

# Preface

The 11th International Conference on Large-Scale Scientific Computations (LSSC 2017) was held in Sozopol, Bulgaria, June 5–9, 2017. The conference was organized by the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences in cooperation with Society for Industrial and Applied Mathematics (SIAM) and Sozopol municipality.

The plenary invited speakers and lectures were:

- J. Adler, “Energy-Minimization, Finite Elements, and Multilevel Methods for Liquid Crystals”
- J. Gopalakrishnan, “Theoretical and Practical Aspects of DPG Methods”
- U. Langer, “Multi-Patch Discontinuous Galerkin Space and Space-Time Isogeometric Analysis”
- J. Pasciak, “Numerical Approximation of a Space-Time Fractional Parabolic Equation”
- G. G. Yin, “Numerical Methods for Consensus of Networked Systems and Stochastic Control with Soft Constraints”

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, we would like to thank 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 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 2017 was “Large-Scale Scientific Computing” with a particular focus on the organized special sessions.

The special sessions and organizers were:

- Space-Time Methods for Solving Time-Dependent PDEs — U. Langer
- Advanced Discretizations and Solvers for Coupled Systems of Partial Differential Equations — J. Adler, X. Hu, L. Zikatanov
- Least-Squares Finite Element Methods — F. Bertrand and P. Bochev
- Advances in Heterogeneous Numerical Methods for Multi Physics Problems — P. Bochev, M. Perego

- Advanced Numerical Methods for Nonlinear Elliptic Partial Differential Equations — J. Kraus
- Solvers and Error Estimators for Mixed Finite Elements in Solid Mechanics — G. Starke
- Control and Optimization of Dynamical Systems — M. Krastanov, V. Veliov
- HPC and Big Data: Algorithms and Applications — A. Karaivanova, T. Gurov, E. Atanassov
- Toward Exascale Computation — O. Iliev
- Monte Carlo Methods: Theory, Applications and Distributed Computing — I. Dimov, R. Georgieva, M. Nedjalkov
- Application of Metaheuristics to Large-Scale Problems — S. Fidanova, G. Luque
- Large-Scale Models: Numerical Methods, Parallel Computations and Applications — K. Georgiev, Z. Zlatev
- Large-Scale Numerical Computations for Sustainable Energy Production and Storage — P. D'Ambra, D. di Serafino, S. Filippone

About 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 66 papers by authors from 21 countries.

The next international conference LSSC will be organized in June 2019.

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