

Journal of Vibration Testing and System Dynamics

Editors

Jan Awrejcewicz

Department of Automation, Biomechanics and Mechatronics
The Lodz University of Technology
1/15 Stefanowskiego Str., BLDG A22, 90-924 Lodz, Poland
Email: jan.awrejcewicz@p.lodz.pl

C. Steve Suh

Department of Mechanical Engineering
Texas A&M University
College Station, TX 77843-3123, USA
Email: ssuh@tamu.edu

Xian-Guo Tuo

School of Automation & Information Engineering
Sichuan University of Science and Engineering
Zigong, Sichuan, 643000, China
Email: tuoxianguo@suse.edu.cn

Jiazhong Zhang

School of Energy and Power Engineering
Xi'an Jiaotong University
Xi'an, 710048, China
Email: jzzhang@mail.xjtu.edu.cn

Associate Editors

Jinde Cao

School of Mathematics
Southeast University
Sipailou 2#
Nanjing, 210096, China
Email: jdcao@seu.edu.cn

Yoshihiro Deguchi

Department of Mechanical Engineering
Tokushima University
2-1 Minamijyousanjima-cho
Tokushima 770-8506, Japan
Email: ydeguchi@me.tokushima-u.ac.jp

Yu Guo

McCoy School of Engineering
Midwestern University
3410 Taft Boulevard
Wichita Falls, TX 76310, USA
Email: yu.guo@mwsu.edu

Hamid R. Hamidzadeh

Department of Mechanical and
Manufacturing Engineering
Tennessee State University
Nashville, TN 37209-1561, USA
Email: hhamidzadeh@tnstate.edu

Jianzhe Huang

Department of Power and
Energy Engineering
Harbin Engineering University
Harbin, 150001, China
Email: jianzhe@hrbeu.edu.cn

Meng-Kun (Jason) Liu

Department of Mechanical Engineering
National Taiwan University of Science
and Technology
Taipei, Taiwan
Email: mkliu@mail.ntust.edu.tw

Zhi-Ke Peng

School of Mechanical Engineering
Shanghai Jiao Tong University
Shanghai, P. R. China 200240
Email: z.peng@sjtu.edu.cn

Alexander P. Seyranian

Institute of Mechanics
Moscow State Lomonosov University,
Michurinsky pr. 1, 119192
Moscow, Russia
Email: aseyranian@mail.ru

Dimitry Volchenkov

Department of Mathematics & Statistics
Texas Tech University
1108 Memorial Circle
Lubbock, TX 79409, USA
Email: dr.volchenk@gmail.com

Baozhong Yang

Schlumberger Smith Bits
1310 Rankin Rd
Houston, TX 77073, USA
Email: bzyang@gmail.com

Guirong (Grace) Yang

Department of Civil, Architectural and
Environmental Engineering
Missouri University of Science and
Technology
Rolla, MO 65409, USA
Email: yang@mst.edu

Shudong Yu

Department of Mechanical and Industrial
Engineering
Ryerson University
Toronto, Ontario
M5B 2K3 Canada
Email: syu@ryerson.ca

Editorial Board

Farbod Alijani

Department of Precision and
Microsystems Engineering
Delft University of Technology
The Netherlands
Email: F.Alijani@tudelft.nl

Nyesunthi Apiwattanalungarn

Department of Mechanical Engineering
Kasetsart University
JatuJak Bangkok 10900
Thailand
Email: fengpra@ku.ac.th

Junqiang Bai

School of Aeronautics
Northwestern Polytechnical University
Xi'an, P. R. China
Email: junqiang@nwpu.edu.cn

Journal of Vibration Testing and System Dynamics

Volume 2, Issue 2, June 2018

Editors

Jan Awrejcewicz

C. Steve Suh

Xian-Guo Tuo

Jiazhong Zhang



L&H Scientific Publishing, LLC, USA

Publication Information

Journal of Vibration Testing and System Dynamics (ISSN 2475-4811 (print), eISSN 2475-482X (online)) is published quarterly (March, June, September, and December) by L & H Scientific Publishing, LLC, P.O. Box 99, Glen Carbon, IL62034, USA. Subscription prices are available upon request from the publisher or from this journal website. Subscriptions are accepted on a prepaid basis only and entered on a calendar year basis. Issues are sent by standard mail (Surface in North America, air delivery outside North America). Priority rates are available upon request. Claims for missing issues should be made within six months of the date of dispatch.

Changes of Address

Send address changes to L&H Scientific Publishing, LLC, P.O. Box 99, Glen Carbon, IL62034, USA. Changes of address must be received at L&H Scientific Publishing eight weeks before they are effective.

Authors Inquiries

For inquiries relative to the submission including electronic submission where available, please visit journal website or contact journal Editors-in-Chief.

Advertising Information

If you are interested in advertng or other commercial opportunities, please email via lhscientificpublishing@gmail.com and your enquiry will be handled as soon as possible.

© 2018 L&H Scientific Publishing, LLC. All rights reserved

L&H Scientific Publishing, LLC requires the authors to sign a Journal Copyright Transfer Agreement for all articles published in L&H Scientific. The Copyright Transfer Agreement is an agreement under which the author retains copyright in the work but grants L & H Scientific Publishing LLC the sole and exclusive right and license to publish the full legal term of copyright.

Authors are responsible for obtaining permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations published somewhere previously.

For authorization to photocopy materials for internal or personal use under those circumstances not falling within the fair use provisions of Copyright Act, requests for reprints and translations should be addressed to the permission office of L&H Scientific publishing, LLC via lhscientificpublishing@gmail.com or call: +1-618-402-2267. Permission of the Publisher and payment of a fee are required for all other photocopying, including multiple or systematic copying, copying for advertising or promotional purposes, resale, and forms of document delivery. Special rates are available for educational institutions to make photocopies for non-profit educational classroom use.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the publisher is required for resale or distribution outside the institution.

Permission of the Publisher is required to store or use electronically any materials contained in this journal, including any entire or partial article, please contact the publisher for advice. Otherwise, no part of this publication can be reproduced, stored in a retrieval systems or transmitted in any form or by means, electronic, mechanical, photocopying, recording or without prior written permission of the Publisher.

Disclaimer

The authors, editors and publisher will not accept any legal responsibility for any errors or omissions that may be made in this publication. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed in USA on acid-free paper.

Aims and Scope

Vibration Testing and System Dynamics is an interdisciplinary journal serving as the forum for promoting dialogues among engineering practitioners and research scholars. As the platform for facilitating the synergy of *system dynamics, testing, design, modeling, and education*, the journal publishes high-quality, original articles in the theory and applications of dynamical system testing. The aim of the journal is to stimulate more research interest in and attention for the interaction of theory, design, and application in dynamic testing. Manuscripts reporting novel methodology design for modelling and testing complex dynamical systems with nonlinearity are solicited. Papers on applying modern theory of dynamics to real-world issues in all areas of physical science and description of numerical investigation are equally encouraged. Progress made in the following topics are of interest, but not limited, to the journal:

- Vibration testing and design
- Dynamical systems and control
- Testing instrumentation and control
- Complex system dynamics in engineering
- Dynamic failure and fatigue theory
- Chemical dynamics and bio-systems
- Fluid dynamics and combustion
- Pattern dynamics
- Network dynamics
- Control signal synchronization and tracking
- Bio-mechanical systems and devices
- Structural and multi-body dynamics
- Flow or heat-induced vibration
- Mass and energy transfer dynamics
- Wave propagation and testing
- Acoustics

No length limitations for contributions are set, but only concisely written manuscripts are published. Brief papers are published on the basis of Technical Notes. Discussions of previous published papers are welcome.

Peer Review

Journal of Vibration Testing and System Dynamics adopts the traditional blind-review policy in which the reviewers' names are concealed for submission author(s) for free submission. Each submitted manuscript is reviewed at least two referees in appropriate fields. In addition, the editorial board members' recommendation or established experts' recommendation publication are welcome.

Manuscript Submission Guidelines

For manuscript submission, authors can directly contact Editors-in-Chief. Manuscript preparation can follow the sample papers and journal manuscript templates (word file and Latex files), which can be found from the website at <https://lhscientificpublishing.com/Journals/JVTSD-Default.aspx>

Proofs and Electronic Offprints

Authors will receive a PDF proof of their articles and, on publication, electronic offprints of the article.

Open Access

After manuscripts were accepted, author(s) have a right to request the accepted manuscripts published by L&H Scientific publishing with open access, and the author(s) have a responsibility to paying the open access publication fee with US\$60 per page. The copyright is still held by the Publisher. Without any request of the open access publication, the accepted manuscripts are assumed to be published traditionally.

Continued from inside front cover

Mohamed Belhaq

Laboratory of Mechanics
University Hassan II-Casablanca
Casablanca, Morocco
Email: mbelhaq@yahoo.fr

Frank Z. Feng

Department of Mechanical and
Aerospace Engineering
University of Missouri
Columbia, MO 65211, USA
Email: FengF@missouri.edu

Krzysztof Kecik

Department of Applied Mechanics
Lublin University of Technology
Nadbystrzycka, Lublin, Poland
Email: k.kecik@pollub.pl

Liansheng Li

College of Mechanical and Electrical
Engineering
Qingdao University of Science and
Technology
NO.99 Songling Road, Qingdao 266061,
P.R. China
Email: lianshengli@126.com

Yan Liu

School of Mechanical Engineering
Northwestern Polytechnical University
Xi'an, P. R. China
Email: liuyan@nwpu.edu.cn

Jihong Wen

Institute of Mechatronical Engineering
National University of Defense
Technology
Changsha, Hunan, P.R. China
Email: wenjihong@nudt.edu.cn

Xingzhong Xiong

School of Automation & Information
Engineering
Sichuan University of Science and
Engineering
Zigong, Sichuan, P. R. China
Email: xzxiong@suse.edu.cn

Zhaobo Chen

School of Mechatronics Engineering
Harbin Institute of Technology Harbin
150001, P.R. China
Email: chenzb@hit.edu.cn

Fotios Georgiadis

School of Engineering
University of Lincoln
Lincolnshire LN6 7TS
United Kingdom
Email: fgeorgiadis@lincoln.ac.uk

Ryoichi Kurose

Department of Mechanical Engineering
and Science
Kyoto University, Kyoto, Japan
Email: kurose@mech.kyoto-u.ac.jp

Ke Li

Schlumberger Technology
200 Gillingham Lane
Sugarland, TX 77478, USA
Email: KLi2@slb.com

Diego Orlando

Department of Civil Engineering
Universidade do Estado do Rio de
Janeiro, Rio de Janeiro, Brazil
Email: dgorlando@gmail.com

Lianhua Wang

College of Civil Engineering
Hunan University
Changsha, Hunan, P.R. China
Email: Lhwang@hnu.edu.cn

Guozhi Yao

Modine Manufacturing Company
Racine, WI 53403, USA
Email: G.Yao@na.modine.com

Francesco Clementi

Department of Civil and Buildings
Engineering and Architecture
Polytechnic University of Marche
Ancona, Italy
Email: francesco.clementi@univpm.it

Lei Guo

School of Automation Science and
Electrical Engineering
Beihang University
Beijing, P.R. China
Email: lguo@buaa.edu.cn

Stefano Lenci

Dipartimento di Ingegneria Civile
Edile e Architettura, Universita'
Politecnica delle Marche via Brecce
Bianche, 60131 ANCONA, Italy
Email: lenci@univpm.it

Xiaofeng Liao

School of Electronic Information
Engineering
Southwest University
Chongqing, P.R. China
Email: xfliao@cqu.edu.cn

Laura Ruzziconi

Dipartimento di Architettura
Costruzioni e Strutture
Università Politecnica delle Marche
Ancona, Italy
Email: laura.ruzziconi@uniecampus.it

Hiroaki Watanabe

Department of Mechanical Engineering
Kyushu University
Nishi-ku, Fukuoka 819-0395, Japan
Email: whiroaki@mech.kyushu-u.ac.jp

Weinian Zhang

School of Mathematics,
Sichuan University
Chengdu, Sichuan, P.R. China
Email: wnzhang@scu.edu.cn