Spotlight on Structures

Research Journal of The Institution of Structural Engineers

In this section we shine a spotlight on papers recently published in *Structures* – the Research Journal of The Institution of Structural Engineers.

***Structures* is a collaboration between the Institution and Elsevier, publishing internationally-leading research across the full breadth of structural engineering which will benefit from wide readership by academics and practitioners.**

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Structures Prizes

The Institution of Structural Engineers has introduced two prizes for papers published in *Structures*: the Best Research Paper Prize and the Best Research into Practice Paper Prize. The prizes are judged by the Institution's Research Panel, and sponsored by Elsevier. Each prize carries an award of £500.

The inaugural prize winners, for papers published in 2015, were announced at the Institution's People and Papers Awards on 8 June. The winners were as follows:

Best Research Paper Prize

Modelling of beam response for progressive collapse analysis

Panagiotis M. Stylianidis, David A. Nethercot, Bassam A. Izzuddin and Ahmed Y. Elghazouli

Volume 3, August 2015

http://dx.doi.org/10.1016/j.istruc.2015.04.001

Local–distortional interaction in cold-formed steel columns: mechanics, testing, numerical simulation and design

André Dias Martins, Dinar Camotim, Pedro Borges Dinis and Ben Young

Volume 4, November 2015

http://dx.doi.org/10.1016/j.istruc.2015.10.005

Best Research into Practice Paper Prize

Advanced materials for concrete-filled tubular columns and connections

Ana Espinos, Manuel L. Romero, Antonio Hospitaler, Ana M. Pascual and Vicente Albero

Volume 4, November 2015

http://dx.doi.org/10.1016/j.istruc.2015.08.006

Articles in press

The following articles have recently been made available online:

Out-of-plane Testing of Unreinforced Masonry Walls Strengthened Using ECC Shotcrete

Y. Lin[a], Derek Lawley[b], Liam Wotherspoon[c] and Jason M. Ingham[c]

[a] EQ Struc Group, Auckland, New Zealand

[b] Reid Construction Systems, Auckland, New Zealand

[c] Department of Civil and Environmental Engineering, University of Auckland, New Zealand

http://dx.doi.org/10.1016/j.istruc.2016.04.005

Experimental study of flush end plate beam-to-column composite joints with precast slabs and deconstructable bolted shear connectors

Abdolreza Ataei, Mark A. Bradford and Xinpei Liu, Centre for Infrastructure Engineering and Safety, School of Civil and Environmental Engineering, UNSW Australia, Sydney, Australia

http://dx.doi.org/10.1016/j.istruc.2016.05.002

Review of Concrete Structures Strengthened with FRP against Impact Loading

Thong M. Pham and Hong Hao, Center for Infrastructural Monitoring and Protection, School of Civil and Mechanical Engineering, Curtin University, Bentley, Australia

http://dx.doi.org/10.1016/j.istruc.2016.05.003

Static and fatigue performance of resin injected bolts for a slip and fatigue resistant connection in FRP bridge engineering

Behrouz Zafari[a], Jawed Qureshi[b], J. Toby Mottram[c] and Rusi Rusev[d]

[a] Department of Civil Engineering, The Faculty of Science, Engineering and Computing, Kingston University London, UK

[b] School of Architecture, Computing and Engineering (ACE), University of East London, UK

[c] School of Engineering, The University of Warwick, Coventry, UK

[d] Mott MacDonald, Croydon, UK

http://dx.doi.org/10.1016/j.istruc.2016.05.004

Systems Reliability for 3D Steel Frames Subject to Gravity Loads

Wenyu Liu, Kim J.R. Rasmussen and Hao Zhang, School of Civil Engineering, the University of Sydney, Australia

http://dx.doi.org/10.1016/j.istruc.2016.06.002

Monotonic and reverse-cyclic load experiment for plywood and RC slab diaphragms used in timber-concrete hybrid building

Naohito Kawai[a], Hiroshi Isoda[b], Minoru Okabe[c] and Solomon Tesfamariam[d]

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[b] Laboratory of Structural Function, Research Institute for Sustainable Humanosphere, Kyoto University, Japan

[c] Tsukuba Building Research and Testing Laboratory of CBL, Tsukuba, Japan

[d] School of Engineering, The University of British Columbia, Kelowna, BC, Canada

http://dx.doi.org/10.1016/j.istruc.2016.05.011

The post-buckled failure of steel plate shear webs with centrally located circular cut-outs

J. Loughlan[a] and N. Hussain[b]

[a] Department of Aeronautical and Automotive Engineering, Loughborough University, UK

[b] School of Mechanical, Aerospace and Civil Engineering, University of Manchester, UK

http://dx.doi.org/10.1016/j.istruc.2016.05.010

Shakedown Behavior of a Continuous Steel Bridge Girder Strengthened With

Post-Installed Shear Connectors
Kerry Kreitman, Amir Reza Ghiami Azad, Michael Engelhardt, Todd Helwig and Eric Williamson, Ferguson Structural Engineering Laboratory, Austin, TX, USA
http://dx.doi.org/10.1016/j.istruc.2016.06.001

Fracture toughness of G450 sheet steels at ambient temperature subjected to tension
Cao Hung Pham, Dang Khoa Phan, Minh Toan Huynh and Gregory J. Hancock, School of Civil Engineering, the University of Sydney, Australia
http://dx.doi.org/10.1016/j.istruc.2016.05.012

Seismic Response and Engineering of Cold-formed Steel Framed Buildings
B.W. Schafer[a], D. Ayhan[a], J. Leng[a], P. Liu[a], D. Padilla-Llano[b] et al.
[a] Johns Hopkins University, USA
[b] Virginia Tech., USA
http://dx.doi.org/10.1016/j.istruc.2016.05.009

Dynamic Time-history Elastic Analysis of Steel Frames Using One Element per Member
Si-Wei Liu, Rui Bai and Siu-Lai Chan, Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China
http://dx.doi.org/10.1016/j.istruc.2016.05.006

Highlights
- Dynamic time-history elastic analysis by one-element-per-member model is proposed
- Geometric nonlinearity allowing large deflections and deformations are considered
- The curved arbitrarily-located-hinge (ALH) beam-column element is employed
- Direct time-integration method via Newmark's algorithm is utilized
- A significant saving in the computational expense is achieved

Spherical Dome Buckling With Edge Ring Support
J. Michael Rotter[a], Greig Mackenzie[b] and Martin Lee[c],
[a] Institute for Infrastructure and Environment, University of Edinburgh, UK
[b] Laing O'Rourke, Glasgow, UK
[c] Jacobs UK Ltd, Glasgow, UK
http://dx.doi.org/10.1016/j.istruc.2016.05.008

Distortional Influence of Pallet Rack Uprights Subject to Combined Compression and Bending
J. Bonada, M.M. Pastor, F. Roure and M. Casafont, Strength of Materials and Structural Engineering Department, ETSEIB, UPC, Spain
http://dx.doi.org/10.1016/j.istruc.2016.05.007

Design of Concrete Filled Tubular Beam-columns with High Strength Steel and Concrete
J.Y. Richard Liew, Mingxiang Xiong and Dexin Xiong, Department of Civil & Environmental Engineering, National University of Singapore, Singapore
http://dx.doi.org/10.1016/j.istruc.2016.05.005

Stressed Skin Effect on the Elastic Buckling of Pitched Roof Portal Frames
Zs. Nagy[a], A. Pop[a], I. Moiş[a] and R. Ballok[b]
[a] Technical University of Cluj-Napoca, Romania
[b] Gordias Ltd, Romania
http://dx.doi.org/10.1016/j.istruc.2016.05.001

Koiter Asymptotic Analysis of Thin-walled Cold-formed Steel Uprights Pallet Racks
V. Ungureanu[a,b], A. Madeo[c], G. Zagari[c], G. Zucco[c], D. Dubina[a,b] and R. Zinno[c]
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[b] Romanian Academy, Timisoara Branch, Romania
[c] University of Calabria, Italy
http://dx.doi.org/10.1016/j.istruc.2016.04.006