia

**OPTICAL VECTOR ANALYZERS FOR MULTIPLICATIVE FIBER OPTIC
SENSORS PROBING. FORMULATION OF THE PROBLEM**

15-00– 15-15

Oleg G. Morozov, *IEEE Member*, **Igor A. Makarov**,

Alexandr A. Vasilets, *IEEE Member*, **Lutsia M. Sarvarova**

Kazan National Research Technical University n.a. A.N.Tupolev – KAI, Kazan, Russia

Svetlana G. Alushina

Moscow Technical University of Communications and Informatics, Moscow, Russia

**TWO-FREQUENCY REFLECTOMETRIC INITIALIZATION OF THE
UPSTREAM CENTRAL WAVELENGTH IN TRANSPORT WDM-PON DOMAIN
FOR 5G MOBILE RADIO ACCESS NETWORKS**

15-15– 15-30

**Artwell Regis Muzata, Mikhail S. Stepanov, Vasilisa A. Pershina,
Faurdoir Ndimumahoro, Juvent Ndayikunda**

Moscow Technical University of Telecommunications and Informatics, Moscow, Russia

**THE MODELING OF ELASTIC TRAFFIC TRANSMISSION BY THE MOBILE
NETWORK WITH NB-IOT FUNCTIONALITY**

15-30– 16-00 Coffee break

16-00– 16-15

**Airat Zh. Sakhabutdinov, IEEE Member, Konstantin A. Lipatnikov,
Artem A. Kuznetsov, Ilnur I. Nureev, Kamil G. Karimov**

*Kazan National Research Technical University named after A.N. Tupolev-KAI, Kazan,
Russia*

HIGH VOLTAGE FIBER OPTIC SENSOR MODELING AND CALCULATION

16-15– 16-30

Oleg I. Sheluhin, Dzhennet I. Magomedova, Sergej Y. Rybakov

Moscow Technical University of Communications and Informatics, Moscow, Russia

**DATA HIDING AND TRANSMISSION OVER OCCUPIED AUDIO CHANNELS
USING DETERMINISTIC CHAOS**

16-30– 16-45

Mikhail P. Shleymovich, Svetlana A. Lyasheva, Oleg G. Morozov, IEEE Member

*Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan,
Russia*

WEIGHT MODEL FOR IMAGE COMPRESSION METHOD

16-45– 17-00

Andrey V. Shvedov, Denis V. Gadasin, Olesya G. Klygina

Moscow Technical University of Communications and Informatics, Moscow, Russia

**DETERMINING SHORTEST PATHS BETWEEN TWO ARBITRARY NODES
IN A COMPOSITE TRANSPORT NETWORK USING SEGMENT ROUTING**

17-00– 17-15

Mikhail S. Stepanov, Artwell Regis Muzata, Vladislav D. Zyuzin, Natalya S. Kostina, Maxim O. Shishkin

Moscow Technical University of Communications and Informatics, Moscow, Russia

**ESTIMATION OF CONTACT CENTER PERFORMANCE MEASURES
IN CASE OF OVERLOAD AND CHATBOT IMPLEMENTATION**

17-15– 17-30

Sergey N. Stepanov

Moscow Technical University of Communications and Informatics, Moscow, Russia

Anastasiia V. Korobkina

Moscow Institute of Physics and Technology (National Research University), Moscow, Russia

Aleksandr O. Volkov, Elena E. Malikova, Alexey E. Panov

Moscow Technical University of Communications and Informatics, Moscow, Russia

**THE ANALYSIS OF TRAFFIC BALANCING FOR DATA CENTERS
SERVING REQUESTS OF LEO MOBILE SATELLITE SYSTEMS**

17-30– 17-45

I. V. Stepanova, O. D. Gerasimova, O. B. Polyakova

Moscow Technical University of Communications and Informatics, Moscow, Russia

**INFORMATION AND REFERENCE SYSTEMS IN CORPORATE
COMMUNICATION NETWORKS**

17-45– 18-00

Alexey N. Terekhov, Alla S. Korchagina

Moscow Technical University of Communications and Informatics, Moscow, Russia

**REFERENCE SIGNAL COMPRESSION IN INTRUSIVE METHODS
FOR ASSESSING THE QUALITY OF SPEECH TRANSMISSION
USING THE UNITARY NUMBERING SYSTEM**

18-00– 18-15

Alexandr A. Vasilets, IEEE Member, Rinat Sh. Misbakhov,

Oleg G. Morozov, IEEE Member, Lutsia M. Sarvarova, Artem A. Kuznetsov

Kazan National Research Technical University n.a. A.N.Tupolev – KAI, Kazan, Russia

**SYMMETRICAL OPTICAL VECTOR ANALYSIS FOR HIGH-Q STRUCTURES
BASED ON TANDEM AMPLITUDE-PHASE MODULATION**

18-15– 18-30

Igor O. Yuskov, Elena P. Stroganova

Moscow Technical University of Communications and Informatics, Moscow, Russia

**INVESTIGATION OF CORPORATE NETWORKS WITH MOVING OBJECTS
USING COMBINED NEURAL NETWORKS**

18-30– 18-45

Alexander L. Zubilevich, Sergey A. Sidnev, Vladimir A. Tsarenko

Moscow Technical University of Communications and Informatics, Moscow, Russia

**THE EFFECT OF THE USE OF SERVICE LEVEL AGREEMENT FOR
OPERATORS OF TRANSPORT SYSTEMS AND ON-BOARD SYSTEMS**

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**SECTION 5.
Intelligent Transport Systems**

SECTION CHAIRMANS: *S.V. Zhankaziev, Doctor of Technical Sciences, Professor
Moscow automobile and road construction state technical University*
*A.M. Ivanov, Doctor of Technical Sciences, Professor
Moscow automobile and road construction state technical University*

**SUB-SECTION 1
Use of digital ITS infrastructure in telematic control systems
on urban passenger transport**

Chairman: *Vlasov V.M., Doctor of Technical Sciences, Professor,
Moscow automobile and road construction state technical University*

11-00 — 11-15

Opening remarks of the section chairman

11-15 – 11-30

Veniamin N. Bogumil, Maria Duque-Sarango

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**DEVELOPMENT OF A PHASE SPACE MODEL OF THE TRANSPORTATION
PROCESS IN URBAN TRANSPORTATION SYSTEMS, AND ITS USE TO
ASSESS THE QUALITY OF THE PROCESS OF TRANSPORTING PASSENGERS**

11-30 – 11-45

Veronika R. Brus, Lilia I. Voronova, IEEE Member

Moscow Technical University of Communications and Informatics, Moscow, Russia

**THE RESEARCH OF NEURAL NETWORK ARCHITECTURES FOR CARDIO-
ANALYSIS IN THE DRIVER SUPPORT SYSTEM**

11-45 – 12-00

Emir Deljanin, University of Sarajevo, Sarajevo, Bosnie-Herzegovine

Peter I. Smirnov, Vologda State University, Vologda, Russia

Boris S. Subbotin, Alexey A. Akulov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**A SUSTAINABLE TRANSPORTATION STRATEGY FOR EVERYDAY
MOBILITY IN MAJOR REGIONAL CENTERS**

12-00 – 12-15

Vasily A. Demin

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Dmitry V. Blinov

Technical director LogistiX, Moscow, Russia

Dmitry B. Efimenko, Daria A. Komkova, Vyacheslav R. Rogov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**MULTI-AGENT APPROACH TO FREIGHT TRANSPORTATION USING
POOLING TECHNOLOGY**

12-15 – 12-30

Sergey A. Filatov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Elena V. Roditelskaya

Russian Customs Academy (RTA), Lyubertsy, Russia

Roman N. Zaikin, Tatiana A. Krutova, Ekaterina S. Barabanova

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**NAVIGATIONAL INFORMATION AS THE BASIS FOR CONSTRUCTING AN
ECONOMETRIC MODEL FOR EVALUATING THE FACTORS OF TRANSPORT
OPERATION**

12-30 – 12-45

Nadezhda A. Filippova, Vladimir M. Vlasov, Veniamin N. Bogumil

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Aleksandr M. Ishkov, Anna E. Ivanova

North-Eastern Federal University (NEFU), Yakutsk, Russia

**SCIENTIFIC SUPPORT OF TEMPORARY HIGHWAYS (WINTER ROADS)
OPERATION PROCESSES IN THE RUSSIA ARCTIC ZONE**

12-45 – 13-00

Ekaterina D. Romashkova

The Russian Federation Government Analytical Center, Moscow, Russia

Oxana N. Romashkova, IEEE Member

*System analysis and Informatics Department Russian Presidential Academy
of National Economy and Public Administration (RANEPA), Moscow, Russia*

**INTERNATIONAL TRAINING PROGRAMS IT SECURITY SYSTEM
FOR SPECIALISTS IN ONBOARD SYSTEMS**

13-00 – 13-15

Sergey V. Shelmakov, Alexey V. Lobikov, Tatyana Yu. Grigoreva

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**ASSESSMENT OF TRAFFIC MANAGEMENT MEASURES IMPACT
ON THE POPULATION HEALTH LIVING NEAR THE HIGHWAY**

13-15 – 13-30

Anastasiya G. Shevtsova

Belgorod State Technological University named after V.G.Shoukhov, Belgorod, Russia

Alexander N. Novikov

Orel State University, Orel, Russia

Valentin V. Silyanov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

METHOD OF URBAN TRAFFIC MANAGEMENT

13-30 – 13-45

Vladimir I. Stroganov, Vitaly V. Guly

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Vladimir N. Kozlovsky, Dmitry I. Panyukov

Samara State Technical University, Samara, Russia

Dmitry I. Blagoveshchensky, FBU «Tul'skiy TSSM», Tula, Russia

**QUALITY MANAGEMENT IN THE AUTOMOTIVE INDUSTRY
IN THE DIGITAL TRANSFORMATION ERA**

13-45 – 14-00

Vladimir M. Vlasov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Gennadiy D. Linnik, «TransSensor» LLC, Moscow, Russia

**GROUND URBAN PASSENGER TRANSPORT IN A PERIOD
OF DIGITAL TRANSFORMATION**

14-00 – 14-15

Dmitriy B. Yefimenko

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Peter I Smirnov, Vologda State University, Vologda, Russia

Danila A. Ptitsyn, Alexey A. Akulov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**MODELING OF FUEL CONSUMPTION OF PASSENGER CARS BASED
ON THEIR TECHNICAL CHARACTERISTICS**

March 16, 2021

SUB-SECTION 2

Peculiarities of data exchange in cooperative ITS

**Chairman: S.V. Zhankaziev, Doctor of Technical Sciences, Professor,
Moscow automobile and road construction state technical University**

14-30 – 14-45

Vitaly V. Dronseiko, Andrey I. Vorobyev, Alexey Yu. Zabudskiy,

Elena A. Shalagina, Aleksandra A. Pakhomova

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**REFLEXIVE CONTROL OF DATA TRANSMISSION
IN THE HUMAN-MACHINE INTERFACE**

14-45 – 15-00

**Oleg I. Maksimychev, Andrey V. Ostroukh, IEEE Member, Ekaterina N. Matiukhina,
Yuri E. Vasiliev**

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

CONNECTED VEHICLE REMOTE DIAGNOSTIC SYSTEM

15-00 – 15-15

Igor F. Mikhalevich

Russian University of Transport (Moscow Institute of Transport Engineers), Moscow, Russia

**PROBLEMATIC ISSUES OF DEPLOYING COOPERATIVE INTELLIGENT
TRANSPORT SYSTEMS DURING OF DIGITAL TRANSFORMATION**

15-55 – 15-30

I. A. Novikov, A. E. Borovskoy, Y. V. Gorbun

Belgorod State Technological University named after V.G.Shoukhov, Belgorod, Russia

A. V. Terentyev, M. G. Pletnev

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

GEOGRAPHIC INFORMATION SYSTEMS TO IMPROVE ROAD SAFETY

15-30 – 15-45

Alexander Pestryakov, Elena Khasianova, IEEE Member, Sergey Dinges

Moscow Technical University of Communications and Informatics, Moscow, Russia

**ANALYSIS OF CELLULAR VEHICLE-TO-EVERYTHING PHYSICAL LAYER
PARAMETERS**

15-45 – 16-00

Andrey I. Vorobyev, Artem A. Kovesnikov, Maxim G. Pletnev, Tatyana V. Vorobyeva, Dmitriy Yu. Morozov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

PROVIDING ADDITIONAL SITUATIONAL AWARENESS WITH THE USE OF V2X TECHNOLOGY TO IMPROVE THE RELIABILITY OF HIGHLY AUTOMATED VEHICLES

16-00 – 16-15

Anatoly N. Yakubovich, Yuriy V. Trofimenko, Elena V. Shashina, Irina A. Yakubovich

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

A METHODOLOGY FOR OPTIMIZING THE OBJECTIVE FUNCTION IN A HIGH-DIMENSIONAL SPACE USING THE SWARM INTELLIGENCE ALGORITHM

16-15 – 16-30

Sultan V. Zhankaziev, Andrey I. Vorobyev, Maxim V. Gavrilyuk,

Tatyana V. Vorobyeva, Dmitriy Yu. Morozov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

CREATION OF A CERTIFICATION SYSTEM FOR ENSURING THE SAFETY OF INFORMATION TRANSFER BETWEEN VEHICLES AND INTELLIGENT ROAD INFRASTRUCTURE IN THE RUSSIAN FEDERATION

March 17, 2021

SUB-SECTION 3

**Theoretical Aspects of Artificial Intelligence Systems Development
for Transportation Engineering**

**Chairman: M. V. Yashina, Doctor of Sciences (Physical and mathematical),
Moscow automobile and road construction state technical University, IEEE Member**

10-00 – 10-15

Marcelo Alencar, IEEE Senior Member

Institute for Advanced Studies in Communications, Bahia, Brazil

Dmitry A. Buslaev

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Alexander G. Tatashev, Marina V. Yashina, IEEE Member

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

Moscow Technical University of Communications and Informatics, Moscow, Russia

**ESTIMATION METHOD OF V2V NETWORKS CAPACITY IN SATURATED
TRAFFIC FLOWS**

10-15 – 10-30

Viktor R. Anisimov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

LLC “Innovation Center “KAMAZ”, Moscow, Russia

Vladimir V. Filatov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Aleksandr V. Klimov, Fedor A. Ryabtsev

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

LLC “Innovation Center “KAMAZ”, Moscow, Russia

Artem V. Podgornyy

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**OPTIMISATION OF THE ROTOR SPEED AS A WAY TO IMPROVE SPECIFIC
INDICATORS OF TRACTION ELECTRIC MOTORS**

10-30 – 10-45

Radion F. Bikhmukhamedov, Adel F. Nadeev

Kazan National Research Technical University named after A. N. Tupolev – KAI, Kazan, Russia

**MULTI-CLASS NETWORK TRAFFIC GENERATORS AND CLASSIFIERS
BASED ON NEURAL NETWORKS**

10-45 – 11-00

Mikhail Buinevich

Saint-Petersburg University of State Fire Service of Emercom of Russia, Saint Petersburg, Russia

Anastasia Spirkina, Vasiliy Elagin

The Bonch-Bruевич Saint-Petersburg State University of Telecommunications, Saint Petersburg, Russia

Sergey Tarakanov, *Architectural Bureau A1 LLC, Saint Petersburg, Russia*

Andrei Vladyko, *IEEE Member*

The Bonch-Bruевич Saint-Petersburg State University of Telecommunications, Saint Petersburg, Russia

V2X-BASED INTERSECTION PRIORITY MANAGEMENT

11-00 – 11-15

Milana E. Chantieva, Khizar A. Dzhabrailov, Rinat A. Gematudinov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

Moscow Technical University of Communications and Informatics, Moscow, Russia

Dmitriy N. Suvorov, Pavel A. Lygin

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

PROSPECTS OF IMPLEMENTATION OF AUTOMATED MONITORING SYSTEMS, TRANSPORTATION FORECASTING AND ROBOTIC MUNICIPAL SOLID WASTE SORTING POINTS

11-15 – 11-30

George A. Dolin

Moscow Technical University of Communications and Informatics, Moscow, Russia

DEVELOPMENT OF A SEMANTIC EXPERT SYSTEM FOR ANALYZING THE PERFORMANCE OF DEVICES AND COMMUNICATION SYSTEMS

11-30 – 11-45

Khizar A. Dzhabrailov, Milana E. Chantieva, Rinat A. Gematudinov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

Moscow Technical University of Communications and Informatics, Moscow, Russia

Andrey V. Ilyukhin, Ilya V. Safyanov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

METHODOLOGY FOR CALCULATING THE MASS OF A VEHICLE IN DYNAMICS USING A DISCRETE PIEZOELECTRIC SENSOR IN AUTOMATIC WEIGHT AND DIMENSIONAL CONTROL SYSTEMS

11-45 – 12-00

Sergey M. Gaidar

Russian State Agrarian University – Moscow Timiryazev Agricultural Academy, Moscow, Russia

Maria Yu. Karelina

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Alexey B. Laguzin

NAMI Russian State Scientific Research Center, Moscow, Russia

Anton S. Brzhezinskiy

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**PHYSICO-CHEMICAL METHOD OF ORGANIZING BOUNDARY
AND HYDRODYNAMIC LUBRICATION IN FRICTION UNITS**

12-00 – 12-15

B.S. Kerner

University of Duisburg-Essen, Duisburg, Germany

S.L. Klenov

Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Region, Russia

**METHODOLOGY OF MICROSCOPIC TRAFFIC PREDICTION
FOR AUTOMATED DRIVING**

12-15 – 12-30

Aleksandr V. Klimov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Aleksandr M. Tishin

Lomonosov Moscow State University, Moscow, Russia

Vladimir V. Filatov, Danila A. Ptitsyn

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**ON TYPES OF TRACTION MOTORS USED IN THE LEADING WHEEL DRIVE
OF ELECTRIC PASSENGER VEHICLES**

12-30 – 13-00 Coffee break

13-00 – 13-15

Peter Menshih, Igor Niesov, Sergey Erokhin, Mikhail Gorodnichev, IEEE Member

Moscow Technical University of Communications and Informatics, Moscow, Russia

**METHODOLOGY FOR REDUCING THE NUMBER OF PSYCHOLOGICAL TEST
QUESTIONS FOR USE IN A PREDICTIVE MACHINE LEARNING MODEL**

13-15 – 13-30

Kirill Kupryanov, Mikhail Gorodnichev, IEEE Member,

Moscow Technical University of Communications and Informatics, Moscow, Russia

RECOGNITION OF HUMAN BEHAVIOR

13-30 – 13-45

Konstantin N. Pankov, Evgeny A. Saksonov

Moscow Technical University of Communications and Informatics, Moscow, Russia

USING PROBABILISTIC METHODS IN THE ANALYSIS OF INFORMATION SECURITY OF DISTRIBUTED LEDGER SYSTEMS

13-45 – 14-00

Vyacheslav A. Rakov

Vologda State University, Vologda, Russia

Andrey M. Ivanov, Boris S. Subbotin, Artem V. Podgorny

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

STAGNATION IN THE DEVELOPMENT OF INTERNAL COMBUSTION ENGINES AS A FACTOR OF TRANSITION TO MORE PERFECT POWER UNITS

14-00 – 14-15

Evgeny A. Saksonov, Yury L. Leokhin

Moscow Technical University of Communications and Informatics, Moscow, Russia

Peter B. Panfilov

National Research University – Higher School of Economics, Moscow, Russia

Evgeny V. Nikitin

JSC Company RNT, Moscow, Russia

SYNTHESIS OF CORE NETWORK STRUCTURE OF GEOGRAPHICALLY DISTRIBUTED COMMUNICATION SYSTEM

14-15 – 14-30

Peter I. Smirnov

Vologda State University, Vologda, Russia

Alexander V. Sukhodolya, Tatyana Yu. Cherepnina, Elmira U. Akhmetzhanova,

Vladimir S. Ershov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

INFLUENCE OF TRIBOTECHNICAL COMPOSITION ON ENGINE PERFORMANCE

14-30 – 14-45

Vladimir B. Yashin

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

Moscow Technical University of Communications and Informatics, Moscow, Russia

BRAIN MAP DATA BASED AGGRESSIVE DRIVING DETECTION METHOD

14-45 – 15-00

O.N. Didmanidze

Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Moscow, Russia

Maria Yu. Karelina

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Ekaterina P. Parlyuk

Russian State Agrarian University – Moscow Timiryazev Agricultural Academy, Moscow, Russia

**TRIBO-CHARACTERISTICS OF PROMISING CUTTING FLUIDS
FOR METAL CUTTING**

15-00 – 15-15

Marina V. Yashina, IEEE Member, Alexander G. Tatashev

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia;

Moscow Technical University of Communications and Informatics, Moscow, Russia

Pavel I. Pospelov, Le Duc Long, Nikolay P. Susoev

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**EVALUATION METHODOLOGY OF DISTRIBUTION OF VEHICLE LANE-
CHANGE PROBABILITIES ON MULTILANE ROAD BEFORE CROSSROAD**

March 17, 2021

SUB-SECTION 4

Test methods of motor vehicles integrated into an intelligent transport environment

Chairman *A.M. Ivanov, Doctor of Technical Sciences, Professor
Moscow automobile and road construction state technical University*

15-30 – 15-45

Sergey A. Evtyukov, Ilya S. Brylev, Maria M. Blinder

*Saint Petersburg State University of Architecture and Civil Engineering,
Saint Petersburg, Russia*

Vyacheslav R. Rogov, Danila A. Ptitsyn

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**MODELING OF A ROAD TRAFFIC ACCIDENT USING MULTIVARIATE
ANALYSIS OF INJURIES IN A TWO-WHEELED VEHICLE COLLISION
WITH A CAR**

15-45 – 16-00

Sergey A. Feofanov, Larisa S. Feofanova

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**INTEGRATED STARTER-GENERATOR USING SWITCHED RELUCTANCE
ELECTRIC MOTOR FOR N1 CATEGORY VEHICLES**

16-00 – 16-15

Vladimir V. Filatov, Ivan V. Ukhov, Alexander V. Klimov, Artem V. Podgornyy

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**SIMULATION OF THE HEAT CURRENT LIMITATION ALGORITHM
FOR THE TRACTION BATTERY MANAGEMENT SYSTEM**

16-15 – 16-30

Vitaliy V. Gaevskiy, Andrey M. Ivanov, Ghith Sater

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**IMPACT OF VEHICLES AND MOTORCYCLES ON THE ENVIRONMENT
AND "SMART CITY" AS A WAY TO SOLVE TRANSPORTATION PROBLEMS
OF A MEGAPOLIS**

16-30 – 16-45

Ilya S. Gladushevskiy, Stanislav S. Evtyukov

*Saint Petersburg State University of Architecture and Civil Engineering,
Saint Petersburg, Russia*

Aleksey V. Terentyev, Dmitry B. Efimenko

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

**INFLUENCE OF AUXILIARY BRAKING SYSTEMS ON DECELERATION
OF VEHICLES OF CATEGORY M1**

16-45 – 17-00

Maria Yu. Karelina

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

Otari N. Didmanidze

Russian State Agrarian University – Moscow Timiryazev Agricultural Academy, Moscow, Russia

Vyacheslav A. Rakov

Vologda State University, Vologda, Russia

METHODOLOGICAL APPROACHES TO ESTIMATION OF THE BRAKING ENERGY RECOVERY PROPERTIES

17-00 – 17-15

Sergey R. Kristalniy, Vitaliy V. Gaevskiy, Nikolay V. Popov,

Aleksey N. Andreev, Maksim A. Toporkov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

EXPERIENCE OF USING A MOVING PEDESTRIAN MODEL IN TESTS OF AUTOMATIC EMERGENCY BRAKING SYSTEM

17-15 – 17-30

Sergey S. Shadrin, Andrey M. Ivanov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

TESTING PROCEDURES AND CERTIFICATION OF HIGHLY AUTOMATED AND AUTONOMOUS ROAD VEHICLES

17-30 – 17-45

Kirill M. Sidorov, Aleksandr G. Grishchenko, Boris N. Sidorov,

Vladimir I. Stroganov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

ELECTRIC PROPULSION SYSTEM SIMULATION AS BASIS FOR THE ELECTRIC VEHICLE DIGITAL TWIN DEVELOPMENT

17-45 – 18-00

Boris S. Subbotin

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

K.S. Lukin, Vologda State University, Vologda, Russia

Alexey A. Solntsev, Vladimir S. Ershov, Alexey A. Akulov

Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia

MODELING METHODS COMPARISON OF URBAN PUBLIC TRANSPORT MOVEMENT FOR ITS

March 16, 2021

SECTION 6.

Digital signal processing in on-board radio systems

SECTION CHAIRMEN:

Yury V. Kuznetsov, *IEEE Senior Member, Doctor of Sciences (Engineering), Professor of Moscow Aviation Institute (National Research University), Moscow, Russia*

Vladimir V. Kirdyashkin, *Ph.D, Director of Institute "Radio electronics, infocommunications and information security" of Moscow Aviation Institute (National Research University), Moscow, Russia*

Timofey Shevgunov, *IEEE Senior Member, Ph.D, Moscow Aviation Institute (National Research University), Moscow, Russia Chair of MTT/ED/AES Chapter Moscow, Russia*

FIRST PART OF SECTION 6

11-00 – 11-15

Valentin A. Abramov, Oleg B. Popov, Tatyana V. Chernysheva, Vladimir G. Taktakishvili, *IEEE Member, Alexey A. Ovchinnikov Moscow Technical University of Communications and Informatics, Moscow, Russia*

ON-BOARD TRANSMISSION QUALITY ASSESSMENT USING SHORT AUDIO SIGNAL

11-15 – 11-30

Vadim V. Afanasiev, Sergey S. Loginov
Kazan National Research Technical University- KAI, Kazan, Russia

DIAGNOSTICS OF CONTROLLED DISCRETE-NONLINEAR DMITRIEV-KISLOV SYSTEM BY FRACTIONAL POWER SPECTRA

11-30 – 11-45

Victoriya N. Aldohina, Victor D. Liferenko, Dmitriy S. Fedorenko, Konstantin E. Legkov

Military Space Academy named after A.F.Mozhaisky, St. Petersburg, Russia

METHODOLOGY FOR CREATING A REFERENCE REFLECTION SPECTRA DATABASE FOR SPACE OBJECTS MONITORING

11-45 – 12-00

Timofey Shevgunov

Moscow Aviation Institute (National Research University), Moscow, Russia

Antonio Napolitano

University of Napoli “Parthenope”, Napoli, Italy

FRACTION-OF-TIME DENSITY ESTIMATION BASED ON LINEAR INTERPOLATION OF TIME SERIES

12-00 – 12-15

Nikita A. Andriyanov

Financial University under the Government of the Russian Federation, Moscow, Russia

THE APPLICATION OF CORRELATION ANALYSIS IN RECOGNIZING VOICE MESSAGES IN CIVIL AVIATION

12-15 – 12-30

Vladimir M. Artyushenko

Technological University, Korolev, Russia

Vladimir I. Volovach, IEEE Member

Volga Region State University of Service, Togliatty, Russia

MODELING THE ALGORITHM OF CUMULATIVE SUMS IN THE APPLIED PROBLEMS OF DETECTING THE SIGNALS WITH RANDOM TIME OF OCCURRENCE IN NON-GAUSSIAN NOISE

12-30 – 12-45

Mikhail G. Bakulin, Taoufik Ben Rejeb, Vitaly B. Kreyndelin, Aleksei E. Smirnov

Moscow Technical University of Communications and Informatics, Moscow, Russia

COMBINED PRECODING TECHNIQUE WITH ANTENNA SELECTION FOR MASSIVE MU-MIMO SYSTEMS

12-45 – 13-00

Fedor V. Balykleisky, Alexander N. Kharlamov

Moscow Aviation Institute, Moscow, Russia

SOFTWARE AND HARDWARE FOR CARRYING OUT RESEARCH WORK WITH AN ULTRA-SHORT PULSE PROBING SIGNAL

13-00 – 13-15

Danil N. Bezumnov, Vyacheslav I. Voronov

Moscow Technical University of Communications and Informatics, Moscow, Russia

DEVELOPMENT OF THE RESEARCH STAND FOR EXPLORATION OF MODELS AND ALGORITHMS FOR GROUP CONTROL OF GROUND-BASED MOBILE ROBOTS

13-15 – 13-30

Vyacheslav V. Borodin, Alexander M. Petrakov, Vyacheslav A. Shevtsov
Moscow Aviation Institute (National Research University), Moscow, Russia
ENERGY-EFFICIENT ROUTING IN COMMUNICATION NETWORKS

13-30 – 13-45

Alexander S. Griбанov, Denis A. Okhotnikov, Kirill Yu. Bulanov
Moscow Aviation Institute (National Research University), Moscow, Russia
**DIGITAL PROCESSING OF RADAR SIGNALS IN THE AUTOMATIC
HELICOPTER LANDING SYSTEM ON A MOVING PLATFORM**

13-45 – 14-00

Irena V. Chernova
Moscow Technical University of Communications and Informatics, Moscow, Russia
**FEATURES OF THE DATA MODELING METHOD OF THE COMPOSITE
FILTER ALGORITHM**

14-00 – 15-00 Coffee break

SECOND PART OF SECTION 6

15-00 – 15-15

G. A. Alekseev, V. E. Martirosov
Moscow Aviation Institute (National Research University), Moscow, Russia
DYNAMIC CHARACTERISTICS OF THE BPSK-GLSS DEMODULATOR

15-15 – 15-30

Vladimir E. Martirosov, G. A. Alekseev
Moscow Aviation Institute (National Research University), Moscow, Russia
**INVESTIGATION OF THE QPSK-GLSS DEMODULATOR USING PHASE
SPACE METHOD**

15-30 – 15-45

Rashid R. Fayzullin, *IEEE Member*, **Ilya M. Lerner**, *IEEE Member*,

Vlad. L. Odintsov, *IEEE Member*,

*Kazan National Research Technical University n.a. A.N. Tupolev – KAI (KNRTU-KAI),
Kazan, Russia*

Vladimir I. Il'in

Kazan Federal University, Kazan, Russia

Gulnara A. Garifullina

Kazan National Research Technological University, Kazan, Russia

**PECULIARITIES OF INSTANTANEOUS FREQUENCY AND ENVELOPE
OF CFSKN-N-SIGNAL IN THE CHANNEL WITH MEMORY**

15-45 – 16-00

Pavel E. Golosov

*The Russian Presidential Academy of National Economy and Public Administration,
Moscow, Russia*

Ivan M. Gostev

The Institute for Information Transmission Problems, Moscow, Russia

ABOUT ONE CLOUD COMPUTING SIMULATION MODEL

16-00 – 16-15

Alexander Yu. Grinev

Moscow Aviation Institute (National Research University), Moscow, Russia

Alexey A. Izmaylov

PJSC «NPO «Almaz» named after academician A.A. Raspletin, Moscow, Russia

**DUAL-BAND ANTENNA SYSTEM BASED ON A METASTRUCTURE WITH
THE PROPERTY OF AN ARTIFICIAL MAGNETIC CONDUCTOR**

16-15 – 16-30

Nikolay Dembitskiy

Moscow Aviation Institute (National Research University), Moscow, Russia

**SPLINE SIGNAL GENERATORS FOR A GIVEN FORM ON CONTINUAL
PROCESSORS**

16-30 – 16-45

Ekaterina O. Kandaurova, **Denis S. Chirov**, *IEEE Member*

Moscow Technical University of Communications and Informatics, Moscow, Russia

**IMPLEMENTATION OF AN ALGORITHM FOR INTELLIGENT TUNING
OF OPERATING FREQUENCIES FOR COGNITIVE RADIO SYSTEMS**

16-45 – 17-00

Vitaly O. Kazachkov, N.A. Soldatenkova

Moscow Aviation Institute (National Research University), Moscow, Russia

**BIT ERROR RATE PERFORMANCE OF POWER DOMAIN
NON-ORTHOGONAL MULTIPLE ACCESS SYSTEMS**

17-00 – 17-15

G. N. Kazakov, V. A. Shevtsov

Moscow Aviation Institute (National Research University), Moscow, Russia

**SYMBOL SYNCHRONIZERS IN HIGH-SPEED ADAPTIVE RECEIVERS
OF OPTICAL AND RADIO FREQUENCY RANGE**

17-15 – 17-30

Sergey V. Kulygin, V.O. Kazachkov

Moscow Aviation Institute (National Research University), Moscow, Russia

MODELING OF NONLINEAR DISTORTIONS IN 5G NR SYSTEMS

17-30 – 17-45

Andrei S. Kuznetsov

Moscow Aviation Institute (National Research University), Moscow, Russia

**THE METHOD OF THE SYNTHESIS OF THE OPTIMAL DESIGN SOLUTION
OF RADIO ELECTRONIC SYSTEM**

17-45 – 18-00

Ilya M. Lerner, Rashid R. Fayzullin, IEEE Member

*Kazan National Research Technical University n.a. A.N. Tupolev – KAI (KNRTU-KAI),
Kazan, Russia*

Vladimir I. Il'in

Kazan Federal University, Kazan, Russia

Gulnara A. Garifullina

Kazan National Research Technological University, Kazan, Russia

**TO THE MATTER OF IMPLEMENTATION OF RADIO ENGINEERING DATA
TRANSMISSION SYSTEM WITH APSK-N-SIGNAL BASED ON THE THEORY
OF RESOLUTION TIME**

March 17, 2021

SECTION 6. (*Continuation of work*)
Digital signal processing in on-board radio systems

THIRD PART OF SECTION 6

10-00 – 10-15

Nikita Yu. Liberovskiy, Vladimir S. Priputin, Denis S. Chirov, IEEE Member
Moscow Technical University of Communications and Informatics, Moscow, Russia

**EVALUATION OF THE EFFICIENCY OF BLIND SIGNAL SEPARATION
IN THE PROBLEM OF DETECTING BPSK SIGNALS**

10-15 – 10-30

V. D. Liferenko

JSC «SUPERTEL», Saint Petersburg, Russia

K. E. Legkov, D. A. Gural

MSA named after A. F. Mozhaisky, Saint Petersburg, Russia

**ORGANIZATION OF EFFECTIVE FUNCTIONING OF THE INFORMATION
SUBSYSTEM OF A NETWORK OF DISTRIBUTED HETEROGENEOUS
INFORMATION AND COMPUTING RESOURCES**

10-30 – 10-45

Sergey S. Loginov, Vadim V. Afanasiev

University Named after A.N. Tupolev, Kazan, Russia

**FRACTIONAL POWER SPECTRA IN DIAGNOSTICS OF CONTROLLED
ANISHCHENKO-ASTAKHOV SYSTEM**

10-45 – 11-00

Mikhail S. Lokhvitskiy

Moscow Technical University of Communications and Informatics, Moscow, Russia

Oleg A. Shorin

National Institute Radio and Infocommunication Technology, Moscow, Russia

**THE REPEATER WITH GLOBAL POSITIONING SYSTEM FOR CELLULAR
COMMUNICATION**

11-00 – 11-15

Evgeny Efimov, Nikolay Neudobnov

Moscow Aviation Institute (National Research University), Moscow, Russia

ARTIFICIAL NEURAL NETWORK BASED ANGLE-OF-ARRIVAL ESTIMATOR

11-15 – 11-30

A.M. Matveev, I.V. Petrov, M.N. Ushkar

Moscow Aviation Institute (National Research University), Moscow, Russian Federation

METHOD OF RECEIVING-TRANSMITTING MODULE TESTABILITY FOR RADAR WITH ACTIVE ELECTRONICALLY SCANNED ANTENNA

11-30 – 11-45

V. Y. Mikhaylov, Roman B. Mazepa

Moscow Aviation Institute (National Research University), Moscow, Russia

SIMULATION OF FAST TRANSFORMATION PROCEDURES IN GALOIS FIELDS TO ESTIMATE EFFICIENCY OF PERSPECTIVE SIGNALS GENERATION AND PROCESSING DEVICES

11-40 – 12-00

Anastasia I. Mozhaeva, IEEE Member

The University of Waikato, Hamilton, New Zealand;

Moscow Technical University of Communications and Informatics, Moscow, Russia

Igor V. Vlasuyk, Alexei M. Potashnikov

Moscow Technical University of Communications and Informatics, Moscow, Russia

Lee Streeter, Michael Cree

The University of Waikato, Hamilton, New Zealand

THE METHOD AND DEVICES FOR RESEARCH THE PARAMETERS OF THE HUMAN VISUAL SYSTEM TO VIDEO QUALITY ASSESSMENT

12-00 – 12-15

Vladimir M. Nuzhdin, Andrey E. Ananenko, Dmitry V. Marin

Moscow Aviation Institute (National Research University), Moscow, Russia

RADAR OF COMPLEX UAV DETECTION AND NEUTRALIZATION

12-15 – 12-30

Denis A. Okhotnikov, Nikolay A. Sharakha, Andrey V. Gerasimov

Moscow Aviation Institute (National Research University), Moscow, Russia

SYNTHESIS OF THE ANTENNA APERTURE BASED ON SHORT-PULSE SHORT-RANGE RADAR

12-30 – 12-45

Valery P. Orlov

Moscow aviation institute (National research university), Moscow, Russia

THE IMPLEMENTATION OF THE ALGORITHM OF "GLUING" IMAGES

12-45 – 13-00

Alexei M. Potashnikov

Moscow Technical University of Communications and Informatics, Moscow, Russia

Anastasia Mozhaeva, IEEE Member

The University of Waikato, Hamilton, New Zealand;

Moscow Technical University of Communications and Informatics, Moscow, Russia

Igor V. Vlasuyk, Vladimir D. Fedorov, Andrei V. Balobanov

Moscow Technical University of Communications and Informatics, Moscow, Russia

**THE METHOD OF FORMING A PANORAMA WITH INCREASED
RESOLUTION IN THE SPATIAL DIRECTION**

13-00 – 14-00 Coffee break

FOURTH PART OF SECTION 6

14-00 – 14-15

Anastasiya I. Repneva

Moscow Aviation Institute (National Research University), Moscow, Russia

**THE PRINCIPLE OF UNBUNDLING DURING THERMAL ENGINEERING
CALCULATIONS OF ON-BOARD DIGITAL SIGNAL PROCESSING DEVICES**

14-15 – 14-30

Oksana Guschina

Moscow Aviation Institute (National Research University), Moscow, Russia

**REFINING TIME DELAY ESTIMATE OF COMPLEX SIGNAL USING
POLYNOMIAL INTERPOLATION IN TIME DOMAIN**

14-30 – 14-45

Oleg A. Shorin

Moscow Technical University of Communications and Informatics, Moscow, Russia

Alexandr O. Shorin, German O. Bokk

OJSC NIRIT-XINWEI Telecom Technology (NXTT), Moscow, Russia

**CONSTELLATIONS OF DISCRETE MODULATION LAWS THAT HAVE
THE MAXIMUM INFORMATION CAPACITY PER SYMBOL UNDER
PEAK POWER LIMITATION**

14-45 – 15-00

Vadim N. Skosyrev

Moscow State Technical University named after N.E. Bauman (National Research University), Moscow, Russia

Vladimir M. Nuzhdin, Pavel V. Sokolov, Alexander N. Kharlamov

Moscow Aviation Institute (National Research University), Moscow, Russia

COMPARISON OF ENERGY METRICS AND LEVELS OF PASSIVE INTERFERENCE FOR UWB RADARS WITH RADIO AND VIDEO PULSE PROBING SIGNALS

15-00 – 15-15

Konstantin Smirnov, Vasiliy Blinov

Scientific Research Institute of System Analysis (SRISA RAS), Moscow, Russia

Alexander Nazarov, Alexander Engalychev

Moscow Aviation Institute (National Research University), Moscow, Russia

METHODS FOR ENSURING FULL TRACEABILITY OF THE PRODUCTION TESTING RESULTS OF THE DIGITAL VLSI

15-15 – 15-30

Mikhail V. Snastin, Elena M. Dobychina

Moscow Aviation Institute (National Research University), Moscow, Russia

INVESTIGATION OF STRAY REFLECTIONS IN AN ANECHOIC CHAMBER WITH IMAGING TECHNIQUE

15-30 – 15-45

Alexey V. Solodkov, IEEE Member

National Research University of Electronic Technology, Moscow, Russia

Vitaliy S. Kuznetsov, Alexey S. Volkov, IEEE Member, Vladimir G. Soroka

National Research University of Electronic Technology, MIET, Moscow, Russia

TWO-PHASE DIGITAL SIGNAL MODULATION WITH EFFICIENCY OF 17 BIT PER SAMPLE

15-45 – 16-00

Artem K. Sorokin

Ural Federal University, Ekaterinburg, Russia

SOME QUESTIONS OF HISTOGRAM APPROXIMATION FOR THE LENGTHENED OBJECTS DETECTION ALGORITHM

16-00 – 16-15

Aleksandr V. Starenchenko, Mihail N. Ushkar, Andrei S. Kuznetsov

Moscow Aviation Institute (National Research University), Moscow, Russia

METHODOLOGY OF DESIGN HIGH HEAT FLUX FOR ON-BOARD RADARS OF SMALL-SIZED AIRCRAFT

16-15 – 16-30

Alexandr V. Timoshenko, IEEE Member

MIET National Research University of Electronic Technology, Moscow, Russia

Yuri V. Babkin

Academician A. L. Mints Radiotechnical Institute, Moscow, Russia

Alexandr B. Silantsev, Carlos Abel Gunza Fernandu, Jelson Silva Fernandes Olim

P.G. Demidov Yaroslavl State University, Yaroslavl, Russia

DETECTION AND ESTIMATION OF PARAMETERS OF A RANDOM PROCESS SET IN MULTI-SCANNING RADAR OBSERVATION BASED ON THE "TRACK-BEFORE-DETECT" METHODS

16-30 – 16-45

Pavel S. Tyapkin, Nikolay A. Vazhenin

Moscow Aviation Institute (National Research University), Moscow, Russia

APPLYING BLIND SIGNAL PROCESSING METHODS IN DATA-TRANSMISSION SYSTEMS

16-45 – 17-00

Vladimir O. Varlamov, Evgeniy M. Lobov, Elizaveta O. Lobova, Efim A. Liberman

Moscow Technical University of Communications and Informatics, Moscow, Russia

RESEARCH OF THE HYBRID FILTER BANK FREQUENCY EQUALIZER TRANSFER FUNCTION COEFFICIENTS ESTIMATION QUALITY

17-00 – 17-15

Vladimir I. Volovach, IEEE Member

Volga Region State University of Service, Togliatti, Russia

Vladimir M. Artyushenko

Technological University, Korolev, Russia

DETECTION OF SIGNALS WITH A RANDOM MOMENT OF OCCURRENCE USING THE CUMULATIVE SUM ALGORITHM

17-15 – 17-30

Andrey A. Yelizarov, IEEE Member, Igor V. Nazarov, Andrey A. Skuridin,

Elmira A. Zakirova, Dinesh Rano, IEEE Member

HSE University, Moscow, Russia

COMPUTER SIMULATION OF MODULATED FREQUENCY-SELECTIVE SURFACES ON MUSHROOM-SHAPED METAMATERIALS