DRAFT PROGRAMME

The Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing

&

The Second International Conference on Soft Computing Technology in Civil, Structural and Environmental Engineering

6-9 September 2011
Chania - Crete - Greece

organised by
Civil-Comp Press
Stirlingshire, UK
Elsevier Journals

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  venue: Dubrovnik, Croatia
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  venue: Pécs, Hungary
  period: 25-27 March 2013

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- **The Third International Conference on Soft Computing Technology in Civil, Structural and Environmental Engineering**
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The conference proceedings are published in five volumes (three invited lecture volumes and two summary volumes with accompanying CD-ROMs).

The invited lectures are published as follows:

- **volume LC: Civil and Structural Engineering Computational Technology**
  B.H.V. Topping and Y. Tsompanakis, (Editors)
  Saxe-Coburg Publications, 2011

- **volume LS: Soft Computing Methods for Civil and Structural Engineering**
  Y. Tsompanakis and B.H.V. Topping, (Editors)
  Saxe-Coburg Publications, 2011

- **volume CTR: Computational Technology Reviews, Volume 4**
  Y. Tsompanakis and B.H.V. Topping, (Guest-Editors)
  Saxe-Coburg Publications, 2011
  ISBN 978-1-874672-54-8, ISSN 2044-8430, CTR: 4

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

- **volume CC: Proceedings of the Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing**
  B.H.V. Topping and Y. Tsompanakis, (Editors)
  Civil-Comp Press, 2011

  Y. Tsompanakis and B.H.V. Topping, (Editors)
  Civil-Comp Press, 2011

In this programme the letters immediately preceding a paper title refer to the volume identifier given above. For example: LC.1 refers to the first chapter of *Civil and Structural Engineering Computational Technology* and CS.2 refers to the second paper in *Proceedings of the Second International Conference on Soft Computing Technology in Civil, Structural and Environmental Engineering*. 
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.

Special 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.

Computational Technology Resources

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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 6 September 2011
15.00-19.00: Conference Office opens in Room Imperial 1
17.00-18.15: Opening Plenary Session in Room Imperial Main
18.15-18.45: Drinks reception

Day 1: Wednesday 7 September 2011
08.15-18.00: Conference Office opens in Room Imperial 1
09.00-10.30: 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
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Day 2: Thursday 8 September 2011
08.30-18.00: Conference Office opens in Room Imperial 1
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Day 3: Friday 9 September 2011
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Opening Plenary Session

17.00-18.15:

Chairmen:

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

Professor Y. Tsompanakis
Technical University of Crete, Greece

Invited Lecture

LS.1 Mastering Computationally Demanding Problems in Mechanics
M. Papadrakakis, Ch.Ch. Mitropoulou and N.D. Lagaros

Professor M. Papadrakakis
Institute for Structural Analysis and Seismic Research
National Technical University of Athens, Greece

18.15-18.45: Drinks reception
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M. Šejnoha, J. Vorel, R. Valenta and J. Zeman

LC.6 Applications of Graph Products and Canonical Forms in Structural Mechanics: A Review
A. Kaveh and H. Rahami

CTR.7 Information-Communication Technology for Architecture, Engineering and Construction: State-of-the-Art and Beyond
M. Dolenc and R. Klinc

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J. Bridgeman

CTR.6 Interval and Fuzzy Finite Element Analysis: An Overview of Current Achievements
D. Vandepitte and D. Moens
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L. Nguyen-Tuan, M. Datcheva, M.I. Khan and T. Schanz

CC.205 Multi-Channel Analysis of Surface Waves: Inversion Strategy
A. Cichowicz, D. Birch and H. Ogasawara

CC.206 A Parametric Study of the Mechanical Performance of Geosynthetic-Encased Granular Columns, Y.S. Hong and C.S. Wu

CC.207 Prediction of Encased Granular Column Behaviour using a Constant Volume Assumption, C.S. Wu and Y.S. Hong

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R. Cajka, P. Matecková, M. Janulíková and M. Stará

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11.00-12.30: Chaired by: T. Koudelka and M.C. Weng

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R. Pusch, S. Knutsson, L. Xiaodong and R. Prikryl

CC.210 A Mathcad® Implementation of Geotechnical Reliability-Based Analysis
S.H. Marques, A.T. Gomes and A.A. Henriques

CC.211 Modelling of Passive Earth Pressure
T. Koudelka and P. Koudelka

CC.212 Three-Dimensional Analysis of Transient Flow through Earth Dams
R.J. Quevedo, C. Romanel and K.V. Bicalho

CC.213 Evaluation of the Influence Factors on Landslides in the Lawnon Basin, Taiwan, M.C. Weng, M.H. Wu, C.W. Yen and S.K. Ning

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C.J. Gantes

LC.9 Recent Developments in the Analysis of Stiffened Plates
E.J. Sapountzakis

BOUNDARY ELEMENT METHOD

CC.137 A Three-Dimensional Beam including Torsional Warping and Shear Deformation Effects arising from Shear Forces and Secondary Torsional Moments, V.G. Mokos and E.J. Sapountzakis

CC.138 Nonlinear Inelastic Analysis of Beams on a Nonlinear Foundation
E.J. Sapountzakis and A.E. Kampitsis

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BASE ISOLATION AND ENERGY DISSIPATION
Special Session organised by A. Dusi

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M. Ikenaga, K. Ikago and N. Inoue

CC.70 Low-Cost Seismic Base Isolation using Recycled Tire Cushions
Y. Tsompanakis, P.N. Psarropoulos and V. Drosos

CC.71 A Performance Comparison of Isolated, Dissipated and Fixed-Based Steel Buildings, F. Comodini and M. Mezzi

CC.72 A Base Isolation Option for the Full Seismic Protection of an Existing Masonry School Building, M. Mezzi, F. Comodini and L. Rossi

CC.73 Seismic Isolation: Available Devices, Recent Applications and Conditions for their Correct Use, A. Martelli, M. Forni and A. Dusi

CC.74 Seismic Isolation of Nuclear Power Plants
M. Forni and A. Poggianti

CC.75 Analysis of Shake Table Tests on Sliding Seismic Isolators
R. Medeot
09.00-10.30: Chaired by: J. Náprstek and Y.-L. Pi

DYNAMICS, VIBRATION AND STABILITY
Special Session organised by J. Náprstek
CC.76 Free Vibration of a Rotating Tapered Rayleigh Beam: A Dynamic Stiffness Method of Solution, J.R. Banerjee and D.R. Jackson
CC.77 Quasi-Periodic Post-Critical Response Types of a Harmonically Excited Auto-Parametric System, J. Náprstek and C. Fischer
CC.78 Modelling Snap-Through of Thin Shallow Arches using Coarse Truss Models P.G. Papadopoulos, P. Lazaridis, H. Xenidis, P. Lambrou and A. Diamantopoulos
CC.80 Enhanced Generalised Beam Theory Buckling Formulations to Handle Transverse Load Application Effects, C. Basaglia and D. Camotim
CC.81 A New Ball Balancer Model and its Application J.H. Kim, H.S. Seo, J.W. Chang and S.M. Jeon

10.30-11.00: Coffee

11.00-12.30: Chaired by: C.J. Gantes

INVITED LECTURES
LS.7 Neurofuzzy Control for Smart Structures G.E. Stavroulakis, I. Papachristou, S. Salonikidis, I. Papalaios and G.K. Tairidis
LS.4 Neural Network Approaches in Structural Analysis considering Imprecision and Variability W. Graf, J.-U. Sickert, S. Freitag, S. Pannier and M. Kaliske
CTR.4 Current and Future Trends in the Use of Artificial Neural Networks in Engineering I. Flood
Day 1: Wednesday 7 September 2011: AM
Room Athina 1B

09.15-10.30: Chaired by: L. Andersen and R. Pusch

OFFSHORE WIND TURBINES
Special Session organised by L. Andersen
CC.82 The Dynamic Stiffness of Surface Footings for Offshore Wind Turbines: Reliability Based Assessment
M.J. Vahdatirad, L. Andersen, J. Clausen and J.D. Sørensen
CC.83 Reliability-Based Assessment of the Natural Frequency of an Offshore Wind Turbine Founded on a Monopile
L. Andersen, M.J. Vahdatirad and J.D. Sørensen
CC.84 The Effect of Soil-Pile Interface Behaviour on Laterally Loaded Piles
V. Zania and O. Hededal
CC.85 Performance-Based Design Optimization of a Transition Piece for Bucket Foundations for Offshore Wind Turbines
A. Nezhentseva, L. Andersen, L.B. Ibsen and E.V. Sørensen
CC.86 Buckling Analysis of Bucket Foundations for Wind Turbines in Deep Water
S. Madsen, L. Andersen and L.B. Ibsen

10.30-11.00: Coffee

11.00-12.30: Chaired by: J. Bencat and A. Tesar

SKELETAL AND SURFACE STRUCTURES
CC.190 Measurements of Forces in Cable Membrane Structures
J. Máca, P. Fajman and M. Polák

BRIDGE ENGINEERING
CC.183 Shear Lag in the Dynamic Response of Thin-Walled Box Bridges
A. Tesar
CC.184 Fatigue Mitigation in a Long Span Suspension Bridge with a Steel Frame Deck, M. Domaneschi and L. Martinelli
CC.185 Seismic Behaviour and Capacity Demand Analysis of a Double Deck Bridge
S. Alali, J.Z. Li and Z.G. Guan
CC.186 The Effect of Partial Fixity of the Bearings on the Structural Behaviour of Bridges, I.I. Ishac and M.K. Swailem
CC.187 Investigating the Problem of Transverse Cracking of Bridge Decks
A. ElSafty, V. Vargas, N.M. Jackson, F. Barsoum and A. Abdel-Mohti
09.30-10.30: Chaired by: M. Domaneschi and J. Novak

INVITED LECTURE

LC.2 Concrete as the Multiphase Material in Biological Shields against Nuclear Radiation  
C.E. Majorana, B. Pomaro, V.A. Salomoni, F. Gramegna and G. Prete

NUCLEAR POWER PLANT AND RELATED ANALYSIS  
Special Session organised by M. Domaneschi

CC.104 A Temperature Distribution Model for a Nuclear Waste Prototype Repository  
J. Novak

CC.106 Numerical Investigations of a Base Isolation System for Nuclear Power Plants: Safety Domain Definition and Analytical Model Identification  
G. Bianchi, L. Corradi Dell'Acqua, M. Domaneschi, D. Mantegazza and F. Perotti

10.30-11.00: Coffee

10.45-12.30: Chaired by: A. Elhami and A. Chateauneuf

INVITED LECTURE

LS.11 Challenges in Reliability-Based Maintenance Optimization for Single and Multi-Component Systems  
A. Chateauneuf

PROBABILISTIC APPROACHES TO STRUCTURAL MECHANICS  
Special Session organised by A. Elhami


CC.88 Advanced Response Surface Method for Structural Reliability  
D.L. Allaix, V.I. Carbone and G. Mancini

CC.89 Reliability Based Design Optimization Analysis of Hydroformed Welded Tubes, B. Radi, A. El-Hami and A. Cherouat

CC.90 Reliability-Based Design of Non-Linear Timber Structures subject to Seismic Loading  
H. Riahi, Ph. Bressolette, R. Moutou Pitti, A. Chateauneuf and E. Fournely

CC.91 A New Approach for the Full Characterization of the Optimal Point of Stochastic Functions, R.H. Lopez, J.E.S. de Cursi and A. El-Hami
14.00-15.30: Chaired by: Z. Dimitrovová and J. Pombo

INVITED LECTURE

LC.3 Development of Realistic Three-Dimensional Track Models for Railway Vehicle Dynamic Analyses, J. Pombo and J. Ambrósio

RAILWAY RESEARCH: VEHICLE TRACK DYNAMIC ANALYSIS AND RELATED ENVIRONMENTAL PROBLEMS

Special Session organised by Z. Dimitrovová, J. Pombo and P. Teixeira

CC.1 Modelling the Impact of Substructure Solutions in the Reduction of Vibration Levels and Maintenance Needs of Railway Tracks
P.A. Ferreira and A. López-Pita

CC.2 Numerical Evaluation of Roadbed Performance subject to the Operation of Korean High-Speed Trains, T. Koh and M. Sagong

CC.3 Stationary Approach for the Modelling of the Ballast Track Behaviour subject to Cyclic Loading, S. Costa d'Aguiar and P. Sicsic

CC.4 Stiffness Transitions of Railway Tracks on Soft Soils
M.J.M.M. Steenbergen

15.30-16.00: Coffee

16.00-18.00: Chaired by: Z. Dimitrovová and J. Pombo

CC.5 Improving Track Transitions of High-Speed Lines
R. Sañudo Ortega, V.L. Markine and L. Dell'Olio

CC.6 An Enhanced Moving Window Method: Applications to High-Speed Tracks
Z. Dimitrovová and A.F.S. Rodrigues

CC.7 Prediction of Environmental Vibrations Induced by Railway Traffic using a Three-Dimensional Dynamic Finite Element Analysis
G. Kouroussis, L. Van Parys, C. Conti and O. Verlinden

CC.8 Prediction Models for Building Structure Response arising from Railway Traffic, J. Bencat, O. Kubovcik and D. Papán

CC.9 Noise from High Speed Trains: Harmonization of National and European Legislation, A. Bracciali, P. Firpo, S. Leth, L. Michelet and M. Sacchi

CC.10 An Efficient Implementation for the Dynamic Pantograph-Catenary Interaction considering a Set of Transition Spans
N. Cuartero, E. Arias, F. Cuartero, T. Rojo and J. Benet

CC.11 Environmental and Track Perturbations on Multiple Pantograph Interactions with Catenaries in High-Speed Trains, J. Pombo and J. Ambrósio

CC.12 Improving Engineer Efficiency in the Design of Railway Electrical Systems by using a High Performance Computing Platform
E. Arias, T. Rojo, D. Cazorla and F. Cuartero
14.00-15.30: Chaired by: G.E. Stavroulakis

INVITED LECTURE

LC.1 Role and Perspective of Computational Structural Analysis for Sustainable Reconstruction and Seismic Risk Mitigation after an Earthquake
V. Gattulli

SEISMIC STRUCTURAL ENGINEERING

CC.168 Probabilistic Analysis of the Earthquake Resistance of Spatial Structures
M. Danieli, J. Bloch and I. Alperin

CC.169 A New Method of Seismic Analysis for Reinforced Concrete Frames
K. Pohl and J. Máca


CC.171 Development of a Finite Element Model of a Church damaged during the 2009 L'Aquila Earthquake, G. De Matteis, E. Criber and G. Brando

15.30-16.00: Coffee

16.00-18.00: Chaired by: A. Ebrahimpour and P. Cacciola

CC.172 Numerical Calibration of a Simplified Procedure for the Seismic Behaviour Assessment of Masonry Building Aggregates
A. Formisano, G. Florio, R. Landolfo and F.M. Mazzolani

CC.173 Multi-Criteria Decision Methods for Structural Modification Interventions: Vertical Addition and Seismic Retrofitting
A. Formisano, T. De Lucia and F.M. Mazzolani

CC.174 Seismic Assessment of Column Retrofitted with Steel Reinforced Polymers in Near Fault Earthquakes, Y. Yasrebi Nia, M. Poorsharifi and Z. Poorsharifi

CC.175 The Dynamics of Three-dimensional Non-Symmetric Rigid Bodies subject to One-Sine Pulse Excitations, D. Zulli, A. Contento and A. Di Egidio

CC.176 The Effect of Brace Connections on the Seismic Behaviour of Steel Frames
S. Bagheri and V. Babazadeh

CC.177 Seismic Response of Steel Frames Considering Actual Behaviour of Connections, S. Bagheri and N. Vafi Tabrizi

CC.178 Numerical Investigations of the Seismic Performance of Precast Buildings equipped with Friction Devices, M. Valente

CC.179 Seismic Response of a Four-Span Reinforced Concrete Bridge Model Using the OpenSees Finite Element Software
A. Ebrahimpour, M. Saiidi and N.B. Johnson
Day 1: Wednesday 7 September 2011: PM
Room Imperial 3

14.00-15.30: Chaired by: J.T. Kim

SUSTAINABLE AND HEALTHY BUILDING TECHNOLOGY
Special Session organised by J.T. Kim

CC.31 Identifying Consumer Response to a Newly Developed Social Mix Building Technique for Healthy Communities


CC.37 Bond Strength of Deformed Bars in Polymer-Modified Lightweight Aggregate Concrete, M.S. Kim, Y.H. Lee, D.J. Kim and H. Kim

CC.41 Validation of a Sky Luminance Measurement System using the CIE Quality Control Test, H.J. Kong and J.T. Kim

CC.34 An Analytical Investigation of the Deflection of Composite Beams with Storey Height Reduction Capability
G.T. Lim, W.K. Hong, S.C. Park and S.Y. Jeong


15.30-16.00: Coffee

16.00-17.45: Chaired by: J.T. Kim

CC.33 Identifying the Effect of an Alternative Environment to Improve the Care of the Elderly in Korea
Y.S. Lee, J.H. Hwang, Y.J. Lim, C.H. Ahn and H.S. Lee

CC.38 A Comparison of the Luminous Environment in a Modern House and a Traditional House in Korea, E. Lim and J.T. Kim


CC.40 A Comparative Analysis of the Luminous Environment of School Classrooms with Different Orientations, Y.J. Kim and J.T. Kim


CC.35 Window Design and Lighting Control for Low Carbon Buildings
H. Kim, H.J. Kong, J.D. Choi, J.T. Kim and G.Y. Yun

CC.36 Analysis of the Carbon Dioxide Emission used in the Transportation of Precast Concrete Members, C.Y. Lim, S.H. Lee, G.J. Lee and S.K. Kim
Day 1: Wednesday 7 September 2011: PM  
Room Imperial 4

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<td>An Entropy-Based Primer for Traffic Management and Bus Routing Optimization</td>
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<td>SUPPORT VECTOR MACHINES</td>
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Day 1: Wednesday 7 September 2011: PM
Room Athina 1B

14.00-15.45: Chaired by: O. Hasançebi and L. Lamberti

INVITED LECTURE

CTR.1 Metaheuristic Design Optimization of Skeletal Structures: A Review
L. Lamberti and C. Pappalettere

METAHEURISTIC OPTIMIZATION OF SKELETAL STRUCTURES

Special Session organised by O. Hasançebi and L. Lamberti

CS.8 Influence of Buckling Constraints on Reliability Based Multiobjective Design
of Truss Structures, D. Greiner and P. Hajela

CS.10 Truss Structural Optimization using Hybrid Evolutionary Algorithms
J.G. de Moura, G.F. Moita and S.R. de Souza

CS.11 A Fast Big Bang-Big Crunch Optimization Algorithm for Weight
Minimization of Truss Structures, L. Lamberti and C. Pappalettere

CS.12 A Reformulation of the Ant Colony Optimization Algorithm for Large Scale
Structural Optimization, O. Hasançebi, S. Çarbas and M.P. Saka

CS.9 Application of Evolution Strategy for Minimization of the Number of
Modules in a Truss Branch Created with the Truss-Z System
M. Zawidzki and K. Tateyama

15.30-16.00: Coffee

16.15-18.00: Chaired by: V. Pomezanski and V.V. Toropov

TOPOLOGY AND SHAPE OPTIMIZATION

Special Session organised by V. Pomezanski

CC.96 The use of Topology and Shape Optimization of Trusses in Earthquake
Architecture, S. Šilih, S. Petrovčič and V. Kilar

CC.97 Optimizing Construction Parameters of Customized Products with
Conflicting Requirements, E. Türck, A. Hortop, T. Vietor and S. Pullwitt

CC.98 Perimeter and Checkerboard Control of a Structure during Topology
Optimization, V. Pomezanski

CC.99 Modified Subgradient Methods for Remeshing Based Structural Shape
Optimization, D.N. Wilke

DESIGN OPTIMIZATION AND SENSITIVITY ANALYSIS

CC.148 Experimental Verification of a Numerical Model of a Vertical Machining
Centre, J. Kosmol and P. Wilk

CC.149 Optimal Design of Extrusion Dies in Metal Forming using the Finite Element
Method, A. Lotfi

CC.150 Practical Recommendations on the Use of Moving Least Squares Metamodel
Building, E.L. Loweth, G.N. de Boer and V.V. Toropov
INVITED LECTURE


STEEL AND CONCRETE COMPOSITE STRUCTURES

Special Session organised by L.F. Costa Neves, J.G.S. da Silva, P.C.G. da S. Vellasco

CC.43 On the Postbuckling Analysis of Thin-Walled Frames
   N.L. Rizzi and V. Varano


CC.45 Optimum Design of Steel Frames considering Semi-Rigid Beam-Column Connections
   J.P. Freitas, G.A.S. Falcón, J.G. Santos da Silva and F.J.C.P. Soeiro


15.30-16.00: Coffee

16.00-18.00: Chaired by: P.C.G. da S. Vellasco and J.G.S. da Silva

   T. Mazda, E.C. Kandemir, M. Matsumoto, N. Oka and N. Ishida

CC.48 Failure Analysis of Transmission Towers subject to Downbursts
   W. Qu, Y.-L. Pi and M.A. Bradford

CC.49 Composite Semi-Rigid Joints Optimization with Genetic Algorithms

CC.50 A Novel Force-Based Element for Composite Beams in Frames
   H.R. Valipour and M.A. Bradford

CC.51 A Fast Incremental-Iterative Procedure for Ultimate Strength Analysis and Design of Composite Steel-Concrete Cross-Sections, C.G. Chiorean

CC.52 Nonlinear Elastic-Plastic Analysis of Composite Steel-Concrete Members
   Y.-L. Pi, M.A. Bradford and W. Qu

CC.53 Development of an Innovative Hybrid-Composite Floor System
   C.M. Abeysinghe, D.P. Thambiratnam and N.J. Perera

CC.54 A Modeling and Experimental Study of Concrete Columns Highly Confined by Carbon Fibre Reinforced Polymer Sheets, J.F. Jiang and Y.F. Wu
09.00-10.30: Chaired by: G. De Matteis

INVITED LECTURES

LS.3 A Survey of Metaheuristic Techniques in Structural Optimization
M. Domaszewski, D. Strohmeier and J.G. Korvink

LS.8 Surrogate Modeling in Evolutionary Based Engineering Design Optimization
I.K. Nikolos

LS.12 Modelling Life-Cycle Performance of Infrastructure under Uncertainty: Emphasis on Condition and Safety Profiles
D.M. Frangopol and L.C. Neves

10.30-11.00: Coffee

11.00-12.30: Chaired by: V. Gattulli

INVITED LECTURES

CTR.3 Stochastic Ground Motion Modelling for the Seismic Analysis of Structures: A Review
P. Cacciola

CTR.8 Information and Communication Technologies in Earthquake Engineering
A. Sextos

LS.2 Alternative Intelligent Techniques for Seismic Damage Classification of Buildings based on Seismic Intensity Parameters
A. Elenas
09.00-10.30: Chaired by: Z. Dimitrovo\text{v}ová and J. Pombo

**INVITED LECTURE**

**LC.4** Dynamic Analysis of Beam Structures under Moving Loads: A Review of the Modal Expansion Method  
Z. Dimitrovo\text{v}ová

**RAILWAY RESEARCH: VEHICLE TRACK DYNAMIC ANALYSIS AND RELATED ENVIRONMENTAL PROBLEMS**  
Special Session organised by Z. Dimitrovo\text{v}ová, J. Pombo and P. Teixeira

**CC.13** Vibrations of a Beam on a Pasternak Foundation subject to an Inertial Moving Load, P. Koziol

**CC.14** Stochastic Modelling of Track Irregularities  
G. Perrin, D. Duhamel, C. Soize and C. Funfschilling

**CC.15** Simulation of the Impact of Mechanical Property Variability on Railway Behaviour subject to Static Loading  
V. Alves Fernandes, S. Costa d'Aguiar and F. Lopez-Caballero

**CC.16** Non-Destructive Tests for Railway Infrastructure Stiffness Evaluation  
S. Fontul, E. Fortunato and F. De Chiara

10.30-11.00: Coffee

11.00-12.30: Chaired by: Z. Dimitrovo\text{v}ová and J. Pombo

**CC.17** Improving the Performance of a Turnout by Optimising its Vertical Stiffness Properties, V.L. Markine, C. Wan and I. Shevtsov

**CC.18** Rail Straightness Control in Service  
A. Bracciali, F. Piccioli and L. Di Benedetto

**CC.19** Development of an Analytical Model to study Railway Track Dynamics for the calculation of Vibration Levels arising from the Passage of Rail Vehicles  
J. Otero Yugat, J. Martínez Miralles, M.A. de los Santos López and S. Cardona i Foix

**CC.20** Surface Damage and Fracture of Subway Rails  
H.P. Rossmanith and E. Fischmeister

**CC.21** Modelling of Rail Rolling Contact Fatigue  
C. Funfschilling, M.L. Nguyen-Tajan, S. Dieudonne, C. Rivron and P.E. Laurens

**CC.22** Rail Damage and Impact Phenomena at Dissimilar Welded Rail Joints  
T. Weisz and H.P. Rossmanith
09.00-10.30: Chaired by: L. Jendele and V. Šmilauer

ELASTO-PLASTIC ANALYSIS
CC.121 The Incremental Plasticity Method Applied to the Drucker-Prager Material Model, D. Rakic, M. Zivkovic, S. Vulovic, D. Divac and N. Grujovic
CC.122 A Nonlinear Algorithm for the Analysis of Elastoplastic Structures Modelled with Mixed Finite Elements, A. Bilotta, G. Garcea and L. Leonetti

MATERIALS MODELLING
CC.123 The Effect of Strain Rate on the Total Response of a Structure subject to a Moving Load, H. Aied and A. González
CC.124 Multi-scale Analysis of Heat Transport in Hydrating Concrete Structures L. Jendele, V. Šmilauer and J. Cervenka
CC.125 Identification of Micromechanical Properties on Metal Foams using Nanoindentation, J. Nemecek, V. Králík, J. Vondrejc and J. Nemecková
CC.126 Thermoelastic Behaviour of Masonry-Like Solids with Temperature-Dependent Young's Modulus M. Girardi, C. Padovani, A. Pagni and G. Pasquinelli

10.30-11.00: Coffee

11.00-12.30: Chaired by: D. Rypl and M.C. Suárez-Arriaga

MATERIALS MODELLING
CC.127 Thermo-Mechanical Modelling of Continuous Casting Primary Zones M. Halilovic, N. Mole and B. Štok

POROUS MATERIALS
CC.129 Modeling Non-Isothermal Poroelastic Structures using Quaternions M.C. Suárez-Arriaga

MESHLESS METHODS
CC.130 Locking-Free Analysis of Shear-Deformable Beams by Coupling Finite Element and Meshfree Methods, R.E. Erkmen and M.A. Bradford
CC.131 Analysis of Errors in Local Meshless Methods with Different Domain Discretizations, R. Trobec and G. Kosec

ISOGEOMETRIC ANALYSIS
CC.132 Comparison of Numerical Quadrature Schemes in Isogeometric Analysis D. Rypl and B. Patzák
09.00-10.45: Chaired by: J. Blachut and A.P. Chassiakos

DOME STRUCTURES
CC.191 Non-Linear Vibration of a Thin-Walled Dome under External Water Pressure
C.T.F. Ross, A. McLennan and A.P.F. Little
CC.192 Buckling Strength Recovery of Geometrically Imperfect Domes
J. Blachut

CONSTRUCTION ENGINEERING
CC.153 Understanding Construction Bidding Behaviour Using Data Visualization and Data Mining, T.P. Williams
CC.154 A Methodology for Managing Electricity related Hazards in Construction Sites, A. Xanthopoulou and A.P. Chassiakos

ENERGY RESOURCES
CC.158 Design of an Underwater Drilling Rig
C.T.F. Ross, R.J. Rodriguez-McCullough, A.P.F. Little and M. El-Hajj
CC.159 Optimizing Geothermal Energy Utilization in Bóly
J. Pálné Schreiner and A. Csébfalvi

10.30-11.00: Coffee

11.15-12.30: Chaired by: E. Kita and M. Domaszewski

INVITED LECTURE
LS.10 Cellular Automata Simulation of Damage Processes in Concrete Structures
F. Biondini

CELLULAR AUTOMATA
CS.35 Stability Analysis of Multiple Vehicle Following Models
Y. Wakita, H. Shimizu, T. Tamaki and E. Kita

PARTICLE SWARM OPTIMIZATION
CS.36 Reliability Based Optimal Design of Truss Structures using Binary Particle Swarm Optimization with Time-Varying Parameters
C.K. Dimou and A.E. Charalampakis
CS.37 Minimizing Thermal Residual Stresses in Ceramic Matrix Composites by using Particle Swarm Optimization Algorithm
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09.15-10.30: Chaired by: H.J.C. Barbosa

INVITED LECTURE

LS.6 Structural Health Monitoring using Soft Computing
    H. Furuta, Y. Nomura and K. Nakatsu

NON-DESTRUCTIVE TESTING, DAMAGE AND IDENTIFICATION

CC.180 Damage Identification in Fibre Reinforced Plastics Strengthened Reinforced Concrete Beams, R. Perera and A. Ruiz
CC.181 Time-Domain Identification of Structural Parameters using Shaking Table Tests, P. Cacciola and P. Vachaviolos
CC.182 Displacement Measurement by Digital Holographic Interferometry
    A. Lotfi

10.30-11.00: Coffee

10.45-12.30: Chaired by: L. Lima and T. Ji

DESIGN OF BUILDINGS: STRUCTURAL CONCEPTS AND MODELLING

Special Session organised by L.F. Costa Neves and L. Lima

CC.62 The Effect of Bracing Patterns on the Lateral Stiffness of a Simple Frame
    X. Yu and T. Ji
CC.63 Preventing the Progressive Collapse of Reinforced Concrete Buildings
    M.N.S. Hadi and T.M.S. Alrudaini
CC.64 Realistic Modeling of High Rise Structures subjected to Progressive Collapse
    D. Stephen, J. Ye and D. Lam
CC.65 Modelling of Steel Structures for Progressive Collapse Mitigation: The Contribution of Lateral Force Resisting Systems
    O.A. Mohamed
CC.66 A Conceptual Design of an Underwater Hotel
CC.67 Numerical Modelling of Extended Endplate Beam-to-Column Joints Subjected to Bending Moment and Axial Force
CC.68 Numerical Modelling of the Lateral Buckling of Steel I Beams Subject to Different Boundary Conditions
    H.A. Sánchez Sánchez and C. Cortés Salas
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HEURISTIC AND HYBRID METAHEURISTIC METHODS FOR STRUCTURAL AND ENVIRONMENTAL ENGINEERING COMPUTING
Special Session organised by A. Csébfalvi

CS.18   Optimal Design of Large-Span Shallow Dome Structures using the ANGEL Metaheuristic Method, A. Csébfalvi and L. Mészáros
CS.19   A Hybrid Metaheuristic for the Resource-Constrained Project Scheduling Problem with Fuzzy Activity Durations, S. Danka
CS.20   An Improved Hybrid Algorithm for the Resource-Constrained Project Scheduling Problem with Hammock Activities, O. Eliezer and R. Levi
CS.21   A Net Present Value Oriented Hybrid Method to Optimize the Revenue of Geothermal Systems with Respect to Operation and Expansion, A. Csébfalvi and J. Pálné Schreiner

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11.00-12.15: Chaired by: M. Hartnett and J. Bridgeman

MODELLING OF TIDAL FLOWS AND MATERIAL TRANSPORT
Special Session organised by M. Hartnett

CC.107  Adaptive Mesh Multi-Scale Modelling of Tidal Hydraulics and Material Transport, S. Nash and M. Hartnett
CC.109  A Performance Assessment Protocol for Structured Mesh Multi-Scale Models, S. Nash and M. Hartnett

WATER RESOURCE MANAGEMENT
CC.156  Correction of Demand Patterns on the Basis of Pressure Measurements, T. Koppel and A. Vassiljev
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Special Session organised by K. Marti, T. Vietor and G.I. Schuëller  
CC.92 On Optimal Topologies for the Case of Uncertain Load Positions  
J. Lógó, D.B. Merczel and L. Nagy  
CC.93 Solving Random Linear Problems: Expected Value Linear Programming  
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CC.94 Coupling Boundary Element Reliability Algorithms applied to Probabilistic Analysis of Crack Propagation in Structures subject to Fatigue  
E.D. Leonel, W.S. Venturini and A. Chateauneuf  
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CC.143 The Solution of N-Multiobjective Optimization Problems using Modified Normal Boundary Intersection and Normal Constraint Methods  
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CC.144 Application of Surrogate Based Optimization to Reservoir Engineering Problems, S.M.B. Afonso, B. Horowitz, R.B. Willmersdorf, J.D. Lira Junior and J.W.O. Pinto  
CC.145 Optimal Design Comparisons for a Prestressed Concrete Beam Designed using the ACI Code, BS8110 and Eurocode Requirements  
K.A. Taib, N. Kasim and N. Mohamad Basir  
CC.146 Competitiveness of Reinforced Concrete Floor Systems  
I. Merta and S. Kravanja  
CC.147 Optimisation of a Cantilever Retaining Wall  
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CC.167 Three-Dimensional Solid Finite Element Modelling and Analysis of Precast Hollow Core Floors  
D.F. Hodge, B.D. O'Rourke, J.J. Murphy and J.R. Harrington |
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Special Session organised by Z. Dimitrovová, J. Pombo and P. Teixeira
CC.23 The Influence of Worn Wheels on Railway Vehicle Dynamics and on their Interaction with the Track, J. Pombo and N. Kuka
CC.25 The Train Dynamics of Wheel Rail Contact and Longitudinal Lateral Interaction between Vehicles, L. Cantone, D. Negretti and V. Vullo
CC.27 On the Steady State Interaction between an Asymmetric Wheelset and Track, T. Mazilu and M. Dumitriu
CC.29 Comparison of the Linear and Nonlinear Analyses of the Stabilization of the Hunting Motion of Railway Vehicles, D. Baldovin and S. Baldovin

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16.15-18.00: Chaired by: A.A. Taflanidis and L.A.C. Neves

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Special Session organised by A.A. Taflanidis and C. Papadimitriou
CS.13 Application of Soft Computing Techniques to Dam Safety Monitoring, V. Rankovic, N. Grujovic, D. Divac, N. Milivojevic and G. Milanovic
CS.14 Application of Response Surface Methodologies for Hurricane Risk Assessment, A.A. Taflanidis
CS.15 Relative Entropy Estimation through Stochastic Sampling and Stochastic Simulation Techniques, G. Jia and A.A. Taflanidis
CS.16 A Rough Set-Based Revised Counter-Propagation Network Model for Structural Damage Identification, S.F. Jiang, C. Fu and J. Lin
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**FINITE ELEMENT ANALYSIS OF MASONRY**

Special Session organised by J.W. Bull

CC.55  The Displacement Approach in No-Tension Structures  
A. Baratta and O. Corbi

CC.56  The Effect of Openings and their Locations on Masonry Infill in Steel Structures, M. Foroughi and M.A. Barkhordari

CC.57  Compatibility Thermal Dilatation Limits of the Repair Material for Historic Masonry, P. Beran and M. Drdácký

CC.58  Computational Analysis of Fibre Reinforced Polymer-Confined Masonry Columns, H.O. Köksal, S. Aktan, B. Doran and C. Karakoç

CC.59  On the Statics of Masonry Helical Staircases, A. Baratta and I. Corbi

CC.60  Finite Element Analysis of Adobe Masonry using Experimentally Derived Material Data, R. Illampas, D.C. Charmpis and I. Ioannou

CC.61  Unilateral Analysis and Damage Identification in Masonry Structures  
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CC.217  Seismic Modal Response Histories of Two-Way Asymmetric Adjacent Buildings with Soil-Structure Interaction Effects Subject to Earthquake Excitations  
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CC.218  Multilevel Analysis for the Identification of Damage Resulting from Foundation Settlements, S. Arangio, M. Ciampoli, E. Silvi and A. Turtoro

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CC.222  Two-Dimensional Modeling of Tunnel Excavations Enhanced by Convergence Measurements, T. Janda, M. Šejnoha and J. Šejnoha

CC.223  Three-Dimensional Finite-Element Analysis of Mechanized Shield Tunneling in Urban Areas, V. Zarev, T. Schanz and M. Datcheva

CC.224  Analysis of Single and Twin Tunnels Interacting with Surrounding Alluvial Soils, H. Shakib and O. Naeemifar

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CS.2 Probabilistic Structural Analysis using Random Samples with Correlations induced by Simulated Annealing, D.C. Charmpis

CS.3 Robust Topology Optimization using Multi Objective Evolutionary Algorithms  

CS.4 Optimum Seismic Design of Gravity Retaining Walls using the Heuristic Big Bang-Big Crunch Algorithm, A. Kaveh, S. Talatahari and R. Sheikholeslami

CS.5 Optimum Design of Reinforced Concrete Frames using a Heuristic Particle Swarm-Ant Colony Optimization, A. Kaveh and O. Sabzi

CS.7 The Impact of Soft Computing on Building Norms and Certification in Engineering, M. Phiri
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CC.202 Effect of Control Point Location on Rut Depth Measurement using Close Range Photogrammetry, M.A. Saif and A.M. Ibrahiem

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CC.195 Non-Linear Analysis of Side-Plated Reinforced Concrete Beams considering Longitudinal and Transverse Interlayer Slips J. Kolšek, T. Hozjan, M. Saje and I. Planinc
CC.196 Eccentric Steel Bracing for Seismic Retrofitting of Non-Ductile Reinforced Concrete Frames, M. Valente
CC.197 Strengthening Base Plates in Steel Structures M.A. Barkhordari and M. Foroughi
CC.198 Investigating the Most Effective Carbon Fibre Reinforced Polymer Configuration in Repairing Concrete Beams Damaged by Collisions A. ElSafty and M.K. Graeff
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CC.134 Numerical Analysis of Dam and Rock Mass Interaction
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CC.226 Fast and Accurate Fatigue Crack Growth Analysis with the Boundary Cracklet Method, A.K. Yavuz, A.D. Senalp and H.S. Turkmen

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COMPUTATIONAL MODELLING AND ANALYSIS ON STRUCTURES UNDER EXTREME LOADING

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CC.162 Parametric Analysis of Welded Aluminium T-Stub Connections
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CC.164 Evaluation of the Shear Constant of a Timber Beam using a Photogrammetric Approach, H. Zhang, A. Mohamed and Z. Xiao

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