

ISSN 1027-5851

# **International Journal of Acoustics and Vibration**

September 2019

Volume 24, Number 3

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2019) by International Institute of Acoustics & Vibration  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2019)

For permission requests, please contact International Institute of Acoustics & Vibration  
at the address below.

International Institute of Acoustics & Vibration  
c/o Dr. Malcolm J. Crocker  
1418 Wiggins Hall  
Auburn, AL 36849, USA

Phone: (334) 844-3248  
Fax: (334) 844-3306

[www.iiav.org](http://www.iiav.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

**EDITORIAL OFFICE****EDITOR-IN-CHIEF****Jorge P. Arenas****EDITOR EMERITUS****Malcolm J. Crocker****MANAGING EDITOR****Marek Pawelczyk****ASSOCIATE EDITORS****Dariusz Bismor****Zhuang Li****ASSISTANT EDITORS****Teresa Glowka****Sebastian Kurczyk****Karol Jablonski****Sara Bysko****Anna Chrąpowska****Szymon Ogonowski****Stanisław Wrona****EDITORIAL ASSISTANT****Margarita Maksotskaya****Tianna Graphenreid****Morgan Shaffer****Linwood Stevens****Elizabeth Robb****April Garrett****EDITORIAL BOARD****Jonathan D. Blotter**

Provo, USA

**Leonid Gelman**

Cranfield, UK

**Samir Gerges**

Florianópolis, Brazil

**Colin H. Hansen**

Adelaide, Australia

**Hugh Hunt**

Cambridge, England

**Dan Marghitu**

Auburn, USA

**Manohar Lal Munjal**

Bangalore, India

**Kazuhide Ohta**

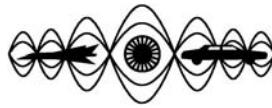
Fukuoka, Japan

**Goran Pavic**

Villeurbanne, France

**Subhash Sinha**

Auburn, USA

**International Journal of  
Acoustics and Vibration**

A quarterly publication of the International Institute of Acoustics and Vibration

**Volume 24, Number 3, September 2019****EDITORIAL****Aeroacoustics***Ricardo E. Musafir* . . . . . 393**ARTICLES****Nonlinear Vibration Analysis of Prestressed Double Layered Nanoscale****Viscoelastic Plates** *Farzad Ebrahimi and S. Hamed S. Hosseini* . . . . . 394**Analysis on the Aeroelastic Stability of Open Cylindrical Shells in Subsonic****Airflow Using the Theoretical and Two-way CFD/CSD Coupled Methods** *Yu-Yang Chai, Feng-Ming Li and Zhi-Guang Song* . . . . . 408**Energy Distribution Analysis Regarding the Crack Size in a Rotating Shaft***Cristina Castejón, María Jesús Gómez, Juan Carlos García-Prada and Eduardo Corral* . . . . . 418**Thermo-Mechanical Vibration Analysis of Imperfect Inhomogeneous Beams Based on a Four-Variable Refined Shear Deformation Beam Theory****Considering Neutral Surface Position** *Farzad Ebrahimi and Ali Jafari* . . . . . 426**Static and Dynamic Stability Analysis of a Rotating Taper Beam Having Elliptical Cross Section Subjected to Pulsating Axial Load With Thermal Gradient***Madhusmita Pradhan, Mrunal Kanti Mishra and Pushparaj Dash* . . . . . 440**Comparisons of Paraboloidal Shells and Sinusoidal-Shaped Shells in Natural Frequencies***Yeong-Bin Yang and Jae-Hoon Kang* . . . . . 451**Characteristics of In-Plane Waves in Composite Plates***K. Renji, S. Josephine Kelvina Florence and Sameer Deshpande* . . . . . 458**Determination of Roller Bearing Inner Race Defect Width Based on Vibration Signal***Mohamed El Morsy and Gabriela Achtenová* . . . . . 467**Research on Dynamic Model of Double Helical Gear Pair Based on TCA and LTCA***Cheng Wang, Shouren Wang and Gaoqi Wang* . . . . . 476**Thermal Vibrations of a Graphene Sheet Embedded in Viscoelastic Medium based on Nonlocal Shear Deformation Theory***Ashraf M. Zenkour and A. H. Al-Subki* . . . . . 485**Analytical Solution for Free Vibration of Annular Mindlin Plate with a Circumferential Open Crack***Eshagh Derakfishan, Mahboobeh Fakhrzarei and Shahram Derakfishan* . . . . . 494**Study of Static and Dynamic Stability of an Exponentially Tapered Revolving Beam Exposed to a Variable Temperature Grade under Axial Loading***Rakesh Ranjan Chand, Pravat Kumar Behera, Madhusmita Pradhan and Pushparaj Dash* . . . . . 504

**EDITORIAL OFFICE****EDITOR-IN-CHIEF****Jorge P. Arenas****EDITOR EMERITUS****Malcolm J. Crocker****MANAGING EDITOR****Marek Pawelczyk****ASSOCIATE EDITORS****Dariusz Bismor****Zhuang Li****ASSISTANT EDITORS****Teresa Glowka****Sebastian Kurczyk****Karol Jablonski****Sara Bysko****Anna Chrąpowska****Szymon Ogonowski****Stanisław Wrona****EDITORIAL ASSISTANT****Margarita Maksotskaya****Tianna Graphenreid****Morgan Shaffer****Linwood Stevens****Elizabeth Robb****April Garrett****EDITORIAL BOARD****Jonathan D. Blotter**

Provo, USA

**Leonid Gelman**

Cranfield, UK

**Samir Gerges**

Florianópolis, Brazil

**Colin H. Hansen**

Adelaide, Australia

**Hugh Hunt**

Cambridge, England

**Dan Marghitu**

Auburn, USA

**Manohar Lal Munjal**

Bangalore, India

**Kazuhide Ohta**

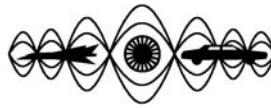
Fukuoka, Japan

**Goran Pavic**

Villeurbanne, France

**Subhash Sinha**

Auburn, USA

**International Journal of  
Acoustics and Vibration**

A quarterly publication of the International Institute of Acoustics and Vibration

**Volume 24, Number 3, September 2019****ARTICLES**

<b>Vibration Modelling and Verification for Rotor-Support-Casing Coupling System with Misalignment Fault</b> <i>Nanfei Wang, Dongxiang Jiang, Yizhou Yang and Kamran Behdinan</i>	511
<b>Effects of Elastic Restraints on the Fundamental Frequency of Nonlocal Nanobeams with Tip Mass</b> <i>Malesela K. Moutlana and Sarp Adali</i>	520
<b>Vibration Characteristics of Plate Structures Embedded with Acoustic Black Holes and Distributed Dynamic Vibration Absorbers</b> <i>Xiuxian Jia, Yu Du, Ye Yu and Kunmin Zhao</i>	531
<b>Two-Temperature Thermoelastic Damping of a Gold Nano-Beam Resonator with Variable Young's Modulus</b> <i>Hamdy M. Youssef and Alaa A. El-Bary</i>	540
<b>Modal Analysis of Mistuned Turbine Blade Packet Due to Combined Blade and Lacing Wire Damage</b> <i>Mangesh S. Kotambkar</i>	546
<b>Optimized Mounting Positions for Vibratory Machines in Buildings Based on Structure-Borne Sound Power Transmission and Machine Stability</b> <i>Zhen Wang, Cheuk Ming Mak and Dayi Ou</i>	558
<b>Achieving More Stringent Levels of Comfort via an Adaptive Fuzzy Controller Optimized by the Gravitational Search Algorithm for a Half-Body Car Model</b> <i>Mohammad Javanbakht and Mohammad Javad Mahmoodabadi</i>	567
<b>Pulsation Attenuation Analysis of Double-Chamber Composite Hydraulic Suppressors with Inserted Conical Tubes</b> <i>Fan Yang and Bin Deng</i>	578
<b>Effects of Elliptical Ring Electrodes on Shear Vibrations of Quartz Crystal Plates</b> <i>Rongxing Wu, Ji Wang, Jianke Du and Jiashi Yang</i>	586
<b>The Key Role of Headrest Optimization in Driver Comfort</b> <i>Hamid Gheibollahi, Masoud Masih-Tehrani and Mohammadmehdī Njoobakfi</i>	592
<b>Equilibrium and Forced Vibration of an Axially Moving Belt with Belt-Pulley Contact Boundaries</b> <i>Hu Ding</i>	600
<b>Application of a Bandpass Filter for the Active Vibration Control of High-Speed Rotors</b> <i>Miroslav Pawlenka, Miroslav Mahdal, Jiří Tůma and Adam Bureček</i>	608
<b>About the Authors</b>	616