

LODZ UNIVERSITY OF TECHNOLOGY

Volume 19

Number 1, 2015

**Mechanics
and
Mechanical
Engineering**

Editor in Chief: Tomasz Kapitaniak

Łódź, Poland

**MECHANICS AND
MECHANICAL ENGINEERING
International Journal**

Editor in chief – Tomasz Kapitaniak

Mechanics and Mechanical Engineering
Editorial Office

Division of Dynamics, Lodz University of Technology
90-924 Łódź, Poland, Tel. (48 42) 636 68 22

Editorial board

J. Brindley – Leeds	M. S. El Naschie – Cambridge
J. Giergiel – Rzeszów	W. Ostachowicz – Gdańsk
M. Giergiel – Kraków	Z. Peradzyński – Warsaw
W. Kaniewski – Łódź	W.-H. Steeb – Johannesburg
Z. Kazimierski – Łódź	C. Szczepaniak – Łódź
M. Królak – Łódź	A. Tylikowski – Warsaw
K. Li – Michigan	K. E. Thylwe – Stockholm
J. Manevich – Dniepropetrovsk	M. Wiercigroch – Aberdeen
A. Nayfeh – Blacksburg	

Editorial Secretary: A. Jach, anna.jach@p.lodz.pl

Scope of the journal

Mechanics and Mechanical Engineering publishes original papers, notes, and invited review articles from all fields of theoretical and applied mechanics as well as mechanical engineering. In addition to the classical fields, such as Rigid Body Dynamics, Elasticity, Plasticity, Hydrodynamics and Gas Dynamics, it gives special attention to recently developed and boundary areas of mechanics. As a rule, only contributions written in English will be accepted.

ISSN 1428–1511

e-ISSN 2354–0192

on-line: www.kdm.p.lodz.pl

Copyright Tomasz Kapitaniak, 2002-2015

Submission of manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if, and when the manuscript is accepted for publication, by authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without consent of the copyright holders.

CONTENTS

Prasun DUTTA and Nityananda NADINI

Effect of Reynolds Number and Curvature Ratio on Single Phase Turbulent Flow in Pipe Bends 5

Osman M. KAMEL

A Semi-Analytic First Order Jupiter – Saturn Planetary Theory 17

C. SARAVANAN, K. SUBRAMANIAN, K., V. ANANDA KRISHNAN, R. SANKARA NARAYANAN

Effect of Particulate Reinforced Aluminium Metal Matrix Composite –A Review 23

M. VENKATESAN, N. SHENBAGA VINAYAGA MOORTHY, P. ARUL FRANCO, A. MANIVANNAN and R. KARTHIKEYAN

Hydrous Methanol Fuelled HCCI Engine Using Ignition Improver CAI Method - ANN Approach 31

Mateusz SZANIEWSKI, Artur DĄBROWSKI, Marek BALCERZAK and Piotr ZAWIASA

Application of the Lyapunov Exponent Based on Current Vibration Control Parameter (CVC) in Control of an Industrial Robot 51

Mieczyslaw JARONIEK and Tadeusz NIEZGODZIŃSKI

Element Birth and Death Method Application to Lamellar Crack Analysis 63

