

2016 13th International Scientific-Technical Conference on Actual Problems of Electronics Instrument Engineering (APEIE 2016)

**Novosibirsk, Russia
3-6 October 2016**

**Part 1 of 4
Pages 1-496**



**IEEE Catalog Number: CFP16471-POD
ISBN: 978-1-5090-4070-4**

**Copyright © 2016 by the Institute of Electrical and Electronics Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP16471-POD
ISBN (Print-On-Demand):	978-1-5090-4070-4
ISBN (Online):	978-1-5090-4069-8

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

CONTENT

GRIDCHIN A.V., KOLCHUZHIN V.A., GRIDCHIN V.A. An Optimization of Initial Gap in Electrostatic Comb Drive, Germany, Russia	13
GOLOVITSKII A.P., PELLI A.V. UV Radiation of Radio Frequency Electronegative Discharge in the Inert Gas – Cl ₂ Mixture in Association with the Discharge Shape, St. Petersburg, Russia	16
DRAGUNOV V.P., LOYKO D.I., KNYAZEV I.V., DORZHIEV V.YU. The Effect of Electrodes Non-Parallelism on Micromechanical Capacitors Parameters, Novosibirsk, Russia	19
GORYAEV M.A. Sensitized Photoconductivity in Silicon, St. Petersburg, Russia	24
BOGOMOLOV B.K. Verilog-Model ALU Microprocessor 6502 at the Base MPGA 5503HM5 (CAD VLSI Kovcheg 3.02), Novosibirsk, Russia	27
CHERNOV A.S., GRIDCHIN V.A. Verification of Pressure Sensor with Optical Spatial Modulation, Novosibirsk, Russia	34
GADALOV V.N., FILONOVICH A.V., VORNACHEVA I.V. The Investigation of the Mechanism of Hardening and Softening of Aluminum Single Crystals with Ultrasound Loading, South-West State University, Russia	38
NIKOLAEVTSEV V.A., SUCHKOV S.G., SELIFONOV A.V., SUCHKOV D.D., YANKIN S.S., SUCHKOVA S.M. Efficiency of Lamb Wave Excitation by Wedge-Shaped Ultrasonic Transducer, Saratov, Russia	42
RUBANOVICH M.G., STOLYARENKO A.A., KHRUSTALEV V.A., VAGIN D.V., MITKOV A.S. Calculation of Capacitance for Planar Capacitors, Novosibirsk, Russia	48
RUBANOVICH M.G., STOLYARENKO A.A., KHRUSTALEV V.A., VAGIN D.V., MITKOV A.S., AUBAKIROV K.YA. Analysis of the transverse distribution of the micro-strip line capacitance, Novosibirsk, Russia	52
RODIONOV A.I. About One Impact-Electric Effect and Possibilities of Creation of Impact Acceleration Sensor, Novosibirsk, Russia	56
BLUM K.E., OSTERTAK D.I. Dynamic Properties Study of MEMS Energy Converter, Novosibirsk, Russia	59
SPUTAI S.V. On the Determination of Piezoresistance Coefficients of Thin Si Films, Novosibirsk, Russia	63
KIM D.C., TATARINOV P.S., TOMSKIY K.O. Installation for studying of tunnel effect by means of the tunnel diode, Mirny, Novosibirsk, Russia	66
LVOVICH I.YA., LVOVICH Y.E., PREOBRAZHENSKIY A.P., CHOPOROV O.N., SALEEV D.V. Method for the Process Control of Integrated Circuits Production to Account the Influence of Uncontrolled Parameters, Bratislava, Slovak Republic, Voronezh, Russia	71
BIRYUKOV A.P., BARYSHEV G.K., SURIN V.I., VOSTRENNIKOV YU.YU. Design of the Information Measuring System for Control of Electrophysical Properties of Composites, Moscow, Russia	75
PEROV G.V., GLUKHOV A.V., SEDININ V.I., MAMYCHEV V.I. About Features of Polysilicon's Lock Relief Formation in Case of its Thermal Oxidation in Matrix FTUU, Novosibirsk, Russia	79
OZHIKENOV K.A., MIKHAILOV P.G., ISMAGULOVA R.S., AZAMATOVA B.N., AZAMATOV ZH.K. Development of technologies, methods and devices of the functional diagnostics of microelectronic sensors parts and components, Kazakhstan, Penza	84
AVDOCHENKO B.I., KARLOVA G.F., YURCHENKO V.I. Weak Magnetic Field Detectors Based on Hall-Effect Sensors, Tomsk, Russia	91
DOBUSH I.M., SHEYERMAN F.I., BABAK L.I., SALNIKOV A.S., KALENTYEV A.A., GARAYS D.V., GORYAINOV A.E., SOBYANIN R.K. Design and Measurement of 0.1 – 4.5 GHz SiGe BiCMOS MMIC Digital Step Attenuator, Tomsk, Russia	94

KOKOLOV A.A., SALNIKOV A.S., SCHEYERMAN F.I., SCHEVLYAKOV M.L., BABAK L.I. A 1-4.5 GHz MMIC Mixer Based On SiGe BiCMOS Technology, Tomsk, Russia	97
VOSTRYAKOV YU.V., RUBANOVICH M.G., STOLYARENKO A.A., KHRUSTALEV V.A., VAGIN D.V., MITKOV A.S., POLOVNIKOV A.S. Matched Band-pass UHF Filter, Novosibirsk, Russia	101
PROKOPENKO N.N., DVORNIKOV O.V., BUTYRLAGIN N.V., BUGAKOVA A.V. The Radiation-Hardened BiJFet Differential Amplifiers with Negative Current Feedback on the Common-Mode Signal, Minsk, Belarus, Rostov-on-Don, Russia	104
FISHOV A., MARCHENKO A., KARJAUBAYEV N., DENISOV V., KLAVSUTS I. The research of influence normalizer voltage on characteristics and processes in electric networks, Novosibirsk, Russia	109
GOLYSHEV N.V., MOTORIN S.V., IUTMAN E.IU. A Method of Increasing the Resolution of the Analog-to-Digital Converter, Novosibirsk, Russia	113
SULTANOV A.N., GREENBERG Y.A.S., KARPOV D.S., IVANOV B.I., SHEVCHENKO S.N. Transport Properties of a Microwave Photon in a System with Two Artificial Atoms, Kharkov, Ukraine, Novosibirsk, Russia	118
SHUVALOV G. V. Prospects for use and design of oil product inspection and quality monitoring tools. Russia, Novosibirsk.	122
SHUVALOV G. V. Experimental studies of metrological performance of SIM-6 sulphur analyzer. Russia, Novosibirsk.	125
SHUVALOV G. V. Investigation of influence of some factors on accuracy of determining the flashpoint of oil products. Russia, Novosibirsk.	128
NIKOVSKI PL.I., DINKOVA M.G., NACHEV V.G., MASLINKOV IV.M. Flow sensor error analysis of heat meters after long term operation. Bulgaria, Plovdiv	130
SHUVALOV V.P., KOLYAGIN L.V., YAKOVLEV A.S. Connection requests service providing various availability coefficients values at different time intervals. Russia, Novosibirsk.	134
MININ I.V., MININ O.V. Brief review of acoustical (sonic) artificial lenses. Russia, Novosibirsk.	136
MININ I.V., MININ O.V., SHUVALOV G.V. Apparatus for liquid acoustic signal generation using self-sustained low-voltage electric discharge generator. Russia, Novosibirsk.	138
MININ I.V., MININ O.V. Multielement emitters of terahertz radiation based on array of photonic jet. Russia, Novosibirsk	140
MININ I.V., MININ O.V. Terajet from 3D anisotropic artificial metamaterial. Russia, Novosibirsk	142
KHOKHLOV R.O., KOBYAKOV A.V., TOROPCHIN R.N., PALCHUN Y.A., FILLIPOV V.P. Measuring and computing complex for bench test: development, implementation, measurement assurance. Russia, Biysk, Novosibirsk	145
NIKONOV A.V., NIKONOVA G.V. Metrological equipment featuring variation automatic frequency control Russia, Omsk	148
BOGACHKOV I.V., GORLOV N.I. Joint testing of optical pulse reflectometers of various types for early diagnostics and detection of “problem” sections in optical fibers. Russia, Omsk, Novosibirsk	152
BOGACHKOV I.V., GORLOV N.I. Researches of the influence of temperature changes in optical fibers on the Brillouin backscatter spectrum. Russia, Omsk, Novosibirsk	157
BOGACHKOV I.V., N.I. GORLOV Investigation of effects of longitudinal stretching of optical fibers on brillouin backscattering spectrum. Russia, Omsk, Novosibirsk	162
BOGACHKOV I.V., GORLOV N.I. Researches of Strain Characteristics of Dispersion-Shifted Optical Fibers. Russia, Omsk, Novosibirsk	169

GRINEVICH V.A., CHUMACHENKO I.M., POPOV A.A., IVANOV R.N. Risk monitoring of the activity in the verification laboratory. Russia, Omsk	175
BAKALOV V.P., SUBBOTIN E.A., CHERNYKH Y.S. Noise models of nonrecursive digital filters with recursive lateral feedbacks. Russia, Novosibirsk, Yekaterinburg	178
DEZHINA E.V., RYASNY YU.V. Identification methods of the communication channel. Russia, Novosibirsk	183
RYASNYI YU.V., CHASHKOV M.S. Increased accuracy of microwave Transistor S-parameters measurements. Russia, Novosibirsk	186
PETROV V.P., YAKUSHEV I.YU. Accuracy evaluation of functional characteristics in devices. Russia, Novosibirsk	189
MALINKIN V.B., MALINKIN A.V., MALINKIN E.V., BELEZEKOVA A.S. Invariant predictor of messages. Russia, Novosibirsk, Surgut	193
MALINKIN V.B., MALINKIN A.V., MALINKIN E.V., BELEZEKOVA A.S. Synthesis of invariant transceiver of first order and its results. Russia, Novosibirsk, Surgut	198
V.B. MALINKIN, A.V. MALINKIN, E.V. MALINKIN, A.S. BELEZEKOVA. Invariant overcoming method with first order echo. Russia, Novosibirsk, Surgut	201
MALINKIN V.B., MALINKIN A.V., MALINKIN E.V., BELEZEKOVA A.S. Invariant transceiver of second order and its characteristics. Russia, Novosibirsk, Surgut	204
POGREBANYAK E.M., SEDININ V.I., SKOROBOGATOV R.YU. Metrological opportunities of direct three-dimensional measurement of objects by means of the Kinect controller. Russia, Novosibirsk	207
GONCHAROV S.A., PALCHUN Y.A., SEDININ V.I. Research of measurement error matrix analysis balun transformers. Russia, Novosibirsk	210
PALCHUN YU.A., YAKIMOVA I.V., YAKIMOVA V.N., STROGANOV A.K. Evaluation of results of activity of educational institutions of professional education. Russia, Novosibirsk	212
PALCHUN YU.A., YELISTRATOVA I.B., PALCHUN A.YU., KVITKOVA I.G., GAYVONENKO A.E. Analysis of high-precision microwave, used by calibration of meters parameters transfer in coaxial tract. Russia, Novosibirsk	214
PALCHUN YU.A., YELISTRATOVA I.B., GAYVONENKO A.E. Classification of external factors Influencing the parameters of the optical fiber. Russia, Novosibirsk	216
GENERALOV K.V., GENERALOV V.M., KRUCHININA M.V., G.V. SHUVALOV G.V., BURYAK G.A., SAFATOV A.S. Dielectrophoresis applications and electric rotations in medicine: metrology objectives. Russia, Novosibirsk	221
PODCHUKAEV V.A. Axiomatic theory of scalar fields dynamic systems. Russia, Saratov	224
KIRYANOV A.V., KIRYANOV V.P., CHUKANOV V.V. The use of hybrid angular encoder in the laser pattern generators with circular scanning, Novosibirsk, Russia	232
POUDALOV A.D, MAZUR V.G. The research of the sorption-capacitance method to measure the humidity of the benzene, Angarsk, Russia	237
ZAKHAROV O.V., KOCHETKOV A.V., BOBROVSKIY N.M., BOBROVSKIY I.N., MELNIKOV P.A. Analysis of stationary means of measurement filters with optimum sensitivity, Saratov – Perm – Togliatti, Russia	241
ZAKHAROV O.V., BOBROVSKIY N.M., KOCHETKOV A.V., BOBROVSKIY I.N., KOROLEV A.A. Without differential method for determining the points of tangency with rotation surfaces when measured on CMMs, Saratov – Perm – Togliatti, Russia	245
CHEREDOV A.I., SHCHELKANOV A.V. Measuring Converters for Cryogenic Temperature, Omsk, Russia	249

DVORNIKOV O.V., TCHEKHOVSKI V.A., PROKOPENKO N.N., BUGAKOVA A.V. The design of the circuits of radiation-hardened charge-sensitive amplifiers based on the structured array (MH2XA010) and the array chip (AC-2.1), Minsk – Rostov-on-Don, Belarus – Russia	253
NOVITSKIY S.P., PECHNIKOV A.L. Improved method of electrochemical impedance parameters estimation, Novosibirsk, Russia	259
POUDALOV A.D., MAZUR V.G. Measuring humidity of organic liquids in a wide concentration range of nondestructive testing, Angarsk, Russia	263
IVANOV A.V., MARKELOVA G.V., TRUSHIN V.A. Research of influence of effect of forcing of the speech on a range formant, Novosibirsk, Russia	267
KOTOV YU.A. Software simulation of substitution ciphers, Novosibirsk, Russia	271
GUZHOV V.I., ILINYKH S.P. The recovery of the phase information from the digital holograms with small angles of interference, Novosibirsk, Russia	274
GUZHOV V.I., ILINYKH S.P. Step-by-step method phase shift using the change of intensity of the interfering beams, Novosibirsk, Russia	277
PEREDELSKIY G.I. Bridge circuit with two extended properties, Kursk, Russia	280
PEREDELSKIY G.I., SHEVELEV S.S. Reduction of influence of sensor communication lines in data collection and preprocessing units, Kursk, Russia	284
KATRUK YU.M., KURSHIN M.L., TRUSHIN V.A. Multithreshold robust methods of increase of reability of detection of sources of radio signals, Novosibirsk, Russia	288
BABICHEV M.M., PASYNKOV YU.A. Specific Characteristics of a PWM Signal Based on Sawtooth Voltage, Novosibirsk, Russia	291
LAPTEV D.V., PASYNKOV YU.A. Comparison of measuring time of frequency by methods counting and coincidence, Novosibirsk, Russia	294
PADALCO V.S., ZRYUMOV E.A. Experimental research of the effect of the LEDs brightness on the structure of the image of the dynamic test object, Barnaul, Russia	299
GOLOBOV V.I., LIAPIDEVSKIY A.V., DROZDOV A.S., ZAKHAROV A.Z., FILIPPOV V.P., ZHMUD V.A. Prospects of the Development of Firmware Complex AKTOMIKA, Novosibirsk, Russia	302
ZHMUD V.A., GONCHARENKO A.M. Modern Ways of High-Precision Frequency Measurements, Novosibirsk, Russia	309
ZHMUD V.A., GONCHARENKO A.M. Modern Problems of High-Precision Measurements of the Phase Differences, Novosibirsk, Russia	314
ABDRAKHMANOV V.KH., SALIKHOV R.B., BIKBAEV N.N. Development of low-cost electronic training boards based on universal microcontroller, Ufa, Russia	319
BARANOV A.V. Virtual students' Laboratories in the physics practicum of the technical university, Novosibirsk, Russia	326
BERESTOV A.V., BARYSHEV G.K., MAKSIMKI A.I. Development of laboratory facilities for analogue electronics as part of CDIO standards implementation in the research university, Moscow, Russia	329
BEREZIN N.U., PETROV N.U. Use of modular training systems in secondary school students' project work, Novosibirsk, Russia	333
BUKREEV D.A., MOISEEV A.A., DEREVYANKO M.S. Laboratory work on the study of magnetoimpedance effect, Irkutsk, Russia	336
CHIPURNOV S.A., KULICHKOV A.A., MAKUKHA V.K., METSLER K.A., MIKERIN V.A., SADKO A.P., VLASOV D.V. Configurable educational laboratory stand for analog and digital circuitry, Novosibirsk, Russia	339

DAVYDKOV V.V., BEREZIN N.U., PETROV N.U. Multimedia support for physics laboratory works in higher education institutions, Novosibirsk, Russia	343
FEDIUK R.S., KHRAMOV D.A. Educational and laboratory equipment in the domestic departments of building materials, Vladivostok, Russia	347
GUBSKY D.S., ZEMLYAKOV V.V., KLESHCHENKOV A.B., KRUTIEV S.V., MAMAY I.V. The virtual laboratory “microwave instruments and devices”, Rostov-on-Don, Russia	354
KOLKER A.B., PERSHINA Z.S. Laboratory course on navigation and motion control of the mobile robot with the differential drive of wheels, Novosibirsk, Russia	357
MYULBAER A.A., TSELEBROVSKY YU.V. Installation for potential-raising current measurement in grounding arrangement, Novosibirsk, Russia	361
NESTERENKO E.S., NESTERENKO G.B., SHEGLOV N.V. Laboratory bench for research of air gaps’ dielectric strength, Novosibirsk, Russia	364
POGOZHIKH S.A., PAVLOVA Y.V. Experimental holography in course of general physics, Novosibirsk, Russia	367
YASSINSKIY V.B., KUZNETSOVA YU.A. Mobile laboratory equipment for physics practicum, Karaganda, Republic of Kazakhstan	370
ZAMANOVA G.I., GAZIZOV E.R. Demonstration experiment for course of general physics, Ufa, Russia	373
TSAREV A.V., KOLOSOVSKY E.A. Abnormal blocking of the fundamental guided wave in a silicon waveguide by weak tunnel coupling with periodic polymer strips, Novosibirsk, Russia	376
SMIRNOV V.A., VOSTRIKOVA L.I. Raman-Nath scattering by all-optical poling, Novosibirsk, Russia	379
NOPPE M.G. On fundamentals of nonlinear theory for semiconductor lasers, Novosibirsk, Russia	382
DMITRIEV A.K., GOLOVIN N.N., ALTYNBEKOV N.ZH., ISAKOVA A.A. Influence of diffraction divergence and wavefront curvature of the Gaussian beam on the error of meter standard, Novosibirsk, Russia	385
ISAKOVA A.A., GOLOVIN N.N., SAVINOV K.N., DMITRIEV A.K. The diode laser for Rb standard with the cavity coordinated to modulation frequency, Novosibirsk, Russia	388
KIDYAROV B.I., MAKUKHA V.K. Interrelationship of the Structural and Non-linear-Optical Properties of the Carbonate Crystals, Novosibirsk, Russia	390
LISITSYNA L.I., BELAVSKAYA S.V., BLOKHIN A.A., KUZMIN A.N., NAVROTSKY L.G. Some actual problems of electronic instrument in the field of reflexotherapy, Novosibirsk, Russia	395
LISITSYNA L.I., BELAVSKAYA S.V., PEDONOVA Z.N., KUZMIN A.N., POTERYAEVA E.L., LYUTKEVICH A.N., FEOFILOV I.V. Investigation of the influence of physical factors of multifunctional devices for reflexotherapy and intracavitary effects on in vivo biological tissue and phantom of animal origin, Novosibirsk, Russia	402
ZHUMANTAIEVA N.A., ALEINIK A.N., LISITSYNA L.I., PEDDER V.V. Processing of biological objects of various sizes using the electrode with two point contacts by coblation, Novosibirsk, Russia	409
BELIK D. V., EMTSEV A. S., SHUMEYKO A. V. Use of impedance analysis of peripheral blood composition for hemopoiesis stimulation by a magnetic field, Novosibirsk, Russia	413
SEMENOV B.V., BARANOV V.N. Mathematical modeling of the scanning laser stimulation of biologically active points, Tyumen, Russia	417
BELIK D.V. Equivalent electrochemical wiring diagram of a neuron, Novosibirsk, Russia	420
BELIK D.V., BUKOVSKY M.P., KUSTOV I.N., DMITRIYEV N.A. Application of neuromuscular electric stimulation for elimination of the obstructive sleep apnea syndrome, Novosibirsk, Russia	423
BELIK D.V., KUSTOV I.N., BUKOVSKIY M.P., DMITRIEV N.A. Reduced thermal injuries bio-tissue during surgery with the use of electro-surgical devices, Novosibirsk, Russia	427

BELIK D.V., DMITRIEV N.A., ZINEVSKAYA M.S., PUSTOVOY S. A., KUSTOV I. N., BUKOVSKY M.P. Magneto-electrical system for magnetic field influences on the brain, including the hippocampus, for various diseases, Novosibirsk, Russia	429
BOROVIKOVA D.V., MAKUKHA V.K., TSVETKOV A.E. Comparative analysis of different voice coefficient variations for children's voice disorders detection, Novosibirsk, Russia	432
KIRILINA S.I., KUSAINOV R.K., MAKUKHA V.K., MUBARAKSHIN R.A., POLTARATSKAYA E.S., SIROTA G.G. The time-response characteristics of gastrointestinal motility, Novosibirsk, Russia	434
AVERCHENKO A.P., ZHENATOV B.D. Comparison of computational costs of Hartley transform and Fourier transform, Omsk, Russia	436
VASYUKOV V.N., ZAITSEVA A.YU. Textured images segmentation based on hierarchical finite-valued Gibbs model, Novosibirsk, Russia	439
LERNER I.M., IL'IN G.I. Capacity of p-cascade tuned filter with an impact PSK-n-signal, Kazan, Russia	443
LETAVIN D.A., KONOVALOV A.L., SYCHUGOV S.G., ZEYDE K.M. Planar antenna array for 3G wireless communications, Ekaterinburg, Russia	448
LETAVIN D.A. Substrate permittivity impact to branch-line couplers miniaturization, Ekaterinburg, Russia	451
LETAVIN D.A., KONOVALOV A.L. Substrate thickness impact to branch-line coupler miniaturization for low pass filters, Ekaterinburg, Russia	454
MOROZOV YU.V. Local extrema stream maximization by data intensity fusion, Novosibirsk, Russia	457
MIKHEENKO A.M., ABRAMOVA E.S., PAVLOV I.I. Key generator with adjustable contour, Novosibirsk, Russia	460
GRUZMAN I.S., PELEPENKO L.N. A development of algorithms for an automated blood sample image analysis, Novosibirsk, Russia	463
GRECHISHNIKOV V.M., TERYAEVA O.V. Digital displacement transducer with a three-phase interpolator in the fine reading channel, Samara, Russia	467
GRECHISHNIKOV V.M., TERYAEVA O.V. Fiberoptic digital-to-analog converter with Porro prism, Samara, Russia	470
TRENKAL E.I., LOSCHILOV A.G. The algorithm of primary responses selection for TDR analysis of multilayer liquids, Tomsk, Russia	473
IVANIN V.V., KHODENKOV S.A., BOEV N.M. The investigation of microstrip diplexer based on 2D electromagnetic crystal, Krasnoyarsk, Russia	476
KHODENKOV S.A., BELYAEV B.A., IVANIN V.V. Investigation of irregular microstrip resonators and wideband filters based on them, Krasnoyarsk, Russia	482
CHERNOUSOV A.V., KUZOVNIKOV A.V., BESSMERTNAYA J.S. The analysis of interference immunity of information transmitting systems with wavelet modulated wideband signals, Zheleznogorsk, Russia	487
NOSKOV V.YA., IGNATKOV K.A., CHUPAKHIN A.P. Features of autodynes taking into consideration the noise of a power supply, Yekaterinburg, Russia	492

2016 13th International Scientific-Technical Conference on Actual Problems of Electronics Instrument Engineering (APEIE 2016)

**Novosibirsk, Russia
3-6 October 2016**

**Part 2 of 4
Pages 1-537**



**IEEE Catalog Number: CFP16471-POD
ISBN: 978-1-5090-4070-4**

**СОДЕРЖАНИЕ
THE CONTENTS**

ALGAZIN E. I.¹, KOVALEVSKIY A.I.¹, VESHKURTSEV Y. M.² Algorithm of processing of signals relative phase modulation in the presence at them the initial angle of shift of phases and correlation between two next instant values, ¹ Novosibirsk, Russia, ² Omsk, Russia	13
BAKHAREV A.V., ZELENTSOV B.P., MAXIMOV V.P., SHUVALOV V.P. Achieving of reliable multigigabit data delivery in presence of multiple receivers with P2M, Новосибирск, Россия	17
VARDANYAN V.A. Single-fiber optical transmission system with dwdm channels. Effect of four-wave mixing products, Novosibirsk, Russia	23
GORBACHEV A.P., DENISENKO I.A. The planar dipole antenna excited by modified microstrip via-hole balance unit, Novosibirsk, Russia	26
NOSOV V. I., DEPTYAREV S. S. Research of the amplitude-phase conversion impact on the 16-apsk signal noise immunity, Novosibirsk, Russia	30
KRAKOV M.S., NOSOV V. I. Research of the satellite transponder beams interference impact, Novosibirsk, Russia	37
ABRAMOV S. S.¹, PAVLOV I. I.¹, ABRAMOVA E. S.¹, STARYSH D. YU.² Ways to ensure quality of work radiopure-sensors to base stations, ¹ Novosibirsk, Russia, ² Nefteyugansk, Russia	40
NOSOV V.I., YANTSEN A.S. Definition of mimo technology noise immunity by correlated channels, Novosibirsk, Russia	45
DROZDOVA V.G., RUSLAN V. AKHPASHEV R.V. The analysis of distributed inter-cell interference control efficiency algorithms of in LTE, Novosibirsk, Russia	49
BOGOMOLOV P.G., RUBANOVICH M.G., RAZINKIN V.P. Methods of expanding the bandwidth of multicascade microwave attenuators, Novosibirsk, Russia	54
DOROSINSKIY L.G., N.V. BUDYLDINA N.V. Synthesis and analysis of detection algorithm of distributed sources against background with distributed clutter, Yekaterinburg, Russia	57
BUDYLDINA N.V., TRUKHIN M.P. Methods for digitizing weak signals much less the LSB level, Yekaterinburg, Russia	60
MAYSTRENKO A.¹, BOGACHKOV I.V.¹, KOPYTOV E.Y.¹, LYUBCHENKO A.A.¹, LUTCHENKO S.S.¹, CASTILLO P.A.² An approach for estimation of integrated reliability indices and maintenance intervals of fiber-optic communication lines. ¹ Omsk, Russia, ² Granada, Spain	64
KROPOTOV Y.A., BELOV A.A. Application Method of Barrier Functions in the Problem of Estimating the Probability Density of the Parameterized Approximations, Murom, Russia	69
KROPOTOV YU.A., PROSKURYAKOV A.Y. Correlation methods of estimation parameters acoustic signals and interference in telecommunications, Murom, Russia	73
LEBEDYANTSEV V.V., LEBEDYANTSEV M.V. The theory of invariant communication systems and the prospect of its development, Novosibirsk, Russia	79
MAYSTRENKO A.V., MAYSTRENKO V., LYUBCHENKO A.A. Distortion effect analysis of n-ofdm signal with frequency drifts of carrier wave, Omsk, Russia	82
FILIMONOVA Y.O., LAYKO K.A., PODOYNIKOV D. I. Applying of dolph-chebyshev amplitude distributions by the criterion of maximum aperture efficiency for given side-lobe level, Novosibirsk, Russia	87
LEONOV A.V. Modeling of bio-inspired algorithms ant colony and beehive for flying ad hoc networks (fanets), Omsk, Russia	90

GOVORUKHIN V.I., UNRU N.E. A ring power divider/combiner integrated with circle-shaped ballast resistor, Novosibirsk, Russia	100
KALACHIKOV A.A., SHELKUNOV N.S. Measurement and statistical analysis of indoor mimo radio channel parameters, Novosibirsk, Russia	103
GRISHKO A.K. Parameter control of radio-electronic systems based of analysis of information conflict, Penza, Russia	107
GRISHKO A.K., GORYACHEV N.V., KOCHEGAROV I.I., KALAEV M.P. Mathematical models of the system of measurement and analysis of temperature parameters of radio electronic modules, Penza, Russia	112
KOCHEGAROV I.I., DANILOVA E.A., YURKOV N.K., BUSHMELEV P.YE, TELEGIN A.M. Analysis and Modeling of Latent Defects in the Printed Conductors., Penza, Russia.	116
STENNIKOV V.N. The scientific development of brazing technology electronic devices, Ekaterinburg, Russia	121
YURKOV N.K., TRUSOV V.A., LYSENKO A.V. Methods of providing reliability of avionics and aerospace equipment at the design stage, Penza, Russia	123
VOLKHIN D. I., DEVYATKOV G. N. Synthesis of Broadband Impedance Transformers with Predetermined Phase Response, Novosibirsk, Russia	128
KOVAL M.V., DEVYATKOV G.N. Synthesis of broadband balun on the coupled transmission lines, Novosibirsk, Russia	132
RADCHENKO S.E., KOZLOV I.N. Statistical Processing Algorithms of Signals at Ultrasound Distance Measurement, Novosibirsk, Russia	136
RADCHENKO S.E., PITSUN D.K., KRIVETSKY A.V. Statistical Algorithms for Superconducting Q-bits Parameters Measurement, Novosibirsk, Russia	139
STARYKH A.A. The Creation of a Digital Element Base from Components of Library ABM to Study Asynchronous Circuits, Taganrog, Russia	143
BELYAEV B.A., KHODENKOV S.A. The Investigation of Filters with Wide Stop Band, Based on Electromagnetic Crystals of Microstrip Resonators 2D Disposition, Krasnoyarsk, Russia	146
AFONIN K.N., OLISOVEC A.U., RYAPOLOVA Y.V., SOLDATKIN V.S., STAROSEK D.G., TUEV V.I. Optimizing the design of LED lamps for the minimum of uneven light distribution in space, Tomsk, Russia	153
IVANOV A.V., REVA I.L., USHAKOV A.E. Features of identification and the analysis of collateral electromagnetic radiations from USB flash drives, Novosibirsk, Russia	156
KASHIRIN I.A., USMANOV D.R., REVA I.L., ZAHAROV K.V. Development of Optical Transceivers SFF standard with support for cryptographic kernel, Novosibirsk, Russia	159
ZHERNAKOV S.V., GAVRILOV G. N. Malicious software detection in operating system (OS) for mobile devices (the case of Android OS), Ufa Russia	163
RAKHIMOV N.R., SER'EZNOV A. N., RAKHIMOV B.N., ALIJANOV D.D. Jig-Sensitive Optical Detectors Based On Semiconductor Films With Anomalous Photovoltage, Novosibirsk, Russia	166
GORBACHEV A.P., TARASENKO N.V. The Novel Reentrant Power Splitters And Band-Stop Elliptic Filters, Novosibirsk, Russia	173
BOGOMOLOV P.G. STUDENT MEMBER, RUBANOVICH M.G., RAZINKIN V.P. Methods of Expanding the Bandwidth of Multicascade Microwave Attenuators, Novosibirsk, Russia	177
NOVIKOV A.V., KHLUSOV V.A. A Receive Linear Array Beamforming Using Spatially Variant Apodization, Tomsk, Russia	180
NIKULINA YU.S., STEPANOV M.A. Permissible Deviation Ranges of a Collimating Lens Irradiator, Novosibirsk, Russia,	184

STEPANOV M.A., SUKHANOV I.I. The Spherical and Aspheric Surfaces Lens Collimators: the Aperture and Aberration Features, Novosibirsk, Russia	187
CHEREVKO A.G. Patent activity of developed countries in the terahertz range – Comparative analysis, Novosibirsk, Russia	190
CHEREVKO A.G., MORGACHEV Y.V. Simulation of phased array in THz region, Novosibirsk, Russia	193
NIKULIN A.V. Dependence of the Mistake in Noise of Coordinates Parameters from the Error in Installation of Capacities of Signals of Radiators, Novosibirsk, Russian Federation	200
BLINOV P.YU., LEMESHKO B.YU. The simulation system and research of functions of random variables, Novosibirsk, Russia	203
BIRYULIN V.I., GORLOV A.N., LARIN O.M., KUDELINA D.V. Calculation of power losses in the transformer substation, Kursk, Russia	210
BIRYULIN V.I., GORLOV A.N., LARIN O.M., KUDELINA D.V. Neural network application for assessment of the asynchronous motors energy consumption, Kursk, Russia	213
VARNAVSKY A.N., SINITSINA N.V. Statistical modeling the probability of some types of automobile-pedestrian accidents, Ryazan, Russia	216
Veretelnikova E.L., Elantseva I.L. The Choice Of The Coefficient of criterion of a minimum of the Resulting Root-mean-square error, Novosibirsk, Russia	221
VOZHOV S.S., CHIMITOVA E.V. An investigation of statistical properties of parameter estimates of distributions on interval data, Novosibirsk, Russia	224
VOLKOVA V.M. Research of tukey's test statistic distribution under failure of the normality assumption, Novosibirsk, Russia	227
GINIS L.A., VOVK S.P. Modeling of achievement of the reference situation in the conditions of uncertainty, Taganrog, Russia	230
DAVYDOV A.P., ZLYDNEVA T.P. On the reduction of free photons speed in modeling of their propagation in space by the wave function in coordinate representation, Magnitogorsk, Russia	233
DENISOV V.I., FADDEENKOV A.V. Specification of spline regression model with variable penalties, Novosibirsk, Russia	241
DOMNIKOV P.A. Speedup of three-dimensional finite element geoelectromagnetic fields modelling in time domain, Novosibirsk, Russia	244
DOMNIKOV P.A. Finite element 3D-modeling of magnetotelluric field for a set of harmonics, Novosibirsk, Russia	247
ZAYTSEVA M.N. Solution of the problem of searching for an energy-efficient functioning mode of a continuous production using simulation and artificial intelligence methods, Pavlodar, Kazakhstan	250
KISELEV D.S., PERSOVA M.G., SOLOVEICHIK YU.G., KOSHKINA YU.I., VAGIN D.V., SIMON E.I. Comparison of approaches and the software for 3D finite element modeling of harmonic electromagnetic fields, Novosibirsk, Russia	255
KONDRATYEV N.V., PERSOVA M.G., KOSHKINA YU.I., KISELEV D.S. Approach to distributed computing system development for three-dimensional geoelectromagnetic problem solving, Novosibirsk, Russia	259
KONDRATYEV N.V., SOLOVEICHIK YU.G., VAGIN D.V., PATRUSHEV I.I. GPU implementation of iterative solver for linear systems obtained by fem discretization, Novosibirsk, Russia	263
KONDRATYEVA N.S., STUPAKOV I.M. Acceleration methods for the calculation of results in boundary element modeling, Novosibirsk, Russia	268
KOTOVA E.E. Application of dynamic approach to learning process modeling, Saint-Petersburg, Russia	271

KOSHKINA YU.I., PERSOVA M.G., SOLOVEICHIK YU.G., PATRUSHEV I.I. Development and research of geometric inversion of induction logging data measured in vertical wells, Novosibirsk, Russia	276
LEMESHKO B.YU., VERETEL'NIKOVA I.V. On power of randomness and absence of trend tests in dispersion characteristics, Novosibirsk, Russia	281
LIMANSKIY A.I., PERSOVA M.G. Software for multidimensional inversion of magnetotelluric data with recovering conductivity in the cells, Novosibirsk, Russia	287
MANUSOV V.Z., MATRENIN P.V. Optimization of fuzzy controller of a wind power plant based on the swarms intelligence, Novosibirsk, Russia	293
NEDEL'KO V.M. New explanation of boosting efficiency in classification problem, Novosibirsk, Russia	299
PERSOVA M.G., SOLOVEICHIK Yu.G., VAGIN D.V., KOSHKINA Yu.I. Grouping of transmitter-receiver positions when using the direct solvers of finite element equation systems in induction logging problems, Novosibirsk, Russia	305
PERSOVA M.G., TRUBACHEVA O.S., SOLOVEICHIK YU.G. Geometric 3D inversion application for recovering the polarizability of geoelectric-heterogeneous geological media, Novosibirsk, Russia	309
POPOV A.A., BOBOEV SH.A. The use of robust criteria for the choice of regression model by LS-SVM method, Novosibirsk, Russia	313
POPOV A.A., GULTYAEVA T.A., UVAROV V.E. Training hidden Markov models on incomplete sequences, Novosibirsk, Russia	317
POPOV A.A., HOLDONOV A.A. Comparative research of estimation accuracy of parameters of fuzzy regression models with various types of M-estimates, Novosibirsk, Russia	321
ROYAK M.E., LYZOV E.R. Study of the effectiveness of curved finite elements on the example of solving a magnetostatic problem, Novosibirsk, Russia	327
ROYAK M.E., STUPAKOV I.M., KONDRATYEVA N.S. Coupled vector FEM and scalar BEM formulation for eddy current problems, Novosibirsk, Russia	330
SIVYKH G.F., FAINER N.I. The simulation of evolution of crystal particle in vortex chamber, Novosibirsk, Russia	336
SOLOVEICHIK YU.G., PERSOVA M.G., VAGIN D.V. Software for finite element analysis of stress-raisers in composite laminates, Novosibirsk, Russia	339
SPESHILOV K.V., KHABAROV V.I. Using the event calculus for modelling an operator of a simulator complex, Novosibirsk, Russia	343
STUPAKOV I.M., ROYAK M.E., KONDRATYEVA N.S. The method for calculating magnetic field induced by current coils, Novosibirsk, Russia	347
SUKHORUKOV M. P. Mathematical modeling exposure of shock on the electronic equipment, Tomsk, Russia	351
TESSELKIN A.A., TESSELKINA K.V., KHABAROV V.I. Elements of data mining for the development of mathematical transport models, Novosibirsk, Russia	354
TIMOFEEV V.S., SHCHEKOLDIN V.YU., TIMOFEEVA A.YU. Geographically weighted regression: fitting to spatial location, Novosibirsk, Russia	358
TROYANOVSKIY V.M., OSTANIN S.A., ZAPEVALINA A.A. Recursive method of extracting the harmonic signal from a mixture with strong noise: limitations and the non-uniqueness, Moscow, Barnaul, Russia	364
PHILONENKO P.A., POSTOVALOV S.N. Test power in two-sample problem testing as the utility function in the theory of decision making under risk and uncertainty, Novosibirsk, Russia	369
CHIMITOVA E.V., SEMENOVA M.A., KARMANOV V.S., SMAGIN G.I. The optimization of drilling conditions by using accelerated life model, Novosibirsk, Russia	374

CHIMITOVA E.V., CHETVERTAKOVA E.S., FADDEENKOV A.V. The construction of degradation trend using the "random-effect" models, Novosibirsk, Russia	378
CHUBICH V.M., FILIPPOVA E.V. Synthesis of D-optimal continuous input signals for stochastic linear systems, Novosibirsk, Russia	381
CHUBICH V.M., CHERNIKOVA O.S. Adaptive fading Kalman filter with applications in identification discrete system, Novosibirsk, Russia	385
SHAKHOV V.V., YURGENSON A.N., SOKOLOVA O.D. Analysis of fault tolerance of wireless sensor networks, Novosibirsk, Russia	390
SHURINA E.P., KUTISCHEVA A.Y. Numerical simulation of a solid deformation under the action of an external and internal pressure, Novosibirsk, Russia	394
SHURINA E.P., MIKHAYLOVA E.I. Modified multiscale discontinuous Galerkin method in the function space $H(\text{curl})$, Novosibirsk, Russia	398
SHORNIKOV YU. V., DOSTOVALOV D.N., BESSONOV A.V., NASYROVA M.S. Specification of electric power systems in ISMA simulation environment, Novosibirsk, Russia	403
SHTABEL N.V., SHURINA E.P. Variational formulation for a magnetic field on dual meshes, Novosibirsk, Russia	408
GUZAIROV M.B., YUSUPOVA N.I., SMETANINA O.N., RASSADNIKOVA E.YU. Models and algorithms for vehicle routing problem with time windows and other conditions, Ufa, Russia	412
RABINOVICH E.V., VAYNMASTER P.I. Information technology for monitoring of hydraulic fracturing, Novosibirsk, Russia	417
RABINOVICH E.V., PUPYSHEV I.M., SHEFEL G.S. Layout of seismic location dots for hydraulic fracturing monitoring, Novosibirsk, Russia	421
KHAIRETDINOV M.S., VOSKOBOYNIKOVA G.M. Detection of signals and identification of sources in the monitoring networks, Novosibirsk, Russia	424
KHAIRETDINOV M.S., POLLER B.V., BRITVIN A.V., SEDUKHINA G.F. An acoustooptic information system of infralow frequencies, Novosibirsk, Russia	428
YAKIMENKO A.A., KHAIRETDINOV M.S., GRISHCHENKO M.V., MATVEEV I.N., MORGUNOV A.S. Access technology to high performance resources by means of information systems, Novosibirsk, Russia	434
KARAVAEV D.A., YAKIMENKO A.A., BULAVINA N.A. A technology of full seismic field simulation on high-performance computing systems, Novosibirsk, Russia	439
KOVALEVSKY V.V., BRAGINSKAYA L.P., GRIGORYUK A.P. An information technology of verification of earth's crust velocity models, Novosibirsk, Russia	443
KHANOV V.KH., CHEKMAREV S.A. Fast SEU fault injection in the SoC-memory, Krasnoyarsk, Russia	447
KROPOTOV Y.A., DOGADINA E.P. Decision support system to determine the effective values the parameters of the production process on the Pareto set, Murom, Russia	451
GAVRILOV A.V., PANCHENKO K.O. Methods of learning for spiking neural networks. A survey, Novosibirsk, Russia	455
MALIAVKO A.A., GAVRILOV A.V. Towards development of self-learning and self-modification spiking neural network as model of brain, Novosibirsk, Russia	461
ROMANOV E.L., NOVITSKAYA Y.V. Program toolkit for auditory scenes' analysis, Novosibirsk, Russia	464
MILUKIN Y.A., PODCHUKAYEV V.A., FILONOVICH A.V., FILATOV E.A. Method recognition of mathematical formulas for the arbitrarily given of the control law, Kursk, Saratov, Russia	471

KURNOSOV M.G. Dynamic mapping of all-to-all collective operations into hierarchical computer clusters, Novosibirsk, Russia	475
KOKOULIN A.N. Distributed storage approach in content delivery networks, Perm, Russia	479
CHUGUNKOV I.V., PROKOFIEV A.O. , STRELCHENKO P.A., MATRIUKHINA Y.A. Research of statistical properties of stochastic calculations using the improved test of distribution on the plane, Moscow, Russia	485
IGUMNOV A.O., SONKIN D.M. Forecasting algorithm of time arrival with statistical data using based on the principle of templates selection, Tomsk, Russia	489
GRIF M.G., KOCHETOV S.A., GANELINA N.D. Functional-structural theory based techniques for human-machine systems optimal design, Novosibirsk, Russia	494
GRIF M.G., MANUEVA J.S. Russian sign language machine interpreter system based on the analyses of syntax and semantic construction, Novosibirsk, Russia	498
PRIHODKO A.L., LUKOYANOV A.V., GRIF M.G. Approach to the analysis and synthesis of the sign language, Novosibirsk, Russia	502
BATYGIN R.I., ALSOVA O.K. Software system for different types of data classification based on the ensemble algorithms, Novosibirsk, Russia	506
ALSOVA O.K., KAZANSKAYA O.V. Training simulators for support of inductive method in teaching, Novosibirsk, Russia	510
AVDEENKO T.V., PUSTOVALOVA N.V. The ontology-based approach to support the requirements engineering process, Novosibirsk, Russia	513
SOKOLOVA O.D., KRATOV S.V. Information systems for popularization of scientific and knowledge-based software, Novosibirsk, Russia	519
ALT V.V., ISAKOVA S.P., LAPCHENKO E.A. The mathematical model of forming of optimal combination of machineries and tractors park subject to social factor, Novosibirsk, Russia	523
BOGOMOLOV D.A., SYSOEV M.D., KARACHAKOV V.A., DAVYDOV A.A. Development of the university platform "My NSTU", Novosibirsk, Russia	527
MISHCHENKO P.V., KARNEEV M.A., BELOBORODOVA Z.E. The impact of memory effect on computing time, Novosibirsk, Russia	530
MISHCHENKO P.V., SILOV Y.V., BELOBORODOVA Z.E., LYKOV A.S. The interaction interface for the distributed computing system's nodes, Novosibirsk, Russia	534
ITKINA N.B., MARKOV S.I. Determining an effective permeability tensor in anisotropic media, Novosibirsk, Russia	N/A

2016 13th International Scientific-Technical Conference on Actual Problems of Electronics Instrument Engineering (APEIE 2016)

**Novosibirsk, Russia
3-6 October 2016**

**Part 3 of 4
Pages 1-503**



**IEEE Catalog Number: CFP16471-POD
ISBN: 978-1-5090-4070-4**

THE CONTENTS

ZINOVEV G.S. Development Of Direct Methods Of Calculation Of Energy Factors Of Nonsinusoidal Current Networks	11
MAKAROV D.V., KHARITONOV S.A., KHOROSHEV M.A. Method Of Synchronization In Power Supply	17
BORODIN D.B., KABIROV V.A., VINTONYAK N.P., SHURYGIN Y.A., SEMENOV V.D. Direct Boost Converter with Zero Voltage Transition and PWM Control (ZVT-PWM)	22
TYUNIN S.S., KABIROV V.A., KOBZEV A.V., SEMYONOV V.D. Direct Buck Converter with Zero Voltage Transition and PWM Control (ZVT-PWM)	29
SIMAKOV G.M., TOPOVSKIY V.V. Dynamic Modes Of Electromechanical Unbalance Vibration Exciter With Induction Motor Under Vector Control	36
RYZHKOV V.A., ANTONOV A.A., KARPOVICH M.S, SURIN I.K., VASILYEV V.YU. Verification “In Silicon” Of The Active Output Rectifier Controller IC In 250 Nm BCD Technology For High-Efficiency Power Converters	41
BESPALOV N.N., LYSENKOV A.E. Influence Of Fluctuation Of MOSFET’s Electrothermal Parameter On Thermal Conditions In Bridge Inverter	46
MANUSOV V.Z., KHALDAROV S.K., BOYKO K.N. Design Of Active And Reactive Power Flows Flexible Regulation Devices For The Effective Integration Of Wind Power Into The Grid	49
MOROZOV P.V. Controllable Electronic Converters Traction Transformers With Even Phase Number	52
NOS O.V., TOKAREV V.G. Dynamic Model of Induction Motor in the Hyper-complex Space	55
MANUSOV V.Z., KIRGIZOV A.K., AKHYOEV J.S. The Effective Use Of STATCOM In The Electrical System Of The Republic Of Tajikistan To Reduce The Losses Of Active Power In The Electric Network	60
BELOVA I.A., MARTINOVICH M.V., SKOLOTA V.A. Application Of Photovoltaic Cells With An Intelligent Control System For Railway Transport	64
TERGEMESS K.T. Sensors Of Rotor Phase Currents And Load Determination Unit Of Asynchronous Drive Of Harmonic Rotation	69
ZAKHAROVA N.E., RUMYANTSEV M.YU., SIGACHEV S.I., BANAKIN A.V. KAPUSTIN A.YU. Experimental Research of the Thermal Modes of the Foil Gas-Dynamic Bearings of the High-Speed Electrical Turbo Machines	73
AKSENOV E. A., YURKEVICH V. D. Control System Design Based on Sliding Mode Control and Singular Perturbation Technique for a Cuk Converter	77

ANTONOV A.A., KARPOVICH M.S., PICHUGIN I.V., VASILYEV V.YU. “In silicon” verification of Multi-Functional Control Integrated Circuits in 250 nm BCD Technology for High-Efficiency Power Converters	83
TUTAEV G.M., VOLKOV A.V., BOBROV M.A. Energy-Efficient Control Options of Electric Drive based on Asynchronous Converter-Fed Motor	88
DYBKO M.A., BROVANOV S.V. Usage of Spectral Models and Switching Functions for Cascaded H-bridges VSC Analysis	94
MAKAROV D.V., KHARITONOV S.A., KOROBKOV D.V., KHRISTOLUBOV A.A., SHKOLNIY V.N., LOPATIN A.A. Characteristics of High Frequency Schemes with "Soft" Switching	99
MAKAROV D.V., KHARITONOV S.A., BALAGUROV M.V., SHKOLNIY V.N., A.A. LOPATIN State-of-the-Art in Microelectronics Class Space	107
LOPATKIN N.N. Voltage Harmonics Integral Factors Estimation of Multilevel Inverter with Space Vector Modulation of Two Delta Voltages	112
ASMYKOVICH I.K. On Finding Zero Dynamics for Descriptor Systems	116
GRYGIEL R., BIEDA R., BLACHUTA M. Remarks on the Coupled Tanks Apparatus as a Control Teaching Tool	120
BARAN E.D., PERSHINA Z.S., SAVITSKAYA N.A. About One Structure of the Autonomous Research Robot	128
BASINYA E.A., SAFRONOV A.V. Design and Study of the System of Computer Network Traffic Using the Secure Virtual Communication Channel Technology	132
ZEMTSOV N., FRANTSUZOVA G. Using Thermostatically Controlled Loads for the Secondary Control Provision Based on the Modal Method	135
KATASONOV D.N. Methods For Improving Parameters Of Power Consumption And Received Data Reliability In Wireless Mobile ECG Monitoring System	140
KOCHETKOV S.A., UTKIN V.A. A Vortex Algorithm For Induction Motor Drives	144
KRASNOVA S.A. Block Design of Robust Control via Sigma-Functions	148
PUTOV V.V., PUTOV A.V., STOTCKAIA A.D. The Method And Technical Facilities For Measurement Of Airfield Friction Coefficient And It's Correlation With The Characteristics Of Aircraft Braking During Landing	154
RADIONOV A.A., GASİYAROV V.R., SHUBIN A.G., KHRAMSHIN R.R. Methods of Calculation of Load Modes of Roughing Stand Electric Drives of Wide-Strip Hot Rolling Mill	160
SABLINA G.V., STAZHILOV I.V., ZHMUD V.A. Development of Rotating Pendulum Stabilization Algorithm and Research of System Properties with the Controller	165

SALIKHOV R.B., ABDRAKHMANOV V.KH., VAZHDAEV K.V. System Of Monitoring And Remote Control Of Temperature Conditions, Climate And Heat Consumption	171
SIMAKOV G.M., FILUSHOV Y.P., FILUSHOV V.YU. Combined Control of An Asynchronous Machine with Squirrel - Cage Rotor	175
TROSHINA G.V., VOEVODA A.A., BOBOBEKOV K.M. The Parameters Determination of the Inverted Pendulum Model in the Automatic Control System	180
FILIMONOV A.B., FILIMONOV N.B. Synthesis of Servosystems Using Method Linear-Quadratic Optimization	183
KARANDAEV A.S., KHRAMSHIN R.R., GRIGORJAN V.V., GALLYAMOVA M.S., KHRAMSHINA E.A. Automated Control of Fuel Burning in Multi-Port Boiler of Thermal Power Station	187
KOBYLYANSKY V.G., STENNIKOV A.A. Basic Principles of Development of the Control Panel of Hump Complex Simulator	192
AVDEENKO T.V., MAKAROVA E.S., KLAVSUTS I.L. Artificial Intelligence Support of Knowledge Transformation in Knowledge Management Systems	195
AMANZHOLIVA B.A., FRIBUS N.V., KHOMENKO E.V. Disclosure of Information on Ecological Activity as a Factor of Sustainable Development of Manufacturing Enterprises	202
BARANOV A.O., MUZYKO E.I., MASLOV M.P., PAVLOV V.N. Research Methodology of Fuzzy Characteristics of Real Options in Innovative Projects	207
BARYSHEV G.K., TUTNOV I.A., BOZHKO Y.V. Method of Engineering-economic Choosing of the Conditions of Development of Devices and Perspective Measurement Systems of Monitoring of Quality of Nuclear Fuel Elements	214
BOZO N.V. The Methodical Approach To Assessing The Effectiveness Of Science/Technology Parks	218
BYCHKOVA S.M., SKOBARA V.V. Functional Problems of Audit at the Present Stage of His Development	223
GOREVAYA E.S., GOREVOY D.V. Analysis of Promising Business Models in Solar Energy Market	227
DRAGUNOVA E.V. Multidimensional Analysis of High-Tech Companies' Growth Potential	232
EKHLAKOV Y.P., BARAKSANOV D.N., NAZAROVA A.I. Multiobjective Problem of Product Line Engineering for a Small IT Company	238
KIREENKO A.P., ORLOVA E.N. The Role of Tax Incentives in Promotion of Innovation Activity in the Russian Federation	242

KLAVSUTS I.L., RUSIN G.L., KHAYRULLINA M.V. Strategic Models of Introducing Innovative Technology for Management of Electric Power Consumption into World Markets	247
KRAVCHENKO N.A., YUSUPOVA A.T. Development of High Tech Companies in Russia: Empirical Study	253
LITVINTSEVA G.P., GAKHOVA N.A. Trends in High-technologic Industries Development in Russia	256
LYAMZIN O.L. The Logic and Directions of Economic Entity Integration During the Formation of Innovation Clusters	263
MARKOVA V.D., KUZNETSOVA S.A. Strategic Development Guidelines for High-technology Companies	269
MEZENTSEV Y.A., ESTRAYKH I.V. On one Problem of Financial Management Optimization of Enterprise when Performing State Defense Order	272
MURTAZINA M.SH., KLEVAKINA E.A. Regional Problems of Environmental Protection Activities in Energy Companies	275
PUSHKAR D.I., DRAGUNOVA E.V. Financial Analysis as a Tool for Company Strategy Developing	279
KHAYRULLINA M.V. High Tech Development of Russian Old Industrial Regions: Opportunities and Instruments	284
TSOY M.E., SHCHEKOLDIN V.YU. RFM-analysis as a Tool for Segmentation of High-tech Products' Consumers	290
ADDITIONAL ABSTRACTS SECTION	294

2016 13th International Scientific-Technical Conference on Actual Problems of Electronics Instrument Engineering (APEIE 2016)

**Novosibirsk, Russia
3-6 October 2016**

**Part 4 of 4
Pages 1-35**



**IEEE Catalog Number: CFP16471-POD
ISBN: 978-1-5090-4070-4**

THE CONTENTS

GALALU V.G., KIRAKOSYAN S.A. The effectiveness of A-trimmed mean to suppression industrial interferences, Taganrog, Russia	13
SALNIKOV A.S. Process variation estimation for passive ladder circuit by means of interval analysis, Tomsk, Russia	17
PETROV V.V.¹, KALAZHOKOV Z.KH.², NADDA M.Z.³, KALAZHOKOV KH.KH.² Investigation of gassensitive characteristics of sensors based on SiO ₂ SnO _x -CNT films, ¹ Taganrog, ² Nalchik, the Kabardino-Balkar Republic, Russia, ³ Brazzaville, Congo	21
PODREZOV R.V., RAJFELD M.A. Determining the number of classes on an image as a distribution space dimension, Novosibirsk, Russia	25
GOVORUN I.V., LEKSIKOV A.A., SERZHANTOV A.M. Features of the coupling coefficients of microstrip irregular quarter-wavelength resonators, Krasnoyarsk, Russia	29
MAMCHEV G. Features visualization acoustic images obtained by the method shady stereo projection, Novosibirsk, Russia	33