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Front Cover Image: Finite element mesh and
effective stress contours of an automotive wheel rim
Back cover Image: Frequency analysis of a
turbine disk using over 67,000 degrees of freedom
Both images are reproduced courtesy of ADINA R&D, Inc.

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Contents

Preface

This volume comprises the Invited Lectures presented at The Sixth International Conference on Computational Structures Technology (CST 2002). The conference was held concurrently with The Third International Conference on Engineering Computational Technology (ECT 2002). Both conferences were organised in conjuction with, and held at, the Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic, from 4 to 6 September 2002. These conferences are part of the CST–ECT series that commenced in 1991.

The first Computational Structures Technology Conference was held in Edinburgh in 1991. At the 1991 conference most of the papers concentrated on the solution of structural engineering problems using computational techniques. Today, the computational technology aspects of the modelling and solution procedures are important if we are to harness the full power of the latest developments in computational hardware and software. Another important research trend is the solution of multi-physics problems where the solution of the structural engineering problem has to be embedded within a much more complex system involving fluid or other models. The lectures included this volume reflect these research trends.

In this volume of Invited Lectures the topics covered include:

- fluid-structure and fluid-solid interaction (Chapters 1 & 6)
- linear and non-linear finite element techniques (Chapters 1, 2, 3, 4, 15 & 16)
- materials and fracture mechanics modelling (Chapters 3, 4, 5, 6, 7 & 14)
- damage mechanics (Chapters 3, 4, 5 & 6)
- analysis and design of composites and laminates (Chapters 8, 9 & 10)
- dynamic analysis (Chapter 11)
- new techniques for structural mechanics (Chapters 12 & 13)
- damage assessment techniques (Chapter 14)
- optimization in structural analysis and design (Chapters 8, 10 & 15)

We are grateful to the authors and co-authors of the special lectures included in this volume. Their contribution both to the CST 2002 conference and this book is greatly appreciated.

We are indebted to Adina R&D for the two computer generated images shown on the cover of the book.

Other papers presented at the conferences in 2002 are published as follows:

- *The Invited Lectures from ECT 2002 are published in:* Engineering Computational Technology, B.H.V. Topping and Z. Bittnar (Editors), Saxe-Coburg Publications, Stirling, Scotland, 2002.
- *The Contributed Papers from CST 2002 are published in:* Proceedings of the Sixth International Conference on Computational Structures Technology, B.H.V. Topping and Z. Bittnar (Editors), (Book of Abstracts and CD-ROM), Civil-Comp Press, Stirling, Scotland, 2002.
- *The Contributed Papers from ECT 2002 are published in:* Proceedings of the Third International Conference on Engineering Computational Technology, B.H. V. Topping and Z. Bittnar (Editors), Saxe-Coburg Publications, Stirling, Scotland, 2002.

These Conferences could not have been organised without the contribution of many who helped in their planning, organisation and execution. We are particularly grateful to Jelle Muylle who once again, so expertly, guided the design of this volume of lectures. We are also grateful to the following staff and students of the Faculty of Civil Engineering at the Czech Technical University: Alexandra Kurfürstová, secretary of the Department of Structural Mechanics and PhD students Jitka Poděbradská, Richard Vondráček and Matěj Lepš.

Barry H.V. Topping and Zdeněk Bittnar