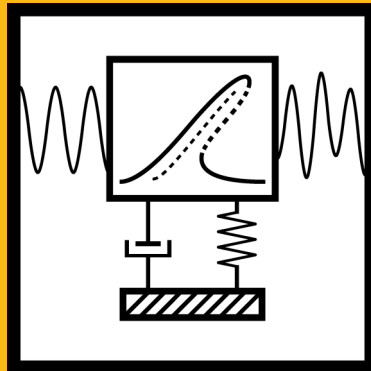


December 2018, Volume 6, Issue 4  
Pages (173-310), NoP (159-175)  
ISSN Print 2335-2124  
ISSN Online 2424-4635

# JME

Journal of  
Measurements in  
Engineering



## Editor in Chief

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

T. C. Akinci Kirklareli University, (Turkey) cetinakinci@hotmail.com

S. V. Augutis Kaunas University of Technology, (Lithuania) vygantas.augutis@ktu.lt

R. Bansevicius Kaunas University of Technology, (Lithuania) ramutis.bansevicus@ktu.lt

M. Bayat Roudehen Branch, Islamic Azad University, (Iran) mbayat14@yahoo.com

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

S. Ersoy Marmara University, (Turkey) sersoy@marmara.edu.tr

H. C. Eun Kangwon National University, (Korea) heechang@kangwon.ac.kr

W. H. Hsieh National Formosa University, (Taiwan) allen@nfu.edu.tw

Li Jun Adv. Inst. of Science and Engg. Information, (China) lijun@aiseiac.org

V. Kaminskas Vytautas Magnus University, (Lithuania) v.kaminskas@if.vdu.lt

V. Kappatos University of Southern Denmark, (Denmark) vk@iti.sdu.dk

S. Kaušinis Kaunas University of Technology, (Lithuania) saulius.kausinis@ktu.lt

R. Kažys Kaunas University of Technology, (Lithuania) rymantas.kazys@ktu.lt

V. Klyuev Association Spektr – Group, (Russia) v.klyuev@spektr.ru

G. Laukaitis Kaunas University of Technology, (Lithuania) giedrius.laukaitis@ktu.lt

Guang-qing Lu Jinan University, Zhuhai Campus, Guangdong, (China) tgqluyp@jnu.edu.cn

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

V. Ostasevičius Kaunas University of Technology, (Lithuania) vytautas.ostasevicus@ktu.lt

D. Pisla Technical University of Cluj-Napoca, (Romania) doina.pisla@mep.utcluj.ro

L. Qiu Nanjing University of Aeronautics and Astronautics, (China) lei.qiu@nuaa.edu.cn

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

S. Rakheja Concordia University, (Canada) subhash.rakheja@concordia.ca

V. Ranjan Bennett University, (India) vinayak.ranjan@bennett.edu.in

J. I. Real Technical University of Valencia, (Spain) jureaher@tra.upv.es

G. E. Sandoval-Romero The National Autonomous University of Mexico, (Mexico) eduardo.sandoval@ccadet.unam.mx

S. Seker Istanbul Technical University, (Turkey) sekers@itu.edu.tr

A. El Sinawi The Petroleum Institute, (United Arab Emirates) aelsinawi@pi.ac.ae

G. Song University of Houston, (USA) gsong@uh.edu

S. Toyama Tokyo A&T University, (Japan) toyama@cc.tuat.ac.jp

D. Wang City University of Hong Kong, (China) dongwang4-c@my.cityu.edu.hk

S. Wierzbicki University of Warmia and Mazury in Olsztyn, (Poland) slawekw@uwm.edu.pl

Mao Yuxin Zhejiang Gongshang University, (China) maoyuxin@zjgsu.edu.cn

# **JME Journal of Measurements in Engineering**

## **Aims and Scope**

JME publishes articles describing contributions in the general field of measurements in/and engineering applications.

JME welcomes theoretical papers aimed at winning further understanding of fundamentals of measurements and associated technologies, including, but not restricted to, general principles of measurement and instrumentation, sensors and systems modelling, data acquisition, processing and evaluation.

JME covers practical aspects and applications with contributions on measurement technology and engineering applications, including, but not restricted to, non-destructive measurement of vibrations, thermal, acoustic, optical and laser based measurement of engineering systems in nano, micro and macro scales.

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

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

## **The journal material is referred:**

### **CLARIVATE ANALYTICS (former THOMSON REUTERS):**

Emerging Sources Citation Index.

### **EBSCO:** Academic Search Complete;

Computers & Applied Sciences Complete;

Central & Eastern European Academic Source;

Current Abstracts;

TOC Premier.

### **GALE Cengage Learning:**

Academic OneFile Custom Periodical;

Science in Context.

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

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

**GOOGLE SCHOLAR:** <https://scholar.google.com>

**CNKI SCHOLAR:** <http://eng.scholar.cnki.net>

**CROSSREF:** <https://www.crossref.org>

**Internet:** <https://www.jvejournals.com>

**E-mail:** [publish@jvejournals.com](mailto:publish@jvejournals.com)

**Publisher:** JVE International Ltd., Geliu ratas 15A, LT-50282, Kaunas, Lithuania

# JME Journal of Measurements in Engineering

DECEMBER 2018. VOLUME 6, ISSUE 4, PAGES (173-310), NUMBERS OF PUBLICATIONS FROM 159 TO 175.  
ISSN PRINT 2335-2124, ISSN ONLINE 2424-4635

## Contents

|      |   |     |
|------|---|-----|
| 159. | <b>TIME HISTORY ANALYSIS FORMULATION IN SCAD FEA SOFTWARE</b><br>SERGIY FIALKO, VIKTOR KARPILOVSKIY   | 173 |
| 160. | <b>MASONRY VAULTS STRENGTHENED WITH A GFRP REINFORCED MORTAR COATING: EVALUATION OF THE RESISTING PEAK GROUND ACCELERATION</b><br>NATALINO GATTESCO, INGRID BOEM                        | 181 |
| 161. | <b>NUMERICAL ANALYSIS OF MONITORING OF PLASTIC HINGE FORMATION IN FRAMES UNDER SEISMIC EXCITATIONS</b><br>ŁUKASZ HURAS, PIOTR BOŃKOWSKI, MAREK NALEPKA, SEWERYN KOKOT, ZBIGNIEW ZEMBATY | 190 |
| 162. | <b>IMPROVED TECHNIQUE FOR THE EARTHQUAKE PROOF SUSPENSION BUILDING</b><br>TALIAT AZIZOV, NADZIEJA JURKOWSKA   | 196 |
| 163. | <b>SOME POSSIBILITIES OF MODELING OF MOVING LOAD ON CONCRETE PAVEMENTS</b><br>VERONIKA VALSŠKOVÁ, JOZEF MELCER  | 203 |
| 164. | <b>TRAFFIC SEISMICITY EFFECT ON MONUMENTAL BUILDINGS – RESULTS OF CASE STUDIES</b><br>VERONIKA VALAŠKOVÁ, DANIEL PAPÁN, ZUZANA PAPÁNOVÁ   | 210 |
| 165. | <b>COMPARISON OF APPROXIMATE ASSESSMENTS OF THE HARMFULNESS OF MINING SHOCKS USING GROUND AND BUILDING FOUNDATION VIBRATIONS</b><br>KRYSZYNA KUZNIAR, KRYSZYNA STEC, TADEUSZ TATARA     | 218 |
| 166. | <b>PROPOSITION OF STIFFNESS REDUCTION IN ANALYSIS OF CLAY BRICK MASONRY UNDER CYCLIC/SEISMIC LOADS</b><br>JAN KUBICA  | 226 |
| 167. | <b>AMBIENT VIBRATION MEASUREMENTS OF STEEL TRUSS BRIDGES</b><br>MICHAL VENGLÁR, MILAN SOKOL, RUDOLF ÁROCH   | 234 |
| 168. | <b>EXPERIMENTAL STUDY OF THE EFFECT OF VERTICAL ACCELERATION COMPONENT ON THE SLOPE STABILITY</b><br>ALEKSANDRA KORZEC, ROBERT JANKOWSKI  | 240 |
| 169. | <b>INFLUENCE OF CREST FACTOR ON EVALUATION OF HUMAN PERCEPTION OF TRAFFIC VIBRATION</b><br>ALICJA KOWALSKA-KOCZWARA, KRZYSZTOF STYPUŁA  | 250 |
| 170. | <b>ANALYSIS OF TEMPORARY STEEL GRANDSTAND WITH DIFFERENT BRACING SYSTEMS EXPOSED TO CROWD LOAD</b><br>NATALIA LASOWICZ, TOMASZ FALBORSKI, ROBERT JANKOWSKI                              | 256 |

|             |  |            |
|-------------|--|------------|
| <b>171.</b> | <b>HUMAN-INDUCED VIBRATION SERVICEABILITY OF ARCH PRE-STRESSED CONCRETE TRUSS SYSTEM</b>                                   | <b>263</b> |
|             | XUHONG ZHOU, QINGSHAN YANG, JIANG LI, XIAOXUE MA   |            |
| <b>172.</b> | <b>ANALYSIS OF VIBRATION PROPAGATION IN THE HUMAN BODY</b>   | <b>271</b> |
|             | RAFAL BURDZIK  |            |
| <b>173.</b> | <b>EXPERIMENTAL INVESTIGATIONS ON PERMEABILITY AND DAMAGE MECHANISM OF CEMENTED SOIL IN ACIDIC AND ALKALI ENVIRONMENTS</b> | <b>277</b> |
|             | CHEN SILI, HOU RUI, ZHANG JINGYU, WANG JUNXIANG  |            |
| <b>174.</b> | <b>DEVELOPING A NEUTRAL EQUILIBRIUM DEVICE AS DYNAMIC VIRTUAL PIERS FOR AN EMERGENCY RELIEF BRIDGE</b>                     | <b>289</b> |
|             | MING-HSIANG SHIH, WEN-PEI SUNG, YU-CHENG WANG  |            |
| <b>175.</b> | <b>A NOVEL BRIDGED-INSERT CASCADED FIVE LEVEL INVERTER TOPOLOGY</b>  | <b>297</b> |
|             | SENTHILKUMAR ARUMUGAM, SATHISH KUMAR SHANMUGAM,<br>ANBARASU LOGANATHAN, GOWTHAM PALANIRAJAN,<br>MEENAKUMARI RAMACHANDRAN   |            |



