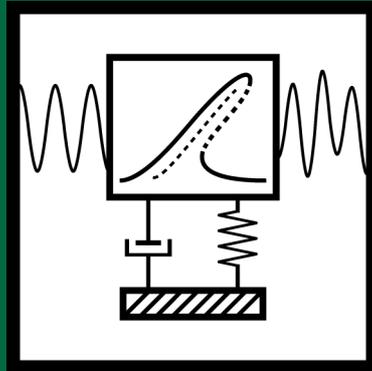


June 2017, Volume 19, Issue 4
Pages (2295-3128), NoP (2463-2521)
ISSN 1392-8716

JVE Journal of Vibroengineering



Editor in chief

K. Ragulskis Lithuanian Academy of Sciences, (Lithuania) k.ragulskis@jve.lt, ragulskis.jve@gmail.com

Managing Editor

M. Ragulskis Kaunas University of Technology, minvydas.ragulskis@ktu.lt
JVE International, (Lithuania) m.ragulskis@jvejournals.com

Editorial Board

H. Adeli The Ohio State University, (USA) adeli.1@osu.edu
V. Babitsky Loughborough University, (UK) v.i.babitsky@lboro.ac.uk
R. Bansevicius Kaunas University of Technology, (Lithuania) ramutis.bansevicus@ktu.lt
M. Bayat Roudehen Branch, Islamic Azad University, (Iran) mbayat14@yahoo.com
I. Blekhman Mekhanobr – Tekhnika Corporation, (Russia) iliya.i.blekhman@gmail.com
K. Bousson University of Beira Interior, (Portugal) bousson@ubi.pt
A. Bubulis Kaunas University of Technology, (Lithuania) algimantas.bubulis@ktu.lt
R. Burdzik Silesian University of Technology, (Poland) rafal.burdzik@polsl.pl
M. S. Cao Hohai University, (China) cmszhy@hhu.edu.cn
Lu Chen Beihang University, (China) luchen@buaa.edu.cn
F. Chernousko Institute for Problems in Mechanics, (Russia) chern@ipmnet.ru
Z. Dabrowski Warsaw University of Technology, (Poland) zdabrow@simr.pw.edu.pl
Y. Duhovnik Institute of Machine Building Mechanics, (Russia) l institut@bk.ru
J. Duhovnik University of Ljubljana, (Slovenia) joze.duhovnik@lecad.uni-lj.si
S. Ersoy Marmara University, (Turkey) sersoy@marmara.edu.tr
A. Fedaravicius Kaunas University of Technology, (Lithuania) algimantas.fedaravicius@ktu.lt
R. Ganiev Blagonravov Mechanical Engineering Research Institute, (Russia) rganiev@nwmtc.ac.ru
W. H. Hsieh National Formosa University, (Taiwan) allen@nfu.edu.tw
V. Kaminskas Vytautas Magnus University, (Lithuania) v.kaminskas@if.vdu.lt
V. Klyuev Association Spektr – Group, (Russia) v.klyuev@spektr.ru
G. Kulvietis Vilnius Gediminas Technical University, (Lithuania) genadijus.kulvietis@vgtu.lt
V. Lyalin Izhevsk State Technical University, (Russia) velyalin@mail.ru
R. Martonka Technical University of Liberec, (Czech Republic) rudolf.martonka@tul.cz
R. Maskeliūnas Vilnius Gediminas Technical University, (Lithuania) rimas.maskeliunas@vgtu.lt
L. E. Muñoz Universidad de los Andes, (Colombia) lui-muno@uniandes.edu.co
V. Ostaševičius Kaunas University of Technology, (Lithuania) vytautas.ostasevicus@ktu.lt
A. Palevičius Kaunas University of Technology, (Lithuania) arvydas.palevicius@ktu.lt
G. Panovko Blagonravov Mechanical Engineering Research Institute, (Russia) gpanovko@yandex.ru
L. Qiu Nanjing University of Aeronautics and Astronautics, (China) lei.qiu@nuaa.edu.cn
S. Rakheja Concordia University, (Canada) subhash.rakheja@concordia.ca
V. Royzman Khmelniyskiy National University, (Ukraine) iftommm@ukr.net
M. A. F. Sanjuan University Rey Juan Carlos, (Spain) miguel.sanjuan@urjc.es
P. M. Singru BITS Pilani, (India) pmsingru@goa.bits-pilani.ac.in
A. El Sinawi The Petroleum Institute, (United Arab Emirates) aelsinawi@pi.ac.ae
E. Shahmatov Samara State Aerospace University, (Russia) shakhm@ssau.ru
G. Song University of Houston, (USA) gsong@uh.edu
S. Toyama Tokyo A&T University, (Japan) toyama@cc.tuat.ac.jp
K. Uchino The Pennsylvania State University, (USA) kenjiuchino@psu.edu
A. Vakhguel't Nazarbayev University, (Kazakhstan) anatoli.vakhguel't@nu.edu.kz
A. Valiulis Vilnius Gediminas Technical University, (Lithuania) algirdas.valiulis@vgtu.lt
P. Vasiljev Lithuanian University of Educational Sciences, (Lithuania) vasiljev@vpu.lt
V. Veikutis Lithuanian University of Health Sciences, (Lithuania) vincetas.veikutis@ismuni.lt
J. Viba Riga Technical University, (Latvia) janis.viba@rtu.lv
V. Volkovas Kaunas University of Technology, (Lithuania) vitalijus.volkovas@ktu.lt
J. Wallaschek Leibniz University Hannover, (Germany) wallaschek@ids.uni-hannover.de
Xiao-Jun Yang China University of Mining and Technology, (China) dyangxiaojun@163.com
Mao Yuxin Zhejiang Gongshang University, (China) maoyuxin@zjgsu.edu.cn
M. Zakrzhevsky Riga Technical University, (Latvia) mzakr@latnet.lv

JVE Journal of Vibroengineering

Aims and Scope

Original papers containing developments in vibroengineering of dynamical systems (macro-, micro-, nano- mechanical, mechatronic, biomechanics and etc. systems).

The following subjects are principal topics: Vibration and wave processes; Vibration and wave technologies; Nonlinear vibrations; Vibroshock systems; Generation of vibrations and waves; Vibrostabilization; Transformation of motion by vibrations and waves; Dynamics of intelligent mechanical systems; Vibration control, identification, diagnostics and monitoring.

All published papers are peer reviewed and crosschecked by plagiarism detection tools.

More information is available online <http://www.jvejournals.com>

The journal material is referred:

THOMSON REUTERS: Science Citation Index Expanded (Web of Science, SciSearch®);
Journal Citation Reports / Science Edition.

SCOPUS: ELSEVIER Bibliographic Database.

COMPENDEX: ELSEVIER Bibliographic Database.

EBSCO: Academic Search Complete;
Computers & Applied Sciences Complete;
Central & Eastern European Academic Source;
Current Abstracts;
Shock & Vibration Digest;
TOC Premier.

GALE Cengage Learning: Academic OneFile Custom Periodical.

INSPEC: OCLC. The Database for Physics, Electronics and Computing.

VINITI: All-Russian Institute of Scientific and Technical Information.

GOOGLE SCHOLAR: <http://scholar.google.com>

CROSSREF: <http://www.crossref.org>

Internet: <http://www.jvejournals.com>; <http://www.jve.lt>

E-mail: m.ragulskis@jvejournals.com; ragulskis.jve@gmail.com

Address: Geliu ratas 15A, LT-50282, Kaunas, Lithuania

Publisher: JVE International Ltd.

Contents

MECHANICAL VIBRATIONS AND APPLICATIONS

- 2463. NUMERICAL SIMULATION AND EXPERIMENTAL RESEARCH OF METAL DYNAMIC FLOW IN COLD EXTRUSION UNDER THE ELECTRIC-HYDRAULIC VIBRATION** 2295
XU-NING ZHANG
- 2464. A SEMI-ANALYTICAL METHOD FOR VIBRATION ANALYSIS OF THIN SPHERICAL SHELLS WITH ELASTIC BOUNDARY CONDITIONS** 2312
KUN XIE, MEIXIA CHEN, ZUHUI LI
- 2465. OPTIMAL DESIGN OF THE MAIN SUPPORT STRUCTURE OF SPACE CAMERA AIMING AT THE RMS VALUE OF RANDOM RESPONSE** 2331
LIN LI, LUYANG TAN, DONG WANG, HONGBO YANG
- 2466. FREE VIBRATION ANALYSIS OF AN ELLIPTICAL PLATE WITH CUT-OUT** 2341
ANJIBABU MERNEEDI, MOHAN RAO NALLURI, V. SUBBA RAO VISSAKODETI
- 2467. VIBROACTIVITY ANALYSIS OF A DUAL FUEL DIESEL ENGINE BASED ON THE KNOCK SENSOR SIGNAL AND MEASURING PRESSURE IN THE COMBUSTION CHAMBER** 2354
KRZYSZTOF SZCZUROWSKI, ŁUKASZ KURKUS, DAMIAN WALCZAK,
ŁUKASZ ZIELIŃSKI
- 2468. OPTICAL FLOW TRACKING METHOD FOR VIBRATION IDENTIFICATION OF OUT-OF-PLANE VISION** 2363
QIBING YU, AIJUN YIN, QUAN ZHANG, SHIYANG MA
- 2469. THE EFFECT OF AN ORIFICE PLATE WITH DIFFERENT ORIFICE NUMBERS AND SHAPES ON THE DAMPING CHARACTERISTICS OF A DUAL-CHAMBER AIR SPRING** 2375
XIAOHUI ZENG, LIANG ZHANG, FAJUN YU, JIFU ZHOU
- 2470. INVESTIGATION THE INFLUENCE OF SHEAR DISTORTION, ROTARY INERTIA AND LONGITUDINAL VIBRATION ON THE POWER FLOW TRANSMISSION OF A FINITE L-SHAPED BEAM** 2390
JIA-XING LI, XUE-ZHI ZHU, ZHAO-BO CHEN, YING-HOU JIAO
- 2471. MOBILE CRAWLER ROBOT VIBRATION ANALYSIS IN THE CONTEXTS OF MOTION SPEED SELECTION** 2403
PIOTR GIERLAK, KRZYSZTOF KURC, DARIUSZ SZYBICKI

2472. STUDY ON DYNAMICS OF VIBRATOR BASEPLATE AT LOW AND HIGH FREQUENCIES ZHIQIANG HUANG, GANG LI, LEI HAO	2413
FAULT DIAGNOSIS BASED ON VIBRATION SIGNAL ANALYSIS	
2473. APPLICATION OF ORTHOGONAL NEIGHBORHOOD PRESERVING PROJECTIONS AND TWO DIMENSIONAL HIDDEN MARKOV MODEL FOR THE DEGRADATION EVALUATION OF ROLLING ELEMENTS BEARINGS YONGXIANG ZHANG, YUJIE XIAO, SHUAI ZHANG, SHENGJIE WANG	2427
2474. RESEARCH ON INTELLIGENT FAULT DIAGNOSIS OF MECHANICAL EQUIPMENT BASED ON SPARSE DEEP NEURAL NETWORKS FEI-WEI QIN, JING BAI, WEN-QIANG YUAN	2439
2475. VIBRATION SIGNAL ANALYSIS AND FAULT DIAGNOSIS OF BOGIES OF THE HIGH-SPEED TRAIN BASED ON DEEP NEURAL NETWORKS YANG ZHAO, ZHENG HONG GUO, JIAN MING YAN	2456
2476. VIBRATION-BASED GEARBOX FAULT DIAGNOSIS USING DEEP NEURAL NETWORKS ZHIQIANG CHEN, XUDONG CHEN, CHUAN LI, RENÉ-VINICIO SANCHEZ, HUAFENG QIN	2475
2477. ADAPTIVE MACHINERY FAULT DIAGNOSIS BASED ON IMPROVED SHIFT-INVARIANT SPARSE CODING LIMIN LI	2497
2478. IMPROVING THE WEAK FEATURE EXTRACTION BY ADAPTIVE STOCHASTIC RESONANCE IN CASCADED PIECEWISE-LINEAR SYSTEM AND ITS APPLICATION IN BEARING FAULT DETECTION HOUGUANG LIU, SHUAI HAN, JIANHUA YANG, SONGYONG LIU	2506
2479. AN AUTOMATIC FEATURE EXTRACTION METHOD AND ITS APPLICATION IN FAULT DIAGNOSIS JINRUI WANG, SHUNMING LI, XINGXING JIANG, CHUN CHENG	2521
2480. RESEARCH ON LOCAL RUB FAULT TRANSFER MECHANISM IN ROTOR SYSTEM ZHONG WANG, QI XU, ZILIANG LIU, HONGLIANG YAO, BANGCHUN WEN	2534
2481. DYNAMIC CHARACTERISTIC ANALYSIS AND FATIGUE LIFE ESTIMATION OF BRIDGES WITH CONSIDERING THE SHEAR RESIDUAL STRESS BO ZHAO, HAN ZHU, YUE YIN, SHUAI MEI	2548
2482. STUDY ON A NOVEL FAULT DIAGNOSIS METHOD BASED ON INTEGRATING EMD, FUZZY ENTROPY, IMPROVED PSO AND SVM WU DENG, RUI YAO, MENG SUN, HUIMIN ZHAO, YINGLIAN LUO, CHANG DONG	2562
2483. OPTIMIZATION THE INNER PRODUCT VECTOR METHOD AND ITS APPLICATION TO STRUCTURAL HEALTH MONITORING SATTAR MOHAMMADI ESFARJANI, MEHDI SALEHI	2578
2484. VIBRATION-BASED CLASSIFICATION OF CENTRIFUGAL PUMPS USING SUPPORT VECTOR MACHINE AND DISCRETE WAVELET TRANSFORM EBRAHIM EBRAHIMI, MOHAMMAD JAVIDAN	2586
2485. THE EXPERIMENTAL INVESTIGATION OF NONLINEAR IMPACT BEHAVIORS OF PARTIAL ROLLING BEARING WITH FAILURE COLLISION XING HE, QIANG WANG, YONGBAO LIU, HUIDONG XU, SHUYONG LIU	2598
2486. FAULT DIAGNOSIS OF MOTORIZED SPINDLE VIA MODIFIED EMPIRICAL WAVELET TRANSFORM-KERNEL PCA AND OPTIMIZED SUPPORT VECTOR MACHINE FEI CHEN, YIFENG YE, WEIZHENG CHEN, BINBIN XU, CHAO CHEN, ZHAOJUN YANG	2611

VIBRATION GENERATION AND CONTROL

- 2487. MODELING AND ACTIVE DISTURBANCE REJECTION CONTROL FOR SEQUENTIAL AIRDROP OPERATIONS** 2632
SHIWEI ZHAO, XIUXIA SUN, DONG WANG
- 2488. A PIEZOELECTRIC MOTOR DRIVEN BY A SINGLE-PHASE SIGNAL** 2645
CHONG LI, CUN-YUE LU, YI-XIN MA
- 2489. ADAPTIVE NEURAL NETWORK CONTROL FOR SEMI-ACTIVE VEHICLE SUSPENSIONS** 2654
ZHUSHUN DING, FENG ZHAO, YECHEN QIN, CHENG TAN
- 2490. CYLINDRICAL PIEZOROBOT'S TRAJECTORY PLANNING AND CONTROL** 2670
JURATE JANUTENAITE-BOGDANIENE, EUGENIJUS MACERAUSKAS, ASTA DRUKTEINIENE, GENADIJUS KULVIETIS, RAMUTIS BANSEVICIUS

SEISMIC ENGINEERING AND APPLICATIONS

- 2491. STRENGTH OR FORCE REDUCTION FACTORS FOR STEEL BUILDINGS: MDOF VS SDOF SYSTEMS** 2680
ALFREDO REYES-SALAZAR, MARIO D. LLANES-TIZOC, EDÉN BOJÓRQUEZ, J. LUZ RIVERA-SALAS, ARTURO LOPEZ-BARRAZA, ACHINTYA HALDAR
- 2492. ANALYSIS OF BLASTING VIBRATION WAVE PROPAGATION BASED ON FINITE ELEMENT NUMERICAL CALCULATION AND EXPERIMENTAL INVESTIGATIONS** 2703
TUNG-CHENG WANG, CHIN-YU LEE, IAU-TEH WANG
- 2493. EFFECTS OF PILE ROWS ON VIBRATION REDUCTION IN NEARLY SATURATED SOIL** 2713
GUANGYA DING, JUN WANG, FAN SUN
- 2494. ATTRIBUTE RECOGNITION MODEL AND ITS APPLICATION OF RISK ASSESSMENT FOR SLOPE STABILITY AT TUNNEL PORTAL** 2726
QIAN ZHANG, JING-CHUN WANG, HAI-XIA ZHANG
- 2495. EFFECTS OF ISOLATOR PROPERTIES ON VISCOUS DAMPER CAPACITY OF BASE ISOLATED ADJACENT BUILDINGS** 2739
ELIF CAGDA KANDEMIR-MAZANOGLU
- 2496. SEISMIC FRAGILITY CURVES FOR HIGHLY SKEWED HIGHWAY BRIDGES** 2749
YAVAR BAVAGHAR, MAHMOUD BAYAT

MODAL ANALYSIS AND APPLICATIONS

- 2497. MODAL PARAMETER IDENTIFICATION OF A THREE-STOREY STRUCTURE USING FREQUENCY DOMAIN TECHNIQUES FDD AND EFDD AND TIME DOMAIN TECHNIQUE SSI: EXPERIMENTAL STUDIES AND SIMULATIONS** 2759
NADER MOHAMMADI, MEHRDAD NASIRSHOABI
- 2498. STABILIZATION DIAGRAMS TO DISTINGUISH PHYSICAL MODES AND SPURIOUS MODES FOR STRUCTURAL PARAMETER IDENTIFICATION** 2777
CHUNLI WU, HANBING LIU, XUXI QIN, JING WANG
- 2499. DEVELOPMENT OF ONLINE DETECTION SYSTEM FOR NATURAL FREQUENCY OF BRAKE DISCS BASED ON THE IMPROVED LEAST SQUARES COMPLEX FREQUENCY DOMAIN METHOD** 2795
ZHIGANG CHU, DI HUANG, JIANG WANG, YANG YANG
- 2500. METHODOLOGY TO IMPROVE MODE IDENTIFICATION AND MODAL PARAMETER EXTRACTION FOR ROTOR DYNAMIC ANALYSIS** 2806
RAFAEL ALFONSO FIGUEROA DÍAZ, J. E. AGUIRRE ROMANO, A. BALVANTÍN GARCÍA, P. CRUZ ALCANTAR

2501. QUICK PSEUDO-RANDOM TOPOLOGY OPTIMIZATION DESIGN BASED ON TRIANGLE ELEMENT	2822
JIAN JUN HE, BIN XU	
2502. AN IMPROVED COMPONENT MODE SYNTHESIS METHOD FOR INTERVAL UNCERTAINTY ANALYSIS	2844
HUAN HE, TAO WANG, WEI-MIN CHEN, CHENG HE	
2503. OPERATIONAL MODAL ANALYSIS OF THREE-DIMENSIONAL STRUCTURES BY SECOND-ORDER BLIND IDENTIFICATION AND LEAST SQUARE GENERALIZED INVERSE	2857
JIANYING WANG, CHENG WANG, YIWEN ZHANG	
2504. FREE VIBRATION OF BASALT FIBER REINFORCED POLYMER (FRP) LAMINATED VARIABLE THICKNESS PLATES WITH INTERMEDIATE ELASTIC SUPPORT USING FINITE STRIP TRANSITION MATRIX (FSTM) METHOD	2873
W AEL A. ALTABEY	

VIBRATION IN TRANSPORTATION ENGINEERING

2505. DOUBLE ANTI-ROLL BAR HARDWARE-IN-LOOP EXPERIMENT FOR ACTIVE ANTI-ROLL CONTROL SYSTEM	2886
V. MUNIANDY, P. MOHD SAMIN, H. JAMALUDDIN, R. ABDUL RAHMAN, S. A. ABU BAKAR	
2506. HYBRID MODEL PREDICTIVE CONTROL OF DAMPING MULTI-MODE SWITCHING DAMPER FOR VEHICLE SUSPENSIONS	2910
XIAOQIANG SUN, YINGFENG CAI, CHAOCHUN YUAN, LONG CHEN, RUOCHEN WANG	
2507. STATIONARY RANDOM VIBRATION ANALYSIS OF VEHICLE-TRACK COUPLED SYSTEM WITH NONLINEAR STIFFNESS OF RAILPADS	2931
PING WANG, FAN YANG, KAI WEI, CHANGSHENG ZHOU	
2508. DYNAMIC BEHAVIOUR OF A NOVEL TRANSITION WEDGE COMPOSED BY PREFABRICATED REINFORCED CONCRETE SLABS	2947
M. LABRADO-PALOMO, S. MORALES-IVORRA, F. RIBES-LLARIO, J. I. REAL-HERRÁIZ	

FLOW INDUCED STRUCTURAL VIBRATIONS

2509. FLOW CHARACTERISTICS AND DYNAMIC RESPONSES OF A REAR CIRCULAR CYLINDER BEHIND THE SQUARE CYLINDER WITH DIFFERENT SIDE LENGTHS	2956
JIAHUANG TU, WENJUAN SUN, DAI ZHOU, ZHAOLONG HAN	

OSCILLATIONS IN BIOMEDICAL ENGINEERING

2510. STUDY ON THE CONTROL ALGORITHM FOR LOWER LIMB EXOSKELETON BASED ON ADAMS/SIMULINK CO-SIMULATION	2976
HONGFANG WU, TIANYU JIA, NA LI, JIAN WU, LEI YAN	
2511. THE IMPACT OF DIFFERENT PROCESSING TECHNIQUES ON FOOT PARAMETERS IN ADULTS	2987
JOLANTA PAUK, TOMASZ KUZMIEROWSKI, MICHAL OSTASZEWSKI, KRISTINA DAUNORAVICIENE	
2512. INFLUENCE OF DIFFERENT MATERIALS FOR ARTIFICIAL AUDITORY OSSICLE ON THE DYNAMIC CHARACTERISTICS OF HUMAN EAR AND RESEARCH ON HEARING RECOVERY	2995
XIAO-PING JIANG, CHENG-HUA LI, HAO DING, JING SUN, JIE-DI SUN	

2513.	DYNAMICS ANALYSIS AND SIMULATION VERIFICATION OF A NOVEL KNEE JOINT EXOSKELETON	3008
	LEI FAN, LEI YAN, JIANG XIAO, FANGZHENG WANG	
2514.	A STUDY ON THE EFFECT OF VIBRATION STIMULATION OF THE SUB-PERCEPTION THRESHOLD INTENSITY ON LOWER LEG MUSCLE BASED ON THE SEPS	3019
	HUIGYUN KIM, KIYOUNG KWAK, DONGWOOK KIM	
CHAOS, NONLINEAR DYNAMICS AND APPLICATIONS		
2515.	BIFURCATIONS AND CHAOS IN A GEAR ASSEMBLY WITH CLEARANCES FOR SOLAR ARRAY DRIVE ASSEMBLY	3030
	WEN LU, HONGGUANG LI, CHENG LI	
ACOUSTICS, NOISE CONTROL AND ENGINEERING APPLICATIONS		
2516.	NUMERICAL OPTIMIZATION OF SOUND PRESSURE RESPONSES FOR THE DASH PANEL BASED ON AUTOMATICALLY MATCHED LAYER AND GENETIC ALGORITHM	3040
	XIN ZHE ZHANG, GUO JIE ZHANG	
2517.	ACOUSTIC CHARACTERISTIC ANALYSIS OF THE NON-SMOOTH SURFACE FAN OF OFF-HIGHWAY MACHINERY	3056
	LIU YANG, SI CHENG QIN, LIU LIU	
2518.	EXPERIMENTAL RESEARCH AND NUMERICAL ANALYSIS ON VIBROACOUSTIC CHARACTERISTICS OF THE LAMINATED COMPOSITE PLATE AND ITS APPLICATION IN HIGH-SPEED TRAINS	3068
	JIN MEI WU	
2519.	NUMERICAL RESEARCH ON AERODYNAMIC RADIATION NOISES OF ALTERNATORS IN VEHICLES	3084
	ZHONG-WEI ZHANG	
2520.	RESEARCH ON THE RADIATION CHARACTERISTICS OF AERODYNAMIC NOISES IN THE CONNECTION POSITION OF HIGH-SPEED TRAINS	3099
	YONG-FENG CUI, CHONG TIAN, ZHONG-YUAN ZHAO	
2521.	NUMERICAL STUDY ON AERODYNAMIC NOISES AND CHARACTERISTICS OF THE HIGH-SPEED TRAIN IN THE OPEN AIR AND TUNNEL ENVIRONMENT	3113
	XIN LI, TAO SHANG, LIU HAN, XIAO-HONG JIN, LI-HUA WANG	

