Advanced Computational Methods in

Heat Transfer VIII

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EIGHTH INTERNATIONAL CONFERENCE ON
ADVANCED COMPUTATIONAL METHODS IN HEAT
TRANSFER

HEAT TRANSFER VIII

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Heat Transfer VIII

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Published by

WIT Press
Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK
Tel: 44 (0) 238 029 3223; Fax: 44 (0) 238 029 2853
E-Mail: witpress@witpress.com
http://www.witpress.com

For USA, Canada and Mexico

Computational Mechanics Inc
25 Bridge Street, Billerica, MA 01821, USA
Tel: 978 667 5841; Fax: 978 667 7582
E-Mail: infousa@witpress.com
http://www.witpress.com

British Library Cataloguing-in-Publication Data

A Catalogue record for this book is available
from the British Library

ISBN: 1-85312-705-1
ISSN: 1369-7331

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Printed and bound in Great Britain by Athenaeum Press Ltd., Gateshead

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Preface

Research and developments of computational methods for solving heat transfer problems continue to be important, because heat transfer topics are commonly of a complex nature and several different mechanisms, like heat conduction, convection, turbulence, thermal radiation and phase change may occur simultaneously. Although heat transfer might be regarded as an established and mature scientific discipline, its role and relevance in sustainable development and reduction of greenhouse gases as well as for micro- and nanoscale structures and bio-engineering have been recently identified. Non-linear phenomena may, besides the momentum transfer, appear due to temperature-dependent thermophysical properties. In engineering design and development works, reliable and accurate computational methods are requested to replace or complement expensive and time consuming experimental trial and error work. Tremendous advancements have been achieved during recent years due to improved numerical solution approaches of non-linear partial differential equations and computer developments, to achieve efficient and rapid calculations by parallelised computations on, e.g., PC-clusters. Nevertheless, to further progress computational methods in heat transfer, developments in theoretical and predictive procedures, both basic and innovative, and applied research are needed.

This book contains the edited versions of the papers presented at the Eighth International Conference on Advanced Computational Methods in Heat Transfer held in Carcavelos, Lisbon, Portugal in 2004. The objective of this conference series is to provide a forum for presentation and discussion of advanced topics, new approaches and application of advanced computational methods to heat transfer problems. All papers have been reproduced directly from material submitted by the authors but an attempt has been made to use a unified outline and methods of presentation for each paper. The contributed papers are grouped in appropriate sections to provide better access for readers.

The editors would like to thank all the distinguished and well-known scientists who supported our efforts by serving in the International Scientific Advisory Committee, reviewing the submitted abstracts and papers. The excellent administrative work of the conference secretariat at WIT is greatly appreciated and the efficient co-operation and encouragement by the staff at WIT Press contributed significantly in producing the conference proceedings.

The Editors
Lisbon, 2004

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