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# Numerical Methods and Applications

7th International Conference, NMA 2010  
Borovets, Bulgaria, August 20-24, 2010  
Revised Papers

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# Preface

The international conference Numerical Methods and Applications is a traditional forum for scientists from all over the world providing an opportunity to share ideas and establish fruitful scientific cooperation. The aim of the conference is to bring together leading international scientists of the numerical and applied mathematics community and to attract original research papers of very high quality.

The papers in this volume were presented at the seventh edition of the International Conference on Numerical Methods and Applications (ICNM&A 2010) held in Borovets, Bulgaria, August 20–24, 2010. The conference was organized by the Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences in cooperation with SIAM. The Faculty of Mathematics and Informatics of St. Kliment Ohridski University of Sofia and the Institute of Computer and Communication Technologies, Bulgarian Academy of Sciences were co-organizers of this traditional scientific meeting. Over 100 participants from 22 countries attended the conference. Ninety-four talks, including ten invited and keynote talks, were presented. This volume contains 60 papers submitted by authors from 16 countries.

During ICNM&A 2010 a wide range of problems concerning recent theoretical achievements in numerical methods and their applications in mathematical modeling were discussed. Specific topics of interest were the following: *Numerical methods for differential and integral equations; approximation techniques in numerical analysis; numerical linear algebra; hierarchical and domain decomposition methods; parallel algorithms; Monte Carlo methods; computational mechanics; computational physics, chemistry and biology; engineering applications*. Five special sessions were organized: *Monte Carlo and Quasi-Monte Carlo Methods; Environmental Modeling; Grid Computing and Applications; Metaheuristics for Optimisation Problems; Modeling and Simulation of Electrochemical Processes*. The ICNM&A 2010 talks were delivered by researchers representing some of the strongest research teams in the field of numerical methods and their application for solving a wide range of practical problems.

The success of the conference and the present volume are due to the joint efforts of many colleagues from various institutions and organizations. We express our deep gratitude to all the members of the Scientific Committee for their valuable contribution to forming the scientific spirit of the conference, as well as for their help in reviewing the submitted papers. We are also grateful to the staff involved in the local organization.

We hope that this meeting among scientists who develop and study numerical methods, on one hand, and researchers who use them for solving real-life problems, on the other, has broadened their horizons and contributed to their mutual enrichment.

December 2010

Ivan Dimov  
Stefka Dimova  
Natalia Kolkovska

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