

2024 IEEE 5th KhPI Week on Advanced Technology (KhPIWeek 2024)

**Kharkiv, Ukraine
7-11 October 2024**



**IEEE Catalog Number: CFP24Z72-POD
ISBN: 979-8-3503-8450-5**

**Copyright © 2024 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:	CFP24Z72-POD
ISBN (Print-On-Demand):	979-8-3503-8450-5
ISBN (Online):	979-8-3503-8449-9

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

TABLE OF CONTENTS

Location Optimization of 3D Printing Filament in the Waveguide to Decrease Mismatch Uncertainty	1
<i>Olga Zaichenko, Nataliia Hapon, Iurii Khoroshailo, Yuriy Oleksandrov, Valentyna Shtanko, Korbetskyi Maksym</i>	
Features of Space Vector Pulse Width Modulation in 5-Phases Cascaded High Voltage Converters.....	5
<i>Victor Busher, Oleksii Chorny, Valerii Tytiuk, Oksana Glazeva, Vitaliy Kuznetsov</i>	
Wide Band Gap Nanostructured Marshite and Digenite Films Deposited by Automatic SILAR Method	10
<i>Alina Fedonenko, Kinga Adach, Volodymyr Kopach, Sergey Petrushenko, Yevhenii Shepotko, Natalja Klochko</i>	
Coke Electrical Resistivity as Cumulative Characteristic of Its Properties	15
<i>Denis Miroshnichenko, Kateryna Shmeltser, Yevhen Soloviov, Alexey Sytnik</i>	
Improving the Electrical Resistivity of Blast-Furnace Coke	20
<i>Valentine Koval, Denis Miroshnichenko, Yevhen Soloviov</i>	
Modelling of a Technical Diagnostic System for a Generator Based on an Internal Combustion Engine(ICE).....	25
<i>Stefan Zaichenko, Denys Derevianko, Serhii Korol, Nataliia Shevchuk, Halyna Bielokha, Zhang Wenjun</i>	
Monitoring and Forecasting Quality Indicators of Predough Production in the Bakery Industry	31
<i>Nataliia Lutska, Nataliia Zaiets, Lidiia Vlasenko, Andrii Zhylytsov</i>	
Control of Electric Drive for Inertially Stabilized Platform in Tracking Mode.....	37
<i>Olha Sushchenko, Olexandr Salyuk</i>	
Open-Pit Railway Transport Traction Complex Power Consumption Mode Modelling	41
<i>Maksim Bezzub, Olexii Bialobrzheskyi, Maxim Oliynichenko</i>	
Kinetics and Degree of Swelling of Hemostatic Hydrogels with a Gelatin-Alginate System Modified with Humic Acids	46
<i>Katerina Lebedeva, Anna Cherkashina, Volodymyr Kopach, Volodimir Lebedev, Denis Miroshnichenko, Natalia Klochko</i>	
Design of Near-Zero Thermal Expansion Polymer Composites.....	51
<i>Gennadiy Lvov, Evgeniy Barkanov</i>	
Explore the Feasibility of Moving an Implant Along an Arc Trajectory for Half a Circle in a Magnetic Stereotaxic System	57
<i>Jiao Hunkun, Oleg Avrunin</i>	
Influence of Swarm Connectivity on l-Best PSO Performance	62
<i>Yuriy Romasevych, Viatcheslav Loveikin, Ziv Brand</i>	
Robot Manipulator Optimal Control Via Ring-Rot-PSO Algorithm	67
<i>Yuriy Romasevych, Viatcheslav Loveikin</i>	

Control of Voltage-Source Series-Resonant Inverters with Extended Topology Using Pulse-Density and Pulse-Frequency Modulations	72
<i>Pavlo Herasymenko, Saurabh Mehta</i>	
Peculiarities of Voltage Quality Control in Power Supply and Lighting Systems of Cities	78
<i>Pylyp Hovorov, Roman Trishch, Vladlen Hovorov, Eduard Khomiak, Oleksandr Vasilevskyi, Vasyl Kukharchuk</i>	
Asymptotic Analysis of Nonlinear Modes of Multi-Walled Nanotubes	84
<i>K. Avramov, S. Plankovskyy, Y. Tsegelnyk, V. Kombarov, M. Avramov</i>	
Improvement of the Model of Cylindrical Harmonics of the Magnetic Field of the Electromagnet of the Orientation Control System to Ensure Magnetic Compatibility of the Spacecraft	90
<i>Andriy Getman, Oleksandr Konstantinov</i>	
Determination of the Distribution of Iron Oxide Nanoparticles Deposited on Textile Fibres with Limited Optical Observation Data.....	95
<i>Mykola Riabchykov, Oksana Tkachuk, Oleksandr Herasymchuk</i>	
Experimental Investigation of the Harmonic Distortion at Points of Common Coupling of Urban Substations in Ukraine.....	101
<i>Oleg Solomchak, Antin Solomchak</i>	
Detection of Cardiac Arrhythmias Using Neural Network-Based Heart Rate Variability Analysis	107
<i>Andrey Ivashko, Viktoriia Krylova, Oleh Petrenko</i>	
Technological Control of the Petroleum Pretreatment Unit Based on the Indicator of Its Relative Dielectric Permittivity	112
<i>Andrii Hryhorov, Alona Tulska, Mikhaïlo Nahliuk</i>	
Modeling and Simulation of Distribution Network with the D-STATCOM and Photovoltaic Power Stations Using MATLAB	117
<i>Oleg Solomchak, Mykola Nykolaychuk, Antin Solomchak</i>	
Dielectric Properties and Electrical Conductivity as a Characteristic of Degradation of Coal Tar Wash Oil	122
<i>Artem Bannikov, Serhiy Nesterenko, Fedir Cheshko, Leonid Bannikov, Olexander Borisenko, Valentine Koval</i>	
Using Electrosark Erosion Method to Obtain Metal Nanoparticles	127
<i>Konstantin Lopatko, Serhiy Zakharchenko, Oksana Zazymko, Volodymyr Nazarenko, Kateryna Vynarchuk</i>	
Nanoparticle and Polyaniline Loaded Neuroconduits: Electrical and Biological Properties.....	131
<i>Mariia Kumeda, Liudmyla Sukhodub, Leonid Sukhodub, Volodymyr Prokopiuk, Nataliia Bozhko, Maksym Yermakov</i>	
Tumor Segmentation Based on Hybrid MR-Images for Radiation Treatment Planning	135
<i>Andrii Mandrikov, Yurii Fedurtsia, Victor Starenkiy, Averianova Liliia</i>	
Alginate/Gelatin/Hydroxyapatite Porous Electrically Conductive Osteoplastic Biomaterial.....	140
<i>Olha Sukhonos, Liudmyla Sukhodub, Leonid Sukhodub, Mariia Kumeda</i>	
Influence of Surface Effect on Linear Vibrations of Multi-Walled Nanoshell	144
<i>K. Avramov, Darkhan Myrzaliyev, Inna Urniaieva, Igor Grebennik, M. Avramova</i>	

Study of Energy Density as a Measure of the Impact of Electromagnetic Radiation on Biological Systems.....	150
<i>Valerii Semenets, Igor Prasol, Oleksandr Hryhoryev, Oleksandr Avrunin, Yana Nosova, Yevhen Chuhui</i>	
Study of Amplitude-Frequency Characteristics of Biological Tissues	154
<i>Valerii Semenets, Igor Prasol, Oleksandr Hryhoryev, Oleksandr Avrunin, Tatyana Nosova, Irina Moroz</i>	
Analysis of Human Body Vibrations in the Frequency Domain	158
<i>Valerii Semenets, Igor Prasol, Oleksandr Hryhoryev, Tatyana Nosova, Yevhen Chuhui, Irina Moroz</i>	
MSE Prediction in BPG-Based Lossy Compression of Grayscale Images.....	162
<i>Bogdan Kovalenko, Vladimir Lukin, Benoit Vozel</i>	
Aspects of Microscopic Slides Automated Image Processing in Cytogenetic Analysis of Radiotherapy Effects	168
<i>Maksym Tymkovych, Averianova Liliia, Valentyn Melnyk, Natalie Maznyk, Victor Starenkiy, Birgid Glasmacher</i>	
Experimental Studies of Effectiveness of Combined Electromagnetic Silence of Power Lines Magnetic Fields	173
<i>B. Kuznetsov, I. Bovdii, T. Nikitina, K. Chunikhin, O. Voloshko, V. Kolomiets</i>	
Using Multivariate Regression Models for Restoring Endocrinological Indicators.....	178
<i>Yevgen Sokol, Kostyantyn Kolisnyk, Kateryna Misiura, Pavlo Shchapov, Tatyana Bernadskaya, Andriy Chepurko</i>	
Justification of the Calculation of the Dynamic Characteristics of Polarized Monostable Electromagnets for Vacuum Switching Devices Using the Combined Method.....	184
<i>Yevhen Baida, Mykola Leliuk, Oleksandr Sereda, Olena Sereda, Viktoriia Lytyynenko</i>	
Analysis of Entropy Indicators of Electromyographic Signals for Differential Diagnostics of Low Back Pain.....	189
<i>Tatyana Zhemchuzhkina</i>	
Nonstoichiometric Nickel Oxide Films Deposited by SILAR Method on Flexible Polyimide Substrates	193
<i>Natalia Klocho, Volodymyr Kopach, Dmytro Zhadan, Sergey Petrushenko, Kinga Adach, Sergei Dukarov</i>	
Refined Research and Optimization of Energy Modes of a Frequency-Regulated Induction Motor with a Fan Load	198
<i>Volkov Vladymyr Aleksandrovich, Antonov Nikolay Leonidovich</i>	
The Magnitude and Shape of the Commutating Voltage of a Three-Phase Two-Bridge Compensating Converter	204
<i>Valerii Boiko, Oleksandr Shkardun, Mykola Buryk</i>	
Optimization of Neural Network Calculations Using Integer Arithmetic	210
<i>Oleksandr Zakovorotnyi, Andrii Khulap</i>	
Regulating the Properties of Dielectric Materials in the MgO – Al ₂ O ₃ – TiO ₂ System	214
<i>Oksana Borysenko, Sergey Logvinkov, Halyna Shabanova, Vadym Arefiev, Anton Ishchenko, Serhii Bykanov</i>	

Propagation of Terahertz Laser Vortex Beams from a Metal Waveguide Resonator.....	218
<i>A. V. Degtyarev, M. M. Dubinin, V. A. Maslov, K. I. Muntean, O. O. Svystunov</i>	
An Intelligent Method for Recognizing Real and Generated Ukrainian-Language Voices	223
<i>Khrystyna Lipianina-Honcharenko, Dmytro Lendiuk, Adam Ivaniush, Gena Boguta, Mariana Soia, Khrystyna Yurkiv</i>	
Threshold Conditions for 1-D Model of Laser Cavity Covered with Noble Metal Film.....	229
<i>Serhii S. Herasymov, Oleksandr S. Hnatenko</i>	
Modeling of Domestic Electric Water Heaters for Demand Response.....	233
<i>Vladyslav Kiianchuk, Kostiantyn Makhotilo</i>	
Low-Voltage Silicon P-I-N Photodiode with Increased Collection Coefficient of Minority Charge Carriers and Responsivity.....	239
<i>M. S. Kukurudziak, V. V. Ryukhtin</i>	
Specific Electrical Resistance of Coke as a Characteristic of Its Consumer Properties	243
<i>Vladyslava Vladymyrenko, Igor Shulga</i>	
Optimizing Energy Management in Shopping Centers with Smart Grid and Solar Power	247
<i>Oleh Yevseienko, Petro Kachanov</i>	
Managerial Approaches to Navigating Renewable Energy Investment Globally.....	253
<i>Hanna Koptieva, Nataliia Krasnokutska, Olena Kruhlova</i>	
Computer Modeling of Optimal Chemical Composition of Polymer Epoxy Composites for Electromagnetic Radiation Absorbing.....	259
<i>Maksym Riabchenko, Anna Cherkashina, Aleksandr Bliznyuk, Volodimir Lebedev, Natalia Kryvobok, Oleksii Shestopalov</i>	
Study of the Architectural Features of the ResNet Neural Network Model for Solving the Task of Speaker Recognition.....	263
<i>Olesia Barkovska, Ihor Velykodnyi, Oleksii Liashenko, Yaroslav Davydov, Ihor Ivanisenko</i>	
Optimization Methods and Transfer Learning for Brain Tumor Detection Model.....	268
<i>Serhii Misochenko, Konstantin Gnetnev, Karina Selivanova</i>	
Ternary Compounds of the BaO-Al ₂ O ₃ -SiO ₂ System and Heterogeneous Dielectrics Based on Them.....	272
<i>Viktoriia Taranenkova, Sergey Logvinkov</i>	
Methodology for Quantitative Assessment of Quality Characteristics in Distributed Systems and Microservices	277
<i>Anton Shantyr</i>	
Selection of BESS Management Strategy and Capacity for Prosumer Microgrid Revenue.....	283
<i>Oleksandr Kulapin, Andrii Ivakhnov, Stanislav Fedorchuk, Kostiantyn Makhotilo, Dmytro Danylchenko, Olexii Bulhakov</i>	
Study of the Operational Regimes of the Sunbrick Solar Simulator	288
<i>Mykhailo Kirichenko, Roman Zaitsev, Kseniia Minakova, Stanislav Lelyuk, Oleksandr Kuzyakin, Andrii Dobrozhan</i>	
The Markov Model of Free Space Optical Network Monitoring System.....	294
<i>Mehman Hasanov, Sahib Piriev, Nadir Atayev, Irade Devrishova, Turana Rasullu, Ulvi Yusufli</i>	

Meta Model of Magnetic Field of Extended Technical Object in Prolate Coordinate System	298
<i>B. Kuznetsov, I. Bovdii, T. Nikitina, K. Chunikhin, O. Voloshko, V. Kolomiets</i>	
Self-Organization Algorithms for Movement Control of a Multicopter Swarm.....	304
<i>Valerii B. Uspenskyi, Natalia V. Shyriaieva</i>	
Development and Experimental Study of a Plasma Flow Generator for Dermatological Applications.....	310
<i>Yevhen Chuhui, Tatyana Nosova, Valentin Filatov</i>	
Modeling of Soft Switching Bridge Converter.....	314
<i>Yevhen Vereshchago, Vitalii Kostiuchenko, Yevhen Stohniienko, Andrii Yeremenko</i>	
A Method for Deterministic Signal Detection on the Background of Noise Based on the Neural Network.....	320
<i>Nazar Yehorov, Maksym Zaliskyi, Bohdan Chumachenko, Denys Bakhtiiarov</i>	
Peculiarities of Apparatus Methods of Diagnostics of Skin Diseases.....	326
<i>Olha Isaieva, Irina Moroz, Valentin Filatov, Ivan Strilets, Natalia Shushliapina, Vasyl Rossikhin</i>	
Analysis of Methods of Building and Researching of Fuzzy Cognitive Models.....	332
<i>Anatolii Adamenko, Oleksandr Zakovorotnyi, Nina Kuchuk</i>	
The Effect of the Design Paddle Electrothermomechanical System on Duration of Heating Substance in the Biogas Reactor	336
<i>Mykhailo Spodoba, Oleksandr Spodoba</i>	
Nonlinear Dynamics of Electromechanical Tracking Systems.....	341
<i>B. Kuznetsov, I. Bovdii, O. Voloshko, T. Nikitina, V. Kolomiets, B. Kobylanskyi</i>	
Zinc Oxide Based Particles with Hierarchical Structure for Surface Wetting Modification	347
<i>Oleksii Myronyuk, Li Che, Anna Bilousova, Yaroslav Pitak</i>	
Study of Structural Properties of Cadmium Telluride Films Obtained on Different Substrates	351
<i>Kseniia Minakova, Roman Zaitsev, Mykhailo Kirichenko, Rostyslav Saprykin, Mykhailo Khrypunov, Anton Drozdov</i>	
Increasing the Heat Resistance and Reducing the Flammability of Reinforced Plastics Used for Electroengineering Purposes	357
<i>Oleh Karandashov, Viacheslav Avramenko, Lidiia Pidhorna</i>	
Development of the Architecture of Energy-Saving Automated Control System for Heat and Power Enterprises of the National Economy	363
<i>Gennadii Kaniuk, Hanna Hrinchenko, Andrii Mezeria, Oleksandr Kupriyanov, Yuliya Danylenko, Tetiana Fursova</i>	
Resource-Saving Cryptography for Microcontrollers in Biomedical Devices	369
<i>Inna Rozlomii, Serhii Naumenko, Pavlo Mykhailovskiy, Veronika Monarkh</i>	
Methodology for Creating Annotated Datasets of Biological Objects in Microscopic Images	374
<i>Sergii Kovalenko, Svitlana Kovalenko, Alexander Kutsenko, Mykhailo Godlevskiy, Valery Severin, Anton Kovalenko</i>	

Research on the Performance of Porous-Si/Si Photoconverters by Optimizing the Anti-Reflective Coating Using PC1D Modeling.....	380
<i>Alena Dyadenchuk, Serhii Halko, Kateryna Halko, Oleksandr Miroshnyk, Lina H. Hussienat, Oleksandr Moroz</i>	
Wetting of Polylactic Acid Solution Blow Spinning Nonwoven Materials.....	385
<i>Denys Baklan, Anna Bilousova, Yaroslav Pitak</i>	
Laser Processing Parameters Optimization of Carbon Fiber Reinforced Structural Plastics.....	389
<i>Oleksiy Myronyuk, Denys Baklan, Anna Bilousova, Egidijus Vanagas, Paulius Šlevas, Yaroslav Pitak</i>	
Technology of Production of Radio-Transparent Ceramic Materials	394
<i>Ruslan V. Kryvobok, Karina V. Bilogubkina, Olena Y. Fedorenko, Georgiy V. Lisachuk, Valentyna V. Voloshuk, Oleksandr M. Tarasenko, Yuliia L. Tataryntseva, Mykola O. Tarasenko</i>	
Correlation of Thermal Mode with the Limit Electrical Load of High Voltage Carbon Resistors	400
<i>Denys G. Koliushko, Serhii S. Rudenko</i>	
Biomechanical Analysis of Stress Fields in Atrophic Posterior Maxilla with Implant-Supported Cantilever Crown	405
<i>Larysa Linetska, Andrii Kipenskyi, Vladislav Demenko, Igor Linetskiy, Oleg Yefremov, Andrii Kondratiev</i>	
A Multi-Parameter Method for Dielectric Liquid Media Physical and Chemical Parameters Determining.....	410
<i>Vadym Sebko, Valerii Zdorenko, Nataliia Zashchepkina, Antonina Sakun, Nataliia Zabiaka, Oleh Adashevskyi</i>	
Mathematical Model of Electromagnetic Transients of a Frequency-Controlled Propeller's Induction Motor.....	416
<i>Dmytro Kulagin, Igor Maslov</i>	
Cloak Control of Thermal and Electric Fields in Anisotropic Semiconductor Concentrically Inhomogeneous Media	421
<i>Oleg Rybin, Muhammad Raza, Sergey Shulga, Amna Shahbaz, Oleksii Kobieliev, Trokhym Baula</i>	
Justification for Transitioning Equipment to Direct Current for Smart Small Enterprises with Sustainable Solar Power Autonomy	425
<i>Iryna Bashynska, Liubov Niekrasova, Dmytro Ivliev, Marek Dudek, Volodymyr Kosenkov, Andrii Yakimets</i>	
Experimental Analysis and Modification of the Rotor System with Passive and Active Magnetic Bearings to Improve Its Dynamic Characteristics	431
<i>Gennadii Martynenko, Volodymyr Martynenko</i>	
Possibilities of Modern Stereoendoscopy in Rhinology.....	437
<i>Andrii Sokoltsov, Nataliia Shushliapina, Yana Nosova, Ibrahim Younouss Abdelhamid, Oleg Avrunin</i>	
Evaluation of the Parameters of a Soft Switching DC/DC Converter with a Modified Push-Pull Current Source Inverter Stage for Photovoltaic Systems	442
<i>Volodymyr Ivakhno, Volodymyr Zamaraiiev, Oleksandr Plakhtii, Dmitry Vinnikov, Volodymyr Nerubatskyi, Denys Hordiienko</i>	

Special Properties of Composite Materials of Alkaline Earth Element Oxide Compounds	448
<i>Olena Khrystych, Alla Korohodska, Halyna Shabanova, Maksim Kustov</i>	
Analysis of Trade-Offs Between Accuracy and Speed of Real-Time Object Detectors for the Tasks of Explosive Ordnance Detection.....	452
<i>Vadym Mishchuk, Andrii Podorozhniak</i>	
Initial Dynamic Characteristics of the Processes Under Magnetic-Pulsed Transportation of the Conductor in the Guiding Structure.....	457
<i>Yuriy Batygin, Svitlana Shinderuk, Evgen Chaplygin, Tetyana Gavriloza, Olena Yeryomina</i>	
Miniature Hybrid Quantum Optomechanical Sensors for Acceleration Measurements	462
<i>Marina Rezinkina, Oleg Rezinkin, Claus Braxmaier, Fedor Jelezko</i>	
Application of the Hall Effect to Excite Electric Current in a Biological Substance	466
<i>Igor Bondarenko, Oleg Avrunin, Yana Nosova</i>	
A Zero-Watermarking Algorithm for Use in RGB and Monochrome Images	470
<i>Vadym Poddubnyi, Roman Gvozdoz, Oleksandr Sievierinov, Vladyslav Sukhoteplyi, Serhii Bulba, Dmytro Lysytsia</i>	
Basic Principles of Creation of Biomimetic Glass-Ceramic Materials for Dental Use	475
<i>Oksana Savvova, Oleksii Fesenko, Olena Babich, Ihor Yanishyn, Olena Fedotova, Inna Zaitseva</i>	
Determining Dielectric Properties of Wood-Polymer Composite from Secondary Thermoplasts with Modified Wood Filler	481
<i>Serhii Kopylov, Anna Cherkashina, Oleksandr Kiessaiev, Svitlana Avina, Artem Kariev, Alexander Sincheskul</i>	
Effect of Indium Doping on Structural and Optical Characteristics of ZnO:In Nanoparticles	485
<i>Maksym Yermakov, Roman Pshenychnyi, Anatoliy Opanasyuk, Vladyslav Yevdokymenko, Anatolii Novhorodtsev, Yurii Shkyria</i>	
The System of Electric Drive of the Dragging Camp During the Automation of the Technological Process of Drawing Steel Wire.....	491
<i>Oksana Khrebtova, Oleksandr Shapoval, Oleg Khrebtov, Mykhailo Rudykh, Maryna Babaryka, Tatyana Kozlovs'Ka</i>	
How the Parameters of Pulse Electrolysis Determine the Structure of Chromium Oxide Composites	497
<i>Viktoriia Shtefan, Nataliia Balamut, Nadiia Kanunnikova, Anastasiia Shchokolova</i>	
Theoretical Analysis of Peculiarities of Phase Formation of Ferromagnetics of CoO – BaO – Fe ₂ O ₃ System	503
<i>Tsapko Nataliia, Halyna Shabanova, Sergey Logvinkov</i>	
Challenges of Tracking Motor Disorders Using Smartphone-Based Computer Vision.....	507
<i>Marko Andrushchenko, Karina Selivanova</i>	
Portable Device for Purifying and Disinfecting Water in Extreme Conditions	512
<i>Roman Tomashevskyi, Bohdan Vorobiov, Nadiia Kanunnikova, Oleksii Shestopalov, Oleksandr Haiduchok, Hanna Kniazieva</i>	
Distribution of the Seebeck Coefficient in Bi ₂ Te ₃ Obtained by Direct Melting Method.....	517
<i>T. M. Shelest, A. V. Meriuts, O. S. Vodorig, T. I. Khranova</i>	

Numerical Modeling and Optimization of Solar Cells Based on the WSe ₂ /MoS ₂ P-N Heterojunctions	521
<i>Ivan Buryk, Larysa Odnodvoret, Mykola Buryk, Maksym Ivashchenko</i>	
Study of the Possibility of Placing the Transformer Underground in Compliance with the Thermal Regime	525
<i>Dmytro Danylchenko, Tymofii Meshkov</i>	
Mixed-Integer Linear Programming Solvers for Local Grid Capacity Planning Problems.....	530
<i>Sergii Saukh, Taras Puchko</i>	
Uncertainty of Patch Matching for Isotropic and Anisotropic Textures of Multimodal Remote Sensing Images.....	536
<i>Mykhail Uss, Benoit Vozel, Vladimir Lukin</i>	
Transformative Neural Networks for Technical Text Generation: Context Length Dependence Analysis	541
<i>Ihor Mykhailichenko, Heorhii Ivashchenko, Tetiana Filimonchuk, Oleksii Liashenko</i>	
Current State and Future Prospects of Using SF ₆ Gas as an Insulation in the Electric Power Industry.....	546
<i>Oleksandr Grechko, Oleksii Kulyk</i>	
High-Strength Radio-Transparent Glass-Ceramic for Armor Protection of Ground and Aviation Equipment	552
<i>Oksana Savvova, Oleh Tur, Vadym Tymofieiev, Oleksii Fesenko, Valerii Hordiichuk, Maksym Tymoshchuk</i>	
Running Wave Interferometer with Active Medium.....	558
<i>Oleksandr Andreiev, Olga Andreieva, Fedir Abramov</i>	
High-Frequency Model of the Ship System «Voltage Source Inverter with Pulse Width Modulation - Asynchronous Motor»	562
<i>Maksym Kozlov, Dmytro Zhuk, Oleksandr Zhuk, Valentine Linchenko</i>	
Analysis of CT Parameters of Trabecular Tissue Density of Vertebral Body	568
<i>Serhii Filimonov, Averianova Liliia, Maksym Tymkovych</i>	
Investigation of the Accuracy of Machine Learning Methods in Prediction of Students Success.....	572
<i>Statsenko Volodymyr, Vladyslav Pylypenko, Vladyslava Skidan, Antonina Volivach</i>	
The Role of Electrical Engineering and Digital Technologies in Sustainable Mining: A Path to Ecological and Economic Prosperity	576
<i>Olga Maslak, Mariya Maslak, Natalya Grishko, Yaroslava Yakovenko, Olha Hlazunova, Andrii Antonov</i>	
Software Development for Modeling Microstructures of Polycrystalline Materials by Cellular Automata Method.....	582
<i>Valeriia Hritskova, Oleh Semenenko, Mariia Shapovalova, Oleksii Vodka</i>	
Rationale of the Design of Antenna Systems for the Control of Insect Pests of Agricultural Crops	588
<i>Natalia Kosulina, Kostiantyn Korshunov, Stanislav Kosulin, Svitlana Kuskova, Mariia Chorna, Vitaly Sukhin</i>	
Evaluation of MPPT Efficiency as a Function of PV Current Ripple	594
<i>Oleksandr Plakhtii, Volodymyr Zamaruev, Volodymyr Ivakhno, Dmitry Vinnikov, Volodymyr Nerubatskyi, Maryna Filipieva</i>	

Mobile Portable Power Plants Based on Heat Engines, Technical Condition Monitoring and Control	600
<i>Anatolii Borysenko, Borys Kubryk, Olga Lavrinenko, Svitlana Lytvynenko, Yana Ilchakova</i>	
Mathematical Model of Electromagnetic Field Influence on Plant Environment with Insect Pests.....	604
<i>Natalia Kosulina, Kostiantyn Korshunov, Stanislav Kosulin, Victor Shigimaga, Mariia Chorna, Vitaly Sukhin</i>	
The Impact of the Heat Pump Horizontal Ground Heat Exchanger Operation on the Soil Thermal State.....	609
<i>Victoria Tarasova, Oleksandr Tarasov, Mikhail Kuznetsov, Andrii Kostikov, Danylo Shaforostov, Dmytro Hrinchenko</i>	
Electromechanical Systems Continuous Diagnostics Through Parametric Identification and Products Digitalization	615
<i>Irina Kolupaieva, Igor Nevliudov, Yurii Romashov</i>	
Method of Determining Thermophysical Properties of Soil Based on the Solution of Invers Heat Conduction Problems	621
<i>Andrii Kostikov, Mykola Safonov, Victoria Tarasova, Valery Hanchyn, Danil Shaforostov, Anna Vorontsova</i>	
Modeling of a Graphene Monolayer on Metal Substrate: Resonance Regimes	626
<i>Anatolii Poyedinchuk, Petro Melezhik, Nataliya Yashina, Kostyantyn Sirenko</i>	
Infrared H-Polarized Plane Wave Scattering by Dielectric Cylinder with Coplanar Graphene Strips	630
<i>Mstyslav E. Kaliberda, Sergey A. Pogarsky</i>	
Research on the Impact of Climatic Factors on the Properties of Plant-Polymer Composites	634
<i>Artem Kariev, Vitalii Herasymenko, Yuliya Danchenko, Tetyana Tykhomyrova, Vladimir Lebedev</i>	
Detection Computer Network Intrusion Using Deep Neural Networks	638
<i>Svitlana Gavrylenko, Vadym Poltoratskyi</i>	
Method of Detection of Intrusions Based on Stacking Meta-Algorithm	643
<i>Svitlana Gavrylenko, Vladislav Zozulia, Nataliia Khatsko</i>	
Heterogeneous Ensemble Classifier in Medical Decision Support Systems	648
<i>Anatol Y Povoroznyuk, Oksana Povoroznyuk, Anna Filatova</i>	
Using Naïve Bayes Classifier to Indentify Falsified Text Information.....	653
<i>Artem Khovrat, Volodymyr Kobziev</i>	
Multiparametric System for Automated Analysis of the Current Technical Condition of Power Transformers.....	657
<i>Volodymyr Zinovkin, Mykola Antonov, Iurii Krysan, Andrii Pyrozhok</i>	
The Method of Dynamic Routing in Self-Healing Networks	663
<i>Shyman Anna, Nina Kuchuk, Andriy Kovalenko, Svitlana Kashkevich, Stanislav Partyka, Oleksandr Yankovskyi</i>	
Management of Power Grid Modes in Conditions of High Heterogeneity	668
<i>Pylyp Hovorov, Anastasiia Kindinova, Roman Trishch, Eduard Khomiak, Olena Cherniak, Katrych Oleh</i>	

Effect of Lithium Ion on Electrochemiluminescent Response of Sensors Based on Langmuir-Blodgett Films with Polycyclic Organic Phosphors	673
<i>Danylo Martynov, Dmytro Snizhko, Mykola Slipchenko, Yuriy Zholudov</i>	
Study of a Pulsed Radio Source of Radiation in the Centimeter Range for the Destruction of Insect Pests of Agricultural Crops.....	678
<i>Natalia Kosulina, Kostiantyn Korshunov, Stanislav Kosulin, Hennadii Lyashenko, Mariia Chorna, Vitaly Sukhin</i>	
Comprehensive Solution of Issues of Voltage Regulation and Compensation of Reactive Power in Power Supply and Lighting Systems of Cities	682
<i>Pylyp Hovorov, Vladlen Hovorov, Mykola Khvorost, Anastasiia Kindinova, Roman Trishch</i>	
Application of Transformers in Financial Analysis: Forecasting Stock Prices and Trading Volumes	688
<i>Roman Trembovetskyi, Inna Rozlomii, Marharyta Chemerys</i>	
Effect of Transition to Impurity Continuum on Thermoelectric Properties of the Semiconductor (Bi _{1-x} Sb _x) ₂ Se ₃ Solid Solutions.....	693
<i>Olena Rogachova, Svitlana Menshikova, Kateryna Martynova, Olga Nashchekina, Tetiana Shelest, Andrii Meriuts</i>	
A Study on the Accuracy of Identification of the Oculo-Motor System Based on Integral Models.....	698
<i>Vitaliy Pavlenko, Denys Lukashuk</i>	
Optimization in Speed of a Positional Electric Drive Using Refined Jerk Prediction Technique	704
<i>Oleksandr Derets, Oleksandr Sadovoi, Serhiy Derets</i>	
Theoretical Foundations and Synthesis of Spinel-Type Ferrites Using the Nitrate-Citrate Method.....	708
<i>Olena Fedorenko, Olesia Romanova, Stanislav Lihesin</i>	
Using Nanocomposite Materials to Strengthen Cylindrical Panels with Complex Base.....	712
<i>Maryna Chernobryvko, Konstantin Avramov</i>	
Electronic Parts to Design Colour Measurements Device for Analytical Applications.....	716
<i>Yuriy Zholudov, Semenii Oleksandr, Serhii Bakin, Volodymyr Kyriy, Guobao Xu, Dmytro Snizhko</i>	
Indirect Influence of Renewable Energy Usage on Countries' Stability and Companies' Competitiveness: A Preliminary Analysis	720
<i>Pavlo Brin, Olena Prokhorenko, Taras Danko, Rosa Lombardi, Salvatore Principale, Riccardo Savio</i>	
Efficiency of Miniplates Fixation in Mandibular Oblique Fractures.....	726
<i>Andrii Kondratiev, Michael Sutcliffe, Vladislav Demenko, Igor Linetskiy, Oleg Yefremov, Larysa Linetska</i>	
Strategies for Filtering Unwanted Comments in Social Media	732
<i>Andrii Podorozhniak, Vasyl Oliinyk, Nataliia Liubchenko</i>	
Methods and Means of Increasing the Accuracy of Assessment Technological Losses of Electricity in Distribution Overhead Power Lines	736
<i>Viacheslav Bezruchko, Roman Buinyi, Anatoliy Prystupa, Anatolii Sereda, Heorhii Kozachok</i>	
Decentralized WAMS for Railway Overhead Lines with Audio-Based Drone Detection.....	741
<i>Dmytro Bosyi, Oleg Sablin, Iryna Potapchuk</i>	

Mathematical Modeling of Heat and Mass Transfer in Capillary-Porous Structure of Heat Accumulators with Wet Sand	747
<i>Dmytro Hrinchenko, Victoria Tarasova, Mikhail Kuznetsov, Andrii Kostikov, Oleksandr Tarasov, Danylo Shaforostov</i>	
Properties of Resonant Converter as Controlled Object with Amplitude, Frequency and Pulse-Width Methods of Output Voltage Regulation	753
<i>Gennadiy Pavlov, Andrii Obrubov, Iryna Vinnychenko, Anatolii Kazariezov</i>	
Compensation of the Electrodes Skewing Error of Runout Capacitive Sensors for Hydro Generators Condition Monitoring System	759
<i>Ievgen Zaitsev, Viktoriia Bereznychenko, Sergiy Zakusilo</i>	
Drone Image Reconstruction Using Autoencoder Architecture.....	763
<i>Vitalii Vlasenko, Andrii Dashkevych</i>	
The Active Power of an Induction Generator with a Single Excitation Capacitor at Different Ways of the Load Switching	768
<i>Vladyslav S. Markov, Natalia V. Kriukova, Yevgen V. Honcharov, Ihor V. Poliakov</i>	
Business Process Control-Flow Complexity Prediction Using Machine Learning-Based Tool	773
<i>Andrii Kopp, Dmytro Orlovskiy, Sergey Orekhov</i>	
Identification of Mathematical Model Parameters of Control Object by S-Shaped Acceleration Curve	779
<i>Alina Kazurova, Yevhen Potapenko, Dmytro Tishyn, Kostiantyn Sknar, Denys Tomin</i>	
2D MoS ₂ Layer as Element of Terahertz Range Antenna.....	785
<i>Dmitry Shtoda, Valerii Zozulia, Oleg Botsula, Sergiy Berdnyk, Kyrylo Prykhodko, Svetlana Fedosova</i>	
Calculated Elastic Constants of CdS and CdTe Thin Films with Cubic and Hexagonal Crystal Structure for Stress Problems	789
<i>Andrii Dobrozhan, Alina Khrypunova, Kseniia Minakova, Roman Zaitsev, Mykhailo Kirichenko, Anton Drozdov</i>	
Symbolic Regression-Based Models for Hyperelastic Material.....	793
<i>Nataliia Fomenko, Oleksiy Larin</i>	
Stripping Voltammetry of Zn-Ni-Cu Alloy Nanoscale Films	798
<i>Antonina Maizelis</i>	
Fabrication and Investigation of W/Mg ₂ Si Multilayer X-Ray Mirrors for the 0.9-2.5 nm and 25–35 nm Wavelength Ranges	802
<i>Leonid Konotopskyi, Serhii Surovitskiy, Serhii Malykhin, Igor Mikhailov, Igor Kopylets, Anton Mikhailov, Tetiana Konotopska, Antonina Mayzelis</i>	

Author Index