

# Preface

Applied Mathematics, Modelling and Computational Science (AMMCS)-2013 was an interdisciplinary international conference, the second in a series of AMMCS meetings held in Waterloo, Ontario, Canada and hosted at Wilfrid Laurier University's Waterloo campus. The series aims at promoting interdisciplinary research and collaboration involving mathematical and computational sciences, and highlighting recent advances in AMMCS. AMMCS-2013 was held on August 26–30, 2013 and was organized in cooperation with AIMS and SIAM, with support from the Fields Institute in Toronto. The AMMCS-2013 book of abstracts can be found online at <http://www.ammcs2013.wlu.ca/> and on behalf of all conference organizers and participants we wish to extend a heartfelt thanks to Mr. Dalibor D. Dvorski who devoted an enormous amount of time to edit it.

The first conference in the AMMCS series was held on July 25–29, 2011 and hosted at Wilfrid Laurier University's Waterloo campus. The AMMCS-2011 book of abstracts can be found online at <http://www.ammcs2011.wlu.ca/> and on behalf of all conference organizers and participants we wish to extend a heartfelt thanks to Mr. Cameron Davidson-Pilon who devoted an enormous amount of time to edit it. The proceedings of AMMCS-2011 have been published in *Advances in Mathematical and Computational Methods: Addressing Modern Challenges of Science, Technology, and Society*, Ilias Kotsireas, Roderick Melnik, Brian West (Editors), AIP Conference Proceeding 1368, (2011). Selected papers received from the AMMCS-2011 plenary speakers have been published in *Advances in Applied Mathematics, Modelling, and Computational Science*, edited by Roderick Melnik and Ilias Kotsireas (Fields Institute Communications, 66, Springer, New York; Fields Institute for Research in Mathematical Sciences, Toronto, 2013).

The AMMCS series of conferences is meant to provide a platform of interaction between applied scientists at all levels in various fields and aims to keep the very interdisciplinary nature of its content and sessions as its distinctive mark. There were many young scientists at AMMCS-2013, both as presenters and organizers. There was a poster session with specific prizes to encourage young trainees in the modelling field towards honing their communication skills on topics from their areas. AMMCS-2013 also managed to successfully pair this infusion of young researchers with an

extensive list of prestigious plenary and semi-plenary speakers, whose presence added an enthusiastic layer of interaction between all participants.

AMMCS-2013 featured 42 special sessions and 10 contributed sessions with a total of 650 participants from 40 countries. The program of the conference was rich and varied with over 550 talks and posters being presented. Highlights were the invited plenary talks given by Peter Carr (Morgan Stanley), Emily Carter (Princeton University), Ronald Coifman (Yale University), Marty Golubitsky (Ohio State University), Vaughan Jones (Vanderbilt University), Lila Kari (Western University), Dimitris Giannakis and Andrew Majda (New York University), George Papanicolaou (Stanford University), Panos Pardalos (University of Florida), Michael Sigal (University of Toronto), and Godfried Toussaint (NYUAD/M.I.T./McGill).

The present proceedings contains 78 refereed papers that were submitted to the AMMCS-2013 Editorial Team after the conference. The papers in this volume were carefully screened and we are grateful to a number of researchers around the world that acted as referees, offering pertinent referee reports to the authors of submitted papers.

We thank all the people who participated in the AMMCS-2013 conference and presented excellent talks, as well as all who contributed to the organization of the conference. We appreciate the help of students during the conference. We gratefully acknowledge the financial support for the conference by the Fields Institute and the Office of Research Services of Wilfrid Laurier University. Finally, we want to express our gratitude to Springer-Verlag for publishing this volume.

Waterloo, Ontario, Canada  
July 2014

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Interdisciplinary Topics in Applied Mathematics,  
Modeling and Computational Science

Cojocaru, M.; Kotsireas, I.S.; Makarov, R.; Melnik, R.V.N.;  
Shodiev, H. (Eds.)

2015, XXIII, 555 p. 145 illus., 102 illus. in color.,

Hardcover

ISBN: 978-3-319-12306-6