

Journal of Vibration Testing and System Dynamics

Editors

J. A. Tenreiro Machado

ISEP-Institute of Engineering of Polytechnic of Porto
Dept. of Electrical Engineering
Rua Dr. Antonio Bernardino de Almeida 431
4200-072 Porto, Portugal
Email: jtm@isep.ipp.pt

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

Associate Editors

Farbod Alijani

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

Mohamed Belhaq

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

Valentina E. Balas

Automatics and Applied Software
Department
Aurel Vlaicu University of Arad
Arad, Romania
Email: balas@drbalas.ro

Jinde Cao

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

Francesco Clementi

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

Yoshihiro Deguchi

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

Frank Z. Feng

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

Vladimir N. Grebenev

Institute of Computational Technologies
Siberian Division of Russian Academy of
Sciences (SDRAS)
630090 Akademgorodok, Novosibirsk,
Russia
Email: vngrebenev@gmail.com

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

School of Aeronautics and Astronautics
Shanghai Jiao Tong University
Shanghai, China 200240
Email: huangdeng9@sjtu.edu.cn

Nizar Jaber

Department of Mechanical Engineering
College of Engineering Sciences and
Applied Engineering
King Fahd University of Petroleum and
Minerals, Saudi Arabia
Email: nizar.jaber@kfupm.edu.sa

Hossein Jafari

Department of Mathematical Science
University of South Africa
Corner of Christiaan de Wet Road &
Pioneer Avenue, Florida, 1709
South Africa
Email: jafarh@unisa.ac.za

Krzysztof Kecik

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

Ryoichi Kurose

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

Journal of Vibration Testing and System Dynamics

Volume 5, Issue 4, December 2021

Editors

J.A.T. Machado

C. Steve Suh

Xian-Guo Tuo



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, 25 Glen Ed Professional Park, 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, 25 Glen Ed Professional Park, 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 advertising or other commercial opportunities, please email via lhscientificpublishing@gmail.com and your enquiry will be handled as soon as possible.

© 2021 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 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

Journal of Vibration Testing and System Dynamics is an interdisciplinary journal as a platform for facilitating the synergy of *dynamics, experimentation, design, and education*. The journal publishes high-quality, original articles that explore the theory, modelling, and application of dynamical systems and data-driven dynamics for high-impact engineering solutions. Manuscripts exploring data science, machine learning, and artificial intelligence to the design and control of complex dynamical systems including cell and neuro networks are solicited. Articles on data mining, deep learning and big data applicable to physical sciences and large-scale dynamic systems are equally encouraged. Progress made in the following topics, but not limited to, are of interest to the journal:

Data-Driven Dynamics and Control

- Artificial intelligence and machine learning
- Data and signal processing
- System identification
- Dynamical sensing and measurement
- Discrete dynamical systems

Dynamics of Continuum

- Flow induced vibrations
- Combustion dynamics
- Sensing, measurement and devices
- Thermoacoustic vibrations

Complex Networks and Systems

- Network dynamics and control
- Synchronization and collective behavior
- Networks of networks
- Consensus tracking

Design for Dynamics

- Dynamical failures and fatigues
- Structural dynamics and reliability
- Vibration testing and validation
- Multi-body dynamics
- Wave propagation and acoustics

Biological and Biomedical Physics

- Biological dynamics and biophysics
- Dynamics of bio-systems
- Neuro and brain dynamics
- Biomechanical systems and devices

Chemical Dynamics

- Dynamic chemical networks
- Mechanism of chemical reaction
- Molecular dynamics
- Process modelling and design

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

Author(s) should submit manuscript(s) via the website: <https://www.editorialmanager.com/vtsd/Default.aspx>. For any questions, author(s) can directly contact one of Editors. Manuscript preparation can follow the sample papers and journal manuscript templates (word file and Latex files), which can be downloaded from the website: <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 Options

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. The copyright is still held by the Publisher, but the open access permission is given to the author(s) as follows. Without any request of the open access publication, the accepted manuscripts are assumed to be published traditionally. This journal offers authors two choices to publish their research.

- *Open access:* Articles are freely available to both subscribers and the wider public with permitted reuse. An open access publication fee is payable by authors or their research funder.
- *Subscription:* Articles are made available to subscribers through our access programs. No open access publication fee.

L&H scientific does offer alternative open access publishing options in accordance with funding body requirements. Your publication choice will have no effect on the peer review process or acceptance of your submission.

Open Access Articles

- User rights

All articles published gold open access will be immediately and permanently free for everyone to read and download. We offer authors a choice of user licenses, which define the permitted reuse of articles. We are continuously working with our author communities to select the best choice of license options, currently being defined for this journal as follows:

Creative Commons Attribution (CC BY): lets others distribute and copy the article, to create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), to include in a collective work (such as an anthology), to text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND): for non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

- Open access publication fee

To provide open access, this journal has a publication fee which needs to be met by the authors or their research funders for each article published open access. The open access publication fee for this journal is USD 100 per page, excluding taxes.

Self-archiving Policy

Authors can share their research in a variety of different ways. The author(s) can also self-archive their author manuscript immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications.

An author is entitled to post the accepted manuscript in their institution's repository and make this public after an embargo period (known as self-archiving). The embargo period for this journal can be found below.

Without the L&H permission, the published journal article cannot be shared publicly, such as, on ResearchGate or Academia.edu, to ensure the sustainability of peer-reviewed research in journal publications.

Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before a manuscript becomes available for free to the public. This is called an embargo period and it begins from the date the article is formally published online in its final and fully citable form.

This journal has an embargo period of 24 months and the embargo period for the USA is 12 months.

Continued from inside front cover

Pawel Olejnik

Department of Automation,
Biomechanics and Mechatronics
Lodz University of Technology
1/15 Stefanowski Str., BLDG A22
90-924 Lodz, Poland
Email: pawel.olejnik@p.lodz.pl

Xu Sun

College of Mechanical and Transportation
Engineering
China University of Petroleum-Beijing
Beijing, 102249, China
Email: xsun@cup.edu.cn

Laura Ruzziconi

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

Xingzhong Xiong

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

Zhi-Ke Peng

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

Dimitry Volchenkov

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

Hiroaki Watanabe

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

Alexander P. Seyranian

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

Diego Orlando

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

Guo-Cheng Wu

Data Recovery Key Laboratory of Sichuan
Province
Neijiang Normal University, Neijiang
641100, China
Email: wuguocheng@gmail.com