Einladung

Im Seminar Datenanalyse und Modellbildung findet am

Freitag, den 3. November 2017, ab 13:30 Uhr

in der Eckerstr.1, Raum 404, 4. OG ein Sonderkolloquium und eine

Feier zum 30-jährigen Bestehen des FDM-Seminars

statt.

13:30 Einführung mit Beiträgen von Rektor Prof. Dr. Hans-Jochen Schiewer und dem Mit-Gründer des FDM, Prof. Dr. Josef Honerkamp

14:00 Prof. Dr. Leonhard Held (University of Zurich): Building a Statistical Model: The Endemic-Epidemic Modelling Framework

15:00 Kaffee

15:30 Prof. Dr. Rainer Dahlhaus (Heidelberg University): Cointegration and Phase Synchronization: Bridging Two Theories

16:30 Prof. Dr. Josef Teichmann (ETH Zürich): Affine processes in mathematical Finance

17:30 Schluss

Siehe auch: https://www.fdm.uni-freiburg.de/seminar/feier

Gäste sind herzlich willkommen!
Abstracts

Prof. Dr. Leonhard Held (University of Zurich)
Title: Building a Statistical Model: The Endemic-Epidemic Modelling Framework

Dependencies in multivariate observations are a unique gateway to uncovering relationships among processes. An approach that has proved particularly successful in modeling and visualizing such dependence structures is the use of graphical models. However, whereas graphical models have been formulated for finite count data and Gaussian-type data, many other data types prevalent in the sciences have not been accounted for. For example, it is believed that insights into microbial interactions in human habitats, such as the gut or the oral cavity, can be deduced from analyzing the dependencies in microbial abundance data, a data type that is not amenable to standard classes of graphical models. We present a novel framework that unifies existing classes of graphical models and provides other classes that extend the concept of graphical models to a broad variety of discrete and continuous data, both in low- and high-dimensional settings. Moreover, we present a corresponding set of statistical methods and theoretical guarantees that allows for efficient estimation and inference in the framework.

Prof. Dr. Rainer Dahlhaus (Heidelberg University)
Title: Cointegration and Phase Synchronization: Bridging Two Theories

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 Rssler-Lorenz system and identify the unidirectional coupling, the phase synchronization equilibrium and the phase shifts with cointegration tests.

Prof. Dr. Josef Teichmann (ETH Zürich)
Title: Affine processes in mathematical Finance

Affine processes are an almost universal modelling tool in mathematical Finance. We show some interesting historic aspects of the theory of affine processes and several recent developments.