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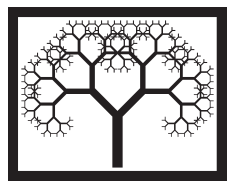

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Preface

This volume comprises the summaries of contributed papers presented at The Tenth International Conference on Computational Structures Technology (CST 2010) held in Valencia, Spain from 14 to 17 September 2010. The full papers from the conference are available on the accompanying CD-ROM. The ECT conference series began in Edinburgh during 1991. The 2010 conference was held concurrently with The Seventh International Conference on Engineering Computational Technology (ECT 2010).

The special sessions included in this volume of proceedings are:

- Railway Research: Vehicle Dynamics, Infrastructure Response and their Interaction
  organised by J. Pombo, L. Baeza and Z. Dimitrovová
- Damage Identification Methods
  organised by J.V. Araujo dos Santos and H.M.R. Lopes
- Composite and Adaptive Structures: Modeling, Simulation and Testing
  organised by C.M. Mota Soares
- Modelling and Analysis of Concrete Structures
  organised by I. Paya-Zaforteza and J. Turmo-Coderque
- Analysis and Design of Steel and Composite Structures
  organised by L.F. Costa Neves
- Connections in Steel and Composite Structures
  organised by L.F. Costa Neves
- Non-Gradient Methods in Optimization
  organised by J.F. Aguilar Madeira and H. Pina
- Assessment of Structures using Numerical Models
  organised by J.M. Adam and F.J. Pallarés
- Computational Structural Stability
  organised by H.A. Mang
- Control of Vibration in Civil Engineering
  organised by R.C. Barros and A. Baratta
- Probabilistic Approaches to Structural Mechanics
  organised by A. Elhami
- Eigenvalues of Continuous Systems
  organised by S. Ilanko
- Slender Structures: Analysis and Design
  organised by I. Doltsinis and V. Dias da Silva
- Structural Optimization and Optimal Structural Control under Uncertainty
  organised by K. Marti, G.I. Schuëller and T. Vietor
- Smart Structure Theories motivated by Continuum Physics Formulations
  organised by H. Irschik
- New Trends in the Simulation of Multi-Body Systems with Contact
  organised by S. Dumont and F. Lebon

- Numerical Modelling of Steel and Steel-Concrete Composite Structures
  organised by M.L. Romero
- Built Heritage Strengthened with Composite Materials
  organised by D. Oliveira and C. Pellegrino
- Simulations of Human and Robotic Movements
  organised by A. Eriksson
- Differential Quadrature, Generalized Methods and Related Discrete Element Analysis Methods
  organised by C.N. Chen
- Timber Structures
  organised by P.H. Kirkegaard
- Vibrations of Continuous Systems
  organised by A.V. Singh

We are particularly grateful to the organisers of these special sessions.

The following sessions are also included in this volume:

- Meshless Methods
- Finite Element Modelling
- Finite Element Technology
- Extended Finite Element Method
- Discrete Element Methods
- Graph Techniques
- Augmented Lagrangian Method
- Microstructures
- Nanotechnology
- Modelling Discontinuities
- Concrete Modelling
- Composites: Damage
- Composite Materials
- Modelling of Foam Composites
- Composite Plates
- Non-Linear Materials
- Layered, Functionally Graded and Piezoelectric Composite Laminates
- Plate and Shell Structures
- Metal Forming
- Boundary Element Method
- Boundary Integral Methods
- Hybrid Element Methods
- Elasto-Plasticity Problems
- Structural Design
- Re-Analysis of Structures
- Structural Optimization
- Topology Optimization
- Crashworthiness
- Vehicle Safety
- Uncertainties in Stochastic Systems
- Seismic Engineering
- Dynamics: General
- Non-Linear Dynamics
- Dynamics: Human Motion
- Penalty Methods
- Damping
- Engineering Simulation
- Engineering Analysis and Design
- Masonry Structures
- Structural Mechanics
- Cable, Truss and Space Structures
- Tall Buildings
- Symbolic Computing

Other papers presented at the conferences in 2010 are published as follows:

- *The Review Lectures from CST 2010 and ECT 2010 are published in:*
  Computational Technology Reviews, Volumes 1 and 2, Saxe-Coburg Publications, Stirlingshire, Scotland, 2010.
- *The Invited Lectures from CST 2010 are published in:*
  Developments and Applications in Computational Structures Technology, B.H.V. Topping, J.M. Adam, F.J. Pallarés, R. Bru and M.L. Romero, (Editors), Saxe-Coburg Publications, Stirlingshire, Scotland, 2010.

- *The Invited Lectures from ECT 2010 are published in:*
  Developments and Applications in Engineering Computational Technology, B.H.V. Topping, J.M. Adam, F.J. Pallarés, R. Bru and M.L. Romero, (Editors), Saxe-Coburg Publications, Stirlingshire, Scotland, 2010.
- *The Contributed Papers from ECT 2010 are published in:*
  Proceedings of the Seventh International Conference on Engineering Computational Technology, B.H.V. Topping, J.M. Adam, F.J. Pallarés, R. Bru and M.L. Romero, (Editors), (Book of Summaries with a CD-ROM of full-text papers), Civil-Comp Press, Stirlingshire, Scotland, 2010.

We would like to thank the "Universidad Politécnica de Valencia", particularly the "Escuela Técnica Superior de Ingeniería del Diseño" and the "Centro de Formación Permanente", for their help in the organisation of these conferences.

We are grateful to Jelle Muylle for designing these conference proceedings and for all his administrative and organisational skills in organising these conferences. We also wish to thank Dawn Sewell (Civil-Comp Press) for her administrative support before and during the conference.

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