

MATHEMATISCHES FORSCHUNGSINSTITUT OBERWOLFACH

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Sparse Recovery Problems in High Dimensions: Statistical Inference and Learning Theory

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ABSTRACT. The statistical analysis of high dimensional data requires new techniques, extending results from nonparametric statistics, analysis, probability, approximation theory, and theoretical computer science. The main problem is how to unveil, (or to mimic performance of) sparse models for the data. Sparsity is generally meant in terms of the number of variables included, but may also be described in terms of smoothness, entropy, or geometric structures. A key objective is to adapt to unknown sparsity, yet keeping computational feasibility.

Mathematics Subject Classification (2000): 62-06.

Introduction by the Organisers

In this workshop, experts from a wide range of mathematics shared their view on sparsity and presented an interesting blend of talks. The approaches discussed include exploiting a priori known structures, such as grouping of variables or graphical hierarchies, and the application of algorithms freed from the bodice of convexity. High dimensional problems lead to deep mathematical questions, and answers from often unexpected angles. The variety of perspectives that came up during this workshop made it into a truly inspiring experience.

