

International Conference on Applied Physics, Information Technologies and Engineering (APITECH-2019)

Journal of Physics: Conference Series Volume 1399

Krasnoyarsk, Russia
25 - 27 September 2019

Part 1 of 3

ISBN: 978-1-7138-1168-8
ISSN: 1742-6588

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

APPLIED PHYSICS

SUBSTANTIATION OF URANIUM MINING BY ISL BASED ON A GEOTECHNOLOGICAL MODELING	1
<i>M P Sadykov</i>	
NONLINEAR HIGH-AMPLITUDE EXCITATIONS OF THE CUPT7 CRYSTAL LATTICE: A MOLECULAR DYNAMICS STUDY	5
<i>P V Zakharov, A I Cherednichenko, M D Starostenkov, A M Eremin, A V Markidonov</i>	
COMPLEX OF TECHNICAL TOOLS FOR FISH CELLS CULTIVATION	10
<i>E A Zavyalova, A E Droshnev, D A Alontseva, K Y Bulina</i>	
THE NEWTON PROBLEM SOLUTION OF THE TRANSFORMED COMPLEX CURVE PARAMETERS	15
<i>Alexander Lozhkin, Alexander Korobeynikov, Ruslan Khaziyakhmetov</i>	
APPLICATION OF FOCUSED ELECTROMAGNETIC FIELDS IN SATELLITE CONSTRUCTION PROCESSES AND FAULT DIAGNOSTICS	21
<i>N A Testoyedov, A G Romanov, I Yu Danilov, Yu E Sedel'nikov, D A Veden'kin</i>	
HEAT TRANSFER IN MAGNETIC FLUIDS IN MAGNETIC AND ELECTRIC FIELDS	26
<i>Zhanna Vegeera</i>	
NONSTATIONARY ANALYTIC MODEL OF HYDRODYNAMIC ROLLING LUBRICATION	30
<i>V A Ivanov, N V Erkeyev</i>	
MODEL OF FUZZY ULTRA-ACOUSTIC DIAGNOSTICS OF NANOCOMPOSITE FUNCTIONALLY GRADED PLATE CONSTRUCTIONS IN MECHANICAL ENGINEERING	37
<i>S V Storozhev, V I Storozhev, V E Bolnokin, Duong Minh Hai, D I Mutin</i>	
TRANSVERSELY MODULATED WAVE PACKET	44
<i>V N Salomatov</i>	
ON THE CONTROLLABILITY OF A QUANTUM OBJECT	48
<i>Nail T Valishin</i>	
REDUCTION IN THE OPERATING VOLTAGE AND ACTIVE POWER OF EXTENDED ELECTRIC POWER SOURCES	53
<i>T A Konev, V A Kuzmin, E Yu Mutovina, R D Puzhaykin, V N Salomatov</i>	
THE INFLUENCE OF CONVECTIVE DRYING ON THE CHANGE OF KIRPICHEV MASS-EXCHANGE CRITERION	58
<i>Vladimir F Sorochinsky</i>	
COMPARATIVE ANALYSIS OF CATS' LYMPHOCYTES STRUCTURAL FEATURES WITH AND WITHOUT RETROVIRAL INFECTION USING ATOMIC FORCE MICROSCOPY	63
<i>E S Krasnikova, D A Artemev, A V Krasnikov, O V Stolbovskaya, B B Kostishko</i>	
AVERAGING USING NORMAL DISTRIBUTION AND ITS APPLICATION IN CONDENSED MATTER MECHANICS	69
<i>P P Rymkevich, D S Vavilov, E A Shakhova, A S Stepashkina</i>	
METHODOLOGY FOR ENSURING SUSTAINABLE AUTOMATIC CONTROL OF THE MANUFACTURING PROCESS OF MANUFACTURING ELECTRONICS USING THE FUZZY LOGIC APPARATUS	77
<i>A A Petrushevskaya, N A Aleshkin</i>	
INFORMATION-MEASURING METHODS FOR CONTROLLING PHYSICAL PARAMETERS AS INFORMATION SYSTEM BUILDING ELEMENT	83
<i>A I Kustov, V A Sklyarov</i>	
ELECTRICAL SWITCHING IN METAL-OXIDE-METAL STRUCTURES BASED ON ANODIC NIOBIUM OXIDE	89
<i>A L Pergament, P P Boriskov</i>	
THERMAL VISCOSITY OF POLYMERIC MATERIALS FROM THE STANDPOINT OF QUANTUM TRANSFER THEORY	93
<i>P P Rymkevich, A A Romanova, E A Shakhova, V V Golovina, A S Stepashkina</i>	

ON THE WAVE-PARTICLE DUALITY WITHIN THE FRAMEWORK OF MODELING SINGLE-PHOTON INTERFERENCE	99
<i>A P Davydov, T P Zlydneva</i>	
THE SIMPLEST OSCILLATING SOLUTIONS OF NONLOCAL NONLINEAR MODELS	106
<i>A O Smirnov, E E Aman</i>	
NUMERICAL MODELLING OF THE LIQUID FILTERING PROCESS IN A POROUS ENVIRONMENT INCLUDING THE MOBILE BOUNDARY OF THE "OIL-WATER" SECTION	115
<i>N Ravshanov, E Sh Nazirova, V M Pitolin</i>	
AB INITIO CALCULATIONS OF THE FORMATION POLYMERIZED FULLERITE FROM ENDOHEDRAL CLUSTERS LI@C₂₄	122
<i>V A Greshnyakov, E A Belenkov</i>	
REGISTRATION OF THE OPTICAL OUTPUT SIGNAL OF DISTRIBUTED MECHANOLUMINESCENT IMPULSE PRESSURE SENSORS	127
<i>K V Tatmyshevskiy, D D Pavlov</i>	
GRAPHENE POLYMORPHS	133
<i>M E Belenkov, A E Kochengin, V M Chernov, E A Belenkov</i>	
LOW-NOISE HYBRID FREQUENCY SYNTHESIZERS FOR 5G TECHNOLOGY	138
<i>V V Romashov, K A Yakimenko, A N Doktorov</i>	
MAGNETIC NANOCONSTRUCTIONS OF IRON OXIDES COATED WITH ARABINOGALACTAN FUNCTIONALIZED WITH DNA APTAMER	144
<i>S V Stolyar, L A Chekanova, R N Yaroslavtsev, S V Komogortsev, Yu V Gerasimova, O A Bayukov, M N Volochaev, R S Iskhakov, I V Garanzha, O S Kolovskaya, M Sh Bairmani, T N Zamay</i>	
PHYSICOCHEMICAL PROPERTIES OF TITANIUM NITRIDE ELECTRIC ARC POWDER	150
<i>I V Karpov, A V Ushakov, A A Shaikhadinov, V G Demin</i>	
THE COMPARATIVE ANALYSIS OF THE SOLID-STATE ³¹P NMR SPECTRA OF RE-PT VINYLIDENE COMPLEXES	155
<i>K T Smolyarov, N V Volkov, A N Matsulev, A A Kondrasenko</i>	
EFFECT OF NANOPARTICLES IN GROWTH OF TEST - BACTERIA	160
<i>SV Stolyar, LA Chekanova, RN Yaroslavtsev, VP Ladygina, LS Tirranen</i>	
LAMP PUMPED LISRALF₆: CR LASER WITH BRAGG GRATING	166
<i>E E Popov, A A Sergeev, A P Pogoda, A S Boreysho</i>	
INVESTIGATION OF THE EFFECT OF AL PLASMA TREATMENT ON THE SUPERCONDUCTING PROPERTIES OF YBA₂CU₃O_{7-δ}	171
<i>A V Ushakov, I V Karpov, A A Shaikhadinov, V G Demin</i>	
OPTIMAL PARAMETERS SELECTION OF PARTICLE SWARM OPTIMIZATION BASED GLOBAL MAXIMUM POWER POINT TRACKING OF PARTIALLY SHADED PV	176
<i>Sergey Obukhov, Ahmed Ibrahim, Raef Aboelsaud</i>	
RAMAN GAS ANALYZER FOR DETECTING CARBON ISOTOPOLOGUES	182
<i>V V Vitkin, I K Chubchenko, A V Polischuk, A V Kovalev, E E Popov</i>	
CREATION OF CYBER-PHYSICAL SYSTEMS BASED ON BASIC STRUCTURES IN CONDITIONS OF UNCERTAINTY	187
<i>G I Korshunov, S L Polyakov</i>	
RATIONALIZATION OF THE PROCESS OF IMPROVING THE QUALITY OF SPATIAL CONTROL SYSTEMS FOR UNMANNED AERIAL VEHICLE GROUPINGS	191
<i>E G Semenova, Ya A Ivakin, V M Balashov, M S Smirnova</i>	
MODELING THE TEMPERATURE DISTRIBUTION OF MULTI-CHIP INTEGRATED CIRCUITS COMBINING WIRE-BOND AND FLIP-CHIP TECHNOLOGIES	198
<i>P P Boriskov, N Yu Ershova, V V Putrolaynen, P N Seredov, M A Belyaev</i>	
THE INFLUENCE OF DESIGN FEATURES ON THE PROPERTIES OF THE METAL NETWORK	203
<i>Nikolay Testoyedov, Osman Sh Dautov, Yuri Vygonskiy, Anatoly G Romanov, A O Shemyakov</i>	
STUDY OF THE PROCESSES OF CLEANING BIOLOGICAL AND CHEMICAL SUBSTANCES FROM IMPLANTS OF BIOLOGICAL ORIGIN USING SUPERCRITICAL CO₂	210
<i>I V Kuznetsova, N S Sandugey, I M Gilmutdinov, I I Gilmutdinov, A N Sabirzyanov</i>	
MORPHOPHYSIOLOGICAL CHANGES IN THE INTACT SURFACE OF RAT SKIN UNDER THE APPLICATION OF SILICON AND GOLD NANOPARTICLES	217
<i>E I Kondratenko, N A Lomteva, V Yu Timoshenko, A F Alykova, S K Kasimova, I N Zavestovskaya, L A Yakovenkova</i>	
ON THE ANALYSIS OF SEMICONDUCTOR MATERIALS SUITABLE FOR THE DEVELOPMENT OF A RADIATION-STIMULATED POWER SUPPLY BASED ON THE NICKEL-63 RADIO ISOTOPE	223
<i>I V Kovalev, P V Zelenkov, V V Brezitskaya, A T Lelekov, M V Karaseva</i>	

QUADRATIC COSINE-GAUSS BEAMS – THE NEW FAMILY OF LOCALIZED SOLUTIONS OF THE PARAXIAL WAVE EQUATION	229
<i>A B Plachenov, G N Dyakova</i>	
OPTICAL MULTILAYER ANTI-REFLECTING COATING IN THE INFRARED RANGE	234
<i>Yu A Novikova</i>	
MATHEMATICAL MODELLING FOR ANALYSIS OF SELF-LOCKING MECHANICAL SYSTEMS OPERATION IN DYNAMIC MODES	239
<i>Dmitry Ershov, Irina Lukjanenko</i>	
REALIZATION OF AN EDUCATIONAL TOOL DEDICATED TO TEACHING THE FUNDAMENTAL PRINCIPLES OF PHOTOVOLTAIC SYSTEMS	247
<i>Bennacer El Hassouni, Ali Haddi, Hamid Chekenbah, Abdellatif G Amrani, O A Ikonnikov, A A Danichev, R Y Tsarev</i>	
METHOD OF INCREASING THE OBJECTIVITY OF EMPIRICAL RESEARCH	260
<i>D N Galiahetmova, O A Feoktistova, Ya A Shchenikov</i>	
THE NON-CAPACITOR MODEL OF LEAKY INTEGRATE-AND-FIRE VO₂ NEURON WITH THE THERMAL MECHANISM OF THE MEMBRANE POTENTIAL	269
<i>A A Velichko, M A Belyaev, D V Ryabokon, S D Khanin</i>	
RADIOPULSE GENERATION IN DISPERSIVE NONLINEAR TRANSMISSION LINES WITH GAS DISCHARGERS	277
<i>P V Pripitnev, I V Romanchenko, V V Rostov</i>	
AN EFFECTIVE SYSTEM FOR RECYCLING POLYETHYLENETEREPHTHALATE	283
<i>M V Kravtsova, D A Volkov, D A Melnikova, M V Kravtsov, E V Bezheskaia</i>	
THE USE OF MULTICONDUCTOR STRIP STRUCTURES FOR SPLITTING AN ULTRASHORT PULSE IN ITS GENERATION SYSTEMS	288
<i>A O Belousov, I V Romanchenko, T R Gazizov</i>	
THE DETERMINATION OF THE DEPENDENCE OF THE CAVERN LENGTH ON THE FLOW VELOCITY ON AN EXPERIMENTAL HYDRODYNAMIC WORKBENCH	295
<i>A Yu Radzyuk, V A Kulagin, E B Istyagina, T A Pyanykh, I I Grishina</i>	
INFLUENCE OF THE DIGITAL DATA REPRESENTATION ERROR IN THE LINEAR CONTROL CONTOUR OF A PULSE VOLTAGE STABILIZER	302
<i>S N Titovskii, N V Titovskaia, T S Titovskaya</i>	
PHYSICAL BASIS OF THE REMOTE MONITORING METHOD OF PILE FOUNDATIONS OF BUILDING STRUCTURES IN PERMAFROST AREAS	306
<i>G Ya Shaidurov, S P Amelchugov, V I Igolkin, O A Tronin, V V Radaev</i>	
ELECTROMAGNETIC COMPATIBILITY OF RECEIVERS IN THE POWER SUPPLY SYSTEM WITH INDUCTION HEATING UNITS	313
<i>E A Gulin, R A Petukhov, E Yu Sizganova, A N Filatov, A Yu Yuzhamnikov</i>	
MODELING OF NONLINEAR SHOCK DEFORMATION OF PASSENGER CAR BODIES WITH EMERGENCY EXITS	319
<i>S G Shorokhov, O I Bondarenko, V A Lebedev</i>	
OWN FLUCTUATIONS OF TECHNOLOGICAL SYSTEMS	325
<i>D Y Ershov, E G Zlotnikov, B Nestorovski</i>	
CHEMICAL METHOD OF CREATION OF EFFECTIVE NI63 RADIATION SOURCE FOR BETAVOLTAIC CONVERTERS	333
<i>A T Lelekov, N P Evsevskaya, I V Kovalev, P V Zelenkov, V V Brezitskaya</i>	
THE PROCESSES OF HYDROCARBON CONVERSION USING CATALYTIC SYSTEMS	340
<i>A A Kuzhaeva, N V Dzhevaga, I V Berlinskii</i>	
DEVELOPMENT OF A CONDITION MONITORING SYSTEM FOR COMPRESSOR EQUIPMENT WITH NEURAL NETWORK DATA ANALYSIS	348
<i>D K Zyryanov, V V Bukhtoyarov, N A Bukhtoyarova, V V Kukartsev, V S Tynchenko, K A Bashmur</i>	
EVALUATION OF THE EFFICIENCY OF PREFILTER MODELS USING NUMERICAL SIMULATION	355
<i>O V Soloveva, S A Solovev, R R Khusainov</i>	
PROBLEM FORMULATION OF ANALYTICAL CHARACTERIZATION OF PART SURFACE LAYER HARDENED BY A MOVING ELASTIC INDENTER	361
<i>Stanislav Abulkhanov, Alexander Khaimovich, Khudobin Leonid, Sergej Bobrovskij, Aleksey Lukyanov, Olesja Levitskih, Yuriy Polyanskov</i>	
APPROACHES TO FIND VULNERABILITIES AND SECURITY IN THE DIGITAL PRODUCTION NETWORKS	367
<i>Denis Parfenov, Lubov Zabrodina, Vadim Torchin, Anton Parfenov</i>	

ANALYSIS OF FACTORS INFLUENCING TRIBOLOGICAL CHARACTERISTICS OF LUBRICATING OILS AND METHODS OF THEIR CONTROL	373
<i>N N Lysyannikova, V G Shram, A V Lysyannikov, M A Kovaleva, A S Bolshakov, A A Kirpichenko</i>	

CYBERNETICS AND IT

DEVELOPMENT OF AN APPLICATION WITH A GRAPHICAL USER INTERFACE (GUI) TO COMPUTE IN PARALLEL IN THE OPENFOAM ENVIRONMENT	378
<i>Dmitri I Chitalov</i>	
DISCRETE EVENT-BASED SYSTEMS OF TRANSPORT AUTOMATED DISPATCHING CONTROL	384
<i>A I Fadeev</i>	
ANALYSIS OF THE UPPER BOUND OF ERROR CORRECTION TIME FOR THE DATA PROTECTION WITH THE USE OF THE REED-SOLOMON CODES	391
<i>P A Rahman, V E Bolnokin</i>	
DEVELOPMENT OF AN EFFECTIVE MODEL OF PARALLEL PROCESSING OF MULTIMEDIA DATA ON THE CPU AND GPU IN THE CLOUD SYSTEM	397
<i>V Shardakov, D Parfenov, I Bolodurina, V Izvozhikova, V Zaporozhko, A Mezhenin</i>	
CONSTRUCTION OF STANDARD AIRCRAFT TURNS IN RELATION TO THE RETURN POINT TO THE PATH LINE	404
<i>V V Markelov</i>	
INFORMATION TECHNOLOGY OF ACCOUNTING THE IMPACT OF DATA REDUCTION METHODS ON THE RESULTS OF CLASSIFICATION OF PLANT LEAVES.....	408
<i>V Kharakhinov, S Sosinskaya, R Dorofeev, A Dorofeev, R Bazhenov</i>	
AN ALGORITHM FOR SELECTION OF THE MULTIPLICITY OF CORRECTABLE ERRORS FOR THE DATA PROTECTION ON APPLICATION OF THE REED-SOLOMON CODES	414
<i>P A Rahman, V E Bolnokin</i>	
IMPACT OF DIGITALIZATION ON IMPROVEMENT OF ECONOMY, IT AND INTERNET OF BUSINESS	421
<i>G N Kutsuri, S S Kamberdieva, V KH Dedegkaev, I A Sopoeva, T G Shelkunova</i>	
GIS AS A TOOL FOR CREATING A GLOBAL GEOGRAPHIC INFORMATION PLATFORM FOR DIGITAL TRANSFORMATION OF AGRICULTURE	427
<i>E V Kotsur, M N Veselova, A V Dubrovskiy, V N Moskvina, Yu S Yusova</i>	
AUTOMATION OF DESIGN FOR DYNAMIC LOADING AT THE DESIGNING STAGE OF MINING MACHINERY	432
<i>V S Velikanov, N V Dyorina, N M Suslov, A I Luntsova, E I Rabina</i>	
CALCULATION OF RELIABILITY OF INFORMATION SYMBOLS IN PERFORATED CODES	437
<i>Alexander A Sidorenko</i>	
OF DISCREPANCY PREDICTION ALGORITHM IN THE MODEL OF IMPROVE THE QUALITY OF SERIAL PROCESSES OF ENGINEERING PRODUCTION	444
<i>L A Ivanova, E B Charushina, E V Khodareva</i>	
IMPROVING INFORMATION SUPPORT OF THE CADASTRAL VALUATION OF SETTLEMENT LANDS WITH USING GIS-TECHNOLOGIES	452
<i>M N Veselova, N A Kapitulina, E V Kotsur, V N Moskvina, T A Filippova</i>	
ANALYSIS OF RELIABILITY OF THE MACHINE BUILDING ENTERPRISE SUPPLY CHAINS BASED ON INFORMATION AND COMPUTER TECHNOLOGIES	458
<i>S S Golubeva, M V Golubnichenko</i>	
REINVESTMENT PROCESS MODELLING PROBLEM SOLUTION FOR BUSINESS ACTIVITIES IN TOURIST DESTINATION	463
<i>Yelena Yu Lukyanova, Anatoliy N Kazak, Nelli P Shamayeva, Armen Darbinyan</i>	
THE APPLICATION OF THE THEORY OF DYNAMIC SYSTEMS TO SOFTWARE QUALITY ESTIMATION	468
<i>A V Kopyltsov</i>	
THE QUESTION SIMULATION OF INTERNET DATA EXCHANGE, ACCORDING THE FEATURES OF FUNCTIONING THE HYBRID CONTENT DELIVERY NETWORKS	473
<i>P A Filimonov, T Y Izotova, S S Gorelik, S S Eskov, D I Mutin</i>	
TECHNOLOGIES OF RECONSTRUCTION AND PROCEDURAL GENERATION OF THREE-DIMENSIONAL CONTENT	479
<i>Alexander Mezhenin, Vera Izvozhikova, Vladimir Shardakov, Alexey Korotkikh</i>	

KALMAN FILTERING OF COORDINATES DETERMINATION FOR LOCAL POSITIONING SYSTEMS MOBILE OBJECTS	484
<i>Timur V Krasnov, Valery N Bondarenko, Denis S Feoktistov, Vadim F Garifullin, Evgenij V Bogatyrev</i>	
INFORMATION SYSTEM OF AGRICULTURAL ROBOTIC KAMAZ CARS	491
<i>S P Orlov, S V Susarev, O Ja Kravets, A S Morev</i>	
THE CHOICE SUBSTANTIATION METHOD OF ROAD CONSTRUCTION EQUIPMENT FOR MINING ENTERPRISES	496
<i>A S Afanasyev, A M Egoshin, S V Alekseev</i>	
MULTI-AGENT MODELING OF THE LEARNING PROCESS USING NESTED COLORED PETRI NETS.....	502
<i>I M Gorbachenko</i>	
THE DEVELOPMENT OF THE FORECASTING INFORMATION SYSTEM OF HIV AND TUBERCULOSIS COINFECTION'S OUTCOME IN INMATES	508
<i>S B Ponomarev, E V Dyuzheva, M E Vostroknutov, V E Polishchuk, D S Ponomarev</i>	
FORMATION THE MANAGEMENT METHODOLOGY FOR DEVELOPING AN EXPORT POTENTIAL OF THE EAEU MACHINE-BUILDING ENTERPRISES	514
<i>Galina Belyakova, Sergey Belyakov, Darya Fokina, Anastasiya Shpak</i>	
A REVERSIBLE IMAGE WATERMARKING SCHEME BASED ON A NEW MODULATION MODE OF DCT COEFFICIENTS	520
<i>A P Bahrushin, G I Bahrushina, R I Bazhenov</i>	
INDIVIDUAL COMPONENTS FOR COMBINED HEAT AND POWER DISTILLATION TO PRODUCE ELECTRICITY	527
<i>Ibragim M Bamatov, Dzhabrail M Bamatov</i>	
CLUSTER ANALYSIS AND DEVELOPMENT OF THE INTELLECTUAL CANCER MONITORING SYSTEM BASED ON DATA OF THE FEDERAL PENITENTIARY SERVICE OF RUSSIA.....	532
<i>S B Ponomarev, A A Burt, E V Dyuzheva, V E Polishchuk, D S Ponomarev</i>	
STOCHASTIC MODELING OF A TECHNOLOGICAL PROCESS USING HISTOGRAM COMPUTATION.....	537
<i>E D Guzha, T V Khvostova, V A Romanenko, M A Skorokhod</i>	
COMMERCIAL SOFTWARE ENGINEERING UNDER THE DIGITAL ECONOMY CONCEPT	543
<i>L N Borisoglebskaya, E N Provotorova, S M Sergeev</i>	
INFORMATION TECHNOLOGIES IN THE STUDY OF THE IMPLEMENTING COMPLEX LOGIC FUNCTIONS POSSIBILITIES	548
<i>O Yu Zaslavskaya, A A Zaslavskiy, V E Bolnokin</i>	
THE MECHANISM FOR THE GENERALIZED DUAL PROBLEM OF NETWORK PROGRAMMING SOLVING	554
<i>A V Zimin, I V Burkova, O Ja Kravets, V V Zimin</i>	
SOLVING THE PROBLEM OF THE EVOLUTIONARY TASKS OF ECONOMICS AND ORGANIZATION OF PRODUCTION IN SPATIAL NETWORKS	560
<i>L N Borisoglebskaya, V V Provotorov, O V Pilipenko, O Ja Kravets</i>	
USING GOOGLE TENSORFLOW MACHINE LEARNING LIBRARY FOR SPEECH RECOGNITION	566
<i>M S Medvedev, Y V Okuntsev</i>	
CONVERGENCE OF THE RUSSIAN POWER INDUSTRY IN A PERIOD OF DECLINING RELIABILITY AND SUSTAINABILITY OF THE INDUSTRY	570
<i>A A Gibadullin, V N Pulyaeva, E N Kharitonova, N A Kharitonova</i>	
INFORMATION OPENNESS IN THE SPHERE OF ENVIRONMENT PROTECTION AS A FACTOR OF SUSTAINABILITY OF MACHINE-BUILDING COMPANIES	576
<i>A A Akhmetshina, N M Galimullina, O N Korshunova, E V Malysheva, I R Feoktistova</i>	
THE COMPARATIVE ESTIMATION OF WORKLOAD RELOCATION APPROACHES IN THE FOG- AND EDGE-COMPUTING ENVIRONMENTS	582
<i>A B Klimenko, I B Safronenkova</i>	
USING RELAXED CONCURRENT DATA STRUCTURES FOR CONTENTION MINIMIZATION IN MULTITHREADED MPI PROGRAMS	591
<i>Andrey V Tabakov, Alexey A Paznikov</i>	
DIGITALIZATION OF ORGANIZATIONS: CURRENT ISSUES, MANAGERIAL CHALLENGES AND SOCIO-ECONOMIC RISKS	596
<i>I A Ivanova, V N Pulyaeva, L V Vlasenko, A A Gibadullin, M I Sadriddinov</i>	
FEATURES OF THE DEVELOPMENT OF INFORMATION SYSTEMS FOR WORKING WITH BLOCKCHAIN TECHNOLOGY	602
<i>M G Gorodnischev, E G Kukhareno, T U Salutina, M S Moseva, A M Kukhareno</i>	

THE METHOD FOR ASSESSING SECURITY OF EMBEDDED SOFTWARE BASED ON THE FUZZY LOGIC	608
<i>Andrei Iuganson, Danil Zakoldaev</i>	
THE METHOD OF SOFTWARE RELIABILITY INCREASING FOR THE MICROPROCESSORS WITH MULTI-BYTE COMMAND SYSTEM	614
<i>Ju Akinina, T Sergeeva, S Tyurin, M Khudyakov, A Achkasov</i>	
THE FORMATION OF FACTORS AFFECTING THE SUSTAINABLE DEVELOPMENT OF THE GENERATING COMPLEX OF THE ELECTRIC POWER INDUSTRY	620
<i>D E Morkovkin, Ch V Kerimova, O I Dontsova, A A Gibadullin</i>	
ON THE POSSIBILITY OF SCIENTIFIC KNOWLEDGE FORMALIZATION BY FUZZY LOGIC METHODS.....	625
<i>Vladimir V Serov</i>	
FUZZY-MULTIPLE ESTIMATES OF THE PARAMETER UNCERTAINTY INFLUENCE IN THE COMPUTING DEVICES ELEMENTS CALCULATING THEORY	629
<i>S V Storozhev, V I Storozhev, V G Vyskub, Duong Minh Hai, V E Bolnokin</i>	
DIGITAL SUPPORT OF PRODUCTION SMALL BUSINESS PREPARATION IN ENGINEERING	636
<i>V F Bulavin, T G Bulavina, V V Yahrichev, A S Stepanov, A A Frolov</i>	
IDENTIFICATION OF THE LOCAL AREA NETWORK USING MACHINE LEARNING	642
<i>I V Voronin, A I Gazin, V S Ziyautdinov, T A Zolotareva, D M Skudnev, O V Selishchev</i>	
USE EXPERIENCE OF COLLARS WITH RADIO BEACONS OF ARGOS SATELLITE SYSTEM PRODUCED BY ES-PAS LTD. FOR THE STUDY OF REINDEER TAIMYR-EVENK POPULATION.....	647
<i>A P Savchenko, A L Salman, P A Savchenko, I A Savchenko, S A Dubintsov, A N Muravyov</i>	
HOW THE DEVELOPMENT OF BLOCKCHAIN AFFECTED CYBERSECURITY	655
<i>A U Mentsiev, V S Magomadov, M Z Ashkhanova, A U Mentsiev, M T Alams</i>	
AN APPROACH TO THE DEVELOPMENT OF CLUSTERING ALGORITHMS WITH A COMBINED USE OF THE VARIABLE NEIGHBORHOOD SEARCH AND GREEDY HEURISTIC METHOD.....	659
<i>V I Orlov, I P Rozhnov, L A Kazakovtsev, E V Lapunova</i>	
SIMULATION OF ARTIFICIAL INTELLIGENCE IN A COMPUTER GAME	665
<i>Elena V Soboleva, Nadezda V Shalaginova</i>	
INDUCTIVELY COUPLED BURST OSCILLATORS IN NEURAL NETWORK INFORMATION PROCESSING SYSTEMS.....	671
<i>P P Boriskov, A A Velichko</i>	
MANAGEMENT BY THE EFFICIENCY OF THE LOCAL GOVERNMENT	678
<i>T N Nikulina, U S Ivanova, A A Stupina, M V Karaseva</i>	
THE ROUTE SELECTION OF INTERNATIONAL TRAFFIC FLOWS OF THE MACHINE-BUILDING ENTERPRISE.....	682
<i>A V Selivanov, E V Belyakova, A A Ryzhaya</i>	
STATISTICAL GAME-THEORETIC MODEL OF THE OPTIMAL LABOR RESOURCES DISTRIBUTION.....	687
<i>Irina Zaitseva, Oleg Malafeyev, Afanasy Zubov, Lidiya Bondarenko, Vyacheslav Orlov</i>	
MULTI-INPUT MULTIPLEXERS AND SELECTORS AS BASIC SHIFTER BLOCKS IN ARITHMETIC DEVICES OPERATING IN FLOATING POINT: COMPARATIVE ANALYSIS.....	697
<i>I V Ushenina</i>	
ASSESSMENT OF INNOVATIVE PROJECTS IN THE ROCKET AND SPACE ENGINEERING	703
<i>Yu A Anikina, M A Ragozina, Yu N Malanina, D V Kurako</i>	
ENVIRONMENTAL ENGINEERING: REGULATION, MONITORING, AUDIT, INNOVATION	708
<i>Svetlana Yu Piskorskaya, Yulia N Malanina</i>	
NEURAL NETWORKS TO SOLVE MODERN ARTIFICIAL INTELLIGENCE TASKS	712
<i>D V Gruzenkin, A V Sukhanova, O S Novikov, G V Grishina, V N Rutskiy, R Y Tsarev, K Y Zhigalov</i>	
DEVELOPMENT OF AN INTELLECTUAL MODULE FOR SELECTION OF PLACES TO TRAVEL IN THE VIRTUAL ASSISTANT SYSTEM FOR PLANNING TRIPS.....	719
<i>Natalia Yanishevskaya, Larisa Kuznetsova, Arthur Zhigalov, Denis Parfenov, Irina Bolodurina</i>	
IMPROVING THE MANAGEMENT TOOLS OF ENGINEERING ENTERPRISES IN MODERN CONDITIONS.....	725
<i>V A Ogloblin, Yu N Malanina, M V Vikhoreva</i>	
RENEWABLE AND SMALL ENERGY DEVELOPMENT MANAGEMENT	731
<i>D S Lopatkin, T N Shushunova, G E Shaldina, A A Gibadullin, I L Smirnova</i>	
DESIGN OF SYSTEMS FOR DETERMINING THE LOCATION (POSITIONING) OF OBJECTS IN CLOSED ELECTRICALLY CONDUCTIVE ENVIRONMENTS	737
<i>A A Shchitnikov, E A Kokhonkova, V V Romanov, A S Neverov</i>	

THE MODEL OF CHOICE OF MACHINE RETAINING DEVICES FOR TECHNOLOGICAL PREPARATION OF PRODUCTION	745
<i>Y V Polyanskov, I V Lutoshkin, A A Blyumenshteyn</i>	
RESEARCH OF MEASURES TO REDUCE METAL PROCESSING WASTES BY ANALYTIC HIERARCHY PROCESS	752
<i>D A Yshanina, D V Kapulin, P A Russkikh</i>	
A FIRE SAFETY CONTROL SYSTEM OF EDUCATIONAL INSTITUTIONS	758
<i>R V Morozov</i>	
INFORMATION TECHNOLOGY IN THE EDUCATIONAL PROGRAM DESIGN	762
<i>Sergej Bronov, Elena Stepanova, Svetlana Pichkovskaya, Artem Sheluhin, Nadezhda Panikarova</i>	
SIMULATION OF MULTI-AGENT INTERACTION IN THE SYSTEM "LABOR EXCHANGE - ENTERPRISE"	768
<i>Irina Zaitseva, Oleg Malafeyev, Sergey Sychev, Tatiana Smirnova, Diana Kurasova</i>	
APPLICATION OF THE BAYESIAN APPROACH IN AN EXPERT'S SYSTEM FOR DIAGNOSTIC FAULT IN COMPUTING ENGINEERING	775
<i>M G Dorrer, A A Popov, A K Ovsyankin</i>	
SUPPORT SERVICE INFORMATION MODEL FOR INFORMATION SYSTEMS ENTERPRISE MANAGEMENT	782
<i>Olga V Kondratieva, Andrey Yu Gulevitskij, Elena A Frolova</i>	
INFORMATION SYSTEM FOR MANAGING MATERIAL FLOWS OF MANUFACTURING ENTERPRISE	788
<i>O A Ikonnikov, S N Yezhemanskaya, L N Korpacheva, R I Kuzmich, V N Yurdanova</i>	
THE HARDWARE AND SOFTWARE IMPLEMENTATION OF THE ADAPTIVE PLATFORM FOR AN ONBOARD SPACECRAFT CONTROL SYSTEM	792
<i>I N Kartsan, A O Zhukov, A O Platonov, S V Efremova</i>	
ECONOMIC VALUATION OF BIOGAS PRODUCTION IN RUSSIA	797
<i>J An, N E Sokolinskaya</i>	
AUTOMATED DATA INTEGRATION SYSTEM AT THE AIRCRAFT FACTORY	801
<i>I A Sannikov, Y V Polyanskov, O V Zheleznov</i>	

PART 2

DESIGN OF THE WALKING PATTERN GENERATION SOFTWARE OF AR-600 ANTHROPOMORPHIC PLATFORM	808
<i>Liudmila Khokhlova, Dmitry Zhdanov, Artem Bureev, Yana Kosteley</i>	
USING BLOCKCHAIN-BASED APPROACH FOR BUILDING THE SYSTEM EVENTS LOGGING SERVICE	814
<i>G Silkina, M Barabanova, S Gazul, V Kiyayev</i>	
METHODS AND ALGORITHMS OF TECHNOLOGICAL PREPARATION FOR ORGANIZING AUTOMATIC SURFACE MOUNT OF PRINTED CIRCUIT BOARDS	821
<i>G I Korshunov, P S Zaicev, A A Petrushevskaya</i>	
GENERATION OF AGENT SIMULATION MODELS BY USING PROCESS MINING METHODS ON THE EXAMPLE OF E-LEARNING PROCESS	829
<i>Mikhail Dorrer, Alexandra Dorrer</i>	
FORMATION OF THE GUILLOTINE CUTTING CARD OF A SHEET	836
<i>G M Rudakova, O V Korchevskaya, V V Dmitriev, E I Antonova, T I Belousova</i>	
MODELLING OF INFORMATION SYSTEMS WITH INCREASED EFFICIENCY WITH APPLICATION OF OPTIMIZATION-EXPERT EVALUATION	841
<i>I Ya Lvovich, Ya E Lvovich, A P Preobrazhenskiy, Yu P Preobrazhenskiy, O N Choporov</i>	
INTELLIGENT DATA MODEL CONCEPTS	848
<i>G M Rudakova, S L Gladkov, O V Korchevskaya</i>	
AUTO-GENERATION OF THE CUSTOMER QUESTIONS AND THEIR RANKING IN E-COMMERCE SYSTEM	852
<i>Yu Yu Dyulichева</i>	
APPROACH TO MATHEMATICAL SIMULATION OF DATA NETWORKING WITH PACKET ROUTING	857
<i>O Ja Kravets, A V Burkovsky, O G Yaskevich</i>	
ANALYSIS OF INFORMATION RESOURCE LIFE CYCLE	862
<i>M G Dorrer, A A Popov, A N Bartuzanova</i>	

ORGANIZATIONAL AND ECONOMIC MECHANISMS OF STATE MANAGEMENT OF TECHNOLOGICAL DEVELOPMENT OF INDUSTRIAL COMPANIES	870
<i>G P Beliakov, A A Ryzhaya, A S Shpak, S A Belyakov</i>	
THE IMPACT OF DIGITAL TECHNOLOGY ON THE STUDY OF LANGUAGES AND THE DEVELOPMENT OF DIGITAL EDUCATION	875
<i>A U Mentsiev, P H Almurzaeva, M Z Ashakhanova, A I Anzorova, K D Dauletukaeva</i>	
MODEL OF OPTIMAL ORGANIZATION MATURITY MANAGEMENT UNDER CONDITIONS OF INTERFERENCE AND UNCERTAINTY	880
<i>Mikhail Dorrer</i>	
ANTAGONISTIC INTERACTION IN AN ECONOMY MODEL WITH INCOMPLETE INFORMATION.....	889
<i>Irina Zaitseva, Roman Kron, Nikita Ugegov, Leonid Kolyada, Galina Pupyshva</i>	
METHODOLOGICAL ASPECTS OF MACHINE-BUILDING COMPLEX ECONOMIC SECURITY FROM THE POSITION OF INNOVATIVE AND INVESTMENT SUSTAINABILITY: MACROECONOMIC CROSS-SECTION.....	897
<i>I R Ruiga, E V Rogozinskiy, A S Yamschikov, E S Kovzunova, Yu A Teterin</i>	
THE USE OF CONVOLUTIONAL NEURAL NETWORKS TO IDENTIFY ARTIFACTS OF CELLS MICROGRAPHS IN BIOMEDICAL RESEARCH.....	904
<i>Anton Yakimov, Andrey Morgun, Alla Salmina, Mikhail Dorrer, Anna Tolmacheva, Dmitry Ogurtsov</i>	
DETERMINATION OF THE ORDER OF STOCHASTICALLY LINEAR DYNAMIC SYSTEMS BY USING NON-PARAMETRIC ESTIMATION OF A REGRESSION FUNCTION.....	912
<i>AV Medvedev, AV Raskina, EA Chzhan, AA Korneeva, CA Videnin</i>	
IMPLEMENTING NEW TECHNOLOGIES AND PROGRAM PRODUCTS IN THE ECOLOGIC SPHERE OF OIL AND GAS CHEMICAL COMPLEXES.....	919
<i>A A Lubnina, F F Galimulina, G R Garipova, V V Bronskaya, O S Kharitonova</i>	
DEVELOPMENT OF A PROGRAM FOR DETERMINING THE HIRSCH INDEX USING WEB OF SCIENCE AND SCOPUS PAGES (BY RESEARCH ID AND AUTHOR ID).....	925
<i>F R Khakimov, O S Kharitonova, V V Bronskaya, T V Ignashina, D S Balzamov</i>	
INFORMATION SECURITY OF RFID AND NFC TECHNOLOGIES	931
<i>M A Masyuk</i>	
VISUALISATION OF A PHYSICAL MODEL OF INTERACTING OF HARD OBJECTS IN A COMPUTER GAME.....	937
<i>E V Soboleva, E V Kharunzheva</i>	
FORMALIZATION AND STUDY OF THE GAME-THEORETIC MODEL OF THE OPTIMAL DISTRIBUTION OF WORKERS IN ENTERPRISES	943
<i>Irina Zaitseva, Tatiana Svehinskaya, Vladimir Zakharov, Natalia Zakharova, Andrey Murashko</i>	
EVALUATION OF THE POSSIBILITY OF WIRELESS DATA TRANSMISSION THROUGH ROCKS USING AN ELECTROMAGNETIC CHANNEL.....	952
<i>D S Kudinov, E A Kokhonkova, V V Romanov, A S Neverov</i>	
MANAGEMENT AND DEVELOPMENT OF DIGITAL TECHNOLOGIES IN THE ELECTRIC POWER INDUSTRY OF RUSSIA.....	960
<i>D I Zimnukhova, G A Zubkova, D E Morkovkin, P V Stroev, A A Gibadullin</i>	
ARTIFICIAL INTELLIGENCE CAPABILITIES CLASSIFICATION IN BUSINESS ENVIRONMENT.....	966
<i>A I Vinogradova, Yu V Fomina, A N Gorodischeva, E V Astapenko, A V Bedareva</i>	
FORMATION OF MECHANISMS FOR THE DEVELOPMENT OF INNOVATIVE ACTIVITY IN THE INDUSTRIAL PRODUCTION OF THE RUSSIAN FEDERATION.....	971
<i>A A Yuryeva, M I Kuternin, A A Gibadullin, Ju A Romanova</i>	
ON THE POSSIBILITY OF CREATING A COMPREHENSIVE SYSTEM FOR ROCKBURST PREDICTION IN MINES AND MINING PLANTS.....	976
<i>G Ya Shaidurov, D S Kudinov, E A Kokhonkova</i>	
AUTOMATION OF THE ENTERPRISE FINANCIAL CONDITION EVALUATION.....	982
<i>A A Rukosueva, V V Kukartsev, D V Erenee, A A Boyko, V S Tynchenko, A A Stupina</i>	
IMPLEMENTATION OF THE WÖLFFLIN FORMAL STATISTICAL ANALYSIS METHOD USING FUZZY LOGIC	990
<i>O A Antamoshkin, E R Bryukhanova, V O Antamoshkina, N O Pikov, V V Kukartsev, V V Tynchenko</i>	
THE USE OF DEEP NEURAL NETWORKS TO DETECT ALARMS IN MINES.....	997
<i>D S Kudinov, E A Kokhonkova</i>	
SELECTION OF APPROPRIATE ARCHITECTURE AND PARAMETERS OF NEURAL NETWORK FOR IMAGES RECOGNITION AND CLASSIFICATION	1004
<i>V V Kukartsev, A S Mikhalev, A V Tarasevich, V S Tynchenko, A R Ogor, V V Khramkov</i>	

SOFTWARE IMPLEMENTATION DETAILS OF THE SECURE DATA COMMUNICATION PROTOCOLS STACK BASED ON THE DYNAMIC NETWORK TOPOLOGY	1013
<i>E A Kushko, N Y Parotkin</i>	
EVALUATING THE PERFORMANCE OF ATOMIC OPERATIONS ON MODERN MULTICORE SYSTEMS.....	1019
<i>E A Goncharenko, A A Paznikov, A V Tabakov</i>	
KOHONEN MAPS TO ORGANIZE STAFF RECRUITMENT AND STUDY OF WORKERS' ABSENTEEISM	1027
<i>V V Kukartsev, O D Beletskaya, M O Fabrichkina, A Yu Telkov, N Y Belyaev, V S Tynchenko, A S Mikhalev</i>	
THE COMBINED METHOD OF TEXTUAL INFORMATION ANALYSIS FOR THE CONTENT OF DESTRUCTIVE INDICATORS.....	1034
<i>V A Gostyunina, N V Davidyuk</i>	
INFORMATION AND COMMUNICATION TECHNOLOGIES IN E-COMMERCE AND E-GOVERNANCE	1041
<i>Omer Faruk Derindag, Mehmet Canakci, Roman Tsarev</i>	
PERFORMANCE ANALYSIS OF DE MUTATION SCHEMES FOR CONSTRAINED LSGO PROBLEMS.....	1049
<i>A Vakhnin, E Sopov, D Kustov, I Panfilov</i>	
NUMERICAL COMPUTATIONS OF THE SAFE BOUNDARIES OF COMPLEX TECHNICAL SYSTEMS AND PRACTICAL STABILITY	1056
<i>A N Rogalev, A A Rogalev, N A Feodorova</i>	
BLOCKCHAIN AS A TECHNOLOGY FOR THE TRANSITION TO A NEW DIGITAL ECONOMY	1061
<i>A U Mentstiev, E R Guzueva, S M Yunaeva, M V Engel, M V Abubakarov</i>	
APPLICATION OF ASSOCIATION RULES LEARNING FOR STUDYING THE STORE HISTORY OF A LARGE RETAIL CHAIN	1066
<i>D A Ogurtsov, M G Dorrer</i>	
FEATURES OF THE INVESTIGATION OF CRIMES COMMITTED BY PERSONS CONTROLLING THE DEBTOR.....	1077
<i>Yu O Altman, M E Chervyakov, O I Karelin, E N Sochneva, I A Panfilov</i>	
PUCK TRACKING SYSTEM FOR AEROHOCKEY GAME WITH YOLO2.....	1082
<i>A E Tolmacheva, D A Ogurtsov, M G Dorrer</i>	
GENETIC SEARCH OF THE OPTIMAL CONFIGURATION OF INFORMATION SECURITY SYSTEM USING SIMULATION MODELING.....	1088
<i>N V Davidyuk, I M Kosmacheva, S V Belov, I Yu Kuchin</i>	
PRACTICAL IMPLEMENTATION OF DATA ENVELOPMENT ANALYSIS TECHNOLOGY TO ASSESS THE INNOVATIVE SUSTAINABILITY OF RESOURCE-TYPE REGIONS.....	1093
<i>I R Ruiiga, A A Stupina, E S Kovzunova, A A Chayka, I A Shkradyuk</i>	
NEURAL NETWORK MODEL OF THE PROCESS OF SUPERCRITICAL WATER OXIDATION OF UTILIZATION OF INDUSTRIAL EFFLUENT WATER.....	1099
<i>A A Tsapaev, F M Gumerov, S V Mazanov, O S Kharitonova, V V Bronskaya</i>	
THE DYNAMIC SIMULATION MODEL OF CALCULATING EQUIPMENT PURCHASE WITH THE BOND LOAN.....	1105
<i>A A Boyko, V V Kukartsev, D V Ereemeev, A S Bondarev, V S Tynchenko, V A Kukartsev, K A Bashmur</i>	
THE STUDY OF THE COMPLEX INFORMATION SYSTEMS STRUCTURE ON THE COEFFICIENT OF STRUCTURAL UNCERTAINTY BASIS	1112
<i>V V Alekseev, A V Yakovlev, F E Aminova, M Ju Sergeev</i>	
ON THE QUESTION OF EVOLUTIONARY ALGORITHMS APPLICATION IN TASKS OF CRITERION OPTIMIZATION.....	1119
<i>A S Lifar, M V Saramud, V V Losev, I V Kovalev</i>	
ON THE PROBLEM OF VERSION SELECTION TO CREATE A GRAPH FOR THE ANT COLONY OPTIMIZATION ALGORITHM.....	1125
<i>M V Saramud, I V Kovalev, V V Losev, D I Kovalev, M V Karaseva</i>	
APPLICATION OF MODERN MACHINE TRANSLATION SYSTEMS IN TEACHING FOREIGN LANGUAGES.....	1130
<i>E V Fibikh, N V Kuznetsova</i>	
 <u>ENGINEERING AND MATERIALS SCIENCE</u>	
DESIGNING CYBER-PHYSICAL DIGITAL PRODUCTION OF THE INDUSTRY 4.0.....	1135
<i>D A Zakoldaev, A V Shukalov, I O Zharinov, O O Zharinov</i>	

INFLUENCE OF GRAINS AND GRAIN BOUNDARIES ON HARDNESS VALUES	1140
<i>V M Matyunin, Nuha Abusaif, A Yu Marchenkov</i>	
THE APPLICATION OF DISPLACED TRAJECTORIES IN TASKS OF AIRCRAFT NAVIGATION IN TIME	1146
<i>V V Markelov</i>	
APPLICATION OF ULTRASONIC EXPOSURE FOR REDUCING MATERIAL ADHESION	1154
<i>S A Zenkov</i>	
RATIONING AND VIBRATION MONITORING OF KNIFE REFINERS	1160
<i>S Vikharev, V Sivakov, A Sannikov</i>	
THE RELATIONSHIP BETWEEN ABRASIVE WEAR BEHAVIOR AND CHEMICAL STRUCTURE OF POLYURETHANE UREA ELASTOMERS	1165
<i>V Yu Senichev, E V Pogoreltsev</i>	
TECHNOLOGICAL FEATURES OF EDUCATING SPECIALISTS FOR DIGITAL FACTORIES OF THE INDUSTRY 4.0	1170
<i>D A Zakoldaev, A V Gurjanov, A V Shukalov, I O Zharinov</i>	
VIBRATION DIAGNOSTICS OF PLATES OF KNIFE REFINERS	1175
<i>S N Vikharev</i>	
ERGONOMIC COMPONENT WHEN DESIGNING MINING MACHINES: NEW SCIENTIFIC AND PRACTICAL WORKS	1182
<i>V S Velikanov, N V Dyorina, E A Pikalova, Yu V Yuzhakova</i>	
MODULAR ARCHITECTURE OF CYBER-PHYSICAL PRODUCTION FOR INDUSTRY 4.0	1188
<i>D A Zakoldaev, A V Shukalov, I O Zharinov, A S Novikov</i>	
STUDY OF LONGITUDINAL VIBRATIONS OF STAB KNIFE REFINERS	1193
<i>S Vikharev, S A Zasykina</i>	
MODELLING OF HEAT AND MASS TRANSFER PROCESSES OF CAPILLARY-POROUS BODIES	1201
<i>Gennady V Alekseev, Maxim V Goncharov, Anna G Leu, Olga I Nikolyyuk, Sergey A Romanchikov</i>	
USING VIBRATION CUTTING FOR FINISH TURNING HARD MATERIALS	1207
<i>A A Vladimirov, A V Makarov, E M Martynov</i>	
REVIEW OF NUMERICAL METHODS FOR MODELING THE INTERACTION OF SOIL ENVIRONMENTS WITH THE TOOLS OF SOIL TILLAGE MACHINES	1214
<i>M N Lysych</i>	
ECOSYSTEM OF EDUCATION COMPETENCE CENTER OF THE INDUSTRY 4.0	1223
<i>D A Zakoldaev, A V Shukalov, I O Zharinov, N I Dorofeev</i>	
ANALYSIS OF THE INDENTATION SIZE EFFECT ON THE HARDNESS MEASUREMENTS OF MATERIALS	1228
<i>V M Matyunin, Nuha Abusaif, A Yu Marchenkov</i>	
MODELING THE OPERATION OF CLIMATE CONTROL SYSTEM IN PREMISES BASED ON FUZZY CONTROLLER	1233
<i>L Zh Sansyzbay, B B Orazbayev</i>	
APPROXIMATION OF MACHINE TOOL EXPERIMENTAL THERMAL CHARACTERISTICS BY NEURAL NETWORK	1240
<i>V V Pozevalkin, I V Parfenov, A N Polyakov</i>	
THE INTEROPERABILITY OF CYBER-PHYSICAL SYSTEMS IN DIGITAL MANUFACTURING OF THE INDUSTRY 4.0	1246
<i>D A Zakoldaev, A V Gurjanov, I O Zharinov, O O Zharinov</i>	
CONCEPTUAL DESIGN OF MULTIFUNCTIONAL HYDROFOIL VESSEL "AFALINA"	1251
<i>I B Abbasov, V V Orekhov</i>	
RESEARCH OF EQUIPMENT FOR CLEANING OIL-CONTAINING WASTEWATER	1258
<i>S I Valeev</i>	
AUTOMATION AND IOT FOR CONTROLLING AND ANALYSING THE GROWTH OF CROPS IN AGRICULTURE	1263
<i>A U Mentsiev, Z A Gerikhanov, A R Isaev</i>	
METHODOLOGY AND PRACTICAL APPLICATION OF THE AUTOMATION SYSTEM FOR UNMANNED SPACECRAFT DESIGN	1269
<i>A L Akhtulov</i>	
DEVELOPMENT OF MATHEMATICAL MODELS OF R-1 REACTOR HYDROTREATMENT UNIT USING AVAILABLE INFORMATION OF VARIOUS TYPES	1276
<i>B B Orazbayev, Ye A Ospanov, K N Orazbayeva, V E Makhatova, M K Urazgaliyeva, A B Shagayeva</i>	
THE DEVELOPMENT OF ROLLING-STOCK VIRTUAL SIMULATOR	1282
<i>N A Staroverova, M L Shustrova, Yu N Zatsarinnyaya</i>	

EXPERIMENTAL STUDY OF DOUBLE-SIDED FACE GRINDING MACHINE TOOL.....	1290
<i>I P Nikitina, A N Polyakov</i>	
USING RHYTHMOGRAMS TO DIAGNOSE MECHANICAL SYSTEMS.....	1298
<i>D A Balakin, V V Shtykov</i>	
FUZZY ESTIMATES OF RESONANCE FREQUENCIES FOR THREE-LAYER COMPOSITE CYLINDRICAL PANELS IN SMART AEROSPACE AND INDUSTRIAL STRUCTURES	1304
<i>S V Storozhev, V I Storozhev, V E Bolnokin, Duong Minh Hai, D I Mutin</i>	
THE CHANGE OF COATING PROCESS OF NPK FERTILIZER WITH A BIOPOLYMER BY USING A CONTINUOUS FLOW REACTOR	1310
<i>Ibragim M Bamatov, Evgeniy V Rumyantsev, Dzhabrail M Bamatov</i>	
RECOVERY OF FATIGUE LIFE OF 30HGSN2A STEEL AIRCRAFT PARTS BY REPEATED SHOT PEENING	1315
<i>G N Kravchenko, I V Gerasimov, K G Kravchenko</i>	
THE CONSTRUCTION OF THE SYSTEM OF AUTOMATION OF DESIGNING OF LOAD- LIFTING CRANES OF BRIDGE TYPE.....	1322
<i>A L Akhtulov, M O Kirasirov, O M Kirasirov</i>	
DIGITAL TESTS OF THE ROBOTIC CHASSIS' CYBER-PHYSICAL SYSTEM FOR AGRICULTURAL UNMANNED VEHICLE	1327
<i>S V Susarev, S P Orlov, A S Morev, O Ja Kravets</i>	
A METHOD TO SELECT THE FINITE ELEMENT MODELS FOR THE STRUCTURAL ANALYSIS OF MACHINE TOOLS	1333
<i>A N Polyakov, S V Kamenev</i>	
TRIBOLOGY OF CARBON-CONTAINING MATERIALS AT HIGH TEMPERATURES.....	1340
<i>V V Alisin, M N Roshchin</i>	
IMPROVING THE QUALITY OF THE MANUFACTURING PROCESS OF TURBINE BLADES OF THE GAS TURBINE ENGINE.....	1346
<i>R A Vdovin</i>	
THE PROCESS OF TACTILE (RELIEF) MARKING OF THERMO SHRINKABLE MEMBRANES AND LABELS	1352
<i>E P Cherkasov, A P Kondratov, V G Nazarov</i>	
IMPROVEMENT OF THE DESIGN AND HEAT SUPPLY SYSTEM OF A CONVECTIVE DEHUMIDIFICATION CHAMBER BASED ON THE HEAT ENGINEERING METHOD.....	1360
<i>Y A Korchuk, A A Orlov, A A Popov</i>	
FEATURES OF HEAT TRANSFER BY RADIATION IN A DIESEL COMBUSTION CHAMBER WHEN OPERATING ON GAS ENGINE FUEL.....	1367
<i>V A Likhanov, A V Rossokhin</i>	
AUTOMATIC CONTROL SYSTEM DEVELOPMENT AND IMPLEMENTATION FOR MELTING IN ELECTRIC ARC FURNACES	1371
<i>E S Martynova, V Yu Bazhin</i>	
IMPROVING THE CONTROL EFFICIENCY OF METALLURGICAL SILICON PRODUCTION TECHNOLOGY	1377
<i>S A Martynov, V Yu Bazhin</i>	
SELF-ORGANIZATION OF PROCESSES IN GAS AND LIQUID-PHASE CATALYTIC REACTORS	1381
<i>N A Merentsov, A V Persidskiy, V V Groshev, V A Kozlovitsev, A B Golovanchikov</i>	
ADVANCEMENT OF MECHANICAL AUTOMATION IN THE AGRICULTURE SECTOR AND OVERVIEW OF IOT.....	1392
<i>A U Mentsiev, A R Isaev, Kh S Supaeva, S M Yunaeva, U A Khatuev</i>	
ANALYSIS OF THE INFLUENCE OF INSTRUMENTAL AND REGIME FACTORS ON THE QUALITY OF WOOD GRINDING.....	1396
<i>A Sergeevichev, V Kushnerev, V Sergeevichev, V Sokolova, V Onegin</i>	
CYBER-PHYSICAL CONTROL SYSTEM FOR INTEGRATED MATERIAL FLOWS	1404
<i>L N Borisoglebskaya, O Ja Kravets, O V Pilipenko, V V Provotorov</i>	
AUTOMATION ENGINEERING OF ADAPTIVE INDUSTRIAL WAREHOUSE.....	1410
<i>O V Pilipenko, E N Provotorova, S M Sergeev, O V Rodionov</i>	
SIMULATING A TRIANGULAR TUBE OF A SPACECRAFT SOLAR ARRAY	1415
<i>V A Nesterov, A S Sukhanov, F K Sinkovsky, Yu G Vygonskiy, A V Kuzovnikov, V A Levko, T V Strekaleva</i>	
SOFTWARE ENGINEERING MATH FOR NETWORK APPLICATIONS	1421
<i>A S Golosnoy, V V Provotorov, S M Sergeev, L B Raikhelgauz, O Ja Kravets</i>	
SIMULATION OF THE ALGORITHM OF GROUP INTERACTION OF CYBER-PHYSICAL OBJECTS IN 3D SPACE	1426
<i>S Palavenia, Yu Duinova, M Popova, Imad El Abed</i>	

MANAGEMENT OF THE BUS FLEET STRUCTURE IN MODERN CONDITIONS	1433
<i>Alexander S Afanasyev, Valeria A Terentyeva, Ivan V Tarasov</i>	
AUTOMATION TECHNOLOGIES FOR FISH PROCESSING AND PRODUCTION OF FISH PRODUCTS	1440
<i>V I Komlatsky, T A Podoinitsyna, V V Verkhoturov, Y A Kozub</i>	
ALGORITHM FOR NON-PARAMETRIC MODELING OF THE CUTTING PROCESS OF DENSE SNOW FORMATIONS WITH SNOW PLOW BLADE	1445
<i>A V Lysyannikov, E D Agafonov, A V Egorov, N N Lysyannikova, V G Shram, M A Kovaleva</i>	
STRUCTURE AND PHASE COMPOSITION OF DIFFUSION ZONES FORMED AS A RESULT OF HOMOGENEOUS AND HETEROGENEOUS REACTIONS AT THE BOUNDARY OF THE AD1-CR15NI60 COMPOSITE	1451
<i>V G Shmorgun, A I Bogdanov, V P Kulevich, D V Shcherbin</i>	
PRODUCTION PLANNING PROCESS EFFECTIVENESS IMPROVEMENT THROUGH THE AUTOMATED SYSTEM INTRODUCTION	1457
<i>E A Skorniakova, V Sh Sulaberidze, E G Semenova</i>	
TECHNOLOGICAL EQUIPMENT PARTS ROUGH SURFACES ELASTIC-PLASTIC STRAIN UNDER COMPRESSION MATHEMATICAL MODELLING	1463
<i>V A Gulyaev, A A Kozlov, N Y Loginov</i>	
FORMATION OF DIFFUSION TITANIUM COATINGS FROM LIQUID METAL MEDIA SOLUTIONS ON HARD ALLOYS WC-CO AND TIC-WC-CO	1471
<i>E E Bobylyov</i>	
DYNAMIC METHOD OF CONTROL OF WEIGHT OF CARGO TRANSPORTED BY A BELT CONVEYOR	1477
<i>A V Egorov, S V Dorohin, A V Lysyannikov, R B Zelykevich, Yu F Kaizer, A V Kuznetsov, N N Lysyannikova, A S Lunev</i>	
ESTIMATED DELAMINATION OF AN ELASTIC-PLASTIC LINER IN A HIGH-PRESSURE METAL COMPOSITE VESSEL	1483
<i>Anton V Egorov</i>	
THE USE OF PLATINUM METALS TO INCREASE THE CORROSION AND STRENGTH CHARACTERISTICS OF INDUSTRIAL TITANIUM CASTING	1488
<i>Yu V Andreev, A E Kozlovskaya</i>	
THE MODIFICATION OF TEMPERATURE CONTROL AT EACH STAGE OF V-STAR CONTINUOUS FLOW REACTOR	1494
<i>Ibragim B Musaevich, Rumyantsev E Vladimirovich, Bamatov D Musaevich, Bamatov D Musaevich</i>	
THE EFFECT OF HARD SEGMENTS STRUCTURE ON THE FUNCTIONAL PROPERTIES OF POLYURETHANE ELASTOMERS BASED ON OLIGOESTERURETHANE EPOXIDES	1498
<i>V Yu Senichev, A I Slobodinyuk, M A Makarova, A V Savchuk, E V Pogoreltsev</i>	
RESEARCH OF LOAD AND SPEED PARAMETERS OF THE HEALTH OF ROLLING BEARINGS	1505
<i>B I Kovalsky, N N Lysyannikova, K A Knyazev, V G Shram, A V Lysyannikov, E G Kravtsova</i>	
DYNAMIC METHOD OF CONTROL OF WEIGHT OF CARGO TRANSPORTED BY VEHICLE	1510
<i>A V Egorov, S V Dorohin, A V Lysyannikov, Yu F Kaizer, A V Kuznetsov, N N Lysyannikova, V L Tyukanov, A S Lunev</i>	
THE STUDY OF CASTING DEFECTS IN STEEL 35HGSL	1515
<i>M L Skryabin, V A Likhanov</i>	
POLYMER MATERIALS FROM RECYCLED PLASTIC IN ROAD CONSTRUCTION	1520
<i>A V Lysyannikov, A V Egorov, N N Lysyannikova, V G Shram, M A Kovaleva, A S Lynev, Y F Kaizer</i>	
DETERMINING THE STRUCTURE OF AN AUTOMATED SYSTEM TO OPTIMIZE THE DESIGN PROCESS	1526
<i>A V Khakimov, V V Markelov, M O Kostishin, O O Zharinov</i>	
THE DYNAMIC CONTROL METHOD OF THE WEIGHT CARGO TRANSPORTED LIFTING MACHINERY	1531
<i>A V Egorov, S V Dorohin, A V Lysyannikov, Yu F Kaizer, A V Kuznetsov, N N Lysyannikova, V L Tyukanov, V G Shram</i>	
ABOUT ONE OF THE FACTORS DETERMINING THE FAILURE RATE IN THE WORKING EQUIPMENT OF MINING EXCAVATORS	1536
<i>V S Velikanov, N V Dyorina, L I Antropova, T Yu Zalavina</i>	
RESEARCH OF MOTOR OIL OXIDATION PROCESSES	1543
<i>B I Kovalsky, YU N Bezborodov, N N Lysyannikova, P YU Pustovit, V G Shram, A V Lysyannikov</i>	
METHOD AND TOOL FOR ASSESSING THE RESIDUAL LIFE OF THE PLANETARY ELECTRIC ACTUATOR OF THE EXOSKELET	1549
<i>A V Egorov, V N Belogusev, K E Kozlov, A V Lysyannikov, Yu F Kaizer, N N Lysyannikova, V L Tyukanov, A V Kuznetsov</i>	

WEATHER CONDITIONS AS A FACTOR AFFECTING THE PERFORMANCE OF MODERN POWERFUL MINING EXCAVATORS	1557
<i>S L Ivanov, P V Ivanova, S U Kuvshinkin</i>	
DEPENDENCE OF STRENGTH PROPERTIES OF ELECTROLYTIC COATINGS ON THEIR SUBSTRUCTURE	1562
<i>Yu E Kisel, G V Guryanov, V A Bezik, D A Bezik, V V Kaminin, N V Dmitrieva</i>	
EXERGY PINCH ANALYSIS OF THE PRIMARY OIL DISTILLATION UNIT	1570
<i>E A Yushkova, V A Lebedev</i>	
DISSIPATIVE STRUCTURES IN THIN FILMS OF CAVITATION-ACTIVATED SOOT SUSPENSIONS	1577
<i>O P Stebeleva, L V Kashkina, E A Petrakovskaya, S L Nikitin, S S Dobrosmyslov, G V Rublev</i>	
RESEARCH RESULTS OF ANTI-WEAR PROPERTIES OF MINERAL AND SEMI-SYNTHETIC MOTOR OIL	1583
<i>B I Kovalsky, N N Lysyannikova, A S Bolshakov, A V Lysyannikov, E G Kravtsova, A V Egorov</i>	
INVESTIGATION OF MATERIAL PROPERTIES FOR POLYMER-BASED MICROWAVE DEVICES	1589
<i>Iurii Cherukhin, Felix V Zander, Alena K Dashkova, Yong Xin Guo</i>	
IMPROVING THE TECHNOLOGY OF SORTING WOOD CHIPS OBTAINED FROM STUMP AND SUBSTANDARD WOOD BY RESIN CONTENT	1596
<i>I A Polyagin, V E Makarov, A V Egorov, A V Lysyannikov, Yu F Kaizer, M N Voldaev, K S Stepanova</i>	
METHODS OF DECODING OF THE GEOECOLOGICAL CONDITIONS OF NATURAL-ANTHROPOGENIC COMPLEXES BASED ON THE DATA OF EARTH REMOTE SENSING	1604
<i>A V Strizhenok, A V Ivanov, I K Suprun</i>	
DYNAMIC METHOD OF CONTROLLING FRICTION LOSSES IN THE MECHANISM OF CONVERTING RECIPROCATING MOTION INTO ROTARY INLINE PISTON INTERNAL COMBUSTION ENGINES	1611
<i>A V Egorov, A V Lysyannikov, Yu F Kaizer, N S Andryuhin, S V Dorohin, A V Kuznetsov, E N Bogdanov, N N Lysyannikova</i>	

PART 3

ABOUT THE DEVELOPMENT OF MULTIMODAL TRANSPORTATION BASED ON MODELING OF CARGO PLACEMENT	1618
<i>E S Golovina, N V Levshonkov</i>	
AUTOMATED CONTROL OF PRODUCTS BY METHODS OF SHORT-WAVE ELECTROMAGNETIC RADIATION	1623
<i>M V Ovechkin</i>	
DYNAMIC METHODS FOR CONTROLLING THE WEIGHT OF THE AIRCRAFT AND HELICOPTER	1628
<i>A V Egorov, A V Lysyannikov, Yu F Kaizer, S V Dorohin, A V Kuznetsov, A M Kaidakov, E N Bogdanov, N N Lysyannikova</i>	
CUTTING TOOL FOR TURNING LARGE WORKPIECES	1632
<i>A D Khalimonenko, D Yu Timofeev, T S Golikov</i>	
METHOD OF ASSEMBLY AND ADHESIVE TECHNOLOGICAL EQUIPMENT AUTOMATED DESIGN	1637
<i>A A Meshihin, Y V Polyanskov, O V Zheleznov</i>	
DIFFUSION METALLIZATION OF CARBIDE CUTTING TOOLS AS A WAY TO IMPROVE THE SURFACE TREATMENT QUALITY	1643
<i>E E Bobylyov, I D Storozhenko</i>	
IMPROVEMENT OF WEAR RESISTANCE OF AUSTENIC STEELS BY APPLYING OF CARBURIZATION AND DIFFUSION SATURATION IN LIQUID METAL MEDIA SOLUTIONS	1648
<i>A G Sokolov, E E Bobylyov</i>	
ABOUT THE INFLUENCE DEGREE OF ERGONOMIC PROPERTIES ON THE GENERALIZED ERGONOMIC INDICATOR OF AN EXCAVATOR USING A SET OF METHODS	1652
<i>N V Dyorina, V S Velikanov, E I Rabina, L S Polyakova</i>	
CONTROL OF THE TECHNOLOGICAL PROCESS OF THE WAVEGUIDE PATHS INDUCTION SOLDERING IN THE FRAMEWORK OF INDUSTRY 4.0	1659
<i>V S Tynchenko, A V Milov, V V Bukhtoyarov, V V Kukartsev, V V Tynchenko, K A Bashmur</i>	
PHOTOVOLTAICS IN HORTICULTURE AS AN OPPORTUNITY TO REDUCE OPERATING COSTS. A CASE STUDY IN POLAND	1665
<i>A Lakomiak, K A Zhichkin</i>	

CALCULATION, EVALUATION AND LIMIT VALUES OF THE MEAN RESIDUAL LIFE OF TECHNOGENIC-HAZARDOUS OBJECTS	1672
<i>G S Sadykhov, V P Savchenko, S S Kudryavtseva</i>	
ADAPTIVE HYBRID CLIMATE CONTROL IN THE MANUFACTURE OF MICROELECTRONICS	1677
<i>N A Aleshkin, A P Aleshkin, A A Petrushevskaya</i>	
STUDY OF THE COMBUSTION CHARACTERISTICS OF ENDOTHERMIC FUEL THERMAL DECOMPOSITION PRODUCTS IN A SUBSONIC AIR FLOW	1684
<i>M S Stashkiv, L S Yanovsky, I V Shevchenko</i>	
THE CONCEPT OF AN ELECTRON BEAM I/O CONTROL SYSTEM TO OPTIMIZE THE WELD FORMATION IN THE PROCESS OF ELECTRON BEAM WELDING	1689
<i>V S Tynchenko, A V Milov, V V Bukhtoyarov, V V Kukartsev, V V Tynchenko, K A Bashmur</i>	
LIMIT RESISTANCE LAW FOR COUETTE-TAYLOR FLOW AND FOR DIRECT ROUND PIPES AT VERY LARGE REYNOLDS NUMBERS.....	1694
<i>Alexander Balonishnikov, Olga Opalikhina</i>	
MODELING THE NON-DESTRUCTIVE CONTROL OF ROAD SURFACES COMPACTION	1700
<i>A P Prokopev, Zh I Nabizhanov, V I Ivanchura, R T Emelyanov</i>	
NEURAL NETWORK CONTROLLER IDENTIFICATION FOR REFINING PROCESS	1706
<i>V V Bukhtoyarov, V S Tynchenko, E A Petrovskiy, K A Bashmur, V V Kukartsev, N A Bukhtoyarova</i>	
THE USE OF ADAPTIVE MATCHING CIRCUITS TO ADJUST THE IMPEDANCE OF HIGH-FREQUENCY LOADS	1711
<i>A G Samoylov, V S Samoylov, S A Samoylov</i>	
MODELING OF DYNAMIC SYSTEM "VIBRATORY PLATE - SOIL" AS AN OBJECT QUALITY CONTROL OF COMPACTION.....	1716
<i>R T Emelyanov, A P Prokopev, E S Turysheva, I I Terekhova, N A Tkachenko</i>	
THE INFLUENCE OF INITIAL PARAMETERS OF PNEUMATIC ACCUMULATOR ON THE DYNAMIC CHARACTERISTICS OF THE ACTUATOR DURING BRAKING BACK PRESSURE	1722
<i>Andrey Sirotenko, Svetlana Partko</i>	
THE DOCUMENT MANAGEMENT SYSTEM AS AN INTEGRATION BASIS FOR FORMING A UNIFIED DATA SOURCE OF INFORMATION SUPPORT OF A PRODUCT LIFE-CYCLE	1728
<i>Yu V Vilkov, B A Chernysh, A S Kartamyshev, E N Golovenkin, I V Poturemsky</i>	
HYBRID TUNING OF A ROBOTIC MANIPULATOR CONTROLLER WITH A DATABASE.....	1734
<i>R T Galemov, G B Masalsky</i>	
AUTOMATED DETECTION OF DEFORESTATION BASED ON MULTI-SPECTRUM SATELLITE DATA	1740
<i>D K Mozgovoy, D N Svinarenko, Y R Leong, K Y Zhigalov, R Y Tsarev, T N Yamskikh, N V Bystrova</i>	
THE ANALYSIS OF FACTORS INFLUENCING ON EFFICIENCY OF APPLYING MOBILE BRICKLAYING ROBOTS AND TOOLS FOR SUCH ANALYSIS	1747
<i>A V Malakhov, D V Shutin</i>	
EQUIPMENT FOR PLASMA PROCESSING IN CO₂.....	1753
<i>S I Ivanov, A A Petrenko, I A Dmitrieva, O V Sakharova</i>	
MODELLING OF LINER ELECTRO DRIVE IN THE WATERGATE OF HYDROTECHNICAL CONSTRUCTIONS.....	1757
<i>Rustem Yunusov, Azizbek Imomnazarov, Batir Mirmigmatov, E'zozbek Ozodov, Aziz Abduganiyev, Oybek Nazarov</i>	
STUDY OF LOCALIZED PLASTIC STRAIN TAKING INTO ACCOUNT THE STAGES OF PLASTIC FLOW.....	1763
<i>D A Rastorguev</i>	
VECTOR ANALYSIS OF THE ACCURACY OF THE LAYOUT OF AUTOMATICALLY REPLACEABLE SYSTEMS FOR DELIVERING LASER RADIATION TO THE PROCESSING ZONE.....	1769
<i>D Levashkin</i>	
LASER WELDING WITH DEEP ALLOYING OF THE ELEMENTS OF THE TRUCK CHASSIS.....	1775
<i>A A Gusev, S I Zhuchenko, P A Ogin, G V Guseva</i>	
THE CHOICE OF A METHOD FOR NON-CONTACT ASSESSMENT OF THE COMPOSITION OF BRIQUETTED CHARGE MATERIALS.....	1780
<i>A A Kul'chitskii, D A Kashin</i>	
DEEP LEARNING AND ITS ROLE IN SMART AGRICULTURE	1786
<i>V S Magomadov</i>	
DISK BRAKE CONTACT ANALYSIS UTILIZING ANSYS	1791
<i>I A Magomedov, A A Magomedov, V S Magomadov, U R Tahaev, S Kh Alikhadzhiev, L V Ibragimova</i>	
MODELING HEAT TRANSFER IN A WELL NETWORK	1795
<i>A B Feodorov, V I Afanasov, A S Lunev, T S Spirin, E S Kurochkin, A J Zagorulko</i>	

MATHEMATICAL MODEL OF ADHESION JUNCTION OF LAYERS DURING COEXTRUSION	1800
<i>A V Dyadichev, E A Dyadicheva, A V Kolesnikov, V V Dyadichev, S G Menyuk, S Ye Chornobay</i>	
EXPERT ANALYSIS OF ELEMENTS OF THE DIAGNOSTIC SYSTEM FOR COMPRESSOR TECHNOLOGICAL EQUIPMENT	1806
<i>V V Bukhtoyarov, D K Zyryanov, N A Bukhtoyarova, V S Tynchenko, V V Kukartsev, K A Bashmur</i>	
TECHNOLOGICAL FEATURES OF AIRCRAFT ENGINE REPAIR IN DIGITAL PRODUCTION	1813
<i>M A Bolotov, I A Grachev, E V Kudashov, V A Pechenin, N D Pronichev</i>	
ANALYSIS OF THE CURRENT STATE OF THE ISSUE OF AUTOMATION OF BOILER PLANTS IN THE CHECHEN REPUBLIC	1819
<i>I I Gazieva, M A Biysultanova, H R Vizirova, I M Daudov</i>	
CHEMICAL REACTIONS AT HIGH-SPEED HFC-BORIDING	1823
<i>A Ishkov, V Malikov</i>	
RESEARCH OF BIODEGRADABLE WOOD COMPLETED COMPOSITE MATERIALS BASED ON POLYLACTIDE	1827
<i>G A Sabirova, R R Safin, N R Galyavetdinov, A R Shaikhutdinova</i>	

INSTRUMENTATION TECHNOLOGY AND ENVIRONMENTAL ENGINEERING

SPECTRAL CHARACTERISTICS AND BIOLOGICAL ACTIVITY OF SYNTHETIC HUMIC-LIKE SUBSTANCES ON THE BASIS OF CARBOHYDRATES	1833
<i>I S Cherepanov</i>	
SCIENTIFIC JUSTIFICATION OF POWER EFFICIENCY OF TECHNOLOGICAL PROCESS OF CRUSHING OF FORAGES	1839
<i>A K Apazhev, Y A Shekikhachev, L M Hazhmetov, A G Fiaphev, L Z Shekikhacheva, Y S Hapov, Z L Hazhmetova, D T Gabachiyev</i>	
THE METHOD OF MONITORING THE INDICATORS OF THERMO-OXIDATIVE STABILITY OF MIXTURES OF MOTOR OILS	1845
<i>B I Kovalsky, V I Afanasov, V G Shram, Yu N Bezborodov, O N Petrov</i>	
THE APPLICATION OF FACTOR ANALYSIS TO DETERMINE THE FUNCTIONAL DEPENDENCIES OF HYDROLOGICAL CHARACTERISTICS IN AQUATIC ECOSYSTEMS	1850
<i>S V Sarkisov, I I Pivovarova, VA Vakunenkov, V I Musatov, A A Sorokin</i>	
HEAT TRANSFER IN MATERIALS WITH A DISORDERED STRUCTURE	1856
<i>L A Marushin, D A Tikhonova</i>	
EVALUATION OF THE METHODS OF SEPARATION INTO PHASES OF THE EMULSION OF THE INTERMEDIATE LAYER FORMED IN THE PROCESS OF OIL PREPARATION	1865
<i>S A Kovaleva, V G Shram, N N Lysyannikova, T N Vinichenko, A V Lysyannikov, E G Kravtsova</i>	
A METHOD OF REDUCING THE AMOUNT OF FUEL GAS DURING OPERATION OF THE OIL FIRE FURNACES	1869
<i>V G Shram, M A Shushenacheva, M A Kovaleva, N N Lysyannikova, A V Lysyannikov, E G Kravtsova</i>	
INFLUENCE OF TRANSPORT ON THE ECOLOGY OF BIG MEGAPOLIS	1875
<i>Yu N Bezborodov, S A Kovaleva, A N Sokolnikov, V G Shram, N N Lysyannikova, A O Karkashenko</i>	
PREDICTION LIFE OF LUBRICANTS ON THE ANALYSIS OF EXPERIMENTAL DATA ON THEIR OPTICAL DENSITY	1880
<i>V G Shram, E D Agafonov, N N Lysyannikov, A V Lysyannikov, M A Kovaleva</i>	
STUDY OF THE EFFECT OF THE SYNTHETIC ADDITIVE MONNOL ELITE 5W-40 SL/CF ON THE QUALITY INDICATORS OF MINERAL MOTOR OIL M-10G2K	1884
<i>V I Afanasov, B I Kovalsky, V G Shram, Yu N Bezborodov, O N Petrov, M A Kovaleva</i>	
ANALYSIS OF THE MECHANISM OF ACTION AND FUNCTIONAL PROPERTIES OF VISCOUS ADDITIVES	1889
<i>M A Kovaleva, V G Shram, N E Soloviev, N N Lysyannikova, A V Lysyannikov, E G Kravtsova</i>	
METHOD FOR CONTROLLING THE FORMATION PARAMETERS OF AN ELASTOHYDRODYNAMIC LAYER IN ROLLING BEARINGS	1893
<i>V G Shram, B I Kovalsky, M A Kovaleva, N N Lysyannikova, A V Lysyannikov, K A Knyazev</i>	
EFFICIENCY OF USING SOLAR ELECTRIC PANELS WITH GRID-TIE INVERTER FOR PUBLIC BUILDINGS	1897
<i>E V Platonova, G N Chistyakov, A S Toropov, A V Kolovsky, A V Bayshev</i>	
THE RESULTS OF THE STUDY OF THE MECHANISM OF OXIDATION OF MOTOR OIL	1902
<i>B I Kovalsky, V G Shram, Yu N Bezborodov, O N Petrov, N N Lysyannikova, E G Kravtsova</i>	
SMART MEASUREMENT AND CONTROL SYSTEM OF CONDITION OF A LOCAL TECHNOSPHERE	1909
<i>V A Baranov, O E Bezborodova, A Ju Bodin, O N Bodin, A I Gerasimov</i>	

RESEARCH OF HIGH-SPEED DIESEL ENGINES OF SMALL DIMENSION ON BIOFUEL	1915
<i>V A Likhanov, O P Lopatin</i>	
WAVE FORMATION IN A TWO-LAYER LIQUID UNDER THE ACTION OF A SOURCE	1921
<i>E A Mikishanina</i>	
OPTIONS FOR ORGANIZING OWN SOURCES OF ENERGY SUPPLY AT THE FACILITIES OF GENERATING COMPANIES BASED ON STEAM SCREW MACHINES.....	1928
<i>D S Balzamov, I G Akhmetova, E Yu Balzamova, G I Oykina, V V Bronsrkaya</i>	
THE METHOD OF ACCIDENT RECONSTRUCTION ACCORDING TO THE PARAMETERS OF THE BRAKING PROCESS OF M₁ CATEGORY VEHICLE UNDER THE CONDITIONS OF THE NORTH-WEST REGION.....	1934
<i>A S Afanasyev, S A Evtyukov, N V Chudakova</i>	
IMPROVING THE ENVIRONMENTAL PERFORMANCE OF A DIESEL ENGINE USING NATURAL GAS AND EXHAUST GAS RECIRCULATION.....	1939
<i>V A Likhanov, O P Lopatin</i>	
THE DEVELOPING PROGRAM SYSTEM OF SOCIAL MONITORING OF ROAD IMPROVEMENT AND URBAN INFRASTRUCTURE.....	1943
<i>A V Obedin, E O Soroka, V V Kukartsev, A S Mikhalev, V S Tynchenko, E I Semenova, K A Bashmur</i>	
NUMERICAL INVESTIGATION OF THE ETHYLBENZENE DEHYDROGENATION REACTION IN A FIXED BED REACTOR WITH CATALYST GRANULES OF VARIOUS SIZES.....	1949
<i>S A Solovev, O V Soloveva, B Sh Gilmurahmanov, A A Lamberov</i>	
CONTENT ANALYSIS OF SALTS AND SUSPENDED SUBSTANCES IN SNOW AND THAWED WATER.....	1956
<i>M Y Dyagelev, D A Khvorenkov, A M Nepogodin, G K Bazhenov, A I Aleksandrov</i>	
CAPABILITIES ANALYSIS OF LIDAR AND PASSIVE OPTICAL METHODS FOR REMOTE VEGETATION MONITORING.....	1962
<i>M L Belov, A M Belov, V A Gorodnichev, S V Alkov</i>	
DETERMINATION OF THE MUTUAL ENTRAINMENT OF THE EXTRACTANT AND THE AQUEOUS PHASE IN THE EXTRACTION OF RARE-EARTH ELEMENTS FROM THE TECHNOLOGICAL PHOSPHORIC ACID SOLUTION.....	1968
<i>D Lutskiy, O Cheremisina, M Ponomareva, A Ignatovich</i>	
STUDY OF THE EFFECTIVE PERFORMANCE OF THE DIESEL ENGINE WHEN WORKING ON METHANOL AND METHYL ETHER RAPESEED OIL	1973
<i>V A Likhanov, O P Lopatin, A S Yurlov</i>	
CONCEPT OF CONTROL AND DATA ACQUISITION SYSTEM FOR MODERN DIGITAL POWER SUBSTATION.....	1978
<i>A A Dmitriev, V E Gerasimov</i>	
MASS TRANSFER APPARATUS FOR A WIDE RANGE OF ENVIRONMENTAL PROCESSES.....	1983
<i>N A Merentsov, A B Golovanchikov, M V Topilin, A V Persidskiy, D A Tezikov</i>	
RELIEF FLOW SWIRLERS TO CONTROL WAX DEPOSITION FORMATION INSIDE DOWNHOLE EQUIPMENT.....	1992
<i>K A Bashmur, E A Petrovsky, Yu A Geraschenko, V A Makolov, Yu N Shadchina, V S Tynchenko</i>	
DETERMINING THE NUMBER OF REDUNDANT ELEMENTS OF THE DISTRIBUTION NETWORK IN COMPLIANCE WITH THE SPECIFIED AMOUNT OF INFORMATION ENTROPY.....	1998
<i>A S Dulesov, D J Karandeev, V I Khrustalev, N V Dulesova, T G Krasnova</i>	
STUDY OF THE SOLUBILITY OF ANTRACENE IN PURE AND MODIFIED SUPERCRITICAL CARBON DIOXIDE.....	2005
<i>M R Khazipov, I L Pastushenko, G S Sagdeeva, A A Sagdeev, A T Galimova</i>	
STUDY OF MICRORELIEF FORMING TECHNOLOGY ON SLIDING BEARINGS FOR OIL AND GAS CENTRIFUGAL UNITS.....	2011
<i>E A Petrovsky, K A Bashmur, Yu N Shadchina, V V Bukhtoyarov, V S Tynchenko</i>	
DEVELOPMENT OF STEELMAKING SLAG PROCESSING SCHEME FOR ENVIRONMENTAL STRESS REDUCTION.....	2017
<i>T V Sviridova, O B Bobrova, O Yu Ilina, E A Nekerov</i>	
SELF-CONTAINED PROCESS MODULE WITH FLOW SWIRLING FOR DOWNHOLE EQUIPMENT POWER SUPPLY	2023
<i>K A Bashmur, E A Petrovsky, Yu N Shadchina, V S Tynchenko, E V Tsygankova</i>	
PROCESSING CAPABILITIES OF REDUCERS WITH ECCENTRIC GEARING FOR ROTARY DRILLING RIGS	2029
<i>E A Petrovsky, K A Bashmur, Yu A Geraschenko, E V Tsygankova, V V Bukhtoyarov</i>	

MATHEMATICAL MODEL AND NUMERICAL ALGORITHMS TO ANALYZE GAS FILTRATION PROCESS IN A POROUS MEDIUM	2034
<i>N Ravshanov, S Aminov, O Ja Kravets</i>	
EXPERIMENTAL STUDIES OF EFFICIENT SENSING FLUORESCENCE RADIATION BANDS TO DETECT OIL AND PETROLEUM PRODUCT SPILLS	2040
<i>Yu V Fedotov, D A Kravtsov, S L Belov, V A Gorodnichev</i>	
REGULARITIES OF CHANGE OF ENERGY INDICATORS OF THE BASIC TECHNOLOGICAL EQUIPMENT OF THE COTTON-CLEANING INDUSTRY	2045
<i>I U Rakhmonov, K M Reymov</i>	
DISCHARGE-IMPULSE METHODS APPLICATION IN TECHNOLOGIES OF MINERAL RESOURCES MASTERING	2049
<i>V V Korostovenko, L P Korostovenko, A G Stepanov, A V Sukhanova</i>	
RESEARCH OF TEXTURAL AND STRUCTURAL FEATURES OF REFRACTORY GOLD- BEARING ORES	2054
<i>V A Gron, V V Korostovenko, A V Galaiko, A V Sukhanova, M S Gron</i>	
LOW-INTENSITY VIBRATION IMPACT ON A LOW-PERMEABLE COAL SEAM	2059
<i>M V Pavlenko, A D Arnavtov, R Y Tsarev, V V Orlova, I N Kartsan, K Y Zhigalov</i>	
INFLUENCE OF CARBON-CONTAINING ADDITIVES ON SINTERING OF LIMESTONE- NEPHELINE FURNACE CHARGE IN ALUMINA PRODUCTION	2066
<i>E V Sizyakova, S B Fokina, P V Ivanov</i>	
LOAD CHARACTERISTICS OF A TURBOCHARGED DIESEL ENGINE WHEN WORKING ON NATURAL GAS	2072
<i>A V Grebnev, A I Chuprakov, A E Toropov</i>	
PHYTOREMEDIATION EFFICIENCY OF DUCKWEED COMMUNITIES FOR MINING ENTERPRISES WASTEWATER TREATMENT FROM NITROGEN COMPOUNDS	2078
<i>Denis S Petrov, Vladimir S Kuznecov, Igor K Suprun, Maria A Zhuravkova, Margarita A Solnyshkova</i>	
COMBINED HEAT AND POWER	2083
<i>Ibragim M Bamatov, Dzhabrail M Bamatov</i>	
OPTIMIZATION OF COMPLEX PARAMETERS OF URBAN DISTRIBUTION ELECTRIC NETWORKS	2088
<i>A D Taslimov, I U Rakhmonov</i>	
WORKING OUT OF AN EFFECTIVE ENERGY-SAVING TECHNOLOGY FOR CRUSHING OF WORN OUT TIRES ON A HAMMER MILL	2093
<i>E V Ganin, S V Antimonov, A Yu Kuzmin</i>	
ANALYSIS AND CALCULATION OF OPTIMUM PARAMETERS OF ELECTRIC ARC FURNACE	2099
<i>I U Rakhmonov, K M Reymov, A M Najimova, B Uzakov, B T Seytmuratov</i>	
CONDITIONS OF OCCURRENCE OF ICE FORMATIONS AND DENSE SNOW ON THE ROAD SURFACE	2103
<i>A V Lysyannikov, A V Egorov, N N Lysyannikova, M A Kovaleva, V G Shram, A S Lynev, S G Selihova, U F Kaizer</i>	
EFFECT OF DIFFUSION PROCESSES ON THE MOVEMENT AND COOLING OF DROPLETS IN THE AIR WASHERS OF HEAT POWER SYSTEMS	2110
<i>A E Pushkarev, O I Varfolomeeva, D A Khvorenkov, L A Pushkareva</i>	
INFLUENCE OF ETHANOL ON THE COMBUSTION PROCESS AND SOOT FORMATION IN THE DIESEL CYLINDER	2115
<i>A N Kozlov, A A Anfilatov, A N Chuvashv</i>	
INFLUENCE OF TECHNICAL CONDITION PARAMETERS ON THE RESIDUAL RESOURCE OF CAPACITIVE EQUIPMENT	2119
<i>P A Kulakov, A V Rubtsov, V G Afanasenko, O E Zubkova, R R Sharipova, A A Gudnikova</i>	
DYNAMIC METHOD OF CONTROLLING THE TRACTION FORCE DRIVING WHEELS OF VEHICLE	2126
<i>A V Egorov, A V Lysyannikov, Yu F Kaizer, S V Dorohin, D U Smirnov, E N Bogdanov, N N Lysyannikova, A V Kuznetsov</i>	
THE USE OF MAGNETIC FLAW DETECTION TO CONTROL THE OFFSET OF THE EDGES OF THE WELDED JOINTS OF TECHNOLOGICAL PIPELINES	2132
<i>E A Naumkin, A V Rubtsov, P A Kulakov, K A Usachev</i>	
THE RESULTS OF THE RESEARCH OF MOTOR OILS BY THE METHOD OF PREDICTING INDICATORS OF THERMAL-OXIDATION STABILITY	2138
<i>Yu N Bezborodov, N N Lysyannikova, A A Kirpichenko, A V Lysyannikov, M A Kovaleva, A V Egorov</i>	
MONITORING THE CURRENT STATE OF RURAL TERRITORIES ECOLOGY IN THE ORYOL REGION AND SOME AREAS OF THEIR ENVIRONMENTAL DEVELOPMENT	2145
<i>E E Afanasieva, O V Koreva, I N Kondrashova, N N Kondykova, V I Tikhii</i>	

TECHNOLOGY OF RECEIVING A FERRIFEROUS PIGMENT FROM PRODUCTION WASTERS OF SYNTHETIC RUBBER.....	2153
<i>M S Luzina</i>	
EXPERIMENTAL RESEARCH OF THE DIESEL ENGINE WITH MODERNIZED SYSTEM OF AIR SUPPLY	2158
<i>A V Razuvaev, V V Biryuk, E V Blagin</i>	
PURIFICATION OF HARVESTED TREE STUMPS BY MEANS OF PULSE SWIRLING HYDRAULIC JETS	2165
<i>I A Polyaniin, K N Nikonorov, A V Egorov, M N Voldaev, A V Lysyannikov, Yu F Kaizer, K S Stepanova</i>	
IMPROVING THE ENERGY PERFORMANCE OF OZONE GENERATORS USED IN AGRICULTURAL ECOLOGY	2170
<i>A Radjabov, M Ibragimov, N M Eshpulatov, O Matchonov</i>	
NUMERICAL SIMULATION OF A SUPERSONIC SEPARATOR	2175
<i>M I Nasyrova, P A Kulakov</i>	
POSSIBLE USE OF PROCESSED FERROMANGANESE CONCRETIONS FOR PRODUCTION SEWAGE PURIFICATION	2181
<i>M A Sulimova</i>	
DEVELOPMENT OF STANDARDS FOR INDUSTRIAL CONTROL MATERIALS TO IMPROVE QUALITY CONTROL OF RUBBERS.....	2186
<i>M A Efremova, V Sh Sulaberidze</i>	
ESTIMATION OF SEISMIC LOAD TO THE OIL PIPELINE WITH MANHOLES.....	2190
<i>M I Bayazitov, V K Berdin, P A Kulakov, V G Afanasenko, R M Bayazitov, R R Tlyasheva</i>	
SUPERCRITICAL FLUID MEDIUMS FOR THE EXTRACTION OF OIL PRODUCTS FROM TAR SANDS.....	2196
<i>F M Gumerov, V F Khairutdinov, Z I Zaripov, F R Gabitov, S V Mazanov, A I Kurdyuko, A R Gabitova</i>	
DEVELOPMENT OF THEORETICAL BASES OF ANALYSIS OF RELIABILITY OF MARINE OIL AND GAS CONSTRUCTIONS WITH REGARD TO TEMPERATURE IMPACT	2201
<i>I V Starokon</i>	
ANALYSIS OF THE IMPLEMENTATION OF BIOGAS PLANTS: PLUSES AND MINUSES OF THE THERMOPHILIC DIGESTION	2208
<i>J An, N E Sokolinskaya</i>	
STATIC AND DYNAMIC APPROACH TO ESTIMATION OF SPRING WATER HARDNESS CATION CONTENT AS A NATURAL FACTOR OF GROUNDWATER FORMATION.....	2213
<i>A E Vasyukov, A P Korzhavyi, S N Nikulina, Y M Zhukova</i>	
DETERMINATION OF THE SORPTION CHARACTERISTICS OF AMMONIUM PERRENATE IONS ON ANION EXCHANGE RESIN AV-17-8	2222
<i>D S Lutskiy, A S Ignatovich, M A Sulimova</i>	
CAUSE AND EFFECT ANALYSIS OF FAILURES AT RUSSIAN NUCLEAR POWER PLANTS BETWEEN YEARS 1992 AND 2018	2226
<i>A I Ivanov, M Yu Egorov, A S Stepashkina, A S Kritchenkov</i>	
IDENTIFICATION OF DAMAGES ZONES OF TRANSFER LINE EXCHANGER BASED ON MODELING.....	2232
<i>M I Bayazitov, A V Rubtsov, P A Kulakov, R M Bayazitov</i>	
STATIC AND DYNAMIC APPROACH TO ESTIMATION OF SPRING WATER MINERALIZATION STABILITY AS A FACTOR OF GROUNDWATER ECOLOGICAL SAFETY	2239
<i>A E Vasyukov, A P Korzhavyi, S N Nikulina</i>	
ON THE FORMULATION AND SOLUTION OF THE BOUNDARY VALUE PROBLEM OF DRILLING WELL BY DIFFERENTLY MOUNTED DRILLING BITS.....	2246
<i>A V Kolotvin, E V Ganin</i>	
FMMA AND FMECA FOR ANALYSIS OF RELIABILITY OF A WIND TURBINE.....	2253
<i>I A Magomedov, V S Magomadov, A A Rahimov, S Kh Alikhadzhiev, M-A A Gudaev</i>	
THE REFINED METHOD OF RISK ASSESSMENT OF THE TECHNICAL CONDITION DETERMINATION OF THE AVIATION EQUIPMENT CRITICAL ELEMENTS	2258
<i>G I Korshunov, S L Polyakov, E T Nurushev, V O Smirnova</i>	
METHOD FOR MONITORING EVALUATION OF DOMINANT INFLUENCE PROCESSES OF OXIDATION AND TEMPERATURE DESTRUCTION ON BASIC INDICATIONS OF BODIES OF MOTOR OILS	2264
<i>Eygeniy A Ermilov, Yuriy N Bezborodov, Boleslav I Kovalsky</i>	
ANALYSIS OF THE CAUSES OF FAILURES OF PYROLYSIS UNITS	2271
<i>O A Kolenchukov, E A Petrovsky</i>	

STATISTICAL METHODOLOGY FOR TAKING INTO ACCOUNT MULTI-MODE IN THE PROBLEMS OF ELECTRICAL SYSTEM FUNCTIONING.....	2276
<i>A A Gerasimenko, E V Puzyrev</i>	
IMPACT OF UNDISSOLVED GAS ON DYNAMIC PROCESSES IN THE FLUID DRIVE FOR WELL TESTING AND SERVICING RESEARCH.....	2282
<i>A S Lunev, A A Nikitin, V I Afanasov, Y F Kaizer, A V Lysyannikov, S P Dunaeva</i>	
HYDROMECHANICAL DEVICES TO PREVENT PARAFFIN DEPOSITS.....	2288
<i>A B Feodorov, V I Afanasov, A S Lunev, T S Spirin, E S Kurochkin, A J Zagorulko</i>	
SULFUR DIOXIDE EMISSION ASSESSMENT USING OMI DATA.....	2293
<i>A I Zuevskaya, V F Garifullin, D V Zuev, F V Zander, S A Temerbaev</i>	
RESEARCH OF METHODS FOR PUMPING TECHNOLOGICAL EQUIPMENT CONDITION PREDICTIVE MONITORING.....	2299
<i>V V Bukhtoyarov, V S Tynchenko, K A Bashmur, E A Petrovskiy, V V Kukartsev, N A Bukhtoyarova</i>	
COMPARATIVE ANALYSIS OF THE DEPENDENCE OF THE BULK ELASTIC MODULUS OF THE LIQUID ON PRESSURE AND GAS FACTOR.....	2305
<i>A S Lunev, A A Nikitin, Y F Kaizer, A V Lysyannikov, D A Sokolov, V Y Obvintseva</i>	
THE ECONOMY OF A SMALL INNOVATIVE ENTERPRISE IN THE IMPLEMENTATION OF OIL AND WASTEWATER TREATMENT TECHNOLOGIES.....	2310
<i>I I Gazieva, M A Biysultanova, H R Vizirova, I M Daudov</i>	
INVESTIGATION OF ENVIRONMENTAL INDICATORS OF DIESEL ENGINE WHEN WORKING ON METHANOL.....	2314
<i>A N Chuvashov, A I Chuprakov</i>	
CALCULATION OF BALANCING AND FILTER COMPENSATING DEVICES OF THE POWER SUPPLY SYSTEM.....	2319
<i>A S Lukovenko, V V Kukartsev, V S Tynchenko, A S Mikhalev, V A Kukartsev, K A Bashmur</i>	
METHODS FOR SOLVING THE PROBLEMS OF EXTENDING THE RESOURCE OF OFFSHORE STATIONARY PLATFORMS: CASE STUDY.....	2325
<i>I V Starokon</i>	
EDUCATIONAL ENVIRONMENT OF UNIVERSITIES TO CREATING TECHNOSPHERE SAFETY AND DEVELOPMENT OF INNOVATION ECONOMY.....	2331
<i>T L Smirnova</i>	
USING OF HAMILTON MECHANICS METHODS FOR MODELING DYNAMIC PROCESSES ON THE EARTH SURFACE.....	2335
<i>Georgy Dorrer</i>	
CHEMICAL NICKEL PLATING ON A SIO₂ FILM OF THE SILICON BETA-VOLTAIC CONVERTER ACTIVE WINDOW.....	2352
<i>S V Saikova, N P Evsevskaya, A T Lelekov, I V Kovalev, P V Zelenkov, V V Brezitskaya</i>	
RELIABILITY FORECASTING MODEL FOR POWER TRANSFORMERS THAT HAVE FULFILLED THEIR STANDARD SERVICE LIFE.....	2361
<i>A S Lukovenko, V V Kukartsev, V S Tynchenko, K A Bashmur, O I Kukartseva, A S Bondarev</i>	
CORRECTION FACTORS APPLICATION TO KRASNOYARSK CITY REAL ESTATE IN THE LACK OF INFORMATION CONDITIONS.....	2366
<i>I A Panfilov, Y A Alekseeva, T A Panfilova, O I Karelin, D V Kustov</i>	
DIGITAL MODEL FOR ASSESSING STRENGTH OF BUSBARS AND BUSBAR SUPPORTS LOCATED IN A SWITCHGEAR UNDER THE INFLUENCE OF ELECTRODYNAMIC FORCE.....	2371
<i>A V Korzhov, A O Cherniavsky, M A Dziuba, D V Putenikhin, A I Kamynin</i>	
ALTERNATIVE METHOD FOR EVALUATION OF VEHICLE STATIC TRANSVERSE STABILITY.....	2376
<i>I M Blyankinshtein, I A Fedotov, D A Khudyakov, F Y Smolenkov, E G Makhova, A G Kovalev, I M Kolesnikov</i>	
ANALYSIS OF THE CURRENT SITUATION AND DEVELOPMENT TREND OF THE INTERNATIONAL CARGO UAVS MARKET.....	2383
<i>I V Kovalev, A A Voroshilova, M V Karaseva</i>	
INTELLIGENT SYSTEMS FOR DECISION MAKING DURING OPERATION OF TECHNOLOGICAL OIL AND GAS EQUIPMENT.....	2391
<i>V G Zhukov, V V Bukhtoyarov, K A Bashmur, V S Tynchenko, N A Bukhtoyarova, V V Kukartsev</i>	
EFFECT STUDY OF MAO-COATINGS HEAT TREATMENT ON THEIR STRUCTURE, PHASE COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES.....	2397
<i>O E Tchufistov, E A Tchufistov</i>	
PREDICTION OF INJURY TO PASSENGERS OF RAILWAY ROLLING STOCK BASED ON MODERN PHYSICAL SIMULATION METHODS.....	2404
<i>S G Shorokhov, O I Bondarenko, V V Kobishanov</i>	

ASSESSMENT MODELS FOR THE GENERALIZED QUALITY CRITERION FOR THE PRODUCTION PROCESSES OF THERMAL POWER PLANTS.....	2411
<i>Ya A Tynchenko, M V Saramud, I V Kovalev</i>	
ON THE PROBLEM OF THE MANNED AIRCRAFT MODIFICATION TO UAVS	2416
<i>I V Kovalev, A A Voroshilova, M V Karaseva</i>	
ANALYTICAL APPROACH IN DETERMINATION OF THE SURFACE LAYER PARAMETERS OF MACHINE PARTS HARDENED BY A MOVING ELASTIC INDENTER.....	2424
<i>Stanislav Abulkhanov, Alexander Khaimovich, Yuriy Polyanskov, Sergej Bobrovskij, Aleksey Lukyanov, Olesja Levitskih, Olga Kuznetsova</i>	
Author Index	