

# Sādhanā

## Academy Proceedings in Engineering Sciences

Volume 32, 2007

### CONTENTS

#### Special Issue on Flow Control and Diagnostics

Foreword		1–5
Flow diagnostics using fibre optics <i>B Vasudevan, Srikanth Padbidri and M Chandra Kishore</i>		7–18
Resection methodology for PSP data processing: Recent experiences in NAL <i>Channa Raju and L Venkatakrishnan</i>		19–27
Wavelet diagnostics for detection of coherent structures in instantaneous turbulent flow imagery: A review <i>Roddam Narasimha</i>		29–42
The dynamics of surge in compression systems <i>A N Vishwanatha Rao and O N Ramesh</i>		43–49
Organised structures in wall turbulence as deduced from stability theory-based methods <i>P K Sen, S V Veeravalli, P W Carpenter, G Joshi and P S Josan</i>		51–64
Some indications from instability results about the effectiveness of wall heating as a control option for channel flow <i>A Sameen and Rama Govindarajan</i>		65–81
Some thoughts on separation control strategies <i>P R Viswanath</i>		83–92
Compressible dynamic stall vorticity flux control using a dynamic camber airfoil <i>M S Chandrasekhara</i>		93–102
Laminar separation bubbles: Dynamics and control <i>Sourabh S Diwan and O N Ramesh</i>		103–109
On wake response to asymmetric blowing in spurts from a blunt trailing edge <i>S D Sharma and R R Pant</i>		111–122

Experimental investigation of drag reduction by forward facing high speed gas jet for a large angle blunt cone at Mach 8	<i>Balla Venukumar and K P J Reddy</i>	123–131
Turbulence and drag control in jet and wake flows	<i>S Rajagopalan and R A Antonia</i>	133–144
Vortex-acoustic lock-on in bluff-body and backward-facing step combustors	<i>S R Chakravarthy, R Sivakumar and O J Shreenivasan</i>	145–154
Surface wave propagation in a fluid-saturated incompressible porous medium	<i>Rajneesh Kumar and B S Hundal</i>	155–166
Free vibration analysis of beams by using a third-order shear deformation theory	<i>Mesut Şimşek and Turgut Kocatürk</i>	167–179
The problem of isotropic rectangular plate with four clamped edges	<i>C Erdem İmrak and Ismail Gerdemeli</i>	181–186
Indian practice on estimation of scour around bridge piers — A comment	<i>Umesh C Kothiyari</i>	187–197
Time-wise variation of scouring at bridge abutments	<i>A Melih Yanmaz and Omer Kose</i>	199–213
SSI analysis of a massive concrete structure based on a novel convolution/deconvolution technique	<i>J Rajasankar, Nagesh R Iyer, B Yerraya Swamy, N Gopalakrishnan and P Chellapandi</i>	215–234
Design and performance characteristics of an electromagnetic interference shielded enclosure for high voltage Pockels cell switching system	<i>A K Sharma, K K Mishra, M Raghuramaiah, P A Naik and P D Gupta</i>	235–242
Investigation of stress–strain models for confined high strength concrete	<i>Metin Husem and Selim Pul</i>	243–252
TCP with header checksum option for wireless links: An analytical approach towards performance evaluation	<i>Pawan Kumar Gupta and Joy Kuri</i>	253–275
Erratum		277

**Special Issue on Transportation Research – Safety and Sustainability**

Foreword		279–283
Health burden of urban transport: The technical challenge	<i>Carlos Dora</i>	285–292
Success and failures in urban transport planning in Europe—understanding the transport system	<i>Hermann Knoflacher</i>	293–307
Traffic planning for non-homogeneous traffic	<i>Geetam Tiwari, Joseph Fazio and Sushant Gaurav</i>	309–328
Should bus commuting be subsidized for providing quality transport services? – A case for Delhi	<i>Akshaya K Sen, Geetam Tiwari and V Upadhyay</i>	329–345
Air flow through a non-airconditioned bus with open windows	<i>S R Kale, S V Veeravalli, H D Punekar and M M Yelmule</i>	347–363
Prediction of traffic fatalities and prospects for mobility becoming sustainable-safe	<i>Matthijs J Koornstra</i>	365–395
The increasing importance of the biomechanics of impact trauma	<i>Murray Mackay</i>	397–408
Finite element crash simulations of the human body: Passive and active muscle modelling	<i>S Mukherjee, A Chawla, B Karthikeyan and A Soni</i>	409–426
Motorcycle safety device investigation: A case study on airbags	<i>A Chawla and S Mukherjee</i>	427–443
Finite element modelling of helmeted head impact under frontal loading	<i>Praveen Kumar Pinnoji and Puneet Mahajan</i>	445–458
Three-wheeled scooter taxi: A safety analysis	<i>S Mukherjee, D Mohan and T R Gawade</i>	459–478
Heuristic algorithms for scheduling heat-treatment furnaces of steel casting industries	<i>M Mathirajan, V Chandru and A I Sivakumar</i>	479–500
Hybrid LES – Review and assessment	<i>S Vengadesan and P Nithiarasu</i>	501–511

Design and development of long-period grating sensors for temperature monitoring	<i>Smita Chaubey, Purushottam Joshi, Manoj Kumar, Rajesh Arya, A K Nath and Sanjay Kher</i>	513–519
A simple and efficient optical character recognition system for basic symbols in printed Kannada text	<i>R Sanjeev Kunte and R D Sudhaker Samuel</i>	521–533
Heat transfer and heating rate of food stuffs in commercial shop ovens	<i>P Navaneethakrishnan, P S S Srinivasan and S Dhandapani</i>	535–544
Influence of decelerating flow on incipient motion of a gravel-bed stream	<i>Hossein Afzalimhr, Subhasish Dey and Pooneh Rasoulianfar</i>	545–559
Quasi-static transient thermal stresses in a thick annular disc	<i>V S Kulkarni and K C Deshmukh</i>	561–575
Hybrid neural network model for the design of beam subjected to bending and shear	<i>H Sudarsana Rao and B Ramesh Babu</i>	577–586
Speed control of SR motor by self-tuning fuzzy PI controller with artificial neural network	<i>Ercument Karakas and Soner Vardarbasi</i>	587–596
Multi-dimensional modelling of spray, in-cylinder air motion and fuel–air mixing in a direct-injection engine	<i>N Abani, S Bakshi and R V Ravikrishna</i>	597–617
A tutorial survey of topics in wireless networking: Part I	<i>Anurag Kumar and D Manjunath</i>	619–643
A survey of topics in wireless networking: Part II	<i>Anurag Kumar and D Manjunath</i>	645–681
Influence of various acids on the physico–mechanical properties of pozzolanic cement mortars	<i>S Türkel, B Felekoğlu and S Dulluç</i>	683–691
<b>Subject Index</b>		693–699
<b>Author Index</b>		701–704