

# Preface

The 9th International Conference on Large-Scale Scientific Computations (LSSC 2013) was held in Sozopol, Bulgaria, during June 3–7, 2013. The conference was organized and sponsored by the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences.

Plenary Invited Speakers and Lectures:

- P. Bochev, Optimization-Based Modeling — a New Strategy for Predictive Simulations of Multiscale, Multiphysics Problems
- M. Falcone, Recent Advances in the Approximation of Optimal Control Problems via Dynamic Programming
- M. Mascagni, Monte Carlo Methods and Partial Differential Equations: Algorithms and Implications for High-Performance Computing
- G. Haase, Multiple-GPU AMG Solver Environment for Biomedical Applications
- J. Pasciak, Variational Formulations of Problems Involving Fractional Order Differential Operators

The success of the conference and the present volume are the 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 specially 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 in natural sciences and environmental and industrial applications, and specialists in the field of numerical methods and algorithms for modern high-performance computers. The invited lectures reviewed some of the most advanced achievements in the field of numerical methods and their efficient applications. The conference talks were presented by researchers from academic institutions and practical industry engineers including applied mathematicians, numerical analysts, and computer experts. The general theme for LSSC 2013 was Large-Scale Scientific Computing with a particular focus on the organized special sessions.

Special Sessions and Organizers:

- Numerical Modeling of Fluids and Structures — J. Adler, X. Hu, P. Vassilevski, L. Zikatanov
- Computational Electromagnetics — U. Langer
- Control and Uncertain Systems — M. Krastanov, V. Veliov
- Monte Carlo Methods: Theory, Applications and Distributed Computing — I. Dimov, M. Nedjalkov, J.M. Sellier

- Recent Advances in High-Dimensional Approximation for PDEs with Random Input Data — C. Webster
- Theoretical and Algorithmic Advances in Transport Problems — P. Bochev, D. Ridzal
- Applications of Metaheuristics to Large-Scale Problems — S. Fidanova, G. Luque
- Modeling and Numerical Simulation of Processes in Highly Heterogeneous Media — O. Iliev, R. Lazarov, J. Willems
- Large-Scale Models: Numerical Methods, Parallel Computations and Applications — K. Georgiev, Z. Zlatev
- Numerical Solvers on Many-Core Systems — G. Haase
- Cloud and Grid Computing for Resource-Intensive Scientific Applications — A. Karaivanova, T. Gurov, E. Atanassov

More than 150 participants from all over the world attended the conference representing some of the strongest research groups in the field of advanced largescale scientific computing. This volume contains 74 papers by authors from more than 25 countries.

The 10th International Conference LSSC 2015 will be organized in June 2015.

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Large-Scale Scientific Computing

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