

XV International Scientific- Technical Conference "Dynamics of Technical Systems" (DTS-2019)

IOP Conference Series: Materials Science and Engineering
Volume 680

Rostov-on-Don, Russia
11 - 13 September 2019

ISBN: 978-1-7138-0932-6
ISSN: 1757-8981

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

SECTION 1. FUNDAMENTALS OF MECHANICS, DYNAMICS AND TRIBOLOGY OF MACHINES

COMPUTER SIMULATION OF KINETICS OF PARALLEL MECHANISMS.....	1
<i>O V Mkrtychev, A V Kartygin</i>	
EXPERIMENTAL STUDIES OF ROTATORY ROLLING OF LONG THIN-WALL PIPES	8
<i>A M Lavrentiev</i>	
EXPERIMENTAL RESEARCH OF FEATURES OF SURFACE TREATMENT USING PLASTIC DEFORMATION	14
<i>Ya N Oteny, A M Lavrentiev</i>	
CONTROL OF GEOMETRICAL PARAMETERS OF A SINGLE LAYER AT ADDITIVE FORMING OF PRODUCTS BY FDM TECHNOLOGY.....	19
<i>A N Grechukhin, V V Kuts, A V Oleshitsky</i>	

SECTION 2. NON-LINEAR DYNAMICS AND APPLIED SYNERGETICS IN TECHNICAL SYSTEMS

BEARING DEFECTS DIAGNOSTICS USING THE PRINCIPAL COMPONENTS ANALYSIS.....	25
<i>E A Abidova, A A Lapkis, A V Chernov</i>	
STUDY OF ADAPTIVE HYDRAULIC DRIVE OF ROTARY DRILLING MACHINE.....	31
<i>M A Lemeshko, S G Stradanchenko, A G Iliev, I A Zanina</i>	
RESEARCH AND ALGORITHMIZATION OF THE PROCESS FOR COMPLETING CLOTHES BY MATERIALS WITH ELECTRIC PROPERTIE	39
<i>I Cherunova, G Kutilina, E Milyutin</i>	
INFORMATION-MEASURING SYSTEM TO IMPROVE THE QUALITY OF MOTION CONTROL ROBOT MANIPULATORS.....	47
<i>K I Goryanina, O I Katin, M A Vernezi, D Yu Donskoy, L A Tregubenko, N X Chiem</i>	
STUDY OF THE INFLUENCE OF THE BASIC SPECTRA OF DISCRETE LIGHT SOURCES ON THE SEEDS OF GREENHOUSE CULTURES	54
<i>D Yu Donskoy, M A Vernezi, O I Katin, K I Goryanina, S G Studennikova, M Petkovic</i>	
ANALYSIS OF THE POSSIBILITY OF LEVITATION OF FERROMAGNETIC BODIES IN A STATIC MAGNETIC FIELD.....	60
<i>M A Vernezi, K I Goryanina, O I Katin, D Yu Donskoy, A D Lukyanov, A N Tooraj</i>	
THE USE OF STATISTICAL ANALYSIS METHODS IN ASSESSING LONG-TERM PROGNOSES IN PATIENTS WITH ACUTE CORONARY SYNDROME AND CONTRAST- INDUCED NEPHROPATHY	68
<i>N Kobzeva, V Terentev, I Zolotuhina</i>	
DETERMINATION OF THE PRACTICAL ACCURACY OF THE OPERATION OF THE SAFETY FRICTION CLUTCH WITH A VARIABLE GAIN INSTALLED IN THE FORGING EQUIPMENT ENSURING THE ABSENCE OF BREAKDOWNS.....	75
<i>K O Kobzev, E S Bozhko, A V Mozgovoii, A G Iliev, A A Kovaleva</i>	

THE STUDY OF THE USE OF MULTI-DISC SAFETY FRICTION CLUTCHES IN THE WORKING BODIES OF CRANK PRESSES	82
<i>K O Kobzev, E S Bozhko, A V Mozgovoï, E I Kostromina, L G Babenko</i>	
THEORETICAL FOUNDATIONS OF THE USE OF SINGLE-CIRCUIT NEGATIVE FEEDBACK IN SAFETY FRICTION CLUTCHES WITH DIFFERENTIATED FRICTION PAIRS INSTALLED IN FORGING EQUIPMENT	90
<i>K O Kobzev, E S Bozhko, A V Mozgovoï, M D Molev, N I Stuzhenko</i>	
ASPECTS OF USING SINGLE-CIRCUIT NEGATIVE FEEDBACK IN A SAFETY FRICTION CLUTCH WITH ALL LEADING FRICTION PAIRS, TAKING INTO ACCOUNT INSTALLATION IN CRANK PRESSES.....	97
<i>K O Kobzev, E S Bozhko, A V Mozgovoï, Y E Chertov, I A Zanina</i>	
OBJECTIVES OF INCREASE OF CAPACITY AND LIFETIME OF MUNICIPAL SOLID WASTE DUMP ACCORDING TO DENSITY INDEX STUDY	103
<i>D Larin, E Staseva, E Khetsuriani</i>	
RECONSTRUCTION OF ELECTROMECHANICAL DEVICE FOR BLOCKING DUST EMISSIONS.....	109
<i>M S Minkin, D N Kuimov</i>	
<u>SECTION 3. ISSUES OF CREATION AND MECHANICS OF HETEROGENEOUS AND COMPOSITE MATERIALS</u>	
MODELING THE MECHANICAL CHARACTERISTICS OF TRIBOTECHNICAL COMPOSITES	116
<i>T V Suvorova, O A Belyak, P G Ivanochkin, S A Danilchenko</i>	
THE ROLE OF LOCAL PLASTIC DEFORMATION IN THE FORMATION OF STRUCTURE AND PROPERTIES OF MATERIALS UNDER EXTREME HEATING.....	122
<i>A V Brover, G I Brover, O B Moysova</i>	
THE HEATING RATE INFLUENCE ON THE ELASTIC MODULUS TEMPERATURE DEPENDENCE OF A CORROSION-RESISTANT NICKEL ALLOY	128
<i>A Yu Zhilyakov, S V Belikov, I B Polovov, A F Gibadullina, E V Elkina</i>	
CONDITIONS AND MECHANISMS OF THE DEFECTS FORMATION IN VACUUM ION-PLASMA COATINGS.....	135
<i>V N Varavka, O V Kudryakov, I Yu Zabyaka, O V Shvedchikova, E A Yadrets</i>	
INVESTIGATION OF OPTICAL PROPERTIES OF QD-INAS/GAAS HETEROSTRUCTURES OBTAINED BY ION-BEAM DEPOSITION.....	143
<i>E E Blokhin, V A Irkha</i>	
THE USE OF THE ATOMIC FORCE MICROSCOPY TO INVESTIGATE THE STRUCTURE OF STEEL 14G2.....	149
<i>V V Duka, V N Pustovoit, D A Ostapenko, L P Arefèva, Yu M Dombrovskij</i>	
DEVELOPMENT OF ABSORBING COATINGS FOR PROTECTION AGAINST ELECTROMAGNETIC POLLUTION OF THE ENVIRONMENT.....	154
<i>Yu Bakhracheva</i>	

SECTION 4. FUNDAMENTAL METHODS OF SYSTEM ANALYSIS, MODELING AND OPTIMIZATION OF DYNAMIC SYSTEMS

MODERNIZED RC4 ENCRYPTION ALGORITHM	159
<i>V Semenov, S Makov, I Grinev</i>	
USING BIG DATA AND ARTIFICIAL INTELLIGENCE TO SOLVE THE FIRE SAFETY PROBLEM OF POTENTIALLY DANGEROUS OBJECTS.....	165
<i>M Shahramanyan, V Marchuk, I Shrayfel, D Chernyshov, B Meskhi, O Ananova</i>	
A MATHEMATICAL MODEL OF SWITCHED-RELUCTANCE MOTOR DRIVE FOR ELECTRICAL SPINDLE IN SYNTHETIC YARN MACHINE	168
<i>P Kolpakhchyan, A Kochin, B Lobov, O Peregudov</i>	
TENSION CONTROL ADAPTIVE SYSTEM SYNTHESIS USED IN WINDING OF PRODUCTS MADE OF "DRY" COMPOSITE MATERIAL.....	174
<i>A Mikitinsky</i>	
PROBABILISTIC-ENTROPY APPROACH TO ENSURE THE OPERATIONAL RELIABILITY OF THE SEAPORT BERTH ELECTRICAL CONTACT BOLLARDS	181
<i>B Lobov, P Kolpakhchyan, S Litskevich</i>	
MODEL AND NUMERICAL EXPERIMENT FOR CALCULATING THE THEORETICAL CURRENT-VOLTAGE CHARACTERISTIC IN ELECTRO-MEMBRANE SYSTEMS	186
<i>M Kh Urtenov, A V Kovalenko, A I Sukhinov, N O Chubyr, V A Gudza</i>	
SUBSTANTIATION OF PARAMETERS OF THE HEAT-SHIELDING PRODUCT FOR DISABLED PEOPLE BY USING THE SYSTEM ANALYSIS AND ALTERNATIVE SYNTHESIS	194
<i>L G Babenko, M D Molev, A B Mikhailov, N Yu Savelyeva</i>	
DEVELOPMENT OF A MATHEMATICAL MODEL FOR DETERMINING THE EMF OF THE SECONDARY WINDING OF A MEASURING CURRENT TRANSFORMER BASED ON THE ROGOWSKI COIL	200
<i>R Oganyan, N Gorbatenko, M Lankin</i>	
CALCULATION OF STRESS-STRAIN STATE OF THE MICROTUNNELING SHIELD HOUSING	207
<i>D A Grinko, A S Khoroshev, M A Zemlyanoy</i>	
MODELING OF COMPETITION BETWEEN AGENTS OF THE SAME LEVEL IN A MULTI-LEVEL SYSTEM WITH INFORMATION ASYMMETRY	214
<i>A Gurtuev, M Dovletmurzaeva, M Chazhaev</i>	
SOME SPECIFICS OF MODELING MULTI-LEVEL AGENT SYSTEMS WITH UNCERTAINTY USING GROVES MECHANISMS	219
<i>A Gurtuev, M Dovletmurzaeva, R Yalmaev</i>	
ALGORITHM OF LINEAR DISCRETE FILTERING WITH FUZZY MODIFICATION OF STRUCTURE.....	226
<i>A Eliseev, O Sokolova</i>	
MODEL OF DEFORMATION OF A FEATHER QUILL WHEN ROLLING WITH A RIBBED ROLLER ON THE FLAT SURFACE	234
<i>Y E Chertov, E Y Fisunova</i>	

DEVELOPMENT OF A NEW METHOD OF MANAGEMENT OF ERGO-TECHNICAL SYSTEM ON THE BASIS OF ITS DYNAMICS MONITORING	242
<i>S O Kramarov, A R Groshev, V V Khramov, A V Belyaev</i>	
GEOMETRIC CONDITIONS OF MATHEMATICAL MODELING OF HUMAN HEAT EXCHANGE PROCESSES WITH THE ENVIRONMENT FOR CAD SYSTEMS CREATING HEAT-SHIELDING CLOTHING	247
<i>I Cherunova, S Tashpulatov, Yu Davydova</i>	
MEDICAL IMAGE INPAINTING USING MULTI-SCALE PATCHES AND NEURAL NETWORKS CONCEPTS	255
<i>N V Gapon, V V Voronin, R A Sizyakin, D Bakaev, A Skorikova</i>	
IMAGE DEFECT DETECTION ALGORITHM BASED ON DEEP LEARNING	261
<i>R A Sizyakin, V V Voronin, N V Gapon, A A Zelensky, A Pižurica</i>	
MODELLING OF ELECTRONICALLY–CONTROLLED FILTERS OF MICROWAVE (SHF), SUBTHZ AND THZ–BANDS BASED ON GRAPHENE META–SURFACES	268
<i>L V Cherckesova, P N Bashly, D A Bezuglov</i>	
MULTI-VIEW IMAGES FUSION MODEL	279
<i>M M Zhdanova, V V Voronin, R A Sizyakin, M S Minkin, A A Zelensky</i>	
MATHEMATICAL MODELING OF THE IMAGE PROCESSING IN TELEVISION SYSTEMS	283
<i>D A Bezuglov, V V Voronin</i>	
SOLVING THE PROBLEM TRANSFORM OF SIZE IMAGES ON SERIES BASE POINTS FOUND ON FRAMES IN THE PROBLEM OF STITCHING IMAGES	289
<i>E Semenishchev, I Shraifel, V Voronin, A Nadykto, V Marchuk</i>	
WAYS TO OPTIMIZE THE PREDICTION OF VASCULAR EVENTS IN PATIENTS WITH ACUTE CORONARY SYNDROME AND ATHEROSCLEROTIC LESIONS OF THE RENAL ARTERIES	294
<i>N Kobzeva, V Terentev, I Zolotuhina</i>	

Author Index