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Rolf Rannacher • Johannes P. Schlöder
Editors

Modeling, Simulation and Optimization of Complex Processes HPSC 2015

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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 speeding up development in emerging countries. High performance scientific computing develops methods for modeling, computer-aided simulation, and optimization of complex systems and processes. In practical applications in industry and commerce, science and engineering, it helps to conserve resources, to avoid pollution, to assess risks and reduce 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 Sixth International Conference on High Performance Scientific Computing that took place in Hanoi on March 16–20, 2015. The conference has been organized jointly by the Heidelberg Institute of Theoretical Studies (HITS), the Institute of Mathematics of the Vietnam Academy of Science and Technology, the Interdisciplinary Center for Scientific Computing (IWR) of Heidelberg University, and the Vietnam Institute for Advanced Study in Mathematics at the Ministry of Education and Training.

More than 290 participants from countries all over the world attended the conference. The scientific program consisted of in total 175 talks, a big part of them presented in 16 mini-symposia. Eight talks were invited plenary lectures given by Peter Bastian (Heidelberg), Björn Enquist (Texas), Elena Fernandez (Barcelona), Martin Jakob Gander (Geneva), Helge Holden (Trondheim), Martine Labbé (Brussels), Peter Maaß (Bremen), and Christof Schütte (Berlin).

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 22 carefully selected contributions, which were presented at the conference. We would like to thank all authors and the referees.

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+ Heidelberg Graduate School of Mathematical and Computational Methods for the Sciences
+ Heidelberg Institute for Theoretical Studies (HITS)
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