

Modeling, Simulation and Optimization of Complex Processes - HPSC 2012

Hans Georg Bock • Hoang Xuan Phu •
Rolf Rannacher • Johannes P. Schlöder
Editors

Modeling, Simulation and Optimization of Complex Processes - HPSC 2012

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Preface

High performance scientific computing is an interdisciplinary area that combines many fields such as mathematics and computer science as well as scientific and engineering applications. It is an enabling technology for both competitiveness in industrialized countries and for speeding up development in emerging countries. High performance scientific computing develops methods for modeling, computer aided simulation and optimisation of complex systems and processes. In practical applications in industry and commerce, science and engineering, it helps to conserve resources, to avoid pollution, to reduce risks and costs, to improve product quality, to shorten development times or simply to operate systems better. Topical aspects of scientific computing have been presented and discussed at the Fifth International Conference on High Performance Scientific Computing that took place in Hanoi on March 5–9, 2012. The conference has been organized by the Institute of Mathematics of the Vietnam Academy of Science and Technology (VAST), the Interdisciplinary Center for Scientific Computing (IWR) of the University of Heidelberg, Ho Chi Minh City University of Technology, and the Vietnam Institute for Advanced Study in Mathematics.

More than 270 participants from countries all over the world attended the conference. The scientific program consisted of in total more than 190 talks, a big part of them presented in 19 mini-symposia. Eight talks were invited plenary lectures given by Frank Allgöwer (Stuttgart), Ralf Borndörfer (Berlin), Ingrid Daubechies (Durham), Mats Gyllenberg (Helsinki), Karl Kunisch (Graz), Volker Schulz (Trier) and Christoph Schwab (Zurich).

Topics included mathematical modeling, numerical simulation, methods for optimization and control, parallel computing, software development, applications of scientific computing in physics, mechanics and biomechanics, material science, hydrology, chemistry, biology, biotechnology, medicine, sports, psychology, transport, logistics, communication networks, scheduling, industry, business and finance.

This proceedings volume contains 21 carefully selected contributions referring to lectures presented at the conference. We would like to thank all authors and the referees.

Special thanks go to the sponsors whose support significantly contributed to the success of the conference:

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- + Interdisciplinary Center for Scientific Computing (IWR), Heidelberg
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Contents

| | |
|---|----|
| A Non-causal Inverse Model for Source Signal Recovery in Large-Domain Wave Propagation | 1 |
| Hunter M. Brown, Minh Q. Phan, and Stephen A. Ketcham | |
| Parallel-in-Space-and-Time Simulation of the Three-Dimensional, Unsteady Navier-Stokes Equations for Incompressible Flow | 13 |
| Roberto Croce, Daniel Ruprecht, and Rolf Krause | |
| Mathematical Modeling of Emotional Body Language During Human Walking | 25 |
| Martin L. Felis, Katja Mombaur, and Alain Berthoz | |
| On Quadratic Programming Based Iterative Learning Control for Systems with Actuator Saturation Constraints | 37 |
| Fei Gao and Richard W. Longman | |
| A Sparse Grid Based Generative Topographic Mapping for the Dimensionality Reduction of High-Dimensional Data | 51 |
| Michael Griebel and Alexander Hullmann | |
| Sparse Approximation Algorithms for High Dimensional Parametric Initial Value Problems | 63 |
| Markus Hansen, Claudia Schillings, and Christoph Schwab | |
| Investigating Capturability in Dynamic Human Locomotion Using Multi-body Dynamics and Optimal Control | 83 |
| Khai-Long Ho Hoang, Katja Mombaur, and Sebastian I. Wolf | |
| High Performance Calculation of Magnetic Properties and Simulation of Nonequilibrium Phenomena in Nanofilms | 95 |
| Vitalii Yu. Kapitan and Konstantin V. Nefedev | |

| | |
|---|-----|
| Inverse Problem of the Calculus of Variations for Second Order Differential Equations with Deviating Arguments | 109 |
| Galina Kurina | |
| State-Space Model and Kalman Filter Gain Identification by a Superspace Method | 121 |
| Ping Lin, Minh Q. Phan, and Stephen A. Ketcham | |
| Stiff Order Conditions for Exponential Runge–Kutta Methods of Order Five | 133 |
| Vu Thai Luan and Alexander Ostermann | |
| A Reduced-Order Strategy for Solving Inverse Bayesian Shape Identification Problems in Physiological Flows | 145 |
| Andrea Manzoni, Toni Lassila, Alfio Quarteroni, and Gianluigi Rozza | |
| A Mathematical Study of Sprinting on Artificial Legs | 157 |
| Katja Mombaur | |
| Hilbert Space Treatment of Optimal Control Problems with Infinite Horizon | 169 |
| Sabine Pickenhain | |
| Optimum Operation of a Beer Filtration Process | 183 |
| Cesar de Prada, Smaranda Cristea, Rogelio Mazaeda, and Luis G. Palacín | |
| Energy-Aware Lease Scheduling in Virtualized Data Centers | 195 |
| Nguyen Quang-Hung, Nam Thoai, Nguyen Thanh Son, and Duy-Khanh Le | |
| Mathematical Models of Perception and Generation of Art Works by Dynamic Motions | 207 |
| Alexander Schubert, Katja Mombaur, and Joachim Funke | |
| An Eulerian Interface-Sharpener Algorithm for Compressible Gas Dynamics | 221 |
| Keh-Ming Shyue | |
| Numerical Simulation of the Damping Behavior of Particle-Filled Hollow Spheres | 233 |
| Tobias Steinle, Jadran Vrabec, and Andrea Walther | |
| FSSP Algorithms for Square and Rectangular Arrays | 245 |
| Hiroshi Umeo | |
| Optimization Issues in Distributed Computing Systems Design | 261 |
| Krzysztof Walkowiak and Jacek Rak | |