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# Large-Scale Scientific Computing

8th International Conference, LSSC 2011  
Sozopol, Bulgaria, June 6-10, 2011  
Revised Selected Papers

 Springer

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# Preface

The 8th International Conference on Large-Scale Scientific Computations (LSSC 2011) was held in Sozopol, Bulgaria, June 6–10, 2011. The conference was organized and sponsored by the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences.

The plenary invited speakers and lectures were:

- E. Casas, Analysis of an Elliptic Control Problem with Non-differentiable Cost Functional
- O. Iliev, On Modeling and Simulation of Multiscale Filtration Processes
- U. Langer, A Non-standard Finite Element Method Based on Boundary Integral Operators
- P. Vassilevski, Construction and Properties of Coarse Finite Element Spaces by Algebraic Multigrid
- W. Wagner, Stochastic Particle Methods
- B. Wohlmuth, Do We Still Need Analysis in PDE-Based Simulation?

The success of the conference and the present volume in particular are outcome of the joint efforts of many partners from various institutions and organizations. First, thanks to all the members of the Scientific Committee for their valuable contribution forming the scientific face of the conference, as well as for their help in reviewing contributed papers. We especially thank the organizers of the special sessions. We are also grateful to the staff involved in the local organization.

Traditionally, the purpose of the conference is to bring together scientists working with large-scale computational models of environmental and industrial problems, and specialists in the field of numerical methods and algorithms for modern high-performance computers. The invited lectures reviewed some of the advanced achievements in the field of numerical methods and their efficient applications. The conference talks were presented by the university researchers and practical industry engineers including applied mathematicians, numerical analysts, and computer experts. The general theme for LSSC 2011 was “Large-Scale Scientific Computing” with a particular focus on the organized special sessions.

Special Sessions and Organizers:

- Robust Multigrid, Multilevel and Multiscale, Deterministic and Stochastic Methods for Modelling Highly Heterogeneous Media — R. Lazarov, P. Vassilevski, L. Zikatanov
- Advanced Methods for Transport — P. Bochev, D. Ridzal, M. Shashkov
- Control and Uncertain Systems — M. Krastanov, V. Veliov
- Applications of Metaheuristics to Large-Scale Problems — S. Fidanova, G. Luque

- Environmental Modeling — A. Ebel, K. Georgiev, Z. Zlatev
- Large-Scale Computing on Many-Core Architectures — G. Haase
- Multiscale Industrial, Environmental and Biomedical Problems — O. Iliev, P. Popov
- Efficient Algorithms of Computational Geometry — L. Dechevski, A. Lakså
- High-Performance Monte Carlo Simulations — A. Karaivanova, E. Atanassov, T. Gurov
- Voxel-Based Computations — P. Arbenz, R. Blaheta, M. Neytcheva

More than 150 participants from all over the world attended the conference representing some of the strongest research groups in the field of advanced large-scale scientific computing. This volume contains 77 papers submitted by authors from more than 20 countries.

The 9th International Conference LSSC 2013 will be held in June 2013.

January 2012

Ivan Lirkov  
Svetozar Margenov  
Jerzy Waśniewski

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