

# Preface

Sparse grids have gained increasing interest in recent years for the numerical treatment of high-dimensional problems. While classical numerical discretization schemes fail in more than three or four dimensions, sparse grids make it possible to overcome the “curse of dimensionality” to some degree—extending the number of dimensions that can be dealt with.

The second Workshop on Sparse Grids and Applications (SGA2012), which took place from July 2 to 6 in 2012, demonstrated once again the importance of this numerical discretization scheme. Organized by Hans-Joachim Bungartz, Jochen Garcke, Michael Griebel, Markus Hegland and Dirk Pflüger, more than 40 researchers from 11 different countries have presented and discussed the current state of the art of sparse grids and their applications. Thirty-three talks covered their numerical analysis as well as efficient data structures, and the range of applications extended to uncertainty quantification settings and clustering, to name but a few examples. This volume of LNCSE collects selected contributions from attendees of the workshop.

More than 20 years after the term “sparse grids” was coined by Christoph Zenger in Munich, the SGA was hosted by his former institution, the Department of Informatics of the Technische Universität München, together with the new Institute for Advanced Study (IAS). Financial support of the IAS is kindly acknowledged. We especially thank Christoph Kowitz and Valeriy Khakhutskyy for their effort and enthusiasm in the local organization of the workshop, and the IAS staff, especially Stefanie Hofmann and Sigrid Wagner, for their assistance.

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