

2023 Systems of Signals Generating and Processing in the Field of on Board Communications

**Moscow, Russia
14-16 March 2023**



IEEE Catalog Number: CFP23O83-POD
ISBN: 979-8-3503-9773-4

**Copyright © 2023 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:	CFP23O83-POD
ISBN (Print-On-Demand):	979-8-3503-9773-4
ISBN (Online):	979-8-3503-9772-7
ISSN:	2768-0096

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

<i>A. S. Adzhemov, A. Y. Kudryashova, N. E. Poborchaya</i> IMPLEMENTATION OF THE FORMAT OF VIDEO LECTURES FOR DISCIPLINES OF THE DEPARTMENT OF GENERAL COMMUNICATION THEORY.....1
<i>A. M. Almufti, O. G. Morozov, R. Sh. Misbakhov, Ya. K. Garovov, A. M. Niyazgulyeva</i> EXPERIMENTAL INVESTIGATION AND COMPARISON OF MODULATION TYPES FOR HIGH CAPACITY BROADBAND TRANSMISSION SYSTEM TO SUPPORT 5G NETWORKS.....6
<i>D. F. Amirov</i> ARTIFICIAL INTELLIGENCE FOR CYBER SECURITY GOALS.....11
<i>V. M. Antonova, E. E. Malikova, V. E. Bogomolov, A. Y. Malikov</i> SOME FEATURES OF ANYLOGIC INTEGRATION INTO THE UNIVERSITY'S EDUCATION SYSTEM.....18
<i>G. M. Aristarkhov, O. V. Arinin, I. N. Kirillov, A. V. Markovskiy, A. D. Doronina</i> MULTI-BAND BANDPASS MICROSTRIP FILTERS BASED ON TWO CODIRECTIONAL HAIRPIN RESONATORS.....23
<i>Ya. S. Artamonova, A. A. Antipov, G.V. Brega, E. N. Vasilieva</i> EMPIRICAL MODEL FOR STUDYING PREFERENCES IN THE FIELD OF INTELLIGENT TRANSPORT SYSTEM OF EUROPE.....28
<i>V. S. Artemyev, M. N. Makhiboroda, S. L. Yablochnikov, I. O. Yablochnikova, F. K. Khutugova</i> SOME ASPECTS OF THE SYNTHESIS OF AUTOMATED SINGULARLY PERTURBED CONTROL SYSTEMS.....33
<i>V. M. Artyushenko, V. I. Volovach</i> THE ENERGY SPECTRUM OF THE NOISE MODULATION FUNCTION UNDER THE INFLUENCE OF SLOW MULTIPLICATIVE NOISE.....39
<i>I. A. Asmanov, V. V. Zavyazkina, D. G. Moroz, A. I. Zhukov</i> DEVELOPMENT OF A HARDWARE AND SOFTWARE COMPLEX FOR OPTIMIZING LOGISTICS ACTIVITIES IN THE FIELD OF CONSUMER WASTE MANAGEMENT.....45
<i>M. G. Bakulin, T.B.C. Ben Rejeb, V. B. Kreyndelin, D. Y. Pankratov, A. E. Smirnov</i> CLASSIFICATION OF NOMA SCHEMES.....49
<i>S. B. Benevolensky, V. S. Ershov, A. A. Sirotkin, A. A. Kiryanov, V. Yu. Sirotkin</i> AGRICULTURAL ROBOT SOFTWARE WITH MACHINE VISION AND COGNITIVE ARTIFICIAL INTELLIGENCE MODULE.....54
<i>V. N. Bogumil, V. M. Vlasov, I. V. Konin, H. M. Eldiba, M. J. Duque Sarango</i> DEVELOPMENT OF THE SPATIAL MODEL OF AN URBAN PASSENGER TRANSPORT ROUTE FOR THE SAFE MOVEMENT OF PASSENGER VEHICLES WITH A PARTIALLY AUTONOMOUS (ROBOTIC) CONTROL SYSTEM.....59
<i>D. V. Braslavskiy, E. A. Skorodumova</i> DEVELOPING AN AI-SYSTEM FOR ANALYZING GAMES OF TEAM SPORTS USING VR/AR TECHNOLOGY.....65
<i>V. V. Butenko, M. V. Ivankovich, E. M. Lobov, A. A. Kuchumov, E. O. Lobova</i> SOFTWARE MODEL OF A 5G DATA TRANSMISSION SYSTEM WITH INCREASED SPECTRAL EFFICIENCY.....71
<i>D. S. Chirov, E. O. Kandaurova</i> SPECTRUM OCCUPANCY PREDICTION ALGORITHM USING ARTIFICIAL NEURAL NETWORKS.....75

<i>N. G. Churbanova, M. A. Trapeznikova, A. G. Churbanov, V. V. Emets</i>	
PREDICTION OF FLOWS IN AN AUTOMOTIVE CATALYTIC CONVERTER.....	79
<i>T. Dawood, M. S. Stepanov, Ch. Naoussi, B. Joao, Kh. Yahia</i>	
THE MATHEMATICAL MODEL OF THE INTERNET OF THINGS TRAFFIC SERVICING IN CASE OF ITS IMPULSE NATURE.....	84
<i>V. A. Dokuchaev, Denis Petukhov</i>	
CLOUD DATA FORMATS TRANSFORMATION ALGORITHMS.....	92
<i>A. V. Dolgopyatova, O. V. Varlamov</i>	
REVERSE INTERMODULATION DISTORTION IN CURRENT MODE AND BRIDGE CLASS D RF POWER AMPLIFIERS.....	97
<i>S. S. Dymkova</i>	
METHODOLOGY FOR ORGANIZING SCIENTIFIC WORK IN TELECOMMUNICATIONS UNIVERSITY.....	104
<i>Dmitry Egorov, Anastasia Egorova, Aleksey Potashnikov</i>	
EFFICIENCY EVALUATION OF NOISE BASED CAMERA MEASUREMENTS ALGORITHMS.....	110
<i>Anastasia Egorova, Roman Baryshev, Anastasia Mozhaeva</i>	
METHODOLOGY OF RESEARCHING PERCEPTION IDENTITY OF REGIONS OF USERS' INTERESTS WHILE VIEWING STREAMING VIDEO CONTAINING VARIOUS CONTENT AND COMPRESSION ARTEFACTS.....	114
<i>A. G. Erokhin, M. F. Vanina, E. A. Frolova</i>	
ANALYTICAL QUEUEING MODEL OF FUNCTIONING OF THE ON-BOARD NAVIGATION COMPLEX DATABASE.....	121
<i>S. A. Eruslankin, G. S. Mazlumyan, A. N. Sova</i>	
RESULTS OF THE ASSESSMENT OF THE ADEQUACY OF THE MATHEMATICAL MODEL OF THE HYDRODYNAMIC TRANSMISSION OF A VEHICLE.....	126
<i>Timur Fatkhulin, Rafif Alshawi, Alena Kulikova, Alexander Mokin, Anna Timofeyeva</i>	
ANALYSIS OF SOFTWARE TOOLS ALLOWING THE DEVELOPMENT OF CROSS-PLATFORM APPLICATIONS FOR MOBILE DEVICES.....	130
<i>Grigoriy Fokin, Dmitriy Volgushev</i>	
SOFTWARE-DEFINED RADIO NETWORK POSITIONING TECHNOLOGY DESIGN. RECEIVER PROCESSING PROCEDURES.....	135
<i>D. V. Gadasin, A. V. Shvedov, Y. D. Egorova, I. R. Shaidullina</i>	
APPLICATION OF THE METHOD OF MAJORITY CODING TO DETERMINE THE OPTIMAL ROUTE FOR DATA TRANSMISSION IN THE NETWORK.....	142
<i>V. V. Gaevskiy, N. V. Popov, S. R. Kristalniy, M. A. Toporkov, A. N. Andreev</i>	
VIRTUAL ADVANCED DRIVER-ASSISTANCE SYSTEMS TESTS.....	148
<i>E. I. Glushankov, V. I. Tsarik</i>	
SPACE-FREQUENCY BEAMFORMING ALGORITHMS COMPARISON WITH A CIRCULAR ANTENNA ARRAY.....	154
<i>Mikhail Gorodnichev, Grach Mkrtchian, Yury Furletov</i>	
ON THE TASK OF CLASSIFYING SOUND PATTERNS IN TRANSPORT.....	159
<i>R. T. Govorova, E. G. Kukharenko</i>	
THE SPECIAL ASPECTS OF CHINESE TEACHING METHODOLOGY FOR RADIO ENGINEERING STUDENTS.....	168

Oksana Guschina

A SIMULATION STUDY ON THE DETECTION OF A CYCLOSTATIONARY SIGNAL BURIED
IN A STATIONARY NOISE FOR UNKNOWN POWER SCENARIO.....173

B. G. Ibrahimov, Z. A. Ismaylov, Z. N. Huseynov, I. M. Mammadov, T. A. Ismaylov

RESEARCH OF RESOURCES FIBER-OPTIC COMMUNICATION LINES BASED ON WAVELONG
MULTIPLEXING TECHNOLOGY.....178

Z. V. Ilyichenkova, S. M. Ivanova, A. Yu. Ermakova, A. I. Volkov

ENSURING THE SAFETY OF AN AUTONOMOUS OBJECT, TAKING INTO ACCOUNT
THE MOVEMENT OF OTHER ROAD USERS.....183

I. I. Ishmiev, S. S. Loginov

M-SEQUENCE BASED PARTIAL TRANSMIT SEQUENCE PAPR REDUCTION TECHNIQUE.....188

D. V. Ivanov, N. V. Ryabova, V. A. Ivanov, A. A. Kislitsin

METHOD FOR DIAGNOSING THE ULTIMATE BANDWIDTH OF VARIABLE TRANSIONOSPHERIC
RADIO COMMUNICATION CHANNEL.....193

K. M. Kafarov, S. S. Loginov, E. A. Bobina

DIGITAL SIGNAL GENERATORS BASED ON THE LORENTZ SYSTEM IMPLEMENTED USING
FIXED-POINT NUMBERS.....197

N. A. Kandaurov, E. O. Lobova, V. O. Varlamov, K. E. Telengator

SIGNAL-CODE CONSTRUCTIONS FOR WIDEBAND SIGNALS BASED ON M-CPFSK
AND NON-BINARY ERROR-CORRECTING CODES.....201

T. P. Kiseleva

THE TIME OF ENTERING INTO SYNCHRONISM DURING SYNCHRONIZATION ACCORDING
TO THE CYCLIC PREFIX OFDM SYMBOLS FORMED BY THE SUM OF INFORMATION
AND MULTIPHASE SEQUENCES.....205

A. Komina, S. Votyakov, K. Nezhivleva, N. Stepanov, I. Vlasuyk

ASSESSMENT OF INFORMATION CAPACITY OF COMPRESSED VIDEO SEQUENCES
FOR INFORMATION SECURITY SYSTEMS.....212

N. A. Konkin

DETERMINATION OF OPTIMAL MAXIMUM USABLE FREQUENCY PREDICTION PERIODS FOR
IONOSPHERIC RADIO CHANNELS USING THE XGBOOST MACHINE LEARNING
ALGORITHM.....217

V. N. Korshunov, N. I. Likhachev, N. A. Shishova, I. A. Ovchinnikova, P. A. Semenov

FIBER – OPTICAL LINES RELIABILITY: THE ECONOMIC ASPECT.....221

A. Y. Kudryashova, A. S. Adzhemov, N. V. Toutova

IMPLEMENTATION OF ELECTRONIC EDUCATIONAL AND METHODOLOGICAL COMPLEXES
FOR STUDENTS OF IT AREAS.....226

N. G. Kuftinova, A. V. Ostroukh, O. I. Maksimychev, C. B. Pronin, A. K. Yadav

IMPLEMENTATION OF THE DATA FABRIC ARCHITECTURE AS A SUSTAINABLE DEVELOPMENT
OF INDUSTRIAL PLATFORM TECHNOLOGIES IN ROAD TRANSPORT SYSTEMS.....231

E. G. Kukharenko, V. V. Voskobovich, A. M. Kukharenko, A. S. Novikova

IMPROVING THE EFFICIENCY OF INFORMATION SYSTEMS MANAGEMENT THROUGH THE
INTRODUCTION OF THE AUTHORITY CRITICALITY MATRIX.....236

Oleg Kuvshinov, Anton Ruzhitskii, Daniil Stafeev, Evgenii Baev, Ivan Malygin

DESIGN AND RESEARCH OF AN ANTENNA ARRAY FOR A SATELLITE COMMUNICATION SYSTEM
IN THE 435 MHZ BAND.....241

<i>A. A. Kuznetsov, I. I. Vasil'ev, S. R. Valiullin, K. A. Lipatnikov</i>	FIBER-OPTICAL SYSTEM FOR MEASURING THE TEMPERATURE OF THE KAI-1 CUBESAT.....	245
<i>I. R. Lavrukhan, A. A. Yelizarov, S. V. Bashkevich, I. V. Nazarov</i>	RESEARCH OF THE ELECTRODYNAMIC PARAMETERS OF UHF RFID TAGS.....	249
<i>Yuri Leokhin, Timur Fatkhulin</i>	DEVELOPMENT OF A MATHEMATICAL MODEL FOR ANALYSIS OF THE INFORMATION STRUCTURE OF A SOFTWARE-DEFINED OPTICAL NETWORK.....	254
<i>German Leon, D. S. Koptev</i>	EVALUATION OF INFLUENCE OF THE RADIO RECEIVING DEVICES HETERODYNES FUNCTIONING QUALITY ON THE QUADRATURE AMPLITUDE MODULATION DIGITAL SIGNALS RECEPTION NOISE IMMUNITY.....	264
<i>I. M. Lerner, A. N. Khairullin, R. R. Fayzullin, D. V. Shushpanov, V. I. Il'in</i>	RESOLUTION TIME THEORY BROADBAND COMMUNICATIONS IN PROBLEM OF DATA DEPENDENT JITTER IN FREQUENCY SELECTIVE CHANNELS WITH PAM-N-SIGNALS.....	269
<i>Vladislav Lesnikov, Tatiana Naumovich, Alexander Chastikov, Alexander Metelyov</i>	RESTORATION OF COMPLEX SIGNALS DISTORTED BY ALIASING AS A RESULT OF BANDPASS SUB-NYQUIST SAMPLING.....	277
<i>E. M. Lobov, E. O. Lobova, V. O. Varlamov</i>	SYNTHESIS OF THE OPTIMAL DISPERSION SLOPE AND PHASE JOINT FILTERING ALGORITHM FOR THE BROADBAND SIGNAL IN THE IONOSPHERIC RADIO CHANNEL.....	283
<i>E. V. Lopatina, S. N. Maltseva, A. Y. Pavlova</i>	SELF-DIRECTED LEARNING OPTIMISATION TOOLKITS FOR ELECTRONICS AND ELECTRICAL ENGINEERING STUDENTS.....	288
<i>M. A. Mashkova, V. N. Karavashkina, A. A. Yelizarov, A. A. Skuridin, E. A. Zakirova</i>	MODELING OF PARTIALLY FILLED WAVEGUIDE STRUCTURES WITH MAGNETIC WALLS ON A MUSHROOM-SHAPED METAMATERIAL.....	293
<i>A. E. Mikenin, G. A. Prokurat, A. V. Pestryakov</i>	SOFTWARE DEMO VERSIONS OF MODERN MEASURING EQUIPMENT USING FOR TELECOMMUNICATION DISCIPLINES STUDYING.....	298
<i>I. F. Mikhalevich</i>	INTELLIGENT TRANSPORT SYSTEMS SOFTWARE AS A SOURCE OF TRANSPORT SECURITY THREATS.....	303
<i>V. Y. Mikhaylov, R. B. Mazepa, A. A. Abramov, N. A. Yakush</i>	DEVELOPMENT OF MODELS OF SECRETLY INFLUENCE ON THE WIRELESS NETWORKS INFRASTRUCTURE USING SIGNAL-LIKE INTERFERENCE AND EVALUATION OF THEIR RESISTANCE TO DETECTION.....	309
<i>N. V. Mokrova, S. L. Yablochnikov, A. B. Semenov, I. K. Kuchieva</i>	INTENSIFICATION OF INTELLIGENT AUTOMATED CONTROL SYSTEMS.....	316
<i>D. G. Moroz, A. I. Zhukov, V. M. Makurina, Ph. V. Akopov, M. A. Kudryshov</i>	METHODOLOGY FOR DETERMINING THE MINIMUM CAPACITY OF TRACTION BATTERIES OF ELECTRIC BUSES BASED ON THE OPERATIONAL CHARACTERISTICS OF ROUTES USING ARTIFICIAL INTELLIGENCE TOOLS.....	322
<i>O. G. Morozov, A. Zh. Sakhabutdinov, V. S. Sokolov, R. Sh. Misbakhov, Ya. Garovov</i>	TWO-FREQUENCY DSB-SC MODULATION FOR RELATIVE FREQUENCY RESPONSE MEASUREMENT OF MACH-ZEHNDER AMPLITUDE MODULATORS.....	328

<i>Marina Moseva, Mikhail Gorodnichev, Ksenia Polyantseva, Artem Pavlikov</i>	
ALGORITHM FOR PREDICTING PEDESTRIAN BEHAVIOR ON PUBLIC ROADS.....	332
<i>O. A. Mukhametzyanov, D. V. Libina, T. F. Shcherbakova, S. S. Sedov</i>	
ANALYSIS OF ELECTROCARDIOSIGNALS BY Z LEAD ON PRESENCE OF LOW-AMPLITUDE HIGH-FREQUENCY COMPONENTS.....	338
<i>Victor Netes</i>	
ULTRA-RELIABLE COMMUNICATIONS: BASIC CONCEPTS, CHALLENGES AND OPEN ISSUES.....	343
<i>I. A. Ovchinnikova, E. B. Vasiliev, P. A. Semenov, A. S. Khahichev, A. G. Koriakin</i>	
INVESTIGATION OF THE POSSIBILITY OF USING OPTICAL CABLES IN REMOTE CONTROL SYSTEMS OPERATING IN UNDERWATER CONDITIONS.....	349
<i>K. N. Pankov, M. M. Glukhov</i>	
ESTIMATION OF THE POWER OF ALGEBRAIC GEOMETRIC CODES DESIGNED TO CONSTRUCT A POST-QUANTUM ALGORITHM FOR ENSURING INFORMATION SECURITY OF ON-BOARD SYSTEMS.....	355
<i>K. A. Panteleeva, D. D. Gadasin, A. V. Shvedov, D. V. Gadasin</i>	
DETERMINING THE AMOUNT OF INFORMATION IN ONE INFORMATION BIT OF TEXT DATA.....	360
<i>Ksenia Polyantseva, Mikhail Gorodnichev, Marina Moseva</i>	
ENSURING THE RELIABILITY OF A HIGHLY LOADED VEHICLE MONITORING AND TRAFFIC CONTROL PLATFORM.....	365
<i>O. B. Popov, T. V. Chernysheva, K. V. Orlov, P. S. Sapronov</i>	
MINIMIZING DISTORTION WHEN COMPANDING AN AUDIO SIGNAL IN TRANSMISSION CHANNELS.....	373
<i>J. Rabenandrasana, A. V. Bachus, N. S. Trofimov, T. V. Kazieva, M. V. Boltanskii</i>	
DEVELOPMENT OF A METROLOGICAL SYSTEM FOR MEASURING THE CHARACTERISTICS OF SINGLE PHOTON DETECTORS BASED ON AN EDUCATIONAL PLATFORM EMQOS 1.0.....	380
<i>Sergey Rozhkov, Vyacheslav Voronov</i>	
INFORMATION THEORY PATTERN RECOGNITION.....	384
<i>D. Yu. Ryabov, O. A. Mukhametzyanov, S. S. Sedov, T. F. Shcherbakova</i>	
ANALYSIS OF POWER SPECTRUMS IN HEART SIGNALS TO DETECT THE PRESENCE OF LOW-AMPLITUDE HIGH-FREQUENCY COMPONENTS.....	393
<i>M. L. Schwartz, A. V. Ryzhkov, V. M. Aladin</i>	
PROBLEMS OF ENSURING THE RELIABILITY OF THE TIME SCALE FORMED BY THE MASTER CLOCK.....	398
<i>S. S. Shadrin, A. M. Ivanov, D. A. Makarova, Yu. M. Furletov</i>	
AUTONOMOUS VEHICLES SAFETY PROVISION BEFORE AND DURING OPERATION ON PUBLIC ROADS.....	402
<i>M. G. Shatrov, A. Yu. Dunin, A. L. Yakovenko, A. S. Stryapunin, L. N. Golubkov</i>	
APPLICATION OF THE AVL CRUISE M SOFTWARE PACKAGE FOR MODELING THE OPERATION OF AN ENGINE AS PART OF A VEHICLE.....	408
<i>O. I. Sheluhin, D. I. Rakovskiy</i>	
MULTI-LABEL LEARNING IN COMPUTER NETWORKS.....	412
<i>Timofey Shevgunov</i>	
USING SHAPING FILTER FOR DERIVING ANALYTICAL MODELS OF SPECTRAL CORRELATION FUNCTIONS DESCRIBING PULSE-MODULATED CYCLOSTATIONARY RANDOM PROCESSES.....	417
<i>A. V. Shvedov, D. V. Gadasin, O. G. Klygina, L. A. Tremasova</i>	
OPTIMIZATION OF NETWORK ROUTING USING THE MARKOV DECISION PROCESS AND HAMILTONIAN CYCLE.....	422

<i>S. A. Sidnev, L. Y. Krasikova, G. S. Artemeva, V. A. Tsarenko</i>	
APPROACH TO SUBSTANTIATING THE EFFECTIVENESS OF THE TRANSITION TO SLA FOR OPERATORS OF TRANSPORT AND ON-BOARD SYSTEMS PROVIDING SERVICES OVER IP NETWORKS.....	426
<i>V. V. Sinyavski, M. G. Shatrov, A. Yu. Dunin, I. V. Maksimov, E. M. Filippova</i>	
SIMULATION OF THE WORKING PROCESS OF A DUAL-FUEL ENGINE TO DETERMINE THE IMPACT OF THE PARAMETERS OF THE PILOT PORTION OF DIESEL FUEL ON ITS PERFORMANCE.....	431
<i>N. D. Smirnov, K. A. Lipatnikov, A. A. Ivanov</i>	
FIBER-OPTIC TEMPERATURE SENSOR BASED ON A PHASE SHIFT.....	437
<i>A. A. Solntsev, A. R. Asoyan, A. G. Tynyanyy, E. M. Tatarnikova, I. A. Panferova</i>	
OPTIMIZATION OF MULTI-CRITERIA DECISION-MAKING PROBLEMS IN SEARCHING AND ELIMINATION OF VEHICLE FAULTS.....	441
<i>M. Y. Spodobaev, M. V. Ivankovich, A. A. Kuchumov, E. M. Lobov, V. O. Varlamov</i>	
5G DATA TRANSMISSION SYSTEM RADIO LINK LAYOUT USING FBMC BASED MULTIPLEXING.....	449
<i>M. S. Stepanov, V. G. Popov, N. K. Fedorova, F. S. Kroshin, A. R. Muzata</i>	
THE AUTOMATION OF CLIENT SERVICING IN UNIVERSITY AND COLLEGE ADMISSION OFFICE.....	454
<i>S. N. Stepanov, V. I. Korotkova, M. G. Kanischeva, A. P. Pshenichnikov</i>	
CONSTRUCTION AND ANALYSIS OF A MODEL OF GROUP RECEIPT OF IOT ELASTIC DATA IN A WIRELESS ACCESS NODE.....	461
<i>E. P. Stroganova, S. E. Grychkin</i>	
DYNAMIC MEASUREMENTS ACCURACY INCREASING OF DIGITAL MEASURING DEVICE FOR ON-BOARD RADIO ELECTRONIC EQUIPMENT.....	468
<i>B. S. Subbotin, M. Yu. Karelina, A. V. Ostroukh, P. I. Smirnov</i>	
APPLICATION OF MULTIVARIATE STATE ESTIMATION TECHNIQUE FOR EARLY DETECTION OF POTENTIAL THREATS WHILE DRIVING A TRUCK.....	473
<i>D. I. Sukhoplyuev, A. N. Nazarov</i>	
ANALYSIS OF APPLICATION-LEVEL LOAD BALANCING ALGORITHMS.....	477
<i>A. V. Tarasova, M. E. Yahimovich, R.A. Gematudinov, P. A. Selezneva, Kh. A. Dzhabrailov</i>	
POSSIBILITIES OF USING THE ARCHITECTURE OF NEURAL NETWORKS "TRANSFORMER" IN TRANSPORT ENGINEERING.....	481
<i>A. N. Terekhov, A. S. Korchagina</i>	
MODELING AN EFFICIENT STORAGE METHOD INFORMATION BASED ON UNARY CODING.....	485
<i>P. A. Titovets, M. O. Fedyuk, A. A. Smolskii, N. E. Miroshnikova</i>	
ATTENUATION OF LASER RADIATION IN WIRELESS UNDERWATER LASER COMMUNICATION CHANNEL CONSIDERING TRANSITION BETWEEN MEDIA.....	489
<i>Yu. V. Trofimenko, T. Yu. Grigoreva, A. Yu. Chekanov</i>	
APPLICATION OF RISK MODELING TO ASSESS THE EFFECTIVENESS OF MOTOR TRANSPORT DECARBONIZATION.....	494
<i>A. A. Tsesar, S. V. Varshavskiy, Yu.E. Vasiliev, M. A. Fineeva</i>	
TECHNOLOGY FOR COLLECTING AND DATA PROCESSING OF STREET-ROAD NETWORK MONITORING OBJECTS.....	500
<i>S. V. Varshavskiy, A. A. Tsesar, Yu. E. Vasiliev, M. A. Fineeva</i>	
ANALYSIS OF MONITORING DATA OF THE STREET-ROAD NETWORK.....	506

<i>A. V. Vasiliev, A. V. Sukhodolya, V. S. Ershov, A. A. Akulov, D. S. Taldykin</i>	
THE USE OF AN ALTERNATIVE FUEL IN AN INTERNAL COMBUSTION ENGINE WITH THE EFFECT OF AUTO-IGNITION.....	510
<i>E. N. Vasilieva, E. S. Vasiliev, Ya. S. Artamonova, A. V. Brega</i>	
PARTICIPATORY DESIGN AS A TOOL FOR OPTIMIZING AN INTELLIGENT TRANSPORT SYSTEM.....	515
<i>V. I. Volovach, V. M. Artyushenko</i>	
ANALYSIS OF THE EFFECT OF MULTIPLICATIVE NOISE ON THE PATTERNS OF PHASED AND SYNTHESIZED ANTENNA ARRAYS.....	520
<i>A. I. Vorobyev, A. A. Koveshnikov, M. V. Gavriluk, T. V. Vorobyeva, D. Yu. Morozov</i>	
CLASSIFICATION OF INTEGRATION PLATFORMS OF INTELLIGENT TRANSPORT SYSTEMS.....	525
<i>E. A. Voronin, S. V. Kozlov, A. N. Kubankov</i>	
IDENTIFICATION OF THE NATURE OF THREATS TO THE ECONOMIC AND FUNCTIONAL SECURITY OF INTELLIGENT ONBOARD SYSTEMS AND THE SELECTION OF PROTECTION BY MACHINE LEARNING.....	530
<i>S. L. Yablochnikov, I. O. Yablochnikova, V. B. Dzobelova, A. V. Dobrovinskaya, A. A. Bekoeva</i>	
MANAGEMENT OF THE PROCESSES OF IT BACHELORS' TRAINING IN TECHNICAL UNIVERSITIES.....	535
<i>M. V. Yashina, A. G. Tatashev, E. K. Shapranova, M. B. Yashina</i>	
MODEL OF MOBILE WEB SERVICE FOR BOOKING A PARKING SPACE BASED ON MULTI-CHANNEL QUEUE SYSTEM WITH DISCIPLINE OF PRIORITIZED CAPACITY.....	541
<i>A. A. Yelizarov, D. M. Ikonnikova, A. I. Katsnelson, P. I. Gromova, D. S. Ilyanova</i>	
MONITORING OF RF-FIELD STRENGTH IN THE ENVIRONMENT BY MOBILE TELECOMMUNICATIONS IN THE MOSCOW.....	546
<i>A. V. Zamytskikh, A. I. Vorobyev, Yu. A. Korotkova, V. V. Dronseiko, Yu. V. Fedyukin</i>	
SERVICE SPEED FOR SELF-DRIVING CARS.....	550
<i>A. P. Zhuravlev, T. A. Chadov</i>	
QAM SIGNAL DEMODULATOR WITH ONE AND A HALF SYMBOL PER SAMPLE.....	555