

2021 Dynamics of Systems, Mechanisms and Machines (Dynamics 2021)

**Omsk, Russia
9-11 November 2021**



**IEEE Catalog Number: CFP21RAB-POD
ISBN: 978-1-6654-3173-6**

**Copyright © 2021 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:	CFP21RAB-POD
ISBN (Print-On-Demand):	978-1-6654-3173-6
ISBN (Online):	978-1-6654-3172-9
ISSN:	2381-7593

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

NIST TESTING OF A KNAPSACK SYMMETRIC CRYPTOSYSTEM ON HAMLIN CODES USING SOURCE BLOCK INJECTIONS	1
<i>A. V. Aleksandrov, A. V. Telny, A. V. Fomich, I. I. Sorokin</i>	
DEVELOPMENT OF PROBABILISTIC MODEL OF SHORT-TERM POWER SUPPLY INTERRUPTIONS.....	6
<i>V. R. Antropova, I. S. Sukhachev, V. V. Sushkov, A. S. Martyanov</i>	
ACCURACY OF MEASURING THE FREQUENCY AND TIME OF ARRIVAL OF THE USEFUL SIGNAL IN THE PRESENCE OF ADDITIVE AND MULTIPLICATIVE LOW LEVEL NOISE	11
<i>V. M. Artyushenko, V. I. Volovach</i>	
ANALYSIS OF RELATIONS BETWEEN THE CHARACTERISTICS OF THE ENSEMBLE OF SIGNAL IMPLEMENTATIONS DISTORTED BY FLUCTUATION MODULATING NOISE AND INDIVIDUAL REALIZATIONS OF THIS SIGNAL.....	17
<i>V. M. Artyushenko, V. I. Volovach</i>	
SIMULATION OF THE OPERATION OF AN AUTONOMOUS HYBRID ELECTRICAL POWER SYSTEM FOR DECENTRALIZED POWER SUPPLY	22
<i>P. V. Belyaev, D. A. Podberezkin</i>	
INVESTIGATION OF THE LOAD REGULATION LIMITS OF AN ELECTRICAL POWER SYSTEM WITH A SOLID OXIDE FUEL CELL	27
<i>P. V. Belyaev, D. A. Podberezkin</i>	
A COMPARISON OF THE DIFFERENT GAAS PHEMT LOGIC FAMILIES CHARACTERISTICS.....	31
<i>D. V. Bilevich, A. S. Salnikov, A. A. Popov, A. A. Kalentyev, A. E. Goryainov</i>	
PHASE TRAJECTORIES CURVATURE COMPUTING FOR QUALITATIVE ANALYSIS OF SPACECRAFT DYNAMICS AS VARIABLE STRUCTURE BODIES	36
<i>Anton Doroshin, Mikhail Krikunov</i>	
THE PECULIAR MEASURE IDENTIFYING OF THE TEMPERATURE LEAP IN THE DISTRIBUTED RAMAN SENSORS.....	40
<i>Ivan A. Ershov, Oleg V. Stukach, Raushan Zh. Aimagambetova</i>	
TUNING A SIMULATED ANNEALING HEURISTIC FOR IRREGULAR POLYOMINO TILING.....	44
<i>Aigul Fabarisova, Vadim Kartak</i>	
THE SYNCHRONIZATION OF READING AND WRITING IN IMPLEMENTATION OF TDOA ESTIMATOR ON A SINGLE BOARD COMPUTER.....	49
<i>Vladimir Faerman, Valeriy Avramchuk, Mikhail Shvetsvov</i>	
USING PORTRAITS OF N-NORMS FOR LARGE-SCALE INVESTIGATION OF CIRCUITS WITH MODAL RESERVATION	54
<i>R. R. Gazizov, A. V. Medvedev, T. R. Gazizov</i>	
DEVELOPMENT OF AN AC / DC CONVERTER FOR POWERING A LOAD OF 540 V DC.....	58
<i>Flyur Ismagilov, Viacheslav Vavilov, Denis Gusakov, Kirill Barabanov, Iskander Garipov</i>	

ANALYSIS OF POWER DISSIPATION IN A TURN OF A MEANDER MICROSTRIP LINE.....	65
<i>Salim Karri, Roman Surovtsev</i>	
GEOECOLOGY OF TECHNOGENIC INFRASOUND	70
<i>Marat Khairtdinov, Gyulnara Shimanskaya, Oksana Kopylova</i>	
RESEARCH OF THE ADAPTIVE CURRENT SHORT-CIRCUIT PROTECTION IN ELECTRICAL DRIVES	75
<i>Regina Khazieva, Petr Vasilyev, Radmir Aflyatunov</i>	
MODELING AN AC VOLTAGE GENERATOR TO CREATE A PULSE ELECTROMAGNETIC FIELD.....	80
<i>Regina Khazieva, Maksim Ivanov</i>	
DESIGNS FOR MOUNTING REED SWITCHES INSIDE COMPLETE CONDUCTORS.....	85
<i>Mark Kletsel, Alexandr Barukin, Bauyrzhan Mashrapov</i>	
DETERMINATION OF THE ECONOMIC EFFICIENCY FROM THE DOWNHOLE COMPENSATORS' INTRODUCTION, UNDER THE AVERAGE ELABORATION TO FAILURES.....	90
<i>V. A. Kopyrin, M. V. Deneko, A. A. Markova, A. V. Pashina, R. N. Khamitov</i>	
THE DETECTION CHARACTERISTICS OF AN ULTRA-WIDEBAND QUASI-RADIO SIGNAL WITH AN UNKNOWN ARRIVAL TIME.....	94
<i>Yu. E. Korchagin, K. D. Titov, O. N. Zavalishina</i>	
DIAGNOSTICS OF ELECTRICAL EQUIPMENT OF ARMORED VEHICLES WITHOUT BREAKING THE CIRCUIT OF THE TRANSMITTING LOOP.....	99
<i>K. V. Kostin, K. S. Kryukov, I. Yu. Lepeshinsky, I. Yu. Kardashev</i>	
ANGULAR MOTION ANALYSIS OF DYNAMICALLY ASYMMETRICAL VARIABLE STRUCTURE SPACECRAFT BY THE PHASE TRAJECTORY CURVATURE METHOD	103
<i>Mikhail Krikunov</i>	
MODELING THE OPERATING MODES OF A FCD BASED ON A HYBRID INDUCTIVE-CAPACITIVE ELEMENT IN POWER SUPPLY SYSTEMS	106
<i>G. S. Kuleshova, D. V. Mikheev</i>	
MODELING THE PROCESSING OF NON-POISSONIAN IIOT TRAFFIC BY INTRA-CHIP ROUTERS OF NETWORK DATA PROCESSING DEVICES.....	111
<i>D. Kutuzov, A. Osovsky, O. Stukach, N. Maltseva, D. Starov</i>	
MOBILE MEDIUM FREQUENCY RADIO BEACON FOR THE ARCTIC	115
<i>A. N. Lyashuk, E. A. Chashin, S. A. Zavyalov</i>	
SENSORLESS SCALAR ASYNCHRONOUS ELECTRIC DRIVE FOR PRESSURE STABILIZATION OF THE PUMPING UNIT.....	119
<i>O. A. Lysenko</i>	
REED-SWITCH SHORT-CIRCUIT PROTECTION WITH ZERO-SEQUENCE CURRENT FILTER, SELF-DIAGNOSTICS AND DUPLICATION	124
<i>Bauyrzhan Mashrapov, Assemgul Zhanitlessova</i>	
ALGORITHM FOR MAXIMIZATION OF INTEGRAL AVAILABILITY IN SOFTWARE DEFINED NETWORKS.....	130
<i>Anna Matveeva, Yuri Monakhov, Mikhail Monakhov, Andrey Telny, Sergey Matveev</i>	

INVESTIGATION OF PARTIAL DISCHARGE CHARACTERISTICS IN SWITCHGEAR BUSHINGS	136
<i>D. A. Polyakov, N. A. Tereschenko, K. I. Nikitin, I. S. Khasibov</i>	
ON SOLUTION OF STATIC ELASTOPLASTIC PROBLEMS CONSIDERING DYNAMIC PROCESSES*	140
<i>B. B. Rikhsieva, B. E. Khusanov</i>	
FACE RECOGNITION IN BIOMETRIC SYSTEMS USING HAAR CASCADE CLASSIFICATION.....	145
<i>L. Kh. Safiullina, A. Sh. Gabdullin, I. V. Anikin</i>	
THE USE OF SPEECH RECOGNITION SYSTEMS TO SELECT A USEFUL SIGNAL IN NOISY SPEECH AT A LOW SIGNAL-TO-NOISE RATIO	150
<i>Sh. R. Salimov, N. A. Volkov, A. V. Ivanov</i>	
DEVELOPMENT OF A SET OF PROCEDURES FOR PROVIDING REMOTE ACCESS TO A CORPORATE COMPUTER NETWORK BY MEANS OF THE SSH PROTOCOL (USING THE EXAMPLE OF THE CISCO IOS OPERATING SYSTEM).....	154
<i>A. M. Shabalin, E. A. Kaliberda</i>	
DIAGNOSING CONTINUOUS DYNAMIC SYSTEMS BY CHANGING THE POSITION OF THE INPUT SIGNAL.....	159
<i>S. V. Shalobanov, S. S. Shalobanov</i>	
DIAGNOSTICS OF CONTINUOUS DYNAMIC SYSTEMS USING LOGIC FUNCTIONS	164
<i>S. V. Shalobanov, S. S. Shalobanov</i>	
CONFIGURING SMITH PREDICTOR PARAMETERS FOR A VARIABLE LINE FEATURE	169
<i>I. X. Siddikov, D. M. Umurzakova</i>	
PRELIMINARY THERMAL SOLUTION OF THE MAGNETIC SYSTEM OF A SYNCHRONOUS GENERATOR WITH THE COMMON CYLINDRICAL MAGNETIC CORE	177
<i>A. A. Tatevosyan, N. V. Zaharova</i>	
ON THE POSSIBILITY OF USING COGNITIVE APPROACHES IN INFORMATION SECURITY TASKS.....	181
<i>A. V. Telny, M. Yu. Monakhov, A. V. Aleksandrov, A. P. Matveeva</i>	
AMPLITUDE-FREQUENCY CHARACTERISTIC OF THE DEVICE FOR MEASURING ESTIMATES OF THE CHARACTERISTIC FUNCTION OF SIGNAL.....	187
<i>D. A. Titov, A. S. Tabakova, I. V. Yunkin</i>	
DYNAMICS OF OPERATION OF PNEUMATIC ARCH DESTRUCTION DEVICE.....	194
<i>A. A. Vorobyov, A. A. Migrov, A. A. Krutko, D. A. Sedykh</i>	
BUILDING A MESH NETWORK MODEL WITH THE TRAFFIC CACHING BASED ON THE P2P MECHANISM	198
<i>Alexander Zharikov, Olga Konstantinova, Oleg Ternovoy</i>	
BIOMETRIC AUTHENTICATION ON THERMOGRAPHIC FACIAL IMAGES USING NEURAL NETWORK “BIOMETRICS-TO-CODE” CONVERTER.....	203
<i>S. S. Zhumazhanova</i>	
USER AUTHENTICATION BY FACE THERMOGRAMS BASED ON HYBRID NEURAL NETWORKS.....	207
<i>S. S. Zhumazhanova, I. D. Tatarinov</i>	

Author Index