Preface

This volume contains articles based on presentations at the 11th workshop on model-oriented data analysis and optimum design (mODa) in Hamminkeln-Dingden, Germany, during June 2016. The 11th workshop was organized by the Department of Statistics of the TU Dortmund and supported by the Collaborative Research Center "Statistical modeling of nonlinear dynamic processes" (SFB 823) of the German Research Foundation (DFG).

The mODa series of workshops focuses on nonstandard design of experiments and related analysis of data. The main objectives are:

- To promote new advanced research areas as well as collaboration between academia and industry.
- Whenever possible, to provide financial support for research in the area of experimental design and related topics.
- To give junior researchers the opportunity of establishing personal contacts and working together with leading researchers.
- To bring together scientists from different statistical schools – particular emphasis is given to the inclusion of scientists from Central and Eastern Europe.

The mODa series of workshops started at the Wartburg near Eisenach in the former GDR in 1987 and has continued as a tri-annual series of conferences. The locations and dates of the former conferences are as follows:

- mODa 1: Eisenach, former GDR, 1987,
- mODa 2: St. Kyrik, Bulgaria, 1990,
- mODa 3: Peterhof, Russia, 1992,
- mODa 4: Spetses, Greece, 1995,
- mODa 5: Luminy, France, 1998,
- mODa 6: Puchberg/Schneeberg, Austria, 2001,
- mODa 7: Heeze, The Netherlands, 2004,
- mODa 8: Almagro, Spain, 2007,
- mODa 9: Bertinoro, Italy, 2010,
- mODa 10: Łagów Lubuski, Poland, 2013.

The articles in this volume provide an overview of current topics in research on experimental design. The topics covered by the papers are:

- designs for treatment combinations (Atkinson; Druilhet; Grömping and Bailey),
- randomisation (Bailey; Ghiglietti; Shao and Rosenberger),
- computer experiments (Curtis and Maruri-Aguilar; Ginsbourger, Baccou, Chevalier and Perales),
- designs for nonlinear regression and generalized linear models (Amo-Salas, Jiménez-Alcázar and López-Fidalgo; Burclová and Pázman; Cheng, Majumdar and Yang; Mielke; Radloff and Schwabe),
- designs for dependent data (Deldossi, Osmetti and Tommasi; Gauthier and Pronzato; Prus and Schwabe),
- designs for functional data (Aletti, May and Tommasi; Zang and Großmann),
- adaptive and sequential designs (Borrotti and Pievatolo; Hainy, Drovandi and McGree; Knapp; Lane, Wang and Flournoy),
- designs for special fields of application (Bischoff; Fedorov and Xue; Graßhoff, Holling and Schwabe; Pepelyshev, Staroselskiy and Zhigljavsky),
- foundations of experimental design (Müller and Wynn; Zhigljavsky, Golyandina and Gillard).

In this time of Big Data, it is often not emphasized in public discourse that experimental design remains extremely important. The mODa series of workshops wishes to raise public awareness of the continuing importance of experimental design. In particular, the papers from various fields of application show that experimental design is not a mathematical plaything, but is of direct use in the sciences.

Since the first workshop in Eisenach, optimal design for various situations has been at the heart of the research covered by mODa. Sequential design is another long-standing topic in the mODa series. It is clear that computer experiments, designs for dependent data, and functional data become increasingly feasible. For causal inference in particular, old-fashioned methods like randomization, blinding, and orthogonality of factors remain indispensable. In addition to the importance of the research covered here, we think that the articles in this volume show the beauty of mathematical statistics, which should not be forgotten.

For the editors, it was a pleasure reading these research results. We would like to thank the authors for submitting such nice work and for providing revisions in time, wherever a revision was necessary. Last, but not least, we want to thank the referees who provided thoughtful and constructive reviews in time, helping to make this volume a fine addition to any statistician's bookshelves.

Dortmund, Germany   Christine Müller
                                                                                  Joachim Kunert
                                                                              Anthony Atkinson