

ISSN 1027-5851

# **International Journal of Acoustics and Vibration**

June 2016

Volume 21, Number 2

**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© (2016) by International Institute of Acoustics & Vibration  
All rights reserved.

Printed by Curran Associates, Inc. (2016)

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  
Malcolm J. Crocker

MANAGING EDITOR  
Marek Pawelczyk

ASSOCIATE EDITORS  
Dariusz Bismor  
Nickolay Ivanov  
Zhuang Li

ASSISTANT EDITORS  
Teresa Glowka  
Sebastian Kurczyk  
Karol Jablonski

EDITORIAL ASSISTANT  
Jill Glover Roberts  
Macie Franklin

## EDITORIAL BOARD

Jorge P. Arenas  
Valdivia, Chile

Jonathan D. Blotter  
Provo, USA

Leonid Gelman  
Cranfield, UK

Samir Gerges  
Florianópolis, Brazil

Colin H. Hansen  
Adelaide, Australia

Hugh Hunt  
Cambridge, England

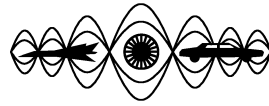
Dan Marghitu  
Auburn, USA

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 21, Number 2, June 2016

## EDITORIAL

The ICSV23 — from Ancient to Modern Acoustics  
*Konstantinos Vogiatzis* . . . . . 136

## ARTICLES

Dynamic Stability Analysis of a Circularly Tapered Rotating Beam  
Subjected to Axial Pulsating Load and Thermal Gradient under Various  
Boundary Conditions  
*Rashmita Parida and Pusparaj Dash* . . . . . 137

Method for Evaluating the Statistical Relationship between Sound  
Pressure Level and Noise Annoyance Based on a Nonlinear Time Series  
Regression Model and an Experiment  
*Hisako Orimoto, Akira Ikuta and Yegui Xiao* . . . . . 145

Multi-objective Optimization of a Multi-chamber Perforated Muffler  
Using an Approximate Model and Genetic Algorithm  
*Shuguang Zuo, Kaijun Wei and Xudong Wu* . . . . . 152

Developing Vibration Equations of an Orthotropic Wrapped Shell,  
Considering Residual Stress Effects; A Mathematical Approach  
*Amirali Sadeqi, Mojtaba Mahzoon and Mohammad Hassan Kadivar* . . . . . 164

Vibration Analysis of Cracked Beams Using Adomian Decomposition  
Method and Non-Baseline Damage Detection via High-Pass Filters  
*Qibo Mao* . . . . . 170

Vibration Analysis of Non-homogenous Orthotropic Visco-elastic  
Rectangular Plate of Parabolically Varying Thickness with Thermal Effect  
*Pooja Singhal and Arun Kumar Gupta* . . . . . 178

Characterisation of Major Fault Detection Features and Techniques for the  
Condition-Based Monitoring of High-speed Centrifugal Blowers  
*Samer Gorwid, Roger Dixon and Saud Ghani* . . . . . 184

Experimental and Theoretical Approach to Generalized Empirical Data-  
based Model of Noise in Ceiling Fan  
*Rupesh V. Bhortake and Bimesh Kumar* . . . . . 192

An Investigation of Initial Shock Cell Formation in Turbulent Coanda Wall  
Jets  
*Caroline P. Lubert, Christian R. Schwantes and Richard J. Shafer* . . . . . 199

Geometrically Nonlinear Free Axisymmetric Vibrations Analysis of  
Thin Circular Functionally Graded Plates Using Iterative and Explicit  
Analytical Solution  
*Rachid El Kaak, Khalid El Bikri and Rhali Benamar* . . . . . 209

Two-Temperature Generalized Thermoelastic Infinite Medium with  
Cylindrical Cavity Subjected To Time Exponentially Decaying Laser Pulse  
*Eman A. N. Al-Lehaibi* . . . . . 222

About the Authors . . . . . 230

## INFORMATION

IIAV Fellows and Senior Member . . . . . 235