Abstract. The main purpose of this workshop was to assemble international leaders from statistics and machine learning to identify important research problems, to cross-fertilize between the disciplines, and to ultimately start coordinated research efforts toward better solutions. The workshop focused on discussing modern methods for analysis complex high dimensional data with applications to econometrics, finance, biomedicine, genomics etc.

Mathematics Subject Classification (2000): 62G, 62H, 68T.

Introduction by the Organisers

The workshop New Inference Concepts for Analysing Complex Data, organised by Jianqing Fan (Chapel Hill), Klaus-Robert Müller (Berlin) and Vladimir Spokoiny (Berlin) was held November 14th–November 20th, 2004. This meeting was well attended with about 45 participants with broad geographic representation from all continents. This workshop was a nice blend of researchers with various backgrounds from the areas of statistics and machine learning.

The main purpose of this workshop was to assemble international leaders from statistics and machine learning in the Institute: to identify important research problems, to cross-fertilize between the disciplines, and to ultimately start coordinated research efforts towards better solutions.

The program included more than 25 talks organized in sections on various topics: Support Vector Machines (B. Schölkopf, A.J. Smola, G.Wahba), mathematical finance (H. Dette, W. Härdle, S.X. Chen), dimension reduction (Y. Xia, A. Dalalyan, M. Kawanabe, E. Mammen, H. H. Zhang), non-parametric smoothing...

There was one organized discussion on \textit{Smoothing methods in classification}. The workshop gave an excellent opportunity for exchanging the opinions and expertise as well as for discussing various topics in different areas of modern mathematical statistics and machine learning theory. The discussion revealed a lot of common ideas and principles in these two fields but also differences in the methodology and approaches. An exchange of ideas can clearly contribute to the both fields. Already during workshop some new projects were originated that involve both statisticians and people from machine learning society.

The workshop was attended by a number of young statisticians and gave an excellent opportunity for training: both by attending the high level presentation, by presenting their own results and by participating at the numerous informal discussions.