DRAFT PROGRAMME

The Eleventh International Conference on Computational Structures Technology

&

The Eighth International Conference on Engineering Computational Technology

4-7 September 2012
Dubrovnik - Croatia

organised by
Civil-Comp Press
Stirlingshire, UK
Computers & Structures publishes advances in the development and use of computational methods for the solution of problems in engineering and the sciences. The range of appropriate contributions is wide, and includes papers on establishing appropriate mathematical models and their numerical solution in all areas of mechanics. The journal also includes articles that present a substantial review of a field in the topics of the journal.

With the modern use of computers and numerical methods to model and solve problems, the traditional boundaries between the fields of solid/structural mechanics and fluid mechanics hardly exist any longer, and multiphysics problems are solved that involve all aspects of mechanics. The word ‘structures’ must therefore now be interpreted in a broad sense including solids, fluids and multiphysics.

The focus of Computers & Structures is on having an impact on the practice of simulations in mechanics as found in many industries and research endeavours, including the fields of engineering, such as civil and environmental, mechanical, biomechanical, automotive, aeronautical, and ocean engineering, and including the various fields of the sciences.
Future Conferences organised by Civil-Comp Press:

- The Third International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering
  venue: Pécs, Hungary
  period: 25-27 March 2013

- The Fourteenth International Conference on Civil, Structural and Environmental Engineering Computing
  venue: Cagliari, Sardinia, Italy
  period: 3-6 September 2013

- The Third International Conference on Soft Computing Technology in Civil, Structural and Environmental Engineering
  venue: Cagliari, Sardinia, Italy
  period: 3-6 September 2013

- The Second International Conference on Railway Technology: Research, Development and Maintenance
  venue: Ajaccio, Corsica, France
  period: 8-11 April 2014

- The Twelfth International Conference on Computational Structures Technology
  period: Autumn 2014

- The Ninth International Conference on Engineering Computational Technology
  period: Autumn 2014

For more information on these conferences, please visit:
- http://www.civil-comp.com/conf

For information on past conferences, please visit:
- http://www.civil-comp.com/pubs
Advances in Engineering Software
(including Computing Systems in Engineering)

The objective of this journal is to communicate recent and projected advances in computer-based engineering techniques. The fields covered include mechanical, aerospace, civil and environmental engineering, with an emphasis on research and development leading to practical problem-solving.

The scope of the journal includes:
- innovative computational strategies and numerical algorithms for large-scale engineering problems
- analysis and simulation techniques and systems
- model and mesh generation
- control of the accuracy, stability and efficiency of computational process
- exploitation of new computing environments (e.g. distributed heterogeneous and collaborative computing)
- advanced visualization techniques, virtual environments and prototyping
- applications of AI, knowledge-based systems, computational intelligence, including fuzzy logic, neural networks and evolutionary computations
- application of object-oriented technology to engineering problems
- intelligent human computer interfaces
- design automation, multidisciplinary design and optimization
- CAD, CAE and integrated process and product development systems
- quality and reliability

EDITORS:
R.A. Adey, A.K. Noor, B.H.V. Topping
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How to find a paper in the conference proceedings

The conference proceedings are published in five volumes (three invited lecture volumes and two summary volumes with full papers on the memory stick).

The invited lectures are published as follows:

- **volume LE: Computational Methods for Engineering Science**
  B.H.V. Topping, (Editor)
  Saxe-Coburg Publications, 2012

- **volume C5: Computational Technology Reviews, Volume 5**
  B.H.V. Topping, (Guest-Editor)
  Saxe-Coburg Publications, 2012

- **volume C6: Computational Technology Reviews, Volume 6**
  B.H.V. Topping, (Guest-Editor)
  Saxe-Coburg Publications, 2012
  ISBN 978-1-874672-60-9, ISSN 2044-8430, CTR: 6

The contributed papers are published in two summary volumes with the full papers available on the accompanying CD-ROMs as follows:

- **volume CST: Proceedings of the Eleventh International Conference on Computational Structures Technology**
  B.H.V. Topping, (Editor)
  Civil-Comp Press, 2012
  ISBN 978-1-905088-54-6, ISSN 1759-3433, CCP: 99

- **volume ECT: Proceedings of the Eighth International Conference on Engineering Computational Technology**
  B.H.V. Topping, (Editor)
  Civil-Comp Press, 2012

In this programme the letters immediately preceding a paper title refer to the volume identifier given above. For example: C5.1 refers to the first lecture of *Computational Technology Reviews Volume 5* and ECT.2 refers to the second paper in *Proceedings of the Eighth International Conference on Engineering Computational Technology*.
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Generally, you should reference a paper as below. The # mark must be changed into the paper number given on the summary and on the full length paper. No page numbers should be quoted.


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A note for authors presenting papers and chairmen

All authors should meet at the front of the meeting room for their session at least 10 minutes before the session starts. Each contributed paper has been allocated 15 minutes for presentation and questions. Chairmen should indicate when 10 minutes have passed and again after 12 minutes that the presenter should immediately finish. Three minutes are available for questions and comments.

Invited lectures have been allocated 30 minutes in total, of which 5 minutes may be used for questions.

Authors are kindly asked to keep to the time allocated to them by the Chairmen. Authors are discouraged from using their own laptops unless absolutely necessary, in which case they should ensure that they can quickly and efficiently start their presentation when requested by the Chairman.

Chairmen are requested to keep to the timetable. Changes to the programme will be indicated on the copies of the programme displayed on the conference timetable board and at the entrance to each of the rooms.

As a courtesy and in politeness to all speakers and other participants, please turn off your mobile phone whenever you enter any of the meeting and lecture rooms.

Journal special issue submission

For details of the format specification and procedures for submitting conference papers for possible publication in the journal special issues please see the final version of this programme
Conference timetable

Day 0: Tuesday 4 September 2012
15.00-19.00: Conference Office opens in Room Mare IV
17.00-18.15: Opening Plenary Session in Room Mare I
18.15: Drinks reception

Day 1: Wednesday 5 September 2012
08.00-18.00: Conference Office opens in Room Cempres
08.30-10.30: Parallel sessions
10.30-11.00: Coffee / Tea
11.00-12.30: Parallel sessions
12.30-13.45: Lunch (admission by ticket only) in the Restaurant
14.00-15.30: Parallel sessions
15.30-16.00: Coffee / Tea
16.00-18.00: Parallel sessions

Day 2: Thursday 6 September 2012
08.00-18.00: Conference Office opens in Room Cempres
08.30-10.30: Parallel sessions
10.30-11.00: Coffee / Tea
11.00-12.30: Parallel sessions
12.30-13.45: Lunch (admission by ticket only) in the Restaurant
14.00-15.30: Parallel sessions
15.30-16.00: Coffee / Tea
16.00-18.00: Parallel sessions
19:30: Coaches depart from the front entrance of the hotel to take guests to the Conference Dinner venue. (admission by ticket only)

Day 3: Friday 7 September 2012
08.30-16.00: Conference Office opens in Room Cempres
09.00-10.30: Parallel sessions
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12.30-13.45: Lunch (admission by ticket only) in the Restaurant
14.00-16.00: Parallel sessions
16.00-16.30: Coffee / Tea
Opening Plenary Session

17.00-18.15:

**Chairman:**

Professor B.H.V. Topping  
Heriot-Watt University, Edinburgh, United Kingdom, and  
University of Pécs, Hungary

**Young Researcher Best Paper Prize for CST2012**  
presented by Professor C. Sansour  
University of Nottingham, United Kingdom

**Young Researcher Best Paper Prize for ECT2012**  
presented by Professor R. Montenegro  
University of Las Palmas de Gran Canaria, Spain

**K.J. Bathe Award 2012 - Computers and Structures**  
presented by C. Christensen  
Publisher, Elsevier, New York NY, United States of America

**Invited Opening Lecture**

LE.1 Advances in the Multiphysics Analysis of Structures  
Professor K.J. Bathe  
Massachusetts Institute of Technology  
Cambridge MA, United States of America

Followed by a Drinks Reception.
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### Additional Notes
- ECT stands for Engineering, Computing and Technology.
- CST stands for Composite, Sandwich & Adaptive Structures.
- LE stands for Large Elements.
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<td><strong>Multi-Level Techniques</strong> ECT.88</td>
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<td><strong>Multi-Physics Problems</strong> ECT.85-87</td>
<td><strong>Expert Systems</strong> ECT.64</td>
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**INVITED LECTURE**

C6.1 Recent Developments in the Integration of Computer Aided Design and Analysis  
H. Lian, S.P.A. Bordas, R. Sevilla and R.N. Simpson

LE.4 A Component-Wise Approach in Structural Analysis  
E. Carrera, A. Pagani, M. Petrolo and E. Zappino

LE.3 Explicit Solutions for the Static and Dynamic Analysis of Discretized Structures with Uncertain Parameters  
G. Muscolino and A. Sofi

LE.10 Proper Generalized Decomposition Based Model Reduction: First Steps Towards a Change of Paradigm in Computational Mechanics  
F. Chinesta, A. Leygue, F. Bordeu, E. Cueto and A. Ammar

**AERONAUTICAL ENGINEERING**

ECT.129 Parametric Geometry Generation and Automatic Aerodynamic Analysis of Aircraft Rear Fuselage and Tail Surfaces  
R. Llamas-Sandin, A. Moreno-Herranz and N. Bailey-Noval

ECT.130 Multi-Disciplinary Design and Analysis of Aircraft Rear Fuselage and Tail Surfaces, R. Llamas-Sandin, A. Moreno-Herranz and N. Bailey-Noval

ECT.131 A Numerical Study of the Effects of Aerofoil Shape on Low Reynolds Number Aerodynamics  
H. Aono, T. Nonomura, M. Anyoji, A. Oyama and K. Fujii


ECT.133 Shape Optimisation and Performance Analysis of Flapping Wings  
M. Ghommem, N. Collier, A.H. Niemi and V.M. Calo

**MULTI-GRID METHOD**

ECT.89 A Multigrid Method using Explicit Approximate Inverses for the Numerical Solution of Two-Dimensional Time-Dependent Problems  
C.K. Filelis-Papadopoulos and G.A. Gravvanis
09.00-10.30: Chaired by (TBC)

**INVITED LECTURES**

LE.7 Strategies for Incorporating Material Discontinuities into Finite Element Formulations  
R. Darvizeh and K. Davey

LE.8 A Modelling Framework for Three-Dimensional Brittle Fracture  
C.J. Pearce, M. Mousavi Nezhad and L. Kaczmarczyk

C6.3 Material Length Scales in Fracture Analysis: From Gradient Elasticity to the Theory of Critical Distances  
L. Susmel and H. Askes

10.30-11.00: Coffee

11.00-12.30: Chaired by A. Formisano and R. Lewandowski

**INVITED LECTURE**

LE.11 Dynamic Soil-Structure Interaction: Reality versus Seismic Norms  
Y. Tsompanakis and P.N. Psarropoulos

**CONTROL OF STRUCTURES**

CST.275 The Continuation Method for Dynamic Problems of Frames with Viscoelastic Dampers, R. Lewandowski

CST.276 The Influence of Various Fractional Models of Viscoelastic Dampers on the Dynamic Behaviour of Structures, Z. Pawlak and R. Lewandowski

CST.277 A Differential Evolution Algorithm for Fuzzy Control of Smart Structures  
M. Marinaki, Y. Marinakis and G.E. Stavroulakis

CST.278 Vibration Control of Civil Engineering Structures using Magneto-Rheological Dampers, M.B. Cesar and R.C. Barros
08.30-10.30: Chaired by C.P. Tsai and R.I. Mackie

INVITED LECTURE

C5.4 Structural Seismic Optimisation using Meta-Heuristics and Neural Networks: A Review
E. Salajegheh and S. Gholizadeh

ARTIFICIAL NEURAL NETWORKS AND SUPPORT VECTOR MACHINES

ECT.68 The Application of Neural Networks to Predict Wind Waves
C.P. Tsai, C.C. Teng and C.H. Tsai
ECT.69 Optimization of Bracing Systems using Neural Networks
E.M. Elkassas and S.M. Swelem
J. Salajegheh, E. Salajegheh, M. Khatibinia and Sh. Khosravi
ECT.71 Support Vector Machine Modelling for the Compressive Strength of Concrete
A. Sriraam, S.K. Sekar and P. Samui
ECT.72 Pedotransfer Functions Development by means of the Ensemble Data-Driven Methodology, M. Cisty, J. Bezak and J. Skalova

10.30-11.00: Coffee

11.00-12.30: Chaired by M.P. Saka and A. Csébfalvi

INVITED LECTURE

C5.2 Recent Developments in Metaheuristic Algorithms: A Review
M.P. Saka and E. Dogan

ENGINEERING DESIGN OPTIMIZATION USING RECENT METAHEURISTIC TECHNIQUES

Special session organised by M.P. Saka
ECT.49 Differential Evolution Assisted by Surrogate Models for Structural Optimization Problems, E. Krempser, H.S. Bernardino, H.J.C. Barbosa and A.C.C. Lemonge
ECT.50 An Improved Hybrid Method for the Multi-Mode Resource-Constrained Project Scheduling Problem, A. Csébfalvi and E. Szendrői
ECT.51 Phenotype Building Blocks and Geometric Crossover in Structural Optimisation, A. Maheri, T. Macquart, D. Safari and M.R. Maheri
ECT.52 Improving the Big Bang-Big Crunch Algorithm for Optimum Design of Steel Frames, O. Hasançebi and S. Kazemzadeh Azad
08.30-10.30: Chaired by J. Sarrate and F. Ledoux

**MESH GENERATION AND ADAPTION**  
Special session organised by J. Sarrate and F. Ledoux

ECT.30  An Analysis of the Transformation Requirements for Digital Mock-Ups of Structural Assembly Simulations  
F. Boussuge, J.-C. Léon, S. Hahmann and L. Fine

ECT.31  Automatic Generation of the Structural Layout of Aircraft Rear Fuselage and Tail Surfaces including Global Finite Elements and CAD Model  
N. Bailey-Noval, R. Llamas-Sandin and A. Moreno-Herranz

ECT.32  An Independent Mesh Model Process to Write Meshing Algorithms  
C. de Bellabre, F. Ledoux and J.C. Weill

ECT.33  Surface Meshing with Metric Gradation Control  
P. Laug and H. Borouchaki

ECT.34  Evaluation of Radial Basis Functions for the Deformation of Unstructured Meshes, P.E. Kouskouris and I.K. Nikolos

ECT.35  Three-Dimensional Finite Element Modelling of Stack Pollutant Emissions  
R. Montenegro, A. Oliver, E. Rodríguez, J.M. Escobar, G. Montero and A. Pérez-Foguet

ECT.36  Untangling and Smoothing of Quadrilateral and Hexahedral Meshes  
T.J. Wilson, J. Sarrate, X. Roca, R. Montenegro and J.M. Escobar

10.30-11.00: Coffee

11.00-12.00: Chaired by D. Eyheramendy and B. Patzák

**OBJECT-ORIENTED METHODS**

ECT.73  Using WCF and TPL in Distributed and Parallel Finite Element Analysis  
R.I. Mackie

ECT.74  Efficient Parallelization of Java Applications for Semantic Web by means of the Message-Passing Interface, A. Cheptsov

ECT.75  An Advanced Java Approach for the Development of Finite Element Codes  
R. Saad and D. Eyheramendy

**MULTI-PHYSICS SIMULATIONS**

CST.255  Object Oriented Design of a Coupled, Multi-Physics Finite Element Kernel  
M. Horák and B. Patzák
08.45-10.30: Chaired by W. Salvatore and R. Calçada

**FATIGUE ASSESSMENT AND DAMAGE CONTROL OF RAILWAY BRIDGES**
Special session organised by W. Salvatore and G. De Roeck

CST.103 The Non-Linear Influence of Ballast on the Vibrations of Railway Bridges  
J.-M. Battini

CST.104 Fatigue Assessment of a Riveted Plate Girder Railway Bridge: Numerical and Experimental Investigations, V. Zabel, A. Schmidt and I. Reichert

CST.105 Dealing with Uncertainty in Advanced Frequency-Domain Operational Modal Analysis, B. Peeters, M. El-Kafafy and P. Guillaume

CST.106 Fatigue Assessment of a Bowstring Railway Bridge  
C. Albuquerque, R. Calçada and P.M.S.T. de Castro

CST.107 Experimental Analysis and Fatigue Assessment of a Railway Steel Viaduct  
L. Vincenzi, M. Savoia and W. Salvatore

CST.108 Vehicle-Bridge Interactive Analyses on the Lagoscuro Viaduct  
L. Vincenzi, M. Savoia and F. Rossi

CST.109 Assessment of Dynamic Loads on Railway Bridges  
H. Bigelow, B. Hoffmeister and M. Feldmann

10.30-11.00: Coffee

11.00-12.30: Chaired by W. Salvatore and J.-M. Battini

CST.110 Local Fatigue Analysis using a Long Term Monitoring System at the Trezói Railway Bridge, F. Marques, C. Moutinho and Á. Cunha

CST.111 Weigh in Motion Measurement and Experimental Fatigue Assessment of a Railway Bridge  
G. Chellini, M. Orlando, W. Salvatore, G. Sorrentino and M. Tisalvi

CST.112 The Assessment of Riveted Railway Bridges in accordance with Swiss Codes SIA 269, M.A. Tschumi

CST.113 Stochastic Modelling of Fatigue Crack Progression using the DOProC Method, M. Krejsa

CST.114 Train-Bridge Interaction and Fatigue on Railway Bridges  
A. Bekö and L. Rossbacher

CST.115 A Numerical Approach for Local Fatigue Analysis of Bridge Details: Analysis of Two Portuguese Case Studies  
A.L.L. Silva, A.M.P. Jesus and A.A. Fernandes
09.00-10.30: Chaired by D. Camotim and C. Basaglia

STABILITY, NON-LINEAR BEHAVIOUR AND DESIGN OF STEEL STRUCTURES
Special session organised by D. Camotim and C. Basaglia

CST.1 The Influence of Residual Stresses on the Buckling Behaviour of Rack Uprights, M.M. Pastor, J. Bonada, F. Roure and M. Casafont
CST.2 Interactive Buckling of Thin-Walled I-Section Columns M.A. Wadee and L. Bai
CST.3 The Behaviour of Beam-Column Elements with Variable I Cross-Sections considering Lateral Restraints, I.M. Cristutiu and A.I. Dogariu
CST.4 Finite Element Analysis of Failure Modes for Cellular Steel Beams B. Dervinis and A.K. Kvedaras
CST.5 Numerical Evaluation of Column Base Rigidity J. Razzaghi and A. Khoshbakht
CST.6 Computational Non-Linear Buckling Analysis of an Elastically Restrained Steel Beam, I. Misiunaite and A. Juozapaitis

10.30-11.00: Coffee

11.00-12.30: Chaired by F. Roure and R.G. Beale

CST.7 Calculation of Initial Post-Buckling Behaviour of Moderately Thick Plates using an Exact Finite Strip S.A.M. Ghannadpour, H.R. Ovesy and E. Zia-Dehkordi
CST.8 Finite Element Analysis of Light Gauge Steel Plate Shear Walls E.B. Machaly, S.S. Safar and M.A. Amer
CST.10 Shear Strength of End Web Panels S.S. Safar
CST.12 The Torsion Effects on the Non-Linear Behaviour of Thin-Walled Beams: A Finite Element Approach, F. Mohri, N. Damil and M. Potier-Ferry
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<td><strong>ERROR ESTIMATION</strong></td>
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<td>CST.297 A Practical Tool for Estimating Errors of Stresses in Assemblies</td>
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<td>S. Pavot, E. Florentin, P. Pasquet and S. Guinard</td>
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<td><strong>NUMERICAL TECHNIQUES IN ENGINEERING</strong></td>
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<td>ECT.80 Approximate Solutions of Two-Dimensional Caputo Fractional Diffusion Equations, D.P. Zielinski and V.R. Voller</td>
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<td>ECT.81 Quadrature-Free Characteristic Methods for Convection-Diffusion Problems, M. Tabata</td>
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<td><strong>MATHEMATICAL VISUALISATION</strong></td>
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<td>ECT.61 Visualizing Nonlinear Implicit Functions, I. Kožar</td>
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<td><strong>ENGINEERING ANALYSIS AND SIMULATION</strong></td>
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<td>ECT.77 Modelling and Simulation Tests of an Electrohydraulic Servo-Drive with a Stepping Motor, A. Myszkowski</td>
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<td>ECT.78 A Numerical Approach to the Effect of Surface Texturing on Parallel Thrust Bearings, F. Abate, V. D'Agostino and R. Di Giuda</td>
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<td>ECT.79 Investigation and Rationalization of Assembly System Productivity using the “Mean Time Between Failures” Parameter, O. Ciszak</td>
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<td><strong>ROCK MECHANICS</strong></td>
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<td>ECT.110 Simulation of the Long-Term Behaviour of an Underground Structure in Rock Salt, A. Pudewills</td>
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<td>ECT.111 Linearization of the Hoek-Brown Failure Criterion for Non-Hydrostatic Stress Fields, S.K. Sharan and R. Naznin</td>
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<td><strong>GEOTECHNICAL ENGINEERING</strong></td>
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<td>ECT.107 Influence of Microscopic Factors on Lateral Earth Pressure using the Discrete Element Approach, M.-C. Weng and C.-C. Cheng</td>
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<td>ECT.108 Assessment of the Stress-Strain State of Earth Dams, M.M. Mirsaidov, T.Z. Sultanov and D.A. Khodzhaev</td>
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<td>ECT.109 Seismic Stability of Reinforced Soil Slopes, I. Tzavara, V. Zania, Y. Tsompanakis and P.N. Psarropoulos</td>
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14.00-15.30: Chaired by J. Blachut and A. Limam

INVITED LECTURE

LE.2 Past, Present and Future Research in Computational Stability of Civil Engineering Structures at Vienna University of Technology
H.A. Mang and X. Jia

STRUCTURAL STABILITY: MODELLING, SIMULATION AND EXPERIMENTS
Special session organised by J. Blachut and A. Limam

CST.162 Stability, Breathing and Design of Steel Girders subjected to Repeated Loading, M. Škaloud, M. Zörnerová and Sh. Urushadze
CST.163 Elastic Buckling of Conical Shells under the Combined Loading of Axial Compression and External Pressure, J. Blachut and D. Stanier
CST.164 Non-Linear Buckling of Conical Shells under External Hydrostatic Pressure C.T.F. Ross, T. Eeeles, C. Fraser, J. Burt, M. Fitzgerald, C. Knipe, A. Little
CST.165 The Effect of a Thermal Barrier on the Buckling and Post-Buckling Behavior of Pressurized Aluminum Cylindrical Shells subjected to Shear A. Limam, J. Didier, A. Da-Silva, F. Marteau and F. Lorioux

15.30-16.00: Coffee

16.00-17.30: Chaired by J. Blachut and A. Limam

CST.166 Assessing the Effect of Two Entering Triangular Initial Geometric Imperfections on the Buckling Strength of an Axisymmetric Shell subjected to Uniform Axial Compression, A. Khamlichi and A. Limam
CST.167 Effects of Approximations on the Lateral-Torsional Buckling and Postbuckling Analysis, Y.-L. Pi and M.A. Bradford
CST.168 Analytical and Experimental Investigations of Crippling in Multiplate Rods and Panels, G. Zamula and I. Kondakov
CST.169 Dynamic Instability of Circular Cylindrical Shells subject to Base Excitation F. Pellicano
CST.170 Buckling of Structures with Interacting Propagating Cracks D.C. Tran and A. Limam
CST.171 Tripping Instability of Ring Stiffened Cylinders induced by Underwater Explosions, Y.O. Shin and Y.S. Shin
14.00-15.30: Chaired by L. Pallares and M.A. Bradford

**INVITED LECTURE**

**LE.16** Finite Element Modelling of Steel-Caged Reinforced Concrete Columns
J.M. Adam, J. Garzón-Roca, P.A. Calderón and F.J. Pallarés

**COMPOSITE AND HYBRID STRUCTURES OF STEEL AND CONCRETE**

Special session organised by L. Pallares

- **CST.151** Structural Response of a Composite Beam subject to Cyclic Loading Conditions considering the Interfacial Slip Effect
  J.W. Hwang, H.G. Kwak and Y.H. Lee
- **CST.152** Nonlinear Finite-Element Analysis of the Shear Behaviour of Stud Connectors, Q. Wang, Y.Q. Liu and J.P. Lebet
- **CST.153** Computational Modelling of Deconstructable Composite Steel-Concrete Beams, M.A. Bradford and Y.-L. Pi
- **CST.154** Creep and Shrinkage Analysis of Curved Composite Beams Including the Effects of Partial Interaction, X. Liu, R.E. Erkmen and M.A. Bradford

15.30-16.00: Coffee

16.00-17.45: Chaired by L. Pallares and R.E. Erkmen

- **CST.155** Analysis of Steel-Concrete Beams: Influence of Time Dependent Effects, Cracking and Connection Flexibility, R.F. Vieira and F. Virtuoso
- **CST.156** A Study of Modelling Composite Connections in Two and Three Dimensions
  M.N. Kataoka and A.L.H.C. El Debs
- **CST.157** A Parametric Study of the Development of Transverse Deck Cracking
  A. Abdel-Mohti and A. ElSafty
- **CST.158** Rheological-Dynamical Limit Analysis of Reinforced Concrete Folded Plate Structures using the Harmonic Coupled Finite-Strip Method
- **CST.159** Ductility Demand on Steel Reinforcing Bars in Concrete Buildings
  A. Braconi, F. Braga, S. Caprili, R. Gigliotti and W. Salvatore
- **CST.160** Automatic Calculation of Optimum Reinforcement for Flexural and Axial Loading, A. Tomás, G. Sánchez and A. Alarcón
- **CST.161** Finite Element Modelling of Steel-Caged Reinforced Concrete Columns subjected to Combined Bending and Axial Loads
  J. Garzón-Roca, J.M. Adam, L. Pallarés and P.A. Calderón
14.00-15.30: Chaired by V.V. Toropov

**INVITED LECTURES**

C5.1 Recent Developments in Derivative-Free Multiobjective Optimisation
A.L. Custódio, M. Emmerich and J.F.A. Madeira

C5.3 Numerical Methods in Probabilistic Topology Optimisation: A Review
J. Lógó and E. Pintér

C5.5 Exact Analytical Solutions in Structural Topology Optimisation: A Review
G.I.N. Rozvany

15.30-16.00: Coffee

16.00-17.45: Chaired by K. Marti and L.M.C. Simões

**INVITED LECTURE**

LE.9 Stochastic Optimal Open-Loop Feedback Control
K. Marti

**RELIABILITY BASED OPTIMIZATION:**
**STATIONARY AND DYNAMIC PROBLEMS**
Special session organised by K. Marti, G.I. Schuëller and H.A. Jensen

CST.203 An Open Computational Framework for Reliability Based Optimization
E. Patelli and M. de Angelis

CST.204 Reliability Assessment and Reliability-Based Design of Plastic Shallow Curved Plates, L.M.C. Simões

CST.205 Deterministic and Reliability-Based Optimization of a Belt- Conveyor Bridge
L.M.C. Simões, J. Farkas and K. Jármái

CST.206 The Coupling of Robust Metamodel and Heuristic Methods in Reliability Based Design Optimization, N. Rabhi, M. Guedri and N. Bouhaddi

CST.207 Topology Optimization for the Case of Probabilistic Loading
J. Lógó, E. Pintér and D.B. Merczel
Day 1: Wednesday 5 September 2012: PM  
Room Mare IV

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|               | LE.5 Structural Computations for Deployable Structures  
A.S.K. Kwan                                                                                                                                                                                                 |
|               | **SPACE, CABLE, MEMBRANE AND SHELL STRUCTURES**                                                                                                                                                          |
|               | CST.239 Theoretical and Experimental Analysis of Tensegrity Structures  
S. Kmet and P. Platko                                                                                                                                                                                   |
|               | CST.240 Numerical Analysis of Cable Structures  
M. Hüttner, J. Máca and P. Fajman                                                                                                                                                                          |
|               | CST.241 Optimization of Arch Supported Tensile Roofs  
K. Hincez                                                                                                                                                                                                  |
|               | CST.242 A New Approach for Shell Form Finding combining Numerical and Physical Design Tools, D. Weiss and S. Adriaenssens                                                                                      |
| 15.30-16.00   | Coffee                                                                                                                                                                                                     |
| 16.00-18.00   | Chaired by M. Cuomo and T. Rabczuk                                                                                                                                                                         |
|               | **NEW APPLICATIONS OF ISOGEOMETRIC METHODS TO STRUCTURAL ANALYSIS,** Special session organised by M. Cuomo, L. Greco and A. Reali                                                                                   |
|               | CST.220 Shape Optimization using Isogeometric Analysis and Particle Swarm Optimization, A. Pospíšilová, M. Lepš, D. Rypl and B. Patzák                                                                                                                                   |
|               | CST.221 Isogeometric Shell Formulation based on a Classical Shell Model  
A.H. Niemi, N. Collier, L. Dalcin, M. Ghommem and V.M. Calo                                                                                                                                               |
|               | CST.222 Multi-Patch Isogeometric Analysis of Space Rods  
L. Greco and M. Cuomo                                                                                                                                                                                     |
|               | **ISOGEOMETRIC ANALYSIS**                                                                                                                                                                                  |
|               | Special session organised by T. Rabczuk                                                                                                                                                                     |
|               | ECT.43 Transient Analysis of Laminated Composite Plates using Isogeometric Analysis  
N. Valizadeh, S.Sh. Ghorashi, H. Yousefí, T.Q. Bui and T. Rabczuk                                                                                                                                     |
|               | ECT.44 An Isogeometric Approach for Free Vibration and Buckling Analysis of Laminated Composite Plates  
N. Valizadeh, S. Shojaee, E. Izadpanah, T.Q. Bui and V.T. Vu                                                                                                                                               |
|               | ECT.45 Singularities in Isogeometric Analysis  
T. Takacs                                                                                                                                                                                                     |
|               | ECT.46 Orthotropic Enriched Extended Isogeometric Analysis for Fracture Analysis of Composites, S.Sh. Ghorashi, N. Valizadeh and S. Mohammadi                                                                                                                                |
|               | ECT.47 Extended Isogeometric Analysis of Plates with Curved Cracks  
S.Sh. Ghorashi, N. Valizadeh, S. Mohammadi and T. Rabczuk                                                                                                                                                  |
Day 1: Wednesday 5 September 2012: PM  
Room Dubrava I

14.00-15.30: Chaired by J. Bencat and K. Stypula

VIBRATION EFFECTS ON STRUCTURES AND ENVIRONMENTS
Special session organised by J. Bencat and K. Stypula
CST.174 Train Induced Free Field Vibrations Experimental and Numerical Analysis J. Bencat and M. Škarupa
CST.175 Numerical Analysis of Railway Track Vibrations J. Bencat and J. Konar
CST.176 The Design of Rail Tracks including the Influence of Vibration on People in Buildings, J. Kawecki, K. Koziol and K. Stypula
CST.177 Methods of Assessment for Vibration Impact on People in Buildings J. Kawecki and K. Stypula

15.30-16.00: Coffee

16.00-18.00: Chaired by J. Bencat, K. Stypula and M. Matos Neves

CST.178 Paraseismic Loading of Bridge Structures D. Papán
CST.179 Dynamic Stability of a Non-linear Continuous System Subjected to Vertical Seismic Excitation, J. Náprstek and C. Fischer
CST.180 Dynamic Identification of a Pedestrian Bridge using Operational Modal Analysis, D. Foti, S. Ivorra, D. Bru and G. Dimaggio

RECENT ADVANCES IN STRUCTURAL ANALYSIS AND OPTIMIZATION FOR ACOUSTICS AND VIBRATIONS
Special session organised by M. Matos Neves
CST.211 Transient Fluid-Structure Interaction Analysis of Exhaust Gas Recirculation Cooler Pipes, T. Grätsch
CST.212 Efficient Calculation of the Added Mass Matrix for Vibration Analysis of Submerged Structures, L.E. Monterrubio and P. Krysl
CST.209 Two Scale Modelling of Acoustic Waves in Phononic Plates using Homogenization of High-Contrast Media, E. Rohan, R. Cimirman, B. Miara
14.00-15.30: Chaired by M.A. Wadee and M.M. Pastor

STABILITY, NON-LINEAR BEHAVIOUR AND DESIGN OF STEEL STRUCTURES
Special session organised by D. Camotim and C. Basaglia

CST.13  Progressive Collapse and Robustness of Steel Framed Structures
  A. Formisano and F.M. Mazzolani
CST.14  Axial-Shear Force-Bending Moment Interaction in Elastoplastic Analysis of Steel Frames, M.M.S. Manola and V.K. Koumousis
CST.15  On the Imperfection Sensitivity of Thin-Walled Frames
  S. Gabriele, N. Rizzi and V. Varano
CST.16  Imperfection Sensitivity Analysis of the Behaviour of Single Storey Frames with Tapered Web Members, I.M. Cristutiu and D.L. Nunes
CST.17  The Influence of Elastic Boundary Conditions on the Stability of Steel Frames, P. Luhakooder and I. Talvik
CST.18  Structural Design of Frames Able to Prevent Element Buckling
  F. Giambanco, S. Benfratello, L. Palizzolo and P. Tabbuso

15.30-16.00: Coffee

16.00-17.45: Chaired by H.R. Ovesy and J.W. Bull

CST.19  Nonlinear Flexural-Torsional Dynamic Analysis of Beams of Variable Cross Section using the Boundary Element Method: Application to the Analysis of Wind Turbine Towers, E.J. Sapountzakis and I.C. Dikaros
CST.21  The Effects of Seismic Loading on Pallet Rack Semi-Rigid Joints
CST.22  Computer-Based Nonlinear Analysis for the Seismic Performance Assessment of Three-Dimensional Steel Frameworks
  C.G. Chiorean, G. Tarta, I. Marchis and M. Buru
CST.24  A Hysteretic Displacement Based Fibre Beam Element
  I.A. Gkimousis and V.K. Koumousis

ALUMINIUM STRUCTURES
CST.267 A Commentary on Improving the Design Rules for Thin Aluminium Shell Structures, J.W. Bull
14.00-15.30: Chaired by N.J. Shih and S.-H. Tung

**IMAGING AND DIGITAL REPRESENTATION**

ECT.55 Three-Dimensional Scans of the Taipei Commercial District  

ECT.57 Block Matching Algorithms for Load Test Evaluation  
G. Almeida, F. Melicio and J. Fonseca

ECT.58 A Method for the Evaluation of the Casting Accuracy of a Cast Iron Body  
A. Gessner and R. Staniek

ECT.59 Simulation of Machining Allowance Mass Minimization of Iron Castings  
K. Mrozek and A. Gessner

ECT.60 Numerical Methods for Digitally Synthetic Holograms  
A. Lotfi

ECT.56 Calibration of the Sensor Direction in the Simplified Three-Dimensional Digital Image Correlation Method  
S.-H. Tung, M.-H. Shih and W.-P. Sung

15.30-16.00: Coffee

16.00-17.45: Chaired by Y.S. Shin and J.K. Kim

**ANALYTICAL AND EXPERIMENTAL PERFORMANCE OF HYBRID, COMPOSITE, CONCRETE STRUCTURAL SYSTEMS AND TOWER CRANES**

Special session organised by H.C. Kim, W.K. Hong and Y.S. Shin


ECT.24 The Design of Special Truss Moment Frames Against Progressive Collapse  
H.K. Kang, J.Y. Park and J.K. Kim

ECT.25 The Effect of Cross Sectional Area on the Fire Performance of High Strength Concrete Columns, H.S. Kim, Y.H. Kim and Y.S. Shin

ECT.26 Management Processes for Tower Crane Selection and Support Design  

ECT.27 The Effect of Fibre Reinforced Polymer Sizes on Debonding when Retrofitting Reinforced Concrete Beams  
Y.H. Kim, Y.S. Shin and H.S. Kim

ECT.28 A Study on the Shear Behaviour of Reinforced Concrete Beams Embedded with Glass Fibre Reinforced Polymer Plates  
J.H. Choi, M.S. Kim, Y.H. Lee, D.J. Kim and H.C. Kim

ECT.29 The Experimental and Analytical Investigation of the Flexural Capacity of Pre-Cast Composite Beams  
Day 2: Thursday 6 September 2012: AM
Room Mare I

08.30-10.30: Chaired by C.F. Castro and M.M. Resch

**CFD AND MODELLING OF FLOW**

ECT.117 Multi-Physics Computational Fluid Dynamics Modelling of Three-Phase Flow in a Nano-Particle Separator using the Particle-Based Method
R. Takahashi, M. Suzuki, M. Yamamoto and H. Kitada

ECT.118 Comparison of the Continuity Vorticity Pressure, Auxiliary Potential and Implicit Potential Methodologies for Incompressible Flow in Straight Ducts
M. Georgiou, P.K. Papadopoulos and P.M. Hatzikonstantinou

ECT.119 A Dynamic Wall-Model for Large-Eddy Simulation of High Reynolds Number Shock-Induced Separated Flows, S. Kawai and J. Larsson

ECT.120 Modelling Fluidized Beds using Coupled Discrete Element Modelling with Computational Fluid Dynamics
C. Marie, S. Al Arkawazi, K. Benhabib and P. Coorevits

ECT.121 A Boundary Element Method for the Computation of Unsteady Sheet Cavitation Effects in Marine Propeller Flows
M. Bauer and M. Abdel-Maksoud


ECT.124 Turbulence in the Artificial Boundary Layer of Photovoltaic Power Plants
A. Tesar

10.30-11.00: Coffee

11.00-12.15: Chaired by M. Schaefer

**FLUID-STRUCTURE INTERACTION**

ECT.116 Effect of Structural Deformation on Underwater Implosions
J.S. Briscoe and S.W. Lee

**INVITED LECTURES**

LE.6 Towards Numerical Prediction of Galloping Events of Iced Conductors
W.G. Habashi, A. Borna and G. McClure

C6.2 Strategies for Solving Fluid-Structure Interaction Problems
M. Ya-Alimadad, R. Prosser and K. Davey
09.00-10.30: Chaired by C.M. Mota Soares, A.L. Araujo and F. Moleiro Duarte

COMPOSITE, SANDWICH AND ADAPTIVE STRUCTURES: MODELLING, OPTIMIZATION, SIMULATION AND TESTING
Special session organised by C.M. Mota Soares, A.L. Araujo and F. Moleiro Duarte

CST.37 A Finite Element for Bending Analysis of Sandwich Composite Beams
P. Belbute, A.L. Araújo, S. Teixeira de Freitas and M. de Freitas

CST.38 Finite Element Modeling of Shear Deficient Beams Bonded with Aluminum Plates, A. Abu-Obeidah, R. Hawileh and J.A. Abdalla

CST.39 Multiscale Design and Optimization of Bi-Material Laminated Structures
P.G. Coelho, H.C. Rodrigues and J.M. Guedes

CST.40 Local and Global Pareto Dominance in Multi-Populations Evolution applied to Optimization of Composites, C.A.C. António

CST.41 A Two-Node Finite Element for Linear Magneto-Electric Laminated Timoshenko Beams, A. Milazzo and C. Orlando

CST.42 A Mathematical Model of a Five Layer Sandwich Beam
K. Magnucki, M. Smyczynski and P. Jasion

CST.43 Collapse of Carbon and E-Glass Composite Tubes under External Hydrostatic Pressure, P.T. Smith, A.P.F. Little and C.T.F. Ross

CST.44 Analysis of Cracked and Notched Composites applying a New Formulation of the Scaled Boundary Finite Element Method
R. Dieringer and W. Becker

10.30-11.00: Coffee

11.00-12.30: Chaired by C.M. Mota Soares, A.L. Araujo and F. Moleiro Duarte

CST.45 Modelling of Piezocomposite Functionally Graded Plates for Active Vibration Control, M. Pietrzakowski

CST.46 Numerical Analysis of the Initiation of Delamination in Fibre Composites
J.-W. Simon and S. Reese

CST.47 Large Deformation Analysis of Laminated Composite Plates
T. Yildiz, Y. Olcay and H. Darendeliler

CST.48 Analysis of the Mechanical Behaviour of Composites and their Bonded Assemblies under Tensile or Compression Shear Out-of-Plane Loads
L. Sohier, J.Y. Cognard and P. Davies

CST.49 A Finite Element Model for Analysis of Laminated Soft Core Sandwich Structures, A.L. Araújo, C.M. Mota Soares and C.A. Mota Soares

CST.50 Elastic Solids Reinforced with Random Fibres Developing Large Deformations: A Finite Element Approach
M.S.M. Sampaio, H.B. Coda and R.R. Paccola
08.30-10.30: Chaired by J. Logo and G.I.N. Rozvany

SHAPE AND TOPOLOGY OPTIMISATION

CST.231 On the Design of a Compliant Mechanism with Non-Uniform Thermal Effects using Evolutionary Structural Optimization
E. Vegueria, R. Ansola, J. Canales and A. Maturana

CST.232 Generating Structural Configurations Having a Number of Specified Eigenfrequencies using a Level Set-Based Topology Optimization Method
T. Yamada, T. Matsumoto and S. Nishiwaki

CST.233 Shape and Topology Optimization of Elastic Contact Problems using the Piecewise Constant Level Set Method, A. Myslinski

CST.234 From Optimal Structural Configuration to Truss Optimization
C.Y. Lin, J.F. Chang and J.Y. Juang

CST.235 Optimal Fibre Reinforcement for Masonry Structures using Topology Optimization, M. Bruggi, G. Milani and A. Taliercio

CST.236 Symmetry of Solutions in Discrete and Continuous Structural Topology Optimization
J.N. Richardson, S. Adriaenssens, Ph. Bouillard and R. Filomeno Coelho

CST.237 Topology Optimisation of Bodies in Unilateral Contact by Maximizing the Potential Energy, N. Strömberg

CST.238 Shape Optimization of Membrane Structures based on Finite Element Simulation, C.W. Lim, V.V. Toropov and J. Ye

10.30-11.00: Coffee

11.00-12.30: Chaired by A. Csébfalvi and M. Lepš

DESIGN OF EXPERIMENTS

ECT.76 A Method for Maximin Constrained Design of Experiments
E. Myšáková, M. Lepš and A. Kucerová

CST.229 Estimation of Critical Flutter Load of a Non-Uniform L-Shaped Beam subjected to a Follower Force, I. Takahashi

MULTI-LEVEL OPTIMISATION

CST.230 Gradient-Enhanced Metamodels and Multiparametric Strategies for Designing Structural Assemblies, L. Laurent, P.A. Boucard and B. Soulier

OPTIMISATION FOR ENGINEERING PRACTICE

ECT.65 A Hybrid Metaheuristic for Project Scheduling Problems with Fuzzy Activity Durations to support the Ōs-Dráva Water Management Programme
S. Danka and A. Csébfalvi

ECT.66 Optimization of Pipeline Routes using an AIS/Adaptive Penalty Method
R.R. de Lucena, B.S.L.P. de Lima, B.P. Jacob and D.M. Rocha

ECT.67 Which is the Best? A Statistically Correct Comparison of Heuristic Results in Structural Optimization, A. Csébfalvi
Day 2: Thursday 6 September 2012: AM
Room Mare IV

08.30-10.30: Chaired by L. Godinho and D. Dias da Costa

**NOVEL NUMERICAL METHODS IN SOLID MECHANICS**
Special session organised by L. Godinho and D. Dias da Costa

CST.181 A Quadratic Ten Node Tetrahedral Cosserat Point Element for Nonlinear Elasticity, M. Jabareen, E. Hanukah and M.B. Rubin

CST.182 Axisymmetric Large Deflection Analysis of an Annular Circular Plate subject to Rotational Symmetric Loading, M. Altekin and R.F. Yükseler

CST.183 Bipenalty Methods for Single-Point and Multi-Point Constraints in Computational Dynamics
J. Hetherington, A. Rodriguez-Ferran and H. Askes

CST.184 A New Method for Solving Random Vibration Problems
M. Grigoriu

CST.185 A Hybrid Approach for Modelling Wave Propagation near Hollow Elastic Pipelines, P. Amado-Mendes, L. Godinho and A. Pereira


CST.187 Efficient Linear and Non-Linear Finite Element Formulation using a New Local Enhancement of Displacement Fields for Triangular Elements
L. Damkilde and R.R. Pedersen

CST.188 Biomechanics of the Willis Circle Arteries
D.V. Ivanov, L.Yu. Kossovich, Y.E. Salkovsky and N.G. Chernyshevsky

10.30-11.00: Coffee

11.00-12.30: Chaired by J.R. Torregrosa and A. Cordero

**NUMERICAL METHODS FOR SOLVING NONLINEAR PROBLEMS**
Special session organised by J.R. Torregrosa and A. Cordero

ECT.37 Numerical Behaviour of Support Splitting and Merging in Nonlinear Diffusion Equations, K. Tomoeda

ECT.38 Using a Model of Hysteresis for Linearization of Piezo Bender Distortion
M. Pelic and R. Staniek

ECT.39 Using Optical Flow for Analyzing the Dynamics of the Bouncing Ball System
D. Ginestar, J.L. Hueso, E. Martinez and J. Riera

ECT.40 A Family of Optimal Methods for Solving Nonlinear Equations
A. Cordero, J.L. Hueso, E. Martinez and J.R. Torregrosa

ECT.41 Dynamic Aspects of Damped Newton's Method
J.M. Gutiérrez, A.A. Magreñán and N. Romero

ECT.42 Dynamic Behaviour of Steffensen-Type Methods
F. Chicharro, A. Cordero and J.R. Torregrosa
Day 2: Thursday 6 September 2012: AM  
Room Dubrava I

09.00-10.30: Chaired by J.V. Araujo dos Santos and H.M.R. Lopes

**DAMAGE IDENTIFICATION METHODS**
Special session organised by J.V. Araujo dos Santos and H.M.R. Lopes

CST.74  Improvement in Damage Localisation using Speckle Shearography  
H. Lopes, J.V. Araújo dos Santos, P. Moreno-García and F. Ferreira

CST.75  Damage Localisation in Composite Laminated Plates using Higher Order Spatial Derivatives  
P. Moreno-García, H. Lopes, J.V. Araújo dos Santos and N.M.M. Maia

CST.76  Detection of Localized Damage for Beams using a Frequency Based Method  
F. El Khannoussi, A. Khamlichi, A. Hajraoui and A. Limam

CST.77  A Method to Detect and Assess Damage in Beams based on Frequency Changes, G.-R. Gillich, Z.-I. Praisach and D. Amariei

CST.78  Detection of Multiple Cracks in Beams using the Superposition Property  
Z.-I. Praisach, G.-R. Gillich and D. Amariei

CST.79  Damage Detection for Beams subject to Moving Loads based on Wavelet Transforms  
J.M. Machorro-López, A. Bellino, S. Marchesiello and L. Garibaldi

10.30-11.00: Coffee

11.00-12.30: Chaired by J.V. Araujo dos Santos and H.M.R. Lopes

CST.80  Structural System Identification in the Presence of Resonant Non-Structural Appendages  
E. Matta, R. Ceravolo, A. De Stefano, A. Quattrone and L. Zanotti Fragonara

CST.81  A Subspace Fitting Method based on Finite Elements for Identification and Localisation of Damage in Mechanical Systems  
G. Gautier, R. Serra and J.-M. Mencik

CST.82  Damage Detection of Truss Structures using an Improved Charged System Search Algorithm, A. Kaveh and A. Zolghadr

CST.83  Statistical Multi-Objective Structural Damage Identification based on Dynamic Parameters, R. Perera, E. Sevillano and A. Ruiz

CST.84  Damage Detection in Beam Structures using a Combined Genetic Algorithm and Nonlinear Optimisation System, S. Aktasoglu and M. Sahin

CST.85  Influence of Incomplete Modal Data on the Performance of a Vibration-Based Damage Detection Methodology, J.E. Laier and J.D. Villalba
## Day 2: Thursday 6 September 2012: AM
**Room Dubrava II**

09.00-10.30: Chaired by E.J. Sapountzakis and F. Mohri

### STABILITY, NON-LINEAR BEHAVIOUR AND DESIGN OF STEEL STRUCTURES
Special session organised by D. Camotim and C. Basaglia

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<td>The Optimal Drift Design Method to Control the Elastic and Inelastic Performance of Steel Moment Frames</td>
<td>S.W. Choi, J.H. Lee, Y.S. Kim and H.S. Park</td>
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<td>CST.28</td>
<td>Buckling, Post-Buckling, Collapse and Design of Thin-Walled Steel Continuous Beams and Frames, C. Basaglia, D. Camotim and H.B. Coda</td>
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<td>CST.29</td>
<td>A Finite Element Study of the Severe Temperature Effect on the Behaviour of Elliptical Hollow Section Columns</td>
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10.30-11.00: Coffee

11.00-12.30: Chaired by D. Camotim and C. Basaglia

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<th>Local and Global Stability Analysis of a Large Free Span Steel Roof Structure, Z. Nagy, I.M. Cristutiu and Z. Kiss</th>
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<td>A Parametric Study of Cold-Formed Steel Bolted Joints in Pitch-Roof Portal Frames, Z. Nagy and P. Pernes</td>
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<td>A Study on the Behaviour of H-shaped Beam-to-Column Connections with Newly Reformed T-Stubs, S.M. Shin and D.K. Lee</td>
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<td>Nonlinear Finite Element Modelling of Welded Pinned Connections with and without Web Angles, J. Razzaghi and A. Pourali</td>
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<td>CST.36</td>
<td>Introducing an Innovative Column Splicing Technique for Steel Structures M. Foroughi and M.A. Barkhordari</td>
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Day 2: Thursday 6 September 2012: AM
Room Kokpit

08.45-10.30: Chaired by P. Coorevits and A. Kaveh

STRUCTURAL MECHANICS
CST.266 Hypergraph Products for Structural Mechanics
A. Kaveh and B. Alinejad

SHAKEDOWN
CST.268 Eurocode Stability Requirements in Optimal Shakedown Truss Design
J. Atkociunas and G. Blaževicius
CST.269 Shakedown Analysis in $n$-dimensional Loading Spaces with Kinematical Hardening, J.-W. Simon

FINITE ELEMENT STUDIES
CST.270 A Study of the Structural Design of a Bottle with Vacuum Insulation
K. Utsumi, T. Kobayashi, T. Horiuchi, T. Tanaka and Y. Arao
CST.271 Development and Implementation of Numerical Strategies for Nonlinear Dynamic Analysis of Risers using the Finite Element Method
J.A.G. Sánchez and H.B. Coda
CST.272 Development of a Vehicle Suspension Finite Element Model for Kerb Impact Simulations, W.Z. Golinski

FINITE ELEMENT TECHNIQUES
ECT.103 Modelling of Multi-Material Assemblies using an Equivalent Finite Element
O. Omram, V.D. Nguyen, H. Jaffâl, P. Marchand and P. Coorevits

10.30-11.00: Coffee

11.00-12.30: Chaired by E. Carrera and J. Novak

COMPUTER AIDED DESIGN
ECT.62 A Three-Dimensional CAD Engine: Implementing Parametric Modelling
S. Kubota, E. Kitagawa, K. Monobe, K. Nakamura and S. Tanaka
ECT.63 Fundamental Research concerning a Three-Dimensional CAD Engine
K. Monobe, S. Kubota, E. Kitagawa, K. Nakamura and S. Tanaka

FINITE ELEMENT STUDIES
ECT.104 Simulation of Mechanical and Thermal Properties for Sandwich Panels with Cellular Wood Cores, E. Labans, K. Kalnins and A. Bikovs
ECT.105 The Prototype Repository Test: Thermal Model Verification
J. Novak

THERMAL PROBLEMS
CST.246 An Exact Elastic Plastic Solution for a Thin Disc subject to Thermal Loading
O. Chesnikova, A. Pirumov and S. Alexandrov

THERMO-MECHANICAL ANALYSIS
CST.247 Thermo-Mechanical Analysis of Isotropic and Orthotropic Beams using a Unified Formulation, D. Crisafulli, G. Giunta, E. Carrera and S. Belouettar
Day 2: Thursday 6 September 2012: PM  
Room Mare I

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| C6.4         | Recent Progress in the Mechanics and Design of Liquid-Containment Shell Structures  
A. Zingoni |
| LE.13        | Numerical Modelling of Thin Pressurised Membranes  
A. Eriksson |
| LE.14        | Analytical Non-Linear Stability of a Continuous System as a Benchmark Study for Computational Formulations  
M.A. Bradford and Y.-L. Pi |
| 15.30-16.00  | Coffee |
| 16.00-17.45  | Chaired by F.J. Montáns and J. Plešek |
|              | **MATERIAL MODELLING AND IDENTIFICATION** |
| CST.259      | A Two-Scale Micromechanical Model for Closed-Cell Aluminium Foams  
J. Nemecek and V. Králík |
| CST.260      | Spline-Based Hyperelasticity for Transversely Isotropic Incompressible Materials, M. Latorre and F.J. Montáns |
| CST.261      | Strain Behaviour of Concrete subjected to Combined Mechanical and Thermal Loading: From Micromechanical Modelling to Simulation of Real-Scale Fire Tests, T. Ring, M. Zeiml and R. Lackner |
| CST.262      | The Elastic-Viscoelastic Correspondence Principle and Parameter Identification, T. Ohkami, S. Matsuura and S. Koyama |
| CST.263      | Obtaining Material Properties from Indentation Loading-Unloading Curves using Simplified Equations, J.J. Kang, M. Boris, A.A. Becker and W. Sun |
| CST.264      | Calibration of a Distortional Hardening Model of Plasticity  
J. Plešek, Z. Hrubý, S. Parma, H.P. Feigenbaum and Y.F. Dafalias |
| CST.265      | Numerical Analysis of Concrete at an Early Age  
A. Ilc, G. Turk and I. Planinc |
### Day 2: Thursday 6 September 2012: PM
**Room Mare II**

**14.00-15.30:** Chaired by C.M. Mota Soares, A.L. Araujo and F. Moleiro Duarte  
**COMPOSITE, SANDWICH AND ADAPTIVE STRUCTURES: MODELLING, OPTIMIZATION, SIMULATION AND TESTING**  
Special session organised by C.M. Mota Soares, A.L. Araujo and F. Moleiro Duarte  
**CST.51** Thermal Postbuckling Behaviour of Rectangular Functionally Graded Plates using the Finite Strip Method  
H.R. Ovesy, S.A.M. Ghannadpour and M. Nassirnia  
**CST.52** A Passive Approach to the Development of High Performance Composite Laminates with Improved Damping Properties  
J.M. Silva, M. Piriz, P.V. Gamboa, R. Cláudio, N. Nunes and J. Lopes  
**CST.53** The Dispersion Function of a Quasi Two-Dimensional Periodic Sandwich using a Dirichlet-to-Neumann Map, N.T. Bagraev, G.J. Martin, B.S. Pavlov, A.M. Yafyasov, L.I. Goncharov and A.V. Zubkova  
**CST.55** A Mixed Mode Cohesive Law for Z-Pinned Composite Delamination  
H. Cui, S. Koussios, Y.-L. Li and A. Beukers  
**CST.56** Investigation of Lightweight Composite and Hybrid Primary Aircraft Structures, A. Shanygin  

**15.30-16.00:** Coffee

**16.00-18.00:** Chaired by C.M. Mota Soares and A.J.M. Ferreira  
**CST.57** Accurate Stresses for Homogeneous and Composite Beams  
J. Aalto, R. Syrjä and C.A. Ribas  
**CST.58** Sequentially Linear Analysis applied to a FETI-Based Model of Quasi-Brittle Interfaces, P. Gruber and J. Zeman  

**BUCKLING AND POSTBUCKLING OF LAMINATED STRUCTURES**  
Special session organised by A.J.M. Ferreira  
**CST.223** Buckling of Laminated and Functionally Graded Plates using Radial Basis Functions, A.M.A. Neves, A.J.M. Ferreira, E. Carrera, M. Cinefra, C.M.C. Roque, C.M. Mota Soares and R.M.N. Jorge  
**CST.224** Stability Analysis of Laminated Composite Thin-Walled Beam Structures  
D. Lanc, I. Pešic and G. Turkalj  

**PLATE ANALYSIS**  
**CST.225** The Spectral Method for Moving Load Analysis of Thin Plates  
I. Kožar and N. Toric Malic  
**CST.226** On the Convergence of a Refined Nonconforming Thin Plate Bending Finite Element, R. Flajs and M. Saje  
**CST.227** Formulation of Thin Plate Finite Elements using the Galerkin Boundary Integral Approach, M. Mazza and F. Mazza  

**SHELL STRUCTURES**  
**CST.228** Dynamic Equations for a Spherical Shell  
R. Okhovat and A. Boström
Day 2: Thursday 6 September 2012: PM
Room Mare III

13.45-15.30: Chaired by J.F. Aguilar Madeira and H. Pina

DERIVATIVE-FREE METHODS FOR ENGINEERING OPTIMIZATION
Special session organised by J.F. Aguilar Madeira and H. Pina

CST.59 Handling Linear Constraints in Genetic Algorithms
H.L. Pina and J.F.A. Madeira

CST.60 Optimization of Tendon Geometry of Post-Tensioned Concrete Bridges using Genetic Algorithms, L. Dlouhý and M. Lepš

CST.61 Application of Genetic Algorithms for Approximation with Energy-Based Models, W.B. Bonczyk


CST.63 Searching for Multiple Minima of Bound Constrained Optimization Problems using Derivative Free Optimization Techniques, U.M. García Palomares

CST.64 Damping Optimization of Viscoelastic Laminated Sandwich Structures using the Direct Multisearch Method
J.F. Aguilar Madeira, A.L. Araújo, C.M. Mota Soares and C.A. Mota Soares


15.30-16.00: Coffee

16.00-18.00: Chaired by J.F. Aguilar Madeira and H. Pina

CST.66 Multi-Objective Ant Colony Approaches for Structural Optimization Problems, J.S. Angelo, H.S. Bernardino and H.J.C. Barbosa

CST.67 Particle Swarm Optimization for Non-Convex Problems of Size and Shape Optimization of Trusses

CST.68 A Comparison of Genetic Algorithm and Particle Swarm Optimisation for Theoretical and Structural Applications
Z. Wang, T.J. McCarthy and M.N. Sheikh

CST.69 Structural Optimization of Tall Buildings using NSGA-II and Resizing Techniques, E.-M. Kwon, S.W. Choi and H.S. Park

CST.70 An Evolutionary Structural Optimization applied to Fluid-Structure Problems
W.M. Vicente, R. Picelli and R. Pavanello

CST.71 Design Optimization of Moment Resisting Steel Frames using a Cuckoo Search Algorithm, M.P. Saka and E. Dogan

CST.72 Optimum Detailing Design of Reinforced Concrete Plane Frames to ACI 318-05 using the Harmony Search Algorithm, A. Akin and M.P. Saka

CST.73 Discrete Design Optimization of Space Steel Frames using the Adaptive Firefly Algorithm, I. Aydogdu, A. Akin and M.P. Saka
14.00-15.30: Chaired by P. Iványi and M. Dolenc

INVITED LECTURE

LE.17 Asynchronous Optimized Schwarz Methods
F. Magoulès

HIGH PERFORMANCE COMPUTING FOR ENGINEERING
Special session organised by P. Iványi

ECT.1 Future High Performance Computing Strategies
M.M. Resch
ECT.2 Addressing the Problem of Data Mobility for Data-Intensive Science
W.E. Johnston, E. Dart and B. Tierney
ECT.3 On the Design of a Parallel, Distributed Multi-Physics Integration Tool
B. Patzák, D. Rypl and J. Kruis
ECT.4 Load Balancing for Mesh Based Multi-Physics Simulations in the Arcane Framework, C. Chevalier, G. Grospellier, F. Ledoux and J.C. Weill

15.30-16.00: Coffee

16.00-18.00: Chaired by P. Iványi and K.L. Lawrence

ECT.5 A Parallelization Algorithm for Non-Smooth Multibody Dynamics
J. Clauberg and H. Ulbrich
ECT.6 Application of GPU-Based Computing to Large Scale Finite Element Analysis of Three-Dimensional Structures, A. Akbariyeh, T.J. Carrigan, B.H. Dennis, W.S. Chan, B.P. Wang and K.L. Lawrence
ECT.7 Adjoining Hybrid Parallel Code
M. Schanen, M. Foerster, J. Lotz, K. Leppkes and U. Naumann
ECT.8 Memory-Region Thread Level Speculative Execution
D. Rubio Bonilla and L. Schubert
ECT.9 A Parallel Meshless Numerical Approach for the Solution of Transport Phenomena, G. Kosec and R. Trobec
ECT.10 The Analysis of Particle Flow using the Parallelised Smoothed Particle Hydrodynamics Method, M. Lee, M. Tak and T. Park
ECT.11 The Analysis of Porous Media using the Mixed Finite Element Method and the FETI Method, K. Lee, M. Tak and T. Park
ECT.12 Platform as a Service Computing Environment for Earthquake Engineering M. Dolenc and R. Klink
Day 2: Thursday 6 September 2012: PM
Room Dubrava I

14.00-15.30: Chaired by J.V. Araujo dos Santos and H.M.R. Lopes

INVITED LECTURE

LE.12 Application of Speckle Interferometry to Damage Identification
J.V. Araújo dos Santos and H. Lopes

DAMAGE IDENTIFICATION METHODS

Special session organised by J.V. Araujo dos Santos and H.M.R. Lopes

CST.86 A Structural Health Monitoring System Based on an Analysis of Changes in the Static, Dynamic and Magnetic Properties of the Structure, J. Maczak

CST.87 Early Failure Detection in Large Scale Civil Engineering Structures
S. Radkowski and J. Maczak

S. Kubo, K. Nakamura and T. Sakagami

15.30-16.00: Coffee

16.00-18.15: Chaired by H. Friedl and E. Salajegheh

INVITED LECTURE

LE.15 Non-Linear and Hysteretic Analysis of the Behaviour of Magnetorheological Dampers, M.B. Cesar and R.C. Barros

SEISMIC VULNERABILITY ASSESSMENT

Special session organised by G. De Roeck and H. Friedl

CST.196 On the Contribution of Experimental Data to the Reduction of the Uncertainty of Fragility Curves, M. Perrault and P. Gueguen

CST.197 Vulnerability Assessment of Structures in a Low-To-Moderate Seismic Region based on Ambient Vibration Test Modal Data, T.T. Bui, G. De Roeck

CST.198 Seismic Reliability of Eccentrically Braced Frames
I. Mansouri, N.M. Mirzai and H. Saffari

CST.199 Seismic Behaviour and Retrofitting of the Poggio Picenze Historical Centre Damaged by the L'Aquila Earthquake, A. Formisano

CST.200 Seismic Performance Assessment of a Reinforced Concrete Building designed using the Albanian Seismic Code, E. Zhulegu and H. Bilgin

CST.201 Evaluation of Seismic Energy Demand of Reinforced Concrete Moment Resistant Frames Considering Soil-Structure Interaction Effects
S. Gharehbaghi, E. Salajegheh and M. Khatibinia

CST.202 Dynamic In-Situ Assessment for Seismic Analysis
H. Friedl, K. Alten and A. Lechner
Day 2: Thursday 6 September 2012: PM
Room Dubrava II

14.00-15.30: Chaired by S. Ilanko and D. Kennedy

EIGENVALUES OF CONTINUOUS SYSTEMS
Special session organised by S. Ilanko and D. Kennedy


CST.97 Sets of Admissible Functions for the Rayleigh-Ritz Method
L.E. Monterrubio and S. Ilanko

CST.96 Computation of Eigenvalues for Thick and Thin Circular and Annular Plates using a Unified Ritz-Based Formulation, L. Dozio

CST.95 Exact Dynamic Stiffness Matrix for a Class of Elastically Supported Structures, W.P. Howson, A. Watson and B. Rafezy

CST.94 An Equivalent Isotropic Model for Functionally Graded Plates
D. Kennedy and R.K.H. Cheng

CST.102 Free Vibration of a Functionally Graded Timoshenko Beam using the Dynamic Stiffness Method, H. Su and J.R. Banerjee

CST.93 The Eigenpairs of a Coupled Rectangular Cavity
N. Tanaka

15.45-16.15: Coffee

16.15-18.00: Chaired by S. Ilanko and D. Kennedy

CST.98 Free Vibration Analysis of Shallow Shells using the Superposition-Galerkin Method, Y. Mochida and S. Ilanko

CST.89 Higher Order Beam Equations
H. Abadikhah and P.D. Folkow

CST.92 Dynamic Analysis of a Timoshenko Beam on a Semi-Infinite Elastic Subgrade using an Ordinary Differential Equation Method
Y.Q. Gong and F.H. Xu

CST.99 Dynamic Stiffness Analysis of Graphene Sheets and Carbon Nanotubes
D. Kennedy

CST.90 Free Vibration of a U-Type Liquid-Containing Rectangular Container with Simply Supported Boundary Condition, K.-H. Jeong

CST.91 A Comprehensive Dynamic Model for Axial, Flexural and Torsional Vibration of a CANDU Fuel Element, S.D. Yu and M. Fadaee

CST.100 Solving Homogeneous Trees of Sturm-Liouville Equations using an Infinite Order Determinant Method
A. Watson, W.P. Howson, C. James and C. Williams
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<td>CST.273 Validation of Numerical Simulation Models for Transport and Storage Casks using Drop Test Results</td>
<td>L. Qiao, U. Zencker, H. Völzke, F. Wille and A. Musolff</td>
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<td>A. Angotzi, A. Mussi, E. Trolese, M. Zanchin, R. Gori and A. Mastropasqua</td>
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<td>RETROFITTING AND REPAIR</td>
<td>CST.279 The Reinforcement of Multiple-Leaves Masonry Walls using Carbon Fibre Reinforced Polymer: A Theoretical Approach</td>
<td>L. Anania, C. Giaquinta and G. D'Agata</td>
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<td>CST.280 Placement of Fibre Reinforced Polymer Provision in No-Tension Vaults using the Vault Inequality System, A. Baratta and O. Corbi</td>
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<td>CST.281 A Simple Homogenized Model for the Non-Linear Analysis of FRP Strengthened Masonry Structures, G. Milani and P.B. Lourenço</td>
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<td>CST.282 Finite Element Analyses of Reinforced Concrete Beams Strengthened using CFRP, A.E. Demirer and G. Arslan</td>
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<td>CST.283 Retrofitting a Truss-Z Modular Pedestrian Ramp with Fully Automated Generation of the Spatial Configuration of the Modules</td>
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Day 3: Friday 7 September 2012: AM
Room Mare I

09.00-10.30: Chaired by S. Dumont and F. Lebon

COMPUTATIONAL ASPECTS IN CONTACT AND INTERFACE MODELING
Special session organised by S. Dumont and F. Lebon

CST.140 The Influence of the Geometry of Coaxial Adhesively-Bonded Joints on the Transmitted Load
J.Y. Cognard, L. Sohier, R. Créac'hca dec, F. Lavelle and N. Lidon

CST.141 Finite Fracture Mechanics for the Assessment of Failure Loads of Adhesive Joints, P. Weiβgraeber and W. Becker

CST.142 Analysis of Stress Concentrations in Adhesively-Bonded Assemblies subject to Thermo-Mechanical Loads: Application to the Characterisation of the Adhesive Behaviour
J.Y. Cognard, C. Badulescu, N. Carrère, R. Créac'hca dec and P. Védrine

CST.143 On the Modelling of the Direct Bonding of Two Silicon Surfaces
N. Cocheteau, F. Lebon, I. Rosu, A. Maurel, S. AitZaid, I. Savin DeLarclaus e

CST.144 An Asymptotic Approach to Thin Film Adhesion
F. Lebon and R. Rizzoni

CST.145 The Influence on the Geometric Curvature of the Mechanical Behaviour of the Adhesive Joint, F. Ascione and G. Mancusi

10.30-11.00: Coffee

11.00-12.15: Chaired by S. Dumont and F. Lebon

CST.146 Numerical Analysis of Thermo-Mechanical Wear Problems for Reciprocal Punch Sliding, I. Páczelt and Z. Mróz

CST.147 Numerical Simulations and Experimental Investigations of Contact Phenomena in a Mechanical Friction Clutch
J. Awrejcewicz and D. Grzelczyk

CST.148 A Space-Time Finite Element Method for Elastodynamics Problems with a Moving Loading Zone, S. Dumont and F. Jourdan

CST.149 On Higher Order Approximation for Nonlinear Variational Problems in Nonsmooth Mechanics, J. Gwinner

08.45-10.30: Chaired by L. Andersen and K. Persson

NUMERICAL ANALYSIS OF LOW-FREQUENCY VIBRATIONS IN LIGHT-WEIGHT BUILDINGS
Special session organised by L. Andersen and P.H. Kirkegaard

CST.189 A Modular Finite Element Model for Analysis of Vibration Transmission in Multi-Storey Lightweight Buildings
L.V. Andersen, P.H. Kirkegaard, K. Persson, N. Kiel and B. Niu

CST.190 Different Modelling Approaches to Coupling Wall and Floor Panels within a Dynamic Finite Element Model of a Lightweight Building
N. Kiel, L.V. Andersen, B. Niu and K. Persson

CST.191 Model Reduction in Dynamic Finite Element Analysis of Lightweight Structures, O. Flodén, K. Persson, A. Sjöström and N. Olhoff

CST.192 Accurate Finite Element Modelling of Chipboard Single-Stud Floor Panels subjected to Dynamic Loads
A. Sjöström, O. Flodén, K. Persson, P.H. Kirkegaard, D. Bard and J. Negreira

CST.193 Evaluation of Various Joints between Studs and Plates on Flanking Noise Transmission within Lightweight Periodic Structures
P.G. Domadiya, K.A. Dickow, L.V. Andersen and S.V. Sorokin

CST.194 Vibration Transmission in a Multi-Storey Lightweight Building: A Parametric Study
B. Niu, L.V. Andersen, N. Kiel, O. Flodén and G. Sandberg

CST.195 Accuracy of Dynamic and Acoustic Analysis of Lightweight Panel Structures: A Comparison of ABAQUS and ANSYS
P.H. Kirkegaard, K.A. Dickow, L.V. Andersen and A. Sjöström

10.30-11.00: Coffee

11.00-12.00: Chaired by J.R.F. Arruda and J.-M. Mencik

STRUCTURAL WAVEGUIDE MODELLING METHODS
Special session organised by J.R.F. Arruda and J.-M. Mencik

CST.217 Wave Spectral Finite Element Analysis of Two-Dimensional Waveguides
P.B. Silva and J.R.F. Arruda

CST.218 Wave Finite Element based Strategies for Computing the Acoustic Radiation of Stiffened or Non-Stiffened Rectangular Plates subject to Arbitrary Boundary Conditions, J.-M. Mencik and M.-L. Gobert

CST.219 A Study of Waveguides with Sections of Proportional Sizes: Application to Wave Radiation, D. Duhamel
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Room Mare III

09.00-10.30: Chaired by J. Kruis and V. Šmilauer

**COUPLED AND MULTI-SCALE METHODS**
Special session organised by J. Kruis

ECT.13 Modelling of Moisture Transfer in Soils  
T. Krejčí and T. Koudelka
ECT.14 Adaptive Modification of the Künzel Model for Coupled Heat and Moisture Transfer, J. Kruis, J. Madera and P. Šolín
ECT.15 Processor Farming in Homogenization of Coupled Heat and Moisture Transfer, J. Kruis, T. Krejčí, J. Sýkora and M. Šejnoha
ECT.16 The Local Discontinuous Galerkin Method for Coupled Unsaturated Flow and Chemical Transport in Porous Media, A. Ghavam-Nasiri and A. El-Zein
ECT.17 A Coupled Chemical and Mass Transport Model for Concrete Durability  
M.M. Jensen, B. Johannesson and M. Geiker
ECT.18 A Finite Strain Thermo-Chemo-Mechanical Coupled Model for Filled Rubber  
T.A. Nguyen Van, S. Lejeunes, D. Eyheramendy and A. Boukamel

10.30-11.00: Coffee

11.00-12.30: Chaired by J. Kruis and R. Melnik

ECT.19 The Three Dimensional Extended Bridging Domain Method for Brittle Fracture, H. Talebi, M. Silani and T. Rabczuk
ECT.21 Application of Micromechanics in Engineering Practice  
M. Šejnoha, V. Šmilauer, J. Nemecek and L. Kopecký
ECT.22 Single Electron Spin Control in Semiconductor Nanowires  
S. Prabhakar and R. Melnik

**MULTI-SCALE MODELLING**

CST.248 Multiscale Hydro-Thermo-Mechanical Analysis of Hydrating Concrete Structures, L. Jendele, V. Šmilauer, M. Hlobil and J. Cervenka
CST.249 Resolution of Different Length Scales by an Efficient Combination of the Finite Element Method and the Discrete Element Method  
M. Michael, B. Peters and F. Vogel
Day 3: Friday 7 September 2012: AM
Room Mare IV

09.00-10.30: Chaired by S.V. Poroseva and A. El-Hami

NETWORK ANALYSIS FOR ENGINEERING APPLICATIONS
Special session organised by S.V. Poroseva
ECT.53 Optimization of Survivability Analysis for Large-Scale Engineering Networks, S.V. Poroseva and P.A. Rikvold
ECT.54 Estimation of Real-Time Demands on the Basis of Pressure Measurements, A. Vassiljev and T. Koppel

PROBABILISTIC APPROACHES TO STRUCTURAL MECHANICS
Special session organised by A. El-Hami
CST.213 A Variability Study on the Response of Composite Structures based on Sensitivity Indices, C.A.C. António and L.N. Hoffbauer
CST.215 Reliability-Based Design Optimization for the Analysis of Vibro-Acoustic Problems, M. Mansouri, B. Radi and A. El Hami
CST.216 Derivation of Deterministic Design Data from Stochastic Analysis in the Aircraft Design Process, U. Armani, S. Coggon and V.V. Toropov

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11.00-12.30: Chaired by L. Pallares and F.J. Pallares

MASONRY MODELS
Special session organised by L. Pallares and F.J. Pallares
CST.117 A Rigid Block Model with Cracking Units for Limit Analysis of Masonry Walls subject to In-Plane Loads, F. Portioli, L. Cascini, M. D'Aniello and R. Landolfo
CST.119 Masonry Walls under Membrane or Bending Loading Cases: Experiments and Discrete Element Analysis, T.T. Bui and A. Limam
CST.121 Numerical Modelling of Reinforced Masonry Arches, J. Brozovsky, M. Jasek and D. Mikolasek
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Room Dubrava I

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| CST.285       | Spectrum-Compliant Accelerograms through Harmonic Wavelet Transform  
                D. Cecini and A. Palmeri |
| CST.286       | Building Pounding Forces for Different Link Element Models  
                R.C. Barros and S.M. Khatami |
| CST.287       | Tuned Mass Dampers for the Mitigation of Impulsive Ground Motions  
                E. Matta, R. Ceravolo, A. De Stefano, A. Quattrone and L. Zanotti Fragonara |
| CST.288       | Structural Integrity Evaluation of Reactor Pool Working Platform:  
                Guide Tubes and Refuelling Cover in a Research Reactor  
| CST.289       | Accounting for Uncertainty in Bidirectional Ground Motion  
                C.S. Belsham |
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| CST.290       | Seismic Retrofitting Strategy for Improved Strength and Ductility of a  
                Plan-Wise Irregular Reinforced Concrete Building, M. Valente |
| CST.291       | The Performance Assessment of a Multi-Span, Box Girder Reinforced  
                Concrete Bridge with and without Seismic Isolation  
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| CST.292       | A Displacement-Based Design Procedure for Seismic Retrofitting of  
                Reinforced Concrete Frames using Braced Ductile Shear Panels, M. Valente |
| CST.293       | Soil-Pile Interaction in Deep Layered Marine Sediment subject to Seismic  
                Excitation, T.P. Peiris, D. Thambiratnam, N. Perera and C. Gallage |
| CST.294       | Reproducing Ground Motions with Shaking Tables with Limited Stroke  
                Y. Ribakov and G. Agranovich |
| CST.295       | Simulating Responses of Objects to Seismic Input Motion using Multibody  
                Dynamics, C.S. Belsham |
09.00-10.30: Chaired by J. Pombo and V. Markine

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Special session organised by J. Pombo and V. Markine
CST.128 Simulation of Fatigue Crack Growth of a Contact Wire in a Catenary System
S.H. Mai and M.L. Nguyen
CST.129 Development of a Computational Tool for the Dynamic Analysis of the Pantograph-Catenary Interaction for High-Speed Trains
P. Antunes, A. Mósca, J. Ambrósio, J. Pombo and M. Pereira
CST.130 Application of a Special Sensing Sleeper for Dynamic Interaction within the Boundary Layer between a Sleeper and Ballasts, A. Aikawa
CST.131 Experimental Analysis of the Dynamic Behaviour of Railway Turnouts
V.L. Markine and I. Shevtsov
CST.133 The Influence of Deck Flexibility on the Dynamic Response of Railway Bridges, P.G.C. Amaral and C.E.N. Mazzilli

10.30-11.00: Coffee

11.00-12.30: Chaired by J. Pombo and V. Markine

CST.134 Modeling Shakedown Plastic Strains of Subballast and Subgrade Materials in the Concrete Slab Track System of High-Speed Trains
Y.H. Jung, C.Y. Choi and E. Nsabimana
CST.135 Multi-Objective Design Optimization of the Nose of a High-Speed Train
M. Suzuki and K. Nakade
CST.137 Assessment of the Dynamic Characteristics of a Ballasted Railway Track subject to Impact Excitation using Three-Dimensional Composite Finite Element - Discrete Element Modelling, A. Aikawa
CST.138 A Three-Dimensional Calculation for Dynamic Pantograph-Catenary Interaction, N. Cuartero, E. Arias, T. Rojo, F. Cuartero and P. Tendero
CST.139 A Study on Multiple Pantograph Operations for High-Speed Catenary Contact, J. Pombo, P. Antunes and J. Ambrósio
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09.00-10.30: Chaired by P.G. Coelho and E. Kita

ENGINEERING DESIGN OPTIMIZATION
ECT.48 Application of Grammatical Evolution to the Determination of Constitutive Equations, E. Kita, T. Kuroda, H. Sugiura, Y. Zuo and Y. Wakita

FINITE ELEMENT TECHNOLOGY
CST.256 On the Convergence of a Nonconforming Plane Quadrilateral Finite Element M. Saje and R. Flajs

BOUNDARY ELEMENT METHOD
CST.296 Nonlinear Inelastic Nonuniform Torsion of Bars including the Secondary Torsional Moment Deformation Effect, V.J. Tsipiras and E.J. Sapountzakis

INVERSE PROBLEMS
ECT.106 A Multi-Parameter Perturbation Solution for the Inverse Eigenproblem of Nearly-Resonant N-Dimensional Hamiltonian Systems, M. Lepidi

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11.00-12.00: Chaired by R. Citarella and A. Palmeri

CRACK MODELLING
CST.257 A Two-Node Multi-Cracked Beam Element for Static and Dynamic Analysis of Planar Frames, M. Donà, A. Palmeri, A. Cicirello and M. Lombardo
CST.258 Limit Analysis of Highly-Undermatched Welded Joints with Cracks S. Alexandrov
ECT.91 Numerical Crack Growth Analysis in AA2024-T3 Friction Stir Welded Butt Joints, P. Carlone, R. Citarella, M. Lepore and G.S. Palazzo
ECT.92 The Influence of Eccentricity on the Crack Breathing in a Rotating Shaft L. Rubio, B. Muñoz-Abella, P. Rubio and L. Montero
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Room Mare I

14.00-16.00: Chaired by P. Coorevits and L. Godinho

COMPUTATIONAL METHODS FOR WAVE PROPAGATION

ECT.96 Dynamic Analysis of a Porous Layered Medium under a Load Moving along a Railway Track, K. Chahour, G. Lefeuve-Mesgouez, A. Mesgouez, A. Bouheraoua and A. Laribi

ECT.97 Transient Wave Analysis for an Inhomogeneous Elastic Thick Plate subjected to Inplane Impact Loading, K. Miura


HEAT DISSIPATION AND TRANSFER PROBLEMS


ECT.100 Adjoint-Based Sensitivity Analysis for Buoyancy-Driven Incompressible Navier-Stokes Equations with Heat Transfer, A. Lincke and T. Rung

ECT.101 Transient Thermal Analysis of a Nano-Satellite in Low Earth Orbit, V. Chandrasekaran and E.R. Subramanian

ECT.102 A Frequency Domain Formulation of Kansa's Method to Simulate Transient Heat Conduction, L. Godinho and F.G. Branco

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ELASTO-HYDRODYNAMIC LUBRICATION
ECT.125 Fast and Reduced Full-System Finite Element Solution of Line Contact Elastohydrodynamic Lubrication Problems, W. Habchi and J. Issa
ECT.126 The Influence of Surface Roughness and Piezo-Viscous Lubricant Properties on the Elastohydrodynamic Line Contact Lubrication V. D'Agostino, V. Petrone and A. Senatore

CHEMICAL ENGINEERING

BIOMEDICAL ENGINEERING
ECT.136 Mechanically-Motivated Selection of Patching Material for the Patient-Specific Carotid Artery, A.V. Kamenskii, I.V. Kirillova, L.Y. Kossovich, Y.E. Salkovskiy and Y.A. Dzenis
ECT.137 Finite Element Comparison of Dental Implants: Static and Dynamic Analysis M.A. Neto, P. Nicolau, S. Rocha and R.P. Leal

16.00-16.30: Coffee
14.00-16.00: Chaired by R.E. Erkmen and A. Tessler

MULTI-BODY SYSTEMS
ECT.82 Flexible Multibody Systems with Active Vibration Control
M.A. Neto, J.A.C. Ambrósio, L.M. Roseiro, A. Amaro and C.M.A. Vasques
ECT.83 Simulation and Validation of Valve Springs in Valve Train Simulations
J. Clauberg, B. Huber and H. Ulbrich
ECT.84 Modal-Space Based Solutions including Geometric Nonlinearities for Flexible Multi-Body Systems, D. Marinkovic, M. Zehn and Z. Marinkovic

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CST.250 Hierarchical Numerical Modelling of Nested Poroelastic Media
E. Rohan and R. Cimrman
CST.251 A Variational Multiscale Approach to Recover Perfect Bond in the Finite Element Analysis of Composite Beams, R.E. Erkmen
CST.252 Representation of Localized Phenomena in Dynamics using Multi-Scale Coupling, J. Marchais, C. Rey and L. Chamoin
CST.253 Optimal Prediction of Lyapunov Exponents for a Duffing Oscillator
A. LaBryer, P.J. Attar and P. Vedula
CST.254 Analytical and Computational Perspectives of Multi-Scale Theory for Homogeneous, Laminated Composite, and Sandwich Beams and Plates
A. Tessler, M. Gherlone, D. Versino and M. Di Sciuva

16.00-16.30: Coffee
Day 3: Friday 7 September 2012: PM  
Room Mare IV

14.00-16.00: Chaired by L. Pallares and F.J. Pallares

MASSONRY MODELS
Special session organised by L. Pallares and F.J. Pallares

CST.122  An Unabridged Push-Over Approach: Beyond POR Analyses for Three-Dimensional Masonry Buildings, O. Corbi
CST.123  Structural Safety Control of Masonry Buildings: Non-Linear Static Seismic Analysis with a Non-Linear Shear Strength Criterion D. Foti, M. Debernardis and V. Paparella
CST.124  Coupled Limit Analysis and Topological Optimization for Masonry Wall Reinforcement, A. Baratta and I. Corbi
CST.125  Strengthening of Masonry Buildings by Post-Stressing: The Verticalisation Method, A. Morais and S. Sazedj
CST.126  A One-Dimensional Evolutionary Masonry Model with Low Tensile Strength A. Baratta and O. Corbi
CST.127  Masonry Vaulted Staircases: Interpretation of Equilibrium Paths A. Baratta and I. Corbi

16.00-16.30: Coffee
Day 3: Friday 7 September 2012: PM
Room Dubrava I

14.00-16.00: Chaired by F. Lebon

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ECT.93 Dynamics and Quasicontinuum Analogues of a Lattice with Simple Microstructures, M. Charlotte
ECT.94 Application of Artificial Neural Networks in Identification of Affinity Hydration Model Parameters, T. Mareš, E. Janouchová and A. Kucerová
ECT.95 Indirect Determination of Material Properties of Closed-Cell Metal Foam: Comparison of Voxel and Tetrahedral Finite Element Models O. Jiroušek, P. Koudelka and P. Zlámal

CONTACT PROBLEMS
ECT.90 Domain-Decomposition based H1/2 Seminorm Preconditioners for Frictional Contact Problems, A. Lotfi

MULTI-LEVEL TECHNIQUES
ECT.88 A Multilevel Technique based on Nested Local Meshes for Nonlinear Mechanics, L. Barbié, I. Ramière and F. Lebon

MULTI-PHYSICS PROBLEMS
ECT.85 Magnetohydrodynamic Flow of a Liquid Metal in a Curved Circular Duct subject to the Effect of an External Magnetic Field P.A. Bakalis, P.M. Hatzikonstantinou and P. Vafeas
ECT.86 Mechano-Chemo-Electrical Finite Element Modelling of the Sensing Behaviour of Ionic Polymer Metal Composites B. Akle, W. Habchi and T. Wallmersperger
ECT.87 Adaptive Model Reduction for Thermoelastic Problems M.G. Larson and H. Jakobsson

16.00-16.30: Coffee
14.00-16.00: Chaired by M.A. Barkhordari, A.P. Chassiakos and E. Kita

**FOUNDATION ENGINEERING**
ECT.112  Studying the Behaviour of a Proposed Strip Foundation for Structural Retrofitting, M. Foroughi and M.A. Barkhordari
ECT.113  Modal Harmonic Three-Dimensional Finite Element Analysis of an Unusual Vibrating Machinery Pile Foundation
          D.K.H. Ho, C.R. Grant and P.G. Dominish

**SOIL-STRUCTURE INTERACTION**
ECT.114  A Subsoil Model based on Numerical Integration of a Nonlinear Halfspace
          R. Cajka
ECT.115  Numerical Modelling of Engineering Structures subjected to Dynamic Seismic Loading, S.N. Polukoshko, V.F. Gonca and E.V. Uspenska

**RISK ASSESSMENT**
CST.298  Numerical and Statistical Methods in Quantitative Risk Analysis of Road Tunnels, C. Forster, M. Drakulic and B. Kohl

**EXPERT SYSTEMS**
ECT.64   An Expert System for Pavement Management in Urban Road Networks
          P.A. Lemis-Petropoulos, A.P. Chassiakos and D.D. Theodorakopoulos

**TRANSPORT ENGINEERING**
ECT.138  Vehicle Platoon Control Based on a Multi-Leader Vehicle Following Model
          E. Kita, H. Shimizu, S. Nishiyama and Y. Wakita
ECT.139  GPS Vehicle Tracking in Urban Areas
          M.T. Obaidat and A.A. Mohammad

16.00-16.30: Coffee
The CST2012 & ECT2012 conferences use rooms in different floors of the Hotel Dubrovnik Palace

- 10th Floor:
  - Room Mare I: the Opening Plenary Session on Tuesday 4 September and regular conference sessions thereafter.
  - Room Mare II: regular conference sessions.
  - Room Mare III: regular conference sessions
  - Room Mare IV: the registration desk on Tuesday 4 September only and regular conference sessions thereafter.

- 9th Floor
  - Room Dubrava I: regular conference sessions
  - Room Dubrava I: regular conference sessions
  - Room Kokpit: regular conference sessions
  - Room Cempres: the registration desk from Wednesday 5 September onwards.

All rooms will be clearly signposted. Please look for the Civil-Comp “tree” logo.

Coffee, tea and refreshments will be served in the circulation area on the 9th floor.

Lunches will be served in the Restaurant. Please remember to take your lunch tickets with you. Admission to the restaurant is by ticket only. You can find your lunch tickets in the envelope handed to you at the registration desk.