

V International Conference on Information Technology and Nanotechnology (ITNT 2019)

Journal of Physics: Conference Series Volume 1368

Samara, Russia
21 - 24 May 2019

Part 1 of 3

ISBN: 978-1-7138-1125-1
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

THE OPTIMAL PARAMETERS OF THE LASER TRIANGULATION MODIFIED THICKNESS METER.....	1
<i>A A Adamov, V N Khramov</i>	
THE CONTROL SYSTEM ELEMENTS OF THE NEW GENERATION OPTICAL SWITCHING CELL.....	10
<i>E A Barabanova, K A Vytovtov, T T Nguyen</i>	
AXICON FOR IMAGING SPECTROMETER.....	19
<i>V A Blank, Yu S Strelkov, R V Skidanov</i>	
CREATION OF ZINC OXIDE BASED NANOMATERIALS BY REPETITIVELY PULSED LASER TREATMENT.....	24
<i>S P Murzin, A I Safin, M V Blokhin</i>	
LONG-HAUL FEW MODE FIBER OPTIC LINK WITH DIFFERENTIAL MODE DELAY COMPENSATION.....	30
<i>V A Burdin, E Y Eremchuk</i>	
MULTI-PORT OPTICAL POWER SPLITTER DESIGN BASED ON COUPLED-MODE THEORY.....	37
<i>M A Butt, E S Kozlova</i>	
RESEARCH AND MODELING OF LASER ABLATION BY ULTRA-SHORT LASER PULSES FOR METAL TARGETS.....	42
<i>R V Davydov, V I Antonov</i>	
METALENS FOR CREATION OF THE LONGITUDINALLY POLARIZED PHOTONIC NEEDLE.....	49
<i>S N Khonina, D A Savelyev, S A Degtyarev, Y Azizian-Kalandaragh</i>	
DYNAMICS OF TWO DIPOLE-COUPLED SUPERCONDUCTING QUBITS INTERACTING WITH TWO INDEPENDENT CAVITY MODES.....	57
<i>M M Evseev, E K Bashkirov</i>	
CALIBRATION SIMULATION FOR STEREOSCOPIC OPTICAL SYSTEMS USING OPTICAL DESIGN SOFTWARE.....	63
<i>A V Gorevoy, A S Machikhin, V I Batshev, V Y Kolyuchkin</i>	
INFLUENCE OF STARK SHIFT AND DETUNING ON ATOMIC ENTANGLEMENT INDUCED BY A THERMAL ELD OF ONE-MODE CAVITY.....	71
<i>M O Gulsyannikova, E K Bashkirov</i>	
MODELING THE ELECTRON-PHOTON INTERACTION IN MONOLAYERS OF GRAPHENE AND TRANSITION METAL DICHALCOGENIDES IN A TIGHT BINDING APPROXIMATION.....	80
<i>S M R H Hussein, S I Kharitonov, N L Kazanskiy, V S Pavelyev, I N Kozlova</i>	
DIFFRACTION FROM EXCITONIC DIFFRACTION GRATING.....	90
<i>Yu V Kapitonov, P Yu Shapochkin, Yu V Petrov, V A Lovtcius, S A Eliseev, Yu P Efimov</i>	
CALCULATION OF DIFFRACTIVE OPTICAL ELEMENTS FOR THE FORMATION OF THIN LIGHT SHEET.....	96
<i>P A Khorin</i>	
CALCULATION OF THE VORTEX EIGENFUNCTIONS OF THE FINITE PROPAGATION OPERATOR IN THE NEAR-FIELD DIFFRACTION.....	105
<i>M S Kirilenko, S G Volotovskiy</i>	
THE RESOLUTION OF OPTICAL IMAGE EDGE DETECTION BASED ON BREWSTER EFFECT.....	112
<i>M D Kolesnikova, A V Lyubarskaya, D V Nesterenko, V A Soifer</i>	
PROSPECTS FOR CREATING A LASER NANOLITHOGRAPHY SYSTEM FOR TASKS OF DIFFRACTIVE OPTICS AND NANOPHOTONICS.....	116
<i>V P Korolkov, R V Shimansky, V N Khomutov, A G Seduhin, R K Nasyrov, V P Kiryanov, A V Kiryanov, M A Zavyalova</i>	
TUNABLE LIQUID CRYSTAL ASTIGMATIC PLATE.....	126
<i>S P Kotova, A M Mayorova, D V Prokopova, S A Samagin</i>	
MEASUREMENT OF THE FRACTIONAL ORBITAL ANGULAR MOMENTUM OF ASYMMETRIC LASER BEAMS BY USING TWO CYLINDRICAL LENSES.....	136
<i>V V Kotlyar, A A Kovalev, A P Porfirev</i>	

COMPARATIVE SIMULATION OF SPIRAL ZONE PLATES WITH A RELIEF FROM SILICA GLASS AND SILVER	142
<i>E S Kozlova, V V Kotlyar</i>	
TRANSMISSION OF OPTICAL VORTICES THROUGH BRAGG OPTICAL MULTIHEDICOIDAL FIBERS OF HETEROGENEOUS TYPE.....	148
<i>B Lapin, M Yavorsky, E Barshak, D Vikulin, C Alexeyev</i>	
SIMULATION OF FIBER OPTIC SENSORS OF ELECTRICAL QUANTITIES BASED ON BRAGG GRATINGS WITH INSTRUMENTAL ERRORS CORRECTION	159
<i>V N Zakharov, G I Leonovich, A F Krutov, A E Lobakh</i>	
CONDITIONS IMPROVING OF LASER HEATING FOR FORMING OF MATERIALS WITH A FERRITIC-MARTENSITIC STRUCTURE.....	167
<i>S P Murzin, G Liedl, R Bielak, A A Melnikov</i>	
FIBER-OPTICAL SYSTEM FOR TRANSMITTING HETERODYNE SIGNALS IN ACTIVE PHASED ANTENNA ARRAYS OF RADAR STATIONS	172
<i>A V Moroz, V V Davydov</i>	
TESTING OF DIFFRACTIVE OPTICAL ELEMENT AS PART OF SPECIFIC CO₂ LASER EQUIPMENT FOR METALLIC MATERIALS MODIFICATION	179
<i>S P Murzin, N L Kazanskiy, G Liedl, G Humenberger</i>	
BESSEL BEAM CONVERTER BASED ON C-CUT LITHIUM NIOBATE CRYSTAL	186
<i>S V Karpeev, V D Pararin</i>	
THE EXPEDIENCY OF FIBER-OPTICAL COMMUNICATION LINE USED IN DIFFERENT SCHEMES OF RECEIVER TRACT OF THE RADIO-MONITORING COMPLEX.....	195
<i>A S Podstrigaev, A S Lukyanov, A V Smolyakov, A N Shishkov, V V Davydov, M I Nikitina</i>	
COMBINED TECHNIQUE BASED ON LIGHT SCATTERING FOR INVESTIGATION OF THE COLLOID'S PARAMETERS	202
<i>E A Savchenko, E K Nepomnyashchaya</i>	
INVESTIGATION OF THE VORTEX LASER BEAM SHIFT RELATIVE TO THE OPTICAL ELEMENT USING HIGH PERFORMANCE COMPUTER SYSTEMS	208
<i>D A Savelyev</i>	
SIMULATION OF LASER LIGHT FOCUSING BY A DIELECTRIC NANOCYLINDER WITH GOLD CORE.....	217
<i>A A Savelyeva, E S Kozlova</i>	
INVESTIGATION OF CHARACTERISTICS OF WAVEGUIDE CHANNELS SYSTEM FORMED IN PDLC WITH INHOMOGENEITY OF THE AMPLITUDE-PHASE DISTRIBUTION OF FORMING FIELD	222
<i>D I Dudnik, I A Kvasova, K O Gusachenko, A O Semkin, S N Sharangovich</i>	
CONVENTIONAL RAMAN AND SURFACE-ENHANCED RAMAN SPECTROSCOPY OF ASCITIC FLUID	230
<i>L A Bratchenko, I A Bratchenko, D N Artemyev, A A Moryatov, J V Starikova, E N Tupikova, I A Platonov, S V Kozlov, V P Zakharov</i>	
ANALYSIS OF THE POSSIBILITY OF UPSCALING BASED ON APODIZATION FOR PARTIALLY COHERENT OPTICAL SYSTEMS IN THE PRESENCE OF ABERRATIONS.....	234
<i>Y R Skidanov</i>	
ANALYSIS AND OPTIMIZATION OF PHOTONICS DEVICES MANUFACTURING TECHNOLOGIES BASED ON CARBON NANOTUBES	241
<i>N Tripathi, V S Pavelyev, V S But, S A Lebedev, S Kumar, P Sharma, P Mishra, M A Sovetkina, S A Fomchenkov, V Podlipnov, V Platonov</i>	
METALENS FOR POLARIZATION CONVERSION AND FOCUSING OF LASER LIGHT	248
<i>S S Stafeev, A G Nalimov, V V Kotlyar</i>	
MODELING THE PROCESS OF OPTICAL CHARACTERISTICS VARIATION FOR A SOLAR SAIL SURFACE DURING HELIOCENTRIC FLIGHTS	252
<i>O L Starinova, M A Rozhkov, B Alipova, I V Chernyakina</i>	
REPRESENTATION OF SHIFTED VORTEX BEAMS OF ARBITRARY ORDER AS A COMBINATION OF NONSHIFTED VORTICES	260
<i>A V Ustinov</i>	
PHYSICAL FOUNDATION OF OPTICAL SMART ANTENNA BASED ON METAMATERIAL AND LITHIUM NIOBATE	268
<i>K Vytovtov, E Barabanova, M Igumnov</i>	
REFINEMENTS TO THE MICROWAVE WAVEGUIDE MATERIAL PARAMETERS MEASUREMENTS. CASE STUDY	275
<i>K M Zeyde, V V Sharov, A I Malkin</i>	

THE PROPAGATION OF PULSES OF A SPECIAL SHAPE IN AN INHOMOGENEOUS ANISOTROPIC MEDIUM WITH DISPERSION AND TORSION OF THE OPTICAL AXIS	282
<i>N Moiseeva, A Moiseev</i>	
SPECTROMETRY OF MOLECULAR INTERACTIONS IN CLUSTERS	289
<i>E K Nepomnyashchaya</i>	
MULTIVARIATE ANALYSIS OF TISSUES RAMAN SPECTRA USING REGRESSION METHODS	296
<i>A A Lykina, D N Artyemyev, V I Kukushkin, I A Bratchenko, S T Avraamova, N S Aleksandrov</i>	
ON THE PHASE FIELD MODEL FOR MICROSTRUCTURE EVOLUTION DURING SELECTIVE LASER MELTING OF POWDER BED INCLUDING DIFFUSION-INDUCED STRESSES	301
<i>F Kh Mirzade</i>	
FORMING OF THREE-DIMENSIONAL OPTICAL FIELDS CONSISTENT WITH THE SUPERPOSITION OF SCALAR SPHERICAL HARMONICS	313
<i>E O Monin</i>	
FEATURES OF THE TRANSMISSION OF MICROWAVE SIGNALS AT OFFSHORE FACILITIES	322
<i>G A Pchelkin, V B Fadeenko, V V Davydov</i>	
HYPERSPECTRAL MONITORING AOTF-BASED APPARATUS	329
<i>V Pozhar, M Gaponov, A Machikhin, S Shirokov</i>	
ANALYSIS OF DIFFRACTION EFFICIENCY OF PHASE GRATINGS IN DEPENDENCE OF DUTY CYCLE AND DEPTH	335
<i>A Yu Meshalkin, V V Podlipnov, A V Ustinov, E A Achimova</i>	
MODELLING AND RECORD TECHNOLOGIES OF ADDRESS FIBER BRAGG STRUCTURES BASED ON GRATINGS WITH TWO SYMMETRICAL PI-PHASE SHIFTS	344
<i>O G Morozov, A Zh Sakhabutdinov, I I Nureev, R Sh Misbakhov</i>	
MODELLING AND RECORD TECHNOLOGIES OF ADDRESS FIBRE BRAGG STRUCTURES BASED ON TWO IDENTICAL ULTRA-NARROW GRATINGS WITH DIFFERENT CENTRAL WAVELENGTHS	353
<i>O G Morozov, A Zh Sakhabutdinov, I I Nureev, R Sh Misbakhov</i>	
ANALYTICAL CALCULATION OF DIFFRACTION ORDER INTENSITIES FOR A HYPERSPPECTROMETER	363
<i>A A Rastorguev, S I Kharitinov</i>	
A COMPLEX STUDY OF THE STRUCTURE "CARBON NANOTUBES - SILICON SUBSTRATE" PHOTOCONDUCTIVITY MECHANISM	369
<i>N Tripathi, V S Pavelyev, A V Mezhenin, M A Sovetkina, A R Rymzhina</i>	
SYNTHESIS OF CONDUCTIVE FILMS BASED ON OXIDIZED CARBON NANOTUBES	379
<i>M V Gorshkov, A S Moskalenko</i>	
A COMPACT IMAGING HYPERSPPECTROMETER	384
<i>N A Ivliev, V V Podlipnov, R V Skidanov</i>	
EXPERIMENTAL STUDY OF THE PHOTON STRUCTURES HOLOGRAPHIC FORMATION BY BESSEL-LIKE LIGHT BEAMS IN PHOTOPOLYMER MATERIALS	388
<i>V O Dolgirev, D I Dudnik, A O Semkin, S N Sharangovich</i>	
OPTICAL PHASE RETRIEVAL WITH THE IMAGE OF INTENSITY IN THE FOCAL PLANE BASED ON THE CONVOLUTIONAL NEURAL NETWORKS	395
<i>A P Dzyuba</i>	
FEATURES OF THE CONSTRUCTION OF THE REGISTRATION SCHEME OF OPTICAL IMAGES IN AN AUTONOMOUS QUANTUM MAGNETIC FIELD SENSOR	402
<i>S E Logunov, R V Davydov, M G Vysotsky, V I Dudkin, V Yu Rud'</i>	
FEATURES OF OPTICAL SIGNALS PROCESSING FOR MONITORING THE STATE OF THE FLOWING LIQUID MEDIUM WITH A REFRACTOMETER	411
<i>N M Grebenikova, V V Davydov, K J Smirnov</i>	
DEVELOPMENT OF A SOFTWARE PACKAGE FOR MODELING AND ANALYSIS OF LIGHT DIFFRACTION ON PERIODIC STRUCTURES OF NANOPHOTONICS BY THE RIGOROUS COUPLED-WAVE ANALYSIS	417
<i>I S Komarov, E A Bezus</i>	
IN VIVO RAMAN AND AUTOFLUORESCENCE STUDY OF THE PIGMENTED SKIN NEOPLASMS	427
<i>Y Khristoforova, I Bratchenko, L Bratchenko, S Konovalov, A Andreeva, A Moryatov, D Kassirov, A Orlov, S Kozlov, V P Zakharov</i>	

SYNTHESIS OF SILICON NANOWIRES USING PLASMA CHEMICAL ETCHING PROCESS FOR SOLAR CELL APPLICATIONS.....	432
<i>P V Mokshin, S Juneja, V S Pavelyev</i>	
STUDY OF ELECTRICAL AND OPTICAL PROPERTIES OF A NEW COMPOSITE MATERIAL BASED ON CARBON NANOTUBES AND TITANIUM OXIDE	437
<i>S M R H Hussein, A M Gavad</i>	
ANALYSIS OF THE RESONANCE CHARACTERISTICS OF SURFACE PLASMON POLARITON MODES AT AIR-METAL INTERFACES IN THE ULTRAVIOLET, VISIBLE AND INFRARED REGIONS	444
<i>D V Nesterenko, R A Pavelkin, S Hayashi, V A Soifer</i>	
COLORIZATION OF COPPER SURFACES BY NANOSTRUCTURE MODIFICATIONS WITH ULTRASHORT LASER PULSES	449
<i>S P Murzin, G Liedl, R Pospichal</i>	
FEATURES OF ADAPTIVE PHASE CORRECTION OF OPTICAL WAVE DISTORTION UNDER CONDITIONS OF INTENSITY FLUCTUATIONS	455
<i>N N Botygina, O N Emaleev, V V Lavrinov, V P Lukin, A A Selin, E L Soin</i>	
IMPACT OF THE EVANESCENT WAVES ON THE BACKFLOW OF POWER IN THE NEAR FIELD.....	463
<i>V V Kotlyar, A A Kovalev, D S Kalinkina</i>	
THE DEPENDENCE OF THE IMAGE EDGE DETECTION DIRECTIVITY BY BREWSTER EFFECT ON THE GRADIENT OF INHOMOGENEITIES OF OBJECTS	469
<i>D V Nesterenko, A V Lyubarskaya, M D Kolesnikova, V A Soifer</i>	
POLARIZATION-DEPENDENT ORBITAL ANGULAR MOMENTUM FLIPPING IN FIBERS WITH ACOUSTO-OPTIC INTERACTION	474
<i>M A Yavorsky, D V Vikulin, E V Barshak, B P Lapin, C N Alexeyev</i>	
THE INFLUENCE OF THE APERTURE DIAPHRAGM ON THE SIZE OF THE SUBJECTIVE SPECKLES AND THE APPLICATION OF THIS IN SPECKLE PHOTOGRAPHY	482
<i>M N Osipov, R N Sergeev</i>	
FORMATION OF MICROSTRUCTURES ON THE SURFACE OF A CARBASEOLE-CONTAINING AZOPOLYMER BY THE ACTION OF LASER BEAMS	490
<i>V V Podlipnov, N A Ivliev, S N Khonina, D V Nesterenko, A Yu Meshalkin, E A Achimova</i>	
DEVELOPMENT OF VIRTUAL ROUGHNESS COMPARATORS	496
<i>S R Abulkhanov, S D Poletaev</i>	
INVESTIGATION OF THE FORMATION OF HYBRID POLARIZED LASER BEAMS USING A FOUR-SECTOR POLARIZATION CONVERTER	505
<i>V V Podlipnov, S V Karpeev</i>	
METHOD OF ASSESSMENT THE DEGREE OF RELIABILITY OF THE PULSE WAVE IMAGE IN THE RAPID DIAGNOSIS OF THE HUMAN CONDITION	513
<i>A S Grevtseva, K J Smirnov, K V Greshnevnikov, V V Davydov, V Yu Rud', A P Glimushkin</i>	
INP/INGAAS PHOTOCATHODE FOR HYBRID SWIR PHOTODETECTORS	521
<i>K J Smirnov, V V Davydov, Y V Batov</i>	
BESSEL BEAMS FORMATION BY HYBRID AXICONS.....	526
<i>S Ganchevskaya, R Skidanov, V Vasilev</i>	
OPTICAL INSPECTION DEVICE FOR THE INNER SURFACE OF PIPE ENDS	530
<i>S R Abulkhanov, N A Ivliev</i>	
APPLICATION OF THE ELECTROOPTICAL METHOD FOR THE ANALYSIS OF SURFACE NANOROUGHNESS OF RACEWAYS OF INSTRUMENT BEARINGS	545
<i>A D Abramov, D S Goryainov, R G Grishin, N V Nosov</i>	
REGULATIONS FOR THE EDITORS OF JOURNAL "COMPUTER OPTICS"	556
<i>D V Kudryashov, D V Kirsh</i>	
RAS ACADEMICIAN VLADIMIR P. SHORIN AND DIFFRACTIVE COMPUTER OPTICS	564
<i>V O Sokolov</i>	
THE 75TH ANNIVERSARY OF PROFESSOR GRIGORY ISAEVICH GREISUKH.....	573
<i>V A Danilov, S B Odinkov</i>	
MICROTECHNOLOGY IN COMPUTER OPTICS	579
<i>V A Danilov</i>	
LASER TECHNOLOGIES IN THE FORMATION OF HARMONIC LENSES MICRORELIEFS.....	586
<i>V A Danilov</i>	
THE CHOICE OF METHODS FOR THE CONSTRUCTION OF PCA-BASED FEATURES AND THE SELECTION OF SVM PARAMETERS FOR PERSON IDENTIFICATION BY GAIT	593
<i>O V Strukova, E V Myasnikov</i>	

REDUCING DIMENSION OF PARAMETRIC SPACE BASED ON THE APPROXIMATION OF COMPONENTS FOR INTERPOLATION OF MULTIDIMENSIONAL SIGNALS	599
<i>M V Gashnikov</i>	
APPLICATION OF SUPERPIXEL SEGMENTATION AND MORPHOLOGICAL PROJECTOR FOR STRUCTURAL CHANGES DETECTION IN REMOTE SENSING IMAGES	605
<i>A Y Denisova, A A Egorova, V V Sergeev</i>	
AUTOREGRESSIVE MODELS OF RANDOM FIELDS ON THE CIRCLE	614
<i>V R Krashennnikov, Yu E Kuvayskova, A U Subbotin</i>	
DETECTION AND IDENTIFICATION OF OBJECTS ON MULTISPECTRAL SATELLITE IMAGES	620
<i>V E Dementiev, R G Magdeev, A G Tashlinskii</i>	
SPATIAL INTERPOLATION METHODS FOR SPECTRAL-SPATIAL REMOTE SENSING IMAGE SUPER-RESOLUTION ALGORITHM BASED ON GRADIENT DESCENT APPROACH	626
<i>A M Belov, A Y Denisova</i>	
A COMPARATIVE STUDY OF THE OPTIMAL AND INTERPOLATION METHODS FOR RESTORATION A STATIONARY CONTINUOUS SIGNAL FROM DISCRETE VALUES	636
<i>A I Maksimov, V V Sergeev</i>	

PART 2

APPROXIMATION OF THE ROAD SEGMENTS TRAVEL TIME USING LEVY DISTRIBUTIONS IN THE RELIABLE SHORTEST PATH PROBLEM	642
<i>A A Agafonov, V V Myasnikov, A I Maksimov</i>	
CAMERA AND AUXILIARY SENSOR CALIBRATION FOR A MULTISPECTRAL PANORAMIC VISION SYSTEM WITH A DISTRIBUTED APERTURE	648
<i>I A Kudinov, M B Nikiforov, I S Kholopov</i>	
PRELIMINARY ICP STAGE FOR DATA-THINNING BASED ON OBJECT GEOMETRY	658
<i>D Tihonkih, A Makovetskii, V Kober, A Voronin</i>	
ANALYSIS OF THE IMAGE SPECTRUM FOR DISTORTION DIAGNOSTICS	664
<i>P Chochia</i>	
TECHNIQUE TO MODEL THE MOVEMENT OF THE SCENE USING IMAGE SEQUENCE	671
<i>A G Tashlinskii, R O Kovalenko, P V Smirnov, M N Suetin</i>	
PROBABILISTIC FINITE MODELING OF STOCHASTIC ESTIMATION OF IMAGE INTER-FRAME GEOMETRIC DEFORMATIONS	679
<i>A G Tashlinskii, G L Safina, R O Kovalenko</i>	
LOCALIZATION OF DIABETIC MACULAR EDEMA AREAS VIA GRAPH-BASED SEGMENTATION OF OCT RETINAL IMAGES	686
<i>N Yu Ilyasova, A S Shirokanov, N S Demin, E A Zamyckij</i>	
SEGMENTATION OF 3D FIB-SEM DATA WITH PORE-BACK EFFECT	693
<i>I A Reimers, I V Safonov, I V Yakimchuk</i>	
VISUAL PRODUCT RECOMMENDATION USING NEURAL AGGREGATION NETWORK AND CONTEXT GATING	704
<i>K V Demochkin, A V Savchenko</i>	
RADIATION MODEL FOR SPECTRAL CHANNELS OF SENTINEL-2A AND LANDSAT 8 RADIOMETERS	711
<i>K M Firsov, A A Razmolov, I I Klitochenko</i>	
SHADOW DETECTION ON COLOR IMAGES	717
<i>E E Kurbatova, V A Lyalina</i>	
USING PROBABILISTIC STATISTICS TO DETERMINE THE PARAMETERS OF DOUBLY STOCHASTIC MODELS BASED ON AUTOREGRESSION WITH MULTIPLE ROOTS	725
<i>K K Vasiliev, V E Demytyev, N A Andriyanov</i>	
TARGET IDENTIFICATION FOR PHOTON-COUNTING IMAGE SENSORS, INSPIRED BY MECHANISMS OF HUMAN VISUAL PERCEPTION	732
<i>V E Antsiperov</i>	
NATURAL AND REVITALIZED GRASSY ECOSYSTEMS AS BIODIVERSITY REFUGES: ON THE ABILITIES OF REMOTE SENSING FOR THEIR DETECTION AND STUDY	742
<i>A Y Bavrina, A Y Denisova, L M Kavelenova, E S Korchikov, O A Kuzovenko, Y V Makarova, N V Prokhorova, D A Terentyeva, V A Fedoseev</i>	
A NEW WATERMARKING METHOD FOR VECTOR MAP DATA: A STUDY ON INFORMATION CAPACITY OF THE CARRIER IMAGE	753
<i>Y D Vyborno, V V Sergeev</i>	

THE PROBLEM OF QUALITY ASSESSING FOR THE METHODS OF COHERENCE MAPS CALCULATION IN INSAR REMOTE SENSING OF THE EARTH DATA PROCESSING	758
<i>A V Sosnovsky, V G Kobernichenko, N S Vinogradova</i>	
MEASURING PARAMETERS OF CANVAS TEXTURE FROM IMAGES OF PAINTINGS OBTAINED IN RAKING LIGHT	765
<i>D M Murashov, A V Berezin, E Yu Ivanova</i>	
ELIMINATION OF INFORMATION REDUNDANCY OF HYPERSPECTRAL IMAGES USING THE "WELL-ADAPTED" BASIS METHOD.....	775
<i>D Yu Vasin, V P Gromov, P A Pakhomov</i>	
METHOD OF CLASSIFICATION OF TECHNOGENIC OBJECTS ON THE BASIS OF CONSTRUCTION OF MULTILAYER THERMAL TOMOGRAMS.....	784
<i>I N Ischuk, A A Dolgov</i>	
SUBJECTIVE MODELING OF IMAGE SHAPE	793
<i>A I Chulichkov</i>	
DIGITAL IMAGE FORGERY DETECTION USING DEEP LEARNING APPROACH.....	798
<i>A Kuznetsov</i>	
AN APPROACH FOR CONFIGURATION OF THE EQUIVALENCE RELATION	802
<i>E A Dmitriev, V V Myasnikov</i>	
NONLINEAR DIMENSIONALITY REDUCTION OF HYPERSPECTRAL DATA BASED ON SPECTRAL INFORMATION DIVERGENCE PRESERVING PRINCIPLE	807
<i>E V Myasnikov</i>	
FOR THE JUBILEE OF VLADIMIR MIKHAILOVICH CHERNOV	812
<i>V G Labunets, Yu G Smetanin</i>	
DEVELOPMENT OF TECHNOLOGY FOR REMOTE LOCATION OF UNKNOWN UNDERGROUND CAVITIES AND DEEP-SEATED ROCKSLIDES BY UNMANNED AIR SYSTEMS (UAS).....	817
<i>Y Shopov, O Ognianov, A Filipov, I R Ivanov</i>	
PROMOTION OF RUSSIAN SCIENTIFIC JOURNALS INTO THE INTERNATIONAL DATABASES THROUGH THE EXAMPLE OF THE COMPUTER OPTICS JOURNAL	830
<i>I V Zhilavskaya</i>	
RESEARCH AND DEVELOPMENT OF HIERARCHICAL MODELS OF AUTOMATED CONTROL SYSTEMS FOR THE PARAMETERS OF THE RADIO-LINE OF THE COGNITIVE RADIO SYSTEM.....	840
<i>G A Blagodatsky, A N Kopysov, V V Khvorenkov, I S Baturin</i>	
APPLICATION OF SPINNING ELECTRODYNAMIC TETHER SYSTEM IN CHANGING SYSTEM ORBITAL PARAMETERS.....	850
<i>H Lu, Y M Zabolotnov, A Li</i>	
INVARIANT MANIFOLD OF VARIABLE STABILITY IN THE KOPER MODEL.....	860
<i>M Balabaev</i>	
ASYMPTOTIC EXPANSIONS OF SOLUTIONS IN THE MODEL OF VIRUS DYNAMICS WITH IMMUNE RESPONSE.....	872
<i>A Archibasov</i>	
DYNAMICS OF THE ELECTROCHEMICAL REACTION BEHAVIOR UNDER THE INFLUENCE OF RANDOM PERTURBATIONS.....	879
<i>N Firstova</i>	
STATUS OF CREATION OF HARDWARE-SOFTWARE COMPLEX OF AUTOMATIC CONTROL OF THE INSULIN DELIVERY	889
<i>P Tutubalin, S Novikova, A Semenova, E Komissarova, N Arutyunova, S Sotnikov, A Alexandrov</i>	
MODELLING OF OSCILLATIONS IN SLOW/FAST MODELS OF POPULATION DYNAMICS.....	900
<i>E Shchepakina</i>	
DECOMPOSITION OF ENZYME KINETICS EQUATIONS.....	911
<i>V Sobolev</i>	
REDUCTION OF THE OPTIMAL CONTROL PROBLEM FOR A MAGNETOELECTRIC POWER DRIVE	920
<i>O Vidilina, N Voropaeva</i>	
MODELING AND COMPARATIVE ANALYSIS OF SCHEMES FOR RETURNING A PAYLOAD USING A SPACE TETHERED SYSTEM.....	928
<i>Z Dong, Y M Zabolotnov, A J Li, C Q Wang</i>	
MODELING OF NON-STATIONARY PROCESSES IN THE STUDY OF LIQUID MEDIA BY THE METHOD OF NUCLEAR MAGNETIC RESONANCE IN A WEAK FIELD	936
<i>E V Rukin, N S Myazin, V V Davydov, V I Dudkin, V Yu Rud'</i>	

STRUCTURES OF ABSOLUTELY INVARIANT MEASURING SYSTEMS AND CONDITIONS FOR THEIR PHYSICAL REALIZABILITY	944
<i>V N Nesterov, A R Li</i>	
NUTATIONAL OSCILLATIONS SUPPRESSION IN ATTITUDE DYNAMICS OF SPACECRAFT BY RELATIVE MOTION OF ITS MOVABLE MODULE	949
<i>A V Doroshin, A V Eremenko</i>	
FRACTIONAL ANALYSIS OF INDUCED RESONANCE EFFECTS IN THE SPHERICAL MOTION OF A RIGID BODY WITH FLYWHEELS	956
<i>V V Lyubimov</i>	
NUMERICAL SIMULATION OF THE CATALYTIC PROCESS OF ISOMERIZATION OF PENTANE-HEXANE CUT.....	965
<i>A G Faskhutdinov, R I Faskhutdinova, I A Arefyev, L V Enikeeva</i>	
OPTIMIZATION ALGORITHMS FOR THE CONDITIONS OF COMPLEX CATALYTIC REACTIONS.....	973
<i>K F Koledina, S N Koledin</i>	
MULTIOBJECTIVE OPTIMIZATION OF A TEMPERATURE MODE IN A REACTOR UNIT OF GASOLINE CATALYTIC REFORMING BASED ON A KINETIC MODEL.....	981
<i>K F Koledina, R Z Zaynullin, S N Koledin, A F Akhmetov</i>	
MATHEMATICAL MODELING OF THE SYNTHESIS REACTION BENZYL BUTYL ETHER.....	989
<i>K F Koledina, S N Koledin, A G Vovdenko, A R Bayguzina, R I Khusnutdinov</i>	
MATHEMATICAL MODELING OF RADICAL-CHAIN REACTION OF ISOPROPYLBENZENE OXIDATION.....	996
<i>M K Vovdenko, E A Ahmerov, K F Koledina, A G Vovdenko</i>	
APPLICATION OF MATHEMATICAL MODELING TO SOLVE PROBLEMS OF OPTIMIZATION OF LATTICE STRUCTURES.....	1003
<i>T V Burnysheva, O A Shteinbreher</i>	
COMPUTATIONAL ASPECTS OF SIMPLIFICATION OF MATHEMATICAL MODELS OF CHEMICAL REACTION SYSTEMS	1012
<i>L F Safullina, I M Gubaydullin, R M Uzyanbaev, A E Musina</i>	
SIMULATION OF FORMALDEHYDE FORMATION DURING A GALAXY COLLISION USING VECTORIZED NUMERICAL METHOD ON INTEL XEON PHI ACCELERATORS	1021
<i>I Kulikov, I Chernykh, V Protasov, I Gubaydullin</i>	
ASSESSMENT OF THE VIEW AREA OF PARACHUTED RADIO MONITORING SYSTEM AND STABILIZATION OF FLIGHT UNDER WIND FORCING.....	1031
<i>M A Voskoboynikov, A S Podstrigaev, V V Davydov</i>	
FATIGUE LIFE ESTIMATION OF HYDRAULICALLY ACTUATED MOBILE WORKING MACHINES USING INTERNET OF THINGS AND DIGITAL TWIN CONCEPTS	1039
<i>V V Zhidchenko, H Handroos, A N Kovartsev</i>	
STRATEGY FOR THE REALIZATION OF SOFT DOCKING WITH SPACE DEBRIS BY USING A TETHER SYSTEM	1049
<i>R S Pikalov</i>	
A METHOD OF IMPROVING THE PEDESTRIAN ACCESSIBILITY OF THE URBAN PUBLIC TRANSPORT STOPS BASED ON A GENETIC ALGORITHM.....	1053
<i>E V Zubkova, O N Saprykin, O V Saprykina, A N Tihonov</i>	
REPRESENTATION AND SIMULATING OF EXTENDED MARKOV CHAINS OVER A FINITE FIELD WITH A PREDEFINED PRECISION	1060
<i>B F Eminov, V M Zakharov, S V Shalagin</i>	
DYNAMIC IDENTIFICATION OF BOUNDARY CONDITIONS FOR CONVECTION-DIFFUSION TRANSPORT MODEL SUBJECT TO NOISY MEASUREMENTS	1068
<i>A V Tsyganov, Yu V Tsyganova, A N Kuvshinova</i>	
THE VAN DER POL OSCILLATOR UNDER HYSTERETIC CONTROL: REGULAR AND CHAOTIC DYNAMICS	1076
<i>M E Semenov, O O Reshetova, V A Sobolev, A M Solovyov, P A Meleshenko, A N Bogaychuk</i>	
THE SIMULATION RESULTS OF THE OPERATION OF A SMALL SPACECRAFT MOTION CONTROL SYSTEM WITH AN ELECTROTHERMAL MICRODRIVE.....	1084
<i>A I Belousov, A V Sedelnikov, A S Gorozhakina</i>	
METHOD FOR MODELING OF SPACECRAFT ONBOARD APPARATUS AND BUILDING OF CONSISTENT CONTROL LOGIC WITH LIMITED ONBOARD RESOURCES	1092
<i>A A Tyugashev, Yu M Sygurov</i>	
FOUR – DIMENSIONAL MODELS FOR CONTROL SYSTEM TYPICAL UNITS.....	1100
<i>E V Klimanova, A V Maksimov</i>	

THE EFFECT OF CLIMBER INITIAL VELOCITY ON ORBITAL SPACE ELEVATOR DYNAMICS	1107
<i>V S Aslanov, T A Ledkova</i>	
A NEW LOOK AT KAPITZA CONDUCTANCE CALCULATION (THERMAL BOUNDARY RESISTANCE)	1115
<i>V I Khvesyuk, B Liu, A A Barinov</i>	
A NEW ALGORITHM USED THE CHEBYSHEV PSEUDOSPECTRAL METHOD TO SOLVE THE NONLINEAR SECOND-ORDER LIENARD DIFFERENTIAL EQUATIONS	1121
<i>L A Nhat, K P Lovetskiy, D S Kulyabov</i>	
METHODOLOGY AND SOFTWARE FOR ESTIMATING TARGET EFFICIENCY OF LAND REMOTE SENSING SATELLITES AT THE STAGE OF DESIGN	1129
<i>V I Kurenkov, A S Kucherov</i>	
AN APPROACH FOR GENERATING AND DETECTING THE SIGNALS WITH THE GIVEN ORBITAL ANGULAR MOMENTUM FOR WIRELESS COMMUNICATION SYSTEMS	1138
<i>E P Grakhova, I K Meshkov, G I Abdrakhmanova, V Kh Bagmanov, I L Vinogradova, A R Gizatulin, I A Kuk, A Kh Sultanov</i>	
MOLECULAR DYNAMICS MODELING OF CRACK PROPAGATION	1148
<i>L V Stepanova, S A Bronnikov</i>	
POSITIONING OF RADIO EMISSION SOURCES WITH UNMANNED AERIAL VEHICLES USING TDOA-AOA MEASUREMENT PROCESSING	1156
<i>S V Bachevsky, G A Fokin, A N Simonov, V V Sevidov</i>	
DECENTRALIZED MULTISENSOR ESTIMATION OF MOTION PARAMETERS OF AN OBJECT MOVING ALONG A COMPLEX TRAJECTORY	1166
<i>A V Golubkov, A V Tsyganov, Yu V Tsyganova, I O Petrishchev</i>	
MATHEMATICAL MODELLING AND NUMERICAL STUDY OF RECIRCULATION MEMBRANE AND MEMBRANE-REFRIGERATED SYSTEMS OF COMPRESSED AIR DEHYDRATION	1176
<i>N I Laguntsov, S N Tikhonov, M D Karaseva, A A Tishin</i>	
DEVELOPMENT OF A MATHEMATICAL MODEL OF MOLECULAR-SELECTIVE GAS TRANSFER IN A HYBRID MEMBRANE-ADSORPTION OXYGEN CONCENTRATOR	1186
<i>A A Tishin, V N Gurkin</i>	
MODIFIED LORENZ-MALKUS WATER WHEEL MODEL: DRY FRICTION VERSUS CHAOS	1195
<i>E A Karpov, M E Semenov, P A Meleshenko, A F Klinskikh, R E Pervezentsev, M Yu Glazkova</i>	
A PARALLEL ALGORITHM FOR THE SIMULATION OF CONTROLLED MOTION OF SPACE TETHER SYSTEMS	1203
<i>V V Zhidchenko, A N Kovartsev</i>	
THE INFLUENCE OF THE IGNITION CONDITIONS OF THE SH-SYNTHESIS OF INTERMETALLIC COMPOUNDS ON THE COMBUSTION PARAMETERS OF THE TI-15.82WT.%AL COMPOSITION: COMPUTER SIMULATION AND COMPUTING EXPERIMENTS	1214
<i>V I Jordan, I A Shmakov</i>	
IMPROVING THE EFFICIENCY OF MULTICHANNEL SYSTEMS BASED ON THE COORDINATION OF CHANNEL SIGNALS	1222
<i>G S Voronkov, P E Filatov, A Kh Sultanov, R V Kutluyarov, I L Vinogradova, I V Kuznetsov</i>	
LINEAR AND NONLINEAR VERSIONS OF PHASE RETRIEVAL	1228
<i>M E Fedina, S Ya Novikov, D A Rogach</i>	
SIMULATION OF TRANSITION MATRIX AND STRIP LINES OF MICROWAVE SWITCH	1236
<i>V A Maklashov, M N Piganov, M V Petrov</i>	
ON SOME METHODS FOR GENERATING EXTREMELY MULTISTABLE SYSTEMS	1243
<i>I M Burkin, O I Kuznetsova</i>	
MODELING OF PHONON DIFFUSION USING A MONTE-CARLO METHOD BASED ON PHYSICS OF PHONON	1254
<i>V I Khvesyuk, W Qiao, A A Barinov</i>	
NUMERICAL SIMULATION OF HIGH-SPEED A^{III}B^V PHOTODETECTORS WITHIN DRIFT-DIFFUSION APPROXIMATION	1261
<i>I V Pisarenko, E A Ryndin</i>	
DEVELOPMENT OF A MATHEMATICAL MODEL OF OPERATION FORMING WITH DISCOUNTING ASSUMPTION ABOUT THE FLAT-DEFORMED STATE	1270
<i>E G Demyanenko, A Yu Kosolapova</i>	
MODEL FOR DISCRETE OPTIMAL CONTROL OF THE ENTERPRISE'S FINANCIAL PROCESSES	1276
<i>E V Orlova</i>	

HOW TO READ THE TRENDLESS SEQUENCES: THE "UNIVERSAL" SET OF QUANTITATIVE PARAMETERS	1286
<i>R R Nigmatullin, A S Vorobev</i>	

PART 3

REPRESENTATION OF THE PROCESS OF OXIDATIVE REGENERATION OF COKED CATALYSTS IN A FIXED LAYER BASED ON GRAPH THEORY	1294
<i>G I Islamova, M R Davletova, O V Dubinets</i>	
MODELING OF BRIGHTNESS TEMPERATURE IN BIOLOGICAL TISSUE.....	1302
<i>M Polyakov, V Levshinskii, A Khoperskov</i>	
SIMULATION OF THERMOELECTRIC PROCESSES IN THE SEMICONDUCTOR STRUCTURE OF A SOLAR CELL	1310
<i>A M Hodakov, V I Smirnov, V A Sergeev, A A Gavrikov</i>	
MODELLING OF SPRAYS: SIMPLE SOLUTIONS OF COMPLEX PROBLEMS	1318
<i>S Sazhin, E Shchepakina, V Sobolev</i>	
CRITICAL TRAVELLING WAVE SOLUTION IN ONE SINGULARLY PERTURBED PARABOLIC EQUATION.....	1328
<i>E Shchepakina, V Sobolev, L Zhang</i>	
IDENTIFICATION OF EXPONENTIAL TREND MODELS WITH FRACTIONAL WHITE NOISE	1336
<i>D V Ivanov, N V Chertykovtseva, A A Terekhova (Zharkova), E A Andreeva</i>	
ON THE RESULTS OF PROCESSING OF THE TELEMETRY DATA RECEIVED FROM THE "AIST" SMALL SATELLITE CONSTELLATION.....	1343
<i>M A Ivanushkin, I S Tkachenko, S L Safronov, I V Kurov, S S Volgin</i>	
NUMERICAL OPTIMIZATION OF GEOMETRIC CONFIGURATION OF LARGE SPACE STRUCTURE.....	1350
<i>G P Anshakov, V V Salmin, K V Peresykin, A S Chetverikov, I S Tkachenko</i>	
MATHEMATICAL MODELING OF A MULTISTAGE ELECTROLYSIS PLANT FOR PRODUCING HEAVY AND LIGHT WATER.....	1358
<i>R A Alexandrov, N I Laguntsov, S N Tikhonov</i>	
COMPUTATIONAL SIMULATION OF DAMAGE ACCUMULATION PROCESSES IN CRACKED BODIES BY THE UMAT PROCEDURE OF SIMULIA ABAQUS	1364
<i>L Stepanova</i>	
COMPUTATIONAL AND EXPERIMENTAL STUDY OF MIXED MODE LOADING OF THE CRACKED SEMI-CIRCULAR DISC UNDER BENDING.....	1374
<i>L Stepanova</i>	
MATHEMATICAL SIMULATION OF A PRESSURE FIELD EXEMPLIFIED BY DUAL POROSITY RESERVOIR.....	1383
<i>Y O Bobreneva, I M Gubaidullin</i>	
SIMULATION OF THE COKE BURNING PROCESS ON THE CATALYST GRAIN	1389
<i>O V Dubinets, M R Davletova, G I Islamova, I M Gubaydullin, G D Khannanova, I V Akhmetov</i>	
STEADY STATE NUMERICAL CALCULATION OF THE MELT-POOL SHAPE.....	1396
<i>E V Avdeev</i>	
STUDY OF THE SEPARATION PROCESSES OF GASES IN THE MICROCHANNEL BASED ON THE STOCHASTIC SIMULATION.....	1403
<i>K I Potienko, A N Agafonov</i>	
MICROSTRIP ANTENNA DESIGN FOR ARRAYS GENERATING OAM MM-WAVE RADIO SIGNALS.....	1413
<i>G I Abdrakhmanova, E P Grakhova, G S Voronkov, V Kh Bagmanov</i>	
ON OSCILLATION APPEARANCE IN ONE CHEMICAL PROBLEM.....	1421
<i>E V Shchetinina</i>	
MATHEMATICAL SIMULATION OF THE PROCESS OF PUTTING A CONNECTIVE INSERT INTO THE ORIFICE IN A THREE-LAYERED COMPOSITE STRUCTURE.....	1426
<i>Yu A Vashukov</i>	
MODELING THE EFFECT OF TEMPERATURE DEFORMATIONS OF LARGE ELEMENTS ON THE DYNAMICS OF THE ORBITAL MOTION OF A SMALL SPACECRAFT	1434
<i>A V Sedelnikov, V S Rodina, D I Orlov</i>	
INFLUENCE OF RADIATION DEFECTS IN A SEMICONDUCTOR STRUCTURE ON THE ELECTRIC FIELD DISTRIBUTION IN THE AIR GAP OF THE GAS-DISCHARGE CHAMBER	1441
<i>M A Petrov, O V Phylonin, A A Galanin</i>	

MATHEMATICAL MODELS OF OPERATING REGIMES OF FLOOD CONTROL FACILITY'S SYSTEM.....	1449
<i>V I Antonov, R V Davydov, V I Maslikov, D V Molodtsov, A N Chusov</i>	
MATHEMATICAL MODELING OF GEOMETRICAL AND ELECTRICAL CHARACTERISTICS OF ISLAND FILMS GROWTH INITIAL STAGES	1456
<i>A A Isaeva, S V Sidorova</i>	
MATHEMATICAL SIMULATION OF PARTICLE IMPACT ON A FIXED SURFACE IN THE FORMATION OF POWDER COATINGS.....	1464
<i>V I Bogdanovich, M G Giorbelidze</i>	
CALCULATION OF RESIDUAL STRESSES IN PLASMA SPRAY COATINGS TAKING INTO ACCOUNT THE BUILD-UP PROCESS	1473
<i>V I Bogdanovich, M G Giorbelidze</i>	
MODELING HEAT TRANSFER IN A SUPERCRITICAL CARBON DIOXIDE FLOW WITH GREATLY VARIABLE THERMOPHYSICAL PROPERTIES	1480
<i>A Yu Chirkov, T Luo, K S Egorov</i>	
DEVELOPING A MICROSCOPIC CITY MODEL IN SUMO SIMULATION SYSTEM.....	1485
<i>E R Maiorov, I R Ludan, J D Motta, O N Saprykin</i>	
SIMULATION AND OPTIMIZATION OF THE CARGO TERMINAL IN THE ANYLOGIC ENVIRONMENT.....	1493
<i>V V Mokshin, A P Kirpichnikov, A I Soiko</i>	
MODEL OF A REAL CYCLE OF A POWER INSTALLATION WITH A REAL-GAS WORKING FLUID.....	1500
<i>A Yu Chirkov, K S Egorov, K B Ganeev, T R Zuev</i>	
MONTE CARLO MODELLING OF NORMAL SKIN AND SKIN CANCER RAMAN SPECTRA	1505
<i>I Matveeva, O Myakinin</i>	
METHOD OF MANUAL SYMMETRIZATION OF ELECTRIC NETWORKS.....	1513
<i>R Yu Zakurdaev, I E Chernetskaya</i>	
CONSTRUCTION OF THE MATHEMATICAL MODEL OF A CATALYTIC REACTION BY MEANS OF A PERCEPTRON WITH ONE HIDDEN LAYER.....	1523
<i>R R Almkhaev, S N Koledin</i>	
MATHEMATICAL MODELING OF THE PROPANE AND PROPANE-PROPYLENE CUT THERMAL DECOMPOSITION PROCESS.....	1530
<i>R M Uzyanbaev, I V Akhmetov</i>	
SOME PROBLEMS FOR THE PROCESSES WITH THE COMPENSATION OF THE CHANGE-POINT EVENT	1537
<i>V G Burmistrova, A A Butov, M A Volkov, M G Moskvicheva, Y Zh Pchelkina</i>	
SOME APPROACHES TO THE ESTIMATION OF THE STOPPING TIME OF THE CROSS-BOUNDARY EVENT FOR THE PROCESS WITH THE CHANGE-POINT	1544
<i>A A Kovalenko</i>	
SIMULATION OF THE COMBINED FLANGING AND FORMING PROCESS TAKING INTO ACCOUNT THE SPRINGBACK EFFECT	1551
<i>E G Demyanenko, A N Epifanov, I P Popov</i>	
SIMULATION OF PLASTIC FORMING PROCESS BY VARIATION OF GEOMETRIC PARAMETERS	1558
<i>E G Demyanenko, A N Epifanov, I P Popov</i>	
SOME FEATURES OF COMPUTER NETWORK MODELLING IN THE OMNET++ ENVIRONMENT.....	1565
<i>D Y Polukarov, A P Bogdan</i>	
IMPLEMENTATION OF THE FDTD METHOD BLOCK ALGORITHM IN THE MATLAB LANGUAGE USING A GRAPHICS PROCESSING UNIT. 2D-DECOMPOSITION CASE	1574
<i>N D Morunov, D L Golovashkin</i>	
ACCELERATION OF CALCULATIONS USING BLOCK ALGORITHMS FOR THE DIFFERENCE SOLUTION OF THE HEAT EQUATION	1580
<i>D L Golovashkin, L V Yablokova, I D Reznik</i>	
INVESTIGATION OF THE MULTIPLE COMPARISONS PROBLEM IN THE ANALYSIS OF THE WAVE TRAIN ELECTRICAL ACTIVITY OF MUSCLES IN PARKINSON'S DISEASE PATIENTS	1586
<i>O S Sushkova, A A Morozov, A V Gabova, A V Karabanov</i>	
ADDRESSING SYSTEM AND ROUTING WITHOUT TABLES IN NEW GENERATION NETWORKS.....	1594
<i>K N Lovtsov, S Mayhoub, S V Timofeeva, A M Sukhov, M S Stengach</i>	

CUDA PARALLEL PROGRAMMING TECHNOLOGY APPLICATION FOR ANALYSIS OF BIG BIOMEDICAL DATA BASED ON COMPUTATION OF EFFECTIVENESS FEATURES	1602
<i>N Yu Ilyasova, V A Shikhevich, A S Shirokanev</i>	
DETECTION OF EPILEPTIC SEIZURES IN EEG SIGNALS DURING LONG-TERM MONITORING OF PATIENTS AFTER TRAUMATIC BRAIN INJURY	1609
<i>I A Kershner, M V Sinkin, Yu V Obukhov</i>	
AN SGD-BASED META-LEARNER WITH "GROWING" DESCENT	1615
<i>I Kulikovskikh, S Prokhorov, T Legović, T Šmuc</i>	
SOLUTION OF OVERDETERMINED SYSTEMS OF EQUATIONS USING THE CONFORMING SUBSYSTEM SELECTION	1624
<i>V A Fursov, A P Kotov, Ye V Goshin</i>	
CLUSTERING BASED ON THE PRINCIPLE OF FINDING CENTERS AND ROBUST AVERAGING FUNCTIONS OF AGGREGATION	1631
<i>Z M Shibzukhov, M A Kazakov</i>	
THE TECHNOLOGY OF FORMING ADAPTIVE RECOVERY FILTERS IN MOBILE DEVICES	1639
<i>V A Fursov, K S Medvedeva, E F Fatkhudinova</i>	
ANALYSIS OF GEOMAGNETIC FIELD DATA DURING PERIODS OF INCREASED SOLAR ACTIVITY AND MAGNETIC STORMS	1646
<i>O V Mandrikova, A I Rodomanskay, B S Mandrikova</i>	
DETECTION OF QUASI-HARMONIC SIGNALS WITH A PRIORI UNKNOWN PARAMETERS IN STRONG ADDITIVE NOISE BY MACHINE LEARNING METHODS.....	1658
<i>A A Nevzorov, A A Orlov, D A Stankevich</i>	
CREATING THE SELF-LEARNING EXPERT SYSTEM FOR SOLVING PROBLEMS WITH FUZZY LOGIC	1665
<i>V A Bakaev, A V Blagov, Yu V Blagov</i>	
BINARY DATA STORAGE, RETRIEVAL AND FEATURE CALCULATION ON NETEZZA PUREDATA SYSTEM FOR ANALYTICS	1673
<i>Y Donon, R Paringer, A Kupriyanov</i>	
REAL-TIME FATIGUE FEATURES DETECTION	1679
<i>A I Gaidar, P Y Yakimov</i>	
THE ESTIMATION OF PHASE-COUPLED CHANNELS OF EEG SIGNALS BY PATIENTS WITH TRAUMATIC BRAIN INJURY DURING COGNITIVE AND MOTOR TESTS	1687
<i>R A Tolmacheva, Y V Obukhov, L A Zhavoronkova</i>	
DIGITAL TRANSFORMATION LEGACY SOCIAL SERVICE INFORMATION SYSTEM	1694
<i>S B Popov, P V Khripunov</i>	
EVOLUTIONARY METHODS IN MODELLING BEHAVIOUR OF COMPLEX SYSTEM.....	1704
<i>V V Mokshin, L M Sharnin</i>	
INTELLIGENT OFDM TELECOMMUNICATION SYSTEM. PART 1. MODEL OF COMPLEX AND QUATERNION SYSTEMS	1715
<i>V G Labunets, E Ostheimer</i>	
INTELLIGENT OFDM TELECOMMUNICATION SYSTEM. PART 2. EXAMPLES OF COMPLEX AND QUATERNION MANY-PARAMETER TRANSFORMS	1725
<i>V G Labunets, E V Ostheimer</i>	
INTELLIGENT OFDM TELECOMMUNICATION SYSTEM. PART 3. ANTI-EAVESDROPPING AND ANTI-JAMMING PROPERTIES OF SYSTEM, BASED ON MANY-PARAMETER WAVELET AND GOLAY TRANSFORMS	1739
<i>V G Labunets, D E Komarov, V P Chasovskikh, J G Smetanin, E V Ostheimer</i>	
INTELLIGENT OFDM TELECOMMUNICATION SYSTEM. PART 4. ANTI-EAVESDROPPING AND ANTI-JAMMING PROPERTIES OF THE SYSTEM, BASED ON MANY-PARAMETER AND FRACTIONAL FOURIER TRANSFORMS.....	1753
<i>V G Labunets, S A Martyugin, V P Chasovskikh, J G Smetanin, E V Ostheimer</i>	
STOCHASTIC PARALLEL ALGORITHM OF STRUCTURAL EVOLUTION OF LARGE MORSE CLUSTERS	1768
<i>A N Kovartsev, D A Popova-Kovartseva</i>	
MACHINE-LEARNING ALGORITHMS FOR HELICOPTER HYDRAULIC FAULTS DETECTION: MODEL BASED RESEARCH	1777
<i>A M Gareev, E Yu Minaev, D M Stadnik, N S Davydov, V I Protsenko, I A Popelniuk, A V Nikonorov, A G Gimadiev</i>	
DYNAMICAL PHYSICALLY STRUCTURED DATA MODELING VS. CLASSICAL TIME SERIES ANALYSIS: A CASE STUDY RELATED TO CLINICAL TRIAL DATA ANALYSIS	1783
<i>I V Semushin, Yu V Tsyganova</i>	

INTELLIGENT INTEGRITY MONITORING SYSTEM FOR TECHNOLOGICAL PROCESS	
DATA	1796
<i>M I Arpishkin, A M Vulfin, V I Vasilyev, A V Nikonov</i>	
SUBJECT-ORIENTED COMPUTING ENVIRONMENT FOR SOLVING LARGE-SCALE PROBLEMS OF ENERGY SECURITY RESEARCH	1811
<i>I V Bychkov, G A Oparin, A G Feoktistov, I A Sidorov, S A Gorsky, R O Kostromin, A V Edelev</i>	
DEEP LEARNING-BASED IMAGE RECONSTRUCTION FOR MULTI-APERTURE DIFFRACTIVE LENS	1822
<i>A V Nikonorov, R V Skidanov, V V Evdokimova, M V Petrov, A P Alekseyev, S A Bibikov, N L Kazanskiy</i>	
APPLICATION OF PRINCIPAL COMPONENT ANALYSIS TO IDENTIFY SEMANTIC DIFFERENCES AND ESTIMATE RELATIVE POSITIONING OF NETWORK COMMUNITIES IN THE STUDY OF SOCIAL NETWORKS CONTENT	1828
<i>I A Rytsarev, R A Paringer, A V Kupriyanov, D V Kirsh</i>	
THE PROBLEM OF NEURAL NETWORKS COMMUNICATION	1835
<i>M Iu Leontev, V Iu Islenteva, A V Mikheev, K V Sviatov, S V Sukhov</i>	
SYSTEM APPROACH TO IDENTIFICATION OF GEOPULSES	1845
<i>M I Gapeev, Yu I Senkevich, O O Lukovenkova, A A Solodchuk</i>	
SIMILARITY-BASED DECISION TREE INDUCTION METHOD AND ITS APPLICATION TO CANCER RECOGNITION ON TOMOGRAPHIC IMAGES	1857
<i>V B Berikov, I A Pestunov, R M Kozinets, S A Ryllov</i>	
MODIFICATION OF SINGLE-PURPOSE CNN FOR CREATING MULTI-PURPOSE CNN	1866
<i>A V Shustanov, P Y Yakimov</i>	
SURFACE ROUGHNESS ESTIMATION BY USING A 3D MODEL RECONSTRUCTED FROM MULTIPLE IMAGES	1872
<i>A E Viktorenkov, P U Yakimov</i>	
USE OF A VERTEBRA DIGITAL MODEL FOR AN IMPLANT DESIGN	1881
<i>S R Abulkhanov, O S Surkov</i>	
RECOGNITION OF HERPES VIRUSES ON THE BASIS OF A NEW METRIC FOR PROTEIN SEQUENCES	1891
<i>V Sulimova, O Seregin, V Mottl</i>	
THE STUDY OF EFFECTIVENESS OF A HIGH-PERFORMANCE CRYSTAL LATTICE PARAMETRIC IDENTIFICATION ALGORITHM BASED ON CUDA TECHNOLOGY	1901
<i>A S Shirokanov, D V Kirsh, A V Kupriyanov</i>	
STUDY OF LATTICE SYSTEMS SEPARABILITY WITH THE USE OF PARAMETRIC IDENTIFICATION METHODS FOR THREE-DIMENSIONAL CRYSTAL LATTICES	1908
<i>D V Kirsh</i>	
THE DIFFUSION-TENSOR MRI DATA ANALYSIS FOR CEREBRAL MICROANGIOPATHY INFLUENCE DETECTION ON THE INTEGRITY OF THE BRAIN WHITE MATTER IN ALZHEIMER'S DISEASE PATIENTS	1914
<i>V N Gridin, V A Perepelov, V I Solodovnikov, N N Yakhno</i>	
BLUR-ROBUST IMAGE REGISTRATION AND STITCHING	1921
<i>Y Donon, R Paringer, A Kupriyanov, Y Goshin</i>	
65-YEAR ANNIVERSARY OF JAKOV YE TAKHTAROV	1932
<i>V O Sokolov</i>	
ANOMALIES DETECTION IN SOCIAL SERVICES DATA IN THE SPHERE OF DIGITAL ECONOMY	1938
<i>P V Khripunov, E Y Minaev, V I Protsenko, N S Davydov, A V Nikonorov</i>	
FANO APPROXIMATION FOR COUPLED MODES IN METAL-DIELECTRIC MULTILAYER STRUCTURES	1944
<i>D V Nesterenko</i>	
Author Index	