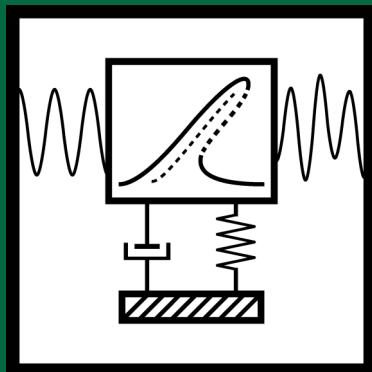


August 2015, Volume 17, Issue 5
Pages (2108-2742), NoP (1661-1711)
ISSN 1392-8716

JVE Journal of Vibroengineering



Editor in chief

K. Ragulskis

Lithuanian Academy of Sciences, (Lithuania)

k.ragulskis@jve.lt,

ragulskis.jve@gmail.com

Editorial Board

V. Babitsky

Loughborough University, (UK)

v.i.babitsky@lboro.ac.uk

N. Bachschmid

Politecnico di Milano, (Italy)

nicolo.bachschmid@polimi.it

R. Bansevičius

Kaunas University of Technology, (Lithuania)

ramutis.bansevicius@ktu.lt

M. Bayat

Tarbiat Modares University, (Iran)

mbayat14@yahoo.com

I. Blekhman

Mekhanobr – Tekhnika Corporation, (Russia)

iliya.i.blekhman@gmail.com

M. Bogdevičius

Vilnius Gediminas Technical University, (Lithuania)

marijonas.bogdevicius@vgtu.lt

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

R. Daukševičius

Kaunas University of Technology, (Lithuania)

rolanasd@centras.lt

Y. Davydov

Institute of Machine Building Mechanics, (Russia)

1institut@bk.ru

M. Dimentberg

Worcester Polytechnic Institute, (USA)

diment@wpi.edu

J. Duhovnik

University of Ljubljana, (Slovenia)

joze.duhovnik@lecad.uni-lj.si

S. Ersøy

Marmara University, (Turkey)

sersoy@marmara.edu.tr

A. Fedaravičius

Kaunas University of Technology, (Lithuania)

algimantas.fedaravicius@ktu.lt

R. Ganiev

Blagonravov Mechanical Engineering Research

rganiev@nwmtc.ac.ru

Institute, (Russia)

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. 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.ostasevicius@ktu.lt

A. Palevičius

Kaunas University of Technology, (Lithuania)

arydas.palevicius@ktu.lt

G. Panovko

Blagonravov Mechanical Engineering Research

gpanovko@yandex.ru

Institute, (Russia)

M. Ragulskis

Kaunas University of Technology, (Lithuania)

minvydas.ragulskis@ktu.lt

V. Royzman

Khmelnytskyi National University, (Ukraine)

iftomm@ukr.net

M. A. F. Sanjuan

University Rey Juan Carlos, (Spain)

miguel.sanjuan@urjc.es

E. Shahmatov

Samara State Aerospace University, (Russia)

shakhm@ssau.ru

J. Škliba

Technical University of Liberec, (Czech Republic)

jan.skliba@tul.cz

S. Toyama

Tokyo A&T University, (Japan)

toyama@cc.tuat.ac.jp

K. Uchino

The Pennsylvania State University, (USA)

kenjiuchino@psu.edu

A. Vakhgult

Nazarbayev University, (Kazakhstan)

anatoli.vakhgult@nu.edu.kz

P. Vasiljev

Vilnius Pedagogical University, (Lithuania)

vasiljev@vpu.lt

V. Veikutis

Lithuanian University of Health Sciences, (Lithuania)

vincetas.veikutis@lsmuni.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)

wallschek@ids.uni-hannover.de

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.

General Requirements

The authors must ensure that the paper presents an original unpublished work which is not under consideration for publication elsewhere.

The following structure of the manuscript is recommended: abstract, keywords, nomenclature, introduction, main text, results, conclusions and references. Manuscript should be single-spaced, one column 162×240 mm format, using Microsoft Word 2007 or higher. Margins: top 10 mm, bottom 10 mm, left 15 mm, right 10 mm, header 4 mm, footer 7 mm.

Font: Times New Roman. Title of the article 16 pt Bold, authors name 10 pt Bold, title of the institution 9 pt Regular, equations and text 10 pt Regular, indexes 5 pt Regular, all symbols Italic, vectors Bold, numbers Regular. Paragraph first line indentation 5 mm. Equations are to be written with Microsoft Office 2007 or higher Equation Tool.

Heading of the table starts with table number 9 pt Bold as “**Table 1.**”, then further text 9 pt Regular. Table itself 9 pt Regular.

Figure caption starts with figure number 9 pt Bold as “**Fig. 1.**”, then further text 9 pt Regular. Figure itself must be a single or grouped graphical item.

Tables and figures are placed after the paragraph in which they are first referenced.

List of references: reference number and authors 9 pt Bold, further information 9 pt Regular:

- [1] **Pain H. J.** The Physics of Vibrations and Waves. Chichester: John Wiley and Sons, 2005.
- [2] **Juška V., Svilainis L., Dumbrava V.** Analysis of piezomotor driver for laser beam deflection. Journal of Vibroengineering, Vol. 11, Issue 1, 2009, p. 17-26.

Every manuscript published in Journal of Vibroengineering must be followed by a list of biographies, with a passport type photographs, of all listed authors.

The authors are responsible for the correctness of the English language.

The authors are expected to cover partial costs of publication in JVE.

JVE annual subscription fees: 300 EUR (individual); 600 EUR (institutional).

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;
- 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>

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

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

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

Publisher: JVE International Ltd.

JVE Journal of Vibroengineering

AUGUST 2015. VOLUME 17, ISSUE 5, PAGES (2108-2742). NUMBERS OF PUBLICATIONS FROM 1661 TO 1711, ISSN 1392-8716

Contents

MECHANICAL VIBRATIONS AND APPLICATIONS

1661. APPLICATION OF COORDINATE TRANSFORMATION FOR DETECTION OF MODES OF VIBRATION: A COMPARATIVE STUDY IN 2 TURBOGENERATORS	2108
RAFAEL ALFONSO FIGUEROA DÍAZ, JORGE ENRIQUE AGUIRRE ROMANO, PEDRO CRUZ ALCANTAR, ISMAEL MURILLO VERDUZCO, MANUEL HERRERA SARELLANO	
1662. DESIGN AND MODEL ANALYSIS OF THE SONIC VIBRATION HEAD	2121
YU WANG, QIN ZHOU, BAOLIN LIU, ZHIJUN LI, MINGXIN HUANG	
1663. DYNAMIC MECHANISM AND PARAMETRIC ANALYSIS OF SHROUDED BLADES IN AIRCRAFT ENGINES	2132
GUOFANG NAN, YUANLU ZHANG	
1664. EXPERIMENTAL STUDY ON A CERTAIN ELASTOMER BUFFER WITH DYNAMIC IDENTIFICATION METHOD	2143
QIANG CHEN, SHUYUN CHEN, XIAOYA GAO, YINGJUN WANG	
1665. DESIGN OF THE MOUNTING SYSTEM OF A GRASS TRIMMER ENGINE FOR MINIMUM HANDLE VIBRATION RESPONSE BASED ON FREQUENCY-DEPENDENT STIFFNESS AND LOSS FACTOR PROPERTIES	2155
TEIK-YIK LEE, LU-EAN OOI, ZAIDI MOHD RIPIN	
1666. DYNAMIC RESPONSE ANALYSIS OF THE RUBBER SHOCK ABSORBER IN THE ARTILLERY VIBRATION SYSTEM	2167
XIAOJUN SHAO, HONGSHENG HUANG, LINA HONG, XIAOYA GAO, HONGXIAO CHAO, XIN CAO	
1667. INCREASE OF PRECISION OF CASTING BLOCKS BY APPLYING ACOUSTICAL OSCILLATIONS IN GAS-IMPULSIVE MOULDING	2178
V. G. BEREZYUK, S. B. KUZEMBAYEV, K. T. SHEROV, M. R. SIKHIMBAYEV, M. K. ALYZHANOV, S. A. MISHNEV, A. B. MAZDUBAY, I. I. GRINEVICH, A. K. SHEROV, D. R. SIKHIMBAYEVA	
1668. NONLINEAR DYNAMIC CHARACTERISTIC OF GEAR SYSTEM WITH THE ECCENTRICITY	2187
JIE LIU, SHIHUA ZHOU, SHIJIE WANG	

1669. NUMERICAL INVESTIGATION ON ROCK FRAGMENTATION BY CUTTING HEAD OF ROADHEADER BASED ON FRACTURE MECHANICS	2199
HONGXIANG JIANG, CHANGLONG DU, SONGYONG LIU, LIN FU, YOUHONG TANG, LI PING WANG	
1670. FORCED TIME-HARMONIC VERTICAL VIBRATION OF A RIGID DISK EMBEDDED IN A TRANSVERSELY ISOTROPIC FULL-SPACE MEDIUM	2212
NADER MOHAMMADI, MEHRDAD NASIRSHOAIBI	
1671. RESEARCH ON MEASURING METHOD OF LARGE-CALIBER GUN MUZZLE VIBRATION	2229
GANG ZHAO, QIANG CHEN, YINGJUN WANG	
1672. SENSITIVITY PREDICTIONS OF GEOMETRIC PARAMETERS ON ENGAGEMENT IMPACTS OF FACE GEAR DRIVES	2236
ZHENGMINQING LI, RUPENG ZHU	
1673. RESEARCH ON HERBACEOUS PLANTS COMPACTION IN CONTAINER STORES USING VIBRATING COMPACTORS	2247
ALGIRDAS JASINSKAS, EGIDIJUS ŠARAUSKIS, ROLANDAS DOMEIKA, GINTAS VISELGA, VYTAUTAS KUČINSKAS, EDVARDAS VAICIUKEVICIUS	
1674. NUMERICAL SIMULATION ON THE IMPACT DYNAMICS OF A NOVEL ROTATION AIR HAMMER AND EXPERIMENTAL RESEARCH	2260
QING-YOU LIU, YANG TANG, DE-GUI WANG, CHEN XIE	
1675. IDENTIFICATION OF STIFFNESS, DAMPING AND MASS COEFFICIENTS OF ROTOR-BEARING SYSTEM USING IMPULSE RESPONSE METHOD	2272
ŁUKASZ BREŃKACZ	
FAULT DIAGNOSIS BASED ON VIBRATION SIGNAL ANALYSIS	
1676. A WAVELET APPROACH TO DETECT GEAR-RATTLE DEVELOPMENT IN MECHANICAL SYSTEMS	2283
EDUARDO RUBIO, GUILLERMO RAMÍREZ	
1677. HOLOSPECTRUM ANALYSIS FOR BEARING CAGE BEHAVIOUR	2291
JINGJUN GU, DISHAN HUANG, PIN LIU, MING LI	
1678. DETERMINATION OF REGULARIZATION PARAMETERS IN NEAR-FIELD ACOUSTICAL HOLOGRAPHY BASED ON EQUIVALENT SOURCE METHOD	2302
ZHIGANG CHU, GUOLI PING, YANG YANG, LINBANG SHEN	
1679. STRUCTURAL IDENTIFICATION OF DAMAGES ON A SIMPLIFIED BRIDGE MODEL IN VEHICLE-BRIDGE SYSTEM FROM MEASURED DYNAMIC RESPONSES AND SENSITIVITY ANALYSIS	2314
TAI-PING CHANG	
1680. A NOVEL REFLECTION REMOVAL METHOD FOR ACOUSTIC EMISSION WAVE PROPAGATION IN PLATE-LIKE STRUCTURES	2322
DENGHONGAO XIAO, YONG GAO, DONGLIANG QUAN, XIAHONG ZHOU, ZONGKAI TONG, XIANDONG LIU, TIAN HE	
1681. OMNI-DIRECTIONAL DAMAGE DETECTION AND LOCALIZATION WITH A CRUCIFORM PIEZOELECTRIC ULTRASONIC PHASED ARRAY	2338
ZHILING WANG, SHENFANG YUAN, LEI QIU, BIN LIU	
1682. AN INTELLIGENT FAULT DIAGNOSIS METHOD USING VARIABLE WEIGHT ARTIFICIAL IMMUNE RECOGNIZERS (V-AIR)	2350
HONGLI ZHANG, JICHENG LIU, ERPING ZHOU, DONG LI, BO WANG, KUNJU SHI	
1683. THE APPLICATION OF PERIDYNAMICS IN PREDICTING BEAM VIBRATION AND IMPACT DAMAGE	2369
BO CHEN, NING LIU, GUOLAI YANG	

1684. MULTI-LAYER NEURAL NETWORK WITH DEEP BELIEF NETWORK FOR GEARBOX FAULT DIAGNOSIS	2379
ZHIQIANG CHEN, CHUAN LI, RENÉ-VINICIO SÁNCHEZ	
1685. AN IMPROVED EMD BASED ON CUBIC SPLINE INTERPOLATION OF EXTREMUM CENTERS	2393
JIE HUANG, JIAN TANG, MEIJUN ZHANG, XIAOMING ZHANG, TAO HAN	
VIBRATION GENERATION AND CONTROL	
1686. ROBUST CONTROL OF PENDULUM-TYPE MICRO-VIBRATION ISOLATION SYSTEM	2410
MENG-SHIUN TSAI, YANN-SHUOH SUN	
SEISMIC ENGINEERING	
1687. DYNAMIC CHARACTERISTICS AND SEISMIC RESPONSE ANALYSIS OF A LONG-SPAN STEEL-BOX BASKET-HANDLE RAILWAY ARCH BRIDGE	2422
XUHUI HE, BIAO WEI, YUNFENG ZOU, DONGYANG HU, DANIEL G. LINZELL	
1688. STUDY ON THE DYNAMIC RESPONSE OF SUBWAY TUNNEL BY VIADUCT COLLAPSING VIBRATION AND THE PROTECTIVE MEASURES OF REDUCING VIBRATION	2433
HUABING ZHAO, YUAN LONG, CHONG JI, XINGHUA LI, MINGSHOU ZHONG	
1689. PROBABILISTIC SEISMIC VULNERABILITY ASSESSMENT OF THE STRUCTURAL DEFICIENCIES IN IRANIAN IN-FILLED RC FRAME STRUCTURES	2444
HOSSEIN PAHLAVAN, MOHSENALI SHAIANFAR, GHOLAMREZA GHODRATI AMIRI, MILAD PAHLAVAN	
1690. INVESTIGATION ON DYNAMIC EFFECTS OF FRAME WITH SPECIALLY SHAPED COLUMNS SUBJECT TO COLUMN FAILURE	2455
TIE-CHENG WANG, QING-WEI CHEN, HAI-LONG ZHAO, LEI ZHANG	
1691. PERFORMANCE OF A LEAD RUBBER DAMPER UNDER CYCLIC SHEAR LOADING AND ITS APPLICABILITY TO A FULL-SCALE STRUCTURE	2471
HEECHEUL KIM, YOUNG HAK LEE, HAEUN PARK, DAE-JIN KIM, JUNG WOO PARK, JIN YOUNG PARK	
1692. COMBINING SUBSPACE APPROACH AND SHORT TIME FOURIER ANALYSIS FOR LOCATING STRUCTURAL DAMAGE STOREYS	2480
CHIUNG SHIANN HUANG, LIAНЕ JYE CHEN, SHIH LIN HUNG, CHUN TING DING, WEI CHIH SU	
MODAL ANALYSIS	
1693. ON THE NATURAL FREQUENCY AND VIBRATION MODE OF COMPOSITE BEAM WITH NON-UNIFORM CROSS-SECTION	2491
BOTONG LI, LONGLEI DONG, LIANGLIANG ZHU, XI CHEN	
1694. PARAMETER ESTIMATION AND ARRANGEMENT OPTIMIZATION OF PARTICLE DAMPERS ON THE CANTILEVER RECTANGULAR PLATE	2503
DONGQIANG WANG, CHENGJUN WU	
VIBRATION IN TRANSPORT ENGINEERING	
1695. THEORY AND EXPERIMENTS ON DRIVING STABILITY OF TANK TRUCKS UNDER DANGEROUS WORKING CONDITIONS	2521
DI YU, XIANSHENG LI, HONGFEI LIU, YUANYUAN REN, JIANGHUI DONG, LIPING WANG	

1696. DEVELOPMENT OF AUTOMATIC PREDICTION MODEL FOR GROUND VIBRATION USING SUPPORT VECTOR MACHINE	2535
YIT-JIN CHEN, CHI-JIM CHEN, YI-JIUN SHEN	
1697. OPTIMIZATION DESIGN ON DYNAMIC CHARACTERISTICS AND FATIGUE LIFE OF AUTOMOTIVE SUSPENSION SYSTEM	2547
JING-XIAO ZHANG, HUI LI	
1698. A STUDY ON THE CHARACTERISTICS OF BRIDGE BEARINGS BEHAVIOR BY FINITE ELEMENT ANALYSIS AND MODEL TEST	2559
JU OH, CHANGWAN JANG, JIN HO KIM	

FLOW INDUCED STRUCTURAL VIBRATIONS

1699. WIND EFFECTS ON A LONG SPAN STEEL ROOF STRUCTURE: NUMERICAL SIMULATION AND EQUIVALENT STATIC WIND LOADS	2572
JIYANG FU, YUN GAO, JIURONG WU, AN XU	
1700. EFFECTS OF STATOR-ROTOR INTERACTION ON UNSTEADY AERODYNAMIC LOAD OF COMPRESSOR ROTOR BLADES	2591
HUIQUN YUAN, WENJUN YANG, TIANYU ZHAO, MINGXUAN LIANG	
1701. A NEW METHOD FOR DYNAMIC PARAMETERS IDENTIFICATION OF A MODEL-BALANCE SYSTEM IN HIGH-FREQUENCY FORCE-BALANCE WIND TUNNEL TESTS	2609
AN XU, ZHUANGNING XIE, MING GU, JIURONG WU	
1702. COUPLING MECHANISM OF DUAL-EXCITATION FATIGUE LOADING SYSTEM OF WIND TURBINE BLADES	2624
XUEMEI HUANG, LEI'AN ZHANG, GUANGMING YUAN, NA WANG	
1703. FLOW NOISE COMPUTATION AND TAIL WING OPTIMIZATION OF THE UNDERWATER VEHICLE BASED ON COMPUTATIONAL FLUID DYNAMICS	2633
HONGXIN ZHANG, KANGHONG DUAN	
1704. INVESTIGATION ON FORCED VIBRATION OF TURBOCHARGER TURBINE IN PULSATION FLOW	2645
YIXIONG LIU, DAZHONG LAO, CE YANG	
1705. STUDY ON VIBRATION OF OFFSHORE WIND TURBINE SUPPORTING SYSTEM UNDER THE WIND-WAVE COUPLING EFFECT	2655
P. Y. ZHANG, Y. H. GUO, H. Y. DING, K. P. XIONG, Y. F. YANG	

OSCILLATIONS IN BIOMEDICAL ENGINEERING

1706. EXPERIMENTAL VALIDATION OF A QUASI-REALTIME HUMAN RESPIRATION DETECTION METHOD VIA UWB RADAR	2669
SHIYOU WU, ZHENGHUAN XIA, KAI TAN, JIE CHEN, SHENGWEI MENG, GUANGYOU FANG, HEJUN YIN	

CHAOS, NONLINEAR DYNAMICS AND APPLICATIONS

1707. STUDY OF SYNCHRONIZATION FOR A ROTOR-PENDULUM SYSTEM WITH POINCARÉ METHOD	2681
PAN FANG, YONGJUN HOU, YANGHAI NAN, LE YU	
1708. DYNAMICAL ANALYSIS OF FRACTIONAL-ORDER MATHIEU EQUATION	2696
SHAOFANG WEN, YONGJUN SHEN, XIANGHONG LI, SHAOPU YANG, HAIJUN XING	
1709. PERIODIC SOLUTION TO A NONLINEAR OSCILLATOR ARISING IN MICRO ELECTRO MECHANICAL SYSTEM	2710
A. NIKKAR, H. JODEIRI, SH. AHARI ABESH AHMAD, H. TARIVERDIAN	

1710. EFFECTS OF BRAKE PRESSURES ON STICK-SLIP BIFURCATION AND CHAOS OF THE VEHICLE BRAKE SYSTEM	2718
DAOGAO WEI, WEIWEI ZHU, BO WANG, QIAN MA, ZUHENG KANG	
OSCILLATIONS IN ELECTRICAL ENGINEERING	
1711. ANALYSIS ON VIBRATIONS AND INFRARED ABSORPTION OF UNCOOLED MICROBOLOMETER	2733
CHAO CHEN, LONG ZHANG, YUN ZHOU, XING ZHENG, JIANGHUI DONG	
ANNOUNCEMENT. CONGRATULATIONS TO PROFESSOR M. S. CAO	2742

