

TECHNICAL UNIVERSITY OF ŁÓDŹ

Volume 15

Number 2, 2011

**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, Technical University of Łódź
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	B. Skalmierski – Częstochowa
Z. Kazimierski – Łódź	W.-H. Steeb – Johannesburg
M. Królak – Łódź	C. Szczepaniak – Łódź
K. Li – Michigan	A. Tylikowski – Warsaw
J. Manevich – Dniepropetrovsk	K. E. Thylwe – Stockholm
A. Nayfeh – Blacksburg	M. Wiercigroch – Aberdeen

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.

Copyright Tomasz Kapitaniak, 2002-2010

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 it 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for publication, by authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without consent of the copyright holders.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

Marta SOLECKA, Marcin KAMIŃSKI and Jacek SZAFRAN

Comparison of the Aluminium Versus Steel Telecommunication Towers
in Stochastic Finite Element Method Eigenvibrations Analysis 101

Marian PERLIKOWSKI

Nonlinear Normal Modes of Three Degree of Freedom Mechanical Oscillator 117

Łukasz BORKOWSKI

Dynamic of Three Unidirectionally Coupled Duffing Oscillators 125

Mariusz URBANIAK and Tomasz KUBIAK

Local Dynamic Buckling of C-Shape Profile Subjected to Bending 133

Przemysław SZUMIŃSKI

Perturbation Method in the Analysis of Manipulator Inertial Vibrations 149

Andrzej MRÓZ

Stability Analysis of a Plane, Rectangular, Boron-epoxy Laminated
Plate Basing on Strength Properties Determined by Different Methods 161

Osman M. KAMEL and Adel S. SOLIMAN

On The Generalized Hohmann Transfer with Plane Change Using
Energy Concepts. Part I 183

Osman M. KAMEL

Determination of the Classical Orbital Elements of the Perturbed
and Perturbing Planets from First Principles. Part I: Outline 193

