Programme and Abstracts

International Workshop in Recent Advances in Time Series Analysis

Department of Mathematics & Statistics
University of Cyprus
Cyprus

June 09-12, 2012

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Sunday, 10/06/2012   11:00-12:00   Session 2

Chair: Dag Tjøstheim

#1: Cointegration and Phase Synchronization: Bridging Two Theories

Presenter: Rainer Dahlhaus,University of Heidelberg, Germany

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Co-authors: Jan C. Neddermeyer

In this talk we present with VEC-state oscillators a new multivariate time series model for oscillators with random phases. In particular the phases may be synchronized. The model is a nonlinear state space model where the phase processes follow a vector error correction model used in econometrics to model cointegration. We demonstrate the relevance of this model for phase synchronization. In that way we bridge the theories of cointegration and phase synchronization which have been important theories in econometrics and physics, respectively. The common ground of both theories is that they describe the fluctuation of some multivariate random process around an equilibrium. We demonstrate how the methods from cointegration can be applied to phase synchronization. In particular we consider an unidirectionally coupled Rössler-Lorenz system and identify the unidirectional coupling, the phase synchronization equilibrium and the phase shifts with cointegration tests.

#2: Generalized Linear Dynamic Factor Models–The Single and the Mixed Frequency Case

Presenter: Manfred Deistler,Vienna University of Technology, Austria

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Co-authors: B.D.O. Anderson, Elisabeth Felsenstein, Bernd Funovits and Mohsen Zamani

We consider generalized linear dynamic factor models. These models have been developed recently and they are used for high dimensional time series in order to overcome the "curse of dimensionality". We present a structure theory with emphasis on the zeroless case, which is generic in the setting considered. Modeling of the latent variables is decomposed into two steps, first the transformation of the latent variables to static factors by a linear static transformation. Then, in the second step, modeling of the static factors as a possibly singular autoregressive process. The (generalized) Yule-Walker equations are used for parameter estimation. The Yule-Walker equations do not necessarily have a unique solution in the singular case, and the resulting complexities are examined with a view to find a stable and coprime system. Finally, some preliminary results for the mixed frequency case are presented.

Sunday, 10/06/2012   16:00-17:30   Session 3

Chair: Manfred Deistler

#1: Specification for Lattice Data

Presenter: Javier Hidalgo,London School of Economics, Department of Economics, UK

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We describe an omnibus test for the correct specification of the dynamics of a sequence $x(t)_{t \in Z^d}$ which is observed in a lattice. As it happens with causal models, its asymptotic distribution is not pivotal and depends on the estimator of the unknown parameters of the model under the null hypothesis. The purpose of the paper