

PREFACE

SPECIAL ISSUE ON NONLINEAR NON-GAUSSIAN MODELS AND RELATED FILTERING METHODS

The analysis and prediction of complex dynamic phenomena and nonlinear phenomena has become very important in various fields of research such as earth science, environmental science, biological science, economics and finance. Obviously, appropriate statistical modeling is the key to success in these problems, and various nonlinear models, especially in the state space model form, related estimation methods and computational methods have been developed in recent years.

The Institute of Statistical Mathematics has a strong tradition in the area of time series modeling, such as model selection, Bayesian modeling and state space modeling as well as various applications. To communicate recent results and the advanced knowledge gained in these areas, we organized the International Symposium on the Frontiers of Time Series Modeling at the Institute of Statistical Mathematics, on February 14–16, 2000.

At this symposium, twenty-one invited talks and thirty-two posters by experts in this field were presented. Twelve articles included in this special issue were selected from papers based on presentations at the symposium. All papers have been reviewed strictly as the ordinary papers submitted to AISM. Due to the page limitation, only about two thirds of the papers could be accepted.

The papers in this issue may be roughly classified into four categories. The paper by H. Akaike is an extended version of his special invited talk at the symposium. This paper and that of L. Fahrmeir-S. Lang present strategies and results of analyzing real world problems.

The papers by S. Godsill-A. Doucet-M. West, N. Bergman-A. Doucet-N. Gordon, S. Frühwirth-Schnatter, A. Takahashi-S. Sato and H. Tanizaki are concerned with state space modeling and related Monte Carlo based computational methods.

The papers by P. J. Brockwell, Y. K. Truong-P. N. Patil, S. A. Chandra-M. Taniguchi and T. Shiohama-M. Taniguchi present various estimation methods for nonlinear time series models. Finally, the paper by W. Härdle-T. Kleinow-R. Tschernig discusses the computer software for time series analysis.

We would like to express our sincere thanks to the authors who contributed to this special issue. In the reviewing process, AISM used internet communication for the first time utilizing email and pdf or postscript files, which enabled the publication of this special issue within one year from the submission of the papers. Special thanks are due to many anonymous reviewers who criticized and made constructive comments on the submitted manuscripts in a very short time. Finally, we would also like to thank the members of the Editorial Board of AISM, the Editorial Office and Kluwer Academic Publishers for realizing rapid publication of this special issue.

Genshiro Kitagawa and Tomoyuki Higuchi, Guest Editors