Abstract. During recent years the focus of scientific interest has turned from low dimensional stationary time series to nonstationary time series and high dimensional time series. In addition new methodological challenges are coming from high frequency finance where data are recorded and analyzed on a millisecond basis. The three topics “nonstationarity”, “high dimensionality” and “high frequency” are on the forefront of present research in time series analysis. The topics also have some overlap in that there already exists work on the intersection of these three topics, e.g. on locally stationary diffusion models, on high dimensional covariance matrices for high frequency data, or on multivariate dynamic factor models for nonstationary processes. The aim of the workshop was to bring together researchers from time series analysis, nonparametric statistics, econometrics and empirical finance to work on these topics. This aim was successfully achieved and the workshops was very well attended.

Mathematics Subject Classification (2010): 62M10.

Introduction by the Organisers

The workshop Statistical Inference for Complex Time Series Data, organised by Rainer Dahlhaus (Heidelberg), Oliver Linton (Cambridge), Wei-Biao Wu (Chicago) and Qiwei Yao (London), was held in 22-28 September 2013. The workshop was well attended with 51 participants with broad geographic representation from Europe, Australia, Canada and USA. The participants formed a nice blend of researchers with various backgrounds including statistics, probability, machine
learning and econometrics. A considerably large proportion of the participants were early career academics, post-doctoral researchers and some PhD.

29 talks of varying lengths were delivered during the five days. The talks were given by both leading experts in the field as well as by up-coming young scientists. In addition, there were seven 10 minute sessions with title “People and Topics” which featured short presentations on ongoing research projects and brief introductions on themselves of young researchers. Participants found those short presentations informative and effective.

There were several major themes in the various sessions, including local stationary time series models, high-dimensional modeling, high-frequency data, volatility estimation in finance, change-point detection for dependent data, and GARCH models. Overall the meeting generated a great deal of discussion and often smaller groups of people met in the evenings for additional spontaneous lectures and detailed discussions. A number of important research contacts were made which we expect to stimulate new collaborative research projects.

In addition to the excellent scientific exchanges, the traditional Wednesday afternoon hike was blessed by excellent weather and delicious black-forest cake. It is important to note that this social event also has a high impact on scientific exchange and on stimulating new collaborative research. Those participants who had never visited Oberwolfach before, left with a clear impression on the MFO and its high valued contribution to the global mathematical community. There was also a strong consensus that the theme “Complex Time Series” should appear more regularly in the Oberwolfach workshop program to reflect the rapid development in mathematics and statistics driven by this information age.
Workshop: Statistical Inference for Complex Time Series Data

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