

October 1-5, 2018



image credit: Tom Ruen

Analysis and Computation in High Dimensions

Organizers: Markus Bachmayr and Albert Cohen

Location: Lipschitz Lecture Hall, Endenicher Allee 60

The approximation or integration of functions on high-dimensional domains arises naturally in many applications, from mathematical physics and economics to machine learning and uncertainty quantification – notably, in numerical computations involving probability distributions of many random variables.

Basic mathematical concepts such as separation of variables, mixed smoothness, and concentration of measure reflect that in high-dimensional problems, the relevant information is often clustered along lower-dimensional subsets. These observations have led to a variety of numerical techniques, for instance sparse expansions, sampling methods, ANOVA-type decompositions, or low-rank formats. Many challenging open questions remain on the connections and relative merits of these approaches for a given computational task, on the intrinsic computational complexity of problems posed in high dimensions, on the integration of real-world measurement data, and on novel concepts for problems that with available methods are still out of reach.

Invited speakers:

Ben Adcock
Peter Binev
Abdellah Chkifa
Wolfgang Dahmen
Dinh Dung
Alireza Doostan
Virginie Ehrlicher
Lars Grasedyck
Michael Griebel

Wolfgang Hackbusch
Anders Hansen
Felix Krahmer
Daniel Kressner
Tony Lelièvre
Christian Lubich
Yvon Maday
Mauro Maggioni
Giovanni Migliorati

Olga Mula
Fabio Nobile
Anthony Nouy
Erich Novak
Ivan Oseledets
Holger Rauhut
Rob Scheichl
Reinhold Schneider
Christoph Schwab

Ian Sloan
Endre Süli
Aretha Teckentrup
Vladimir Temlyakov
Tino Ullrich
André Uschmajew
Clayton Webster
Henryk Wozniakowski
Harry Yserentant



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In case of questions regarding this workshop, please contact highdim18@hcm.uni-bonn.de.

The deadline for applications is: Mai 31, 2018.

www.hcm.uni-bonn.de/high-dimensions-2018/