



KATHOLIEKE UNIVERSITEIT LEUVEN

Statistics Seminar

Joint organization statistics research groups Faculty of Science and Faculty of Economics and Applied Economics
Leuven Statistics Research Centre (LSTAT)

Dr Giovanni Motta

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“Evolutionary Factor Analysis”

Thursday October 8, 2009

12:00—13:00

Location: Room B00.05, Department of Mathematics, Celestijnenlaan 200B, Heverlee.
Supporting research project: GOA-project 2007/04

Abstract:

In this work we generalize the tools of factor analysis for the study of multivariate stochastic processes whose second order structure evolves over time. In particular, we introduce a new class of factor models with time-varying factor loadings. The basic idea is to consider these as smooth functions of time, rendering the process nonstationary while the factors are stationary. The assumption that loadings are smooth enables to estimate the model using nonparametric methods. To estimate these nonstationary factor models we generalize the properties of the principal components techniques to the time-varying framework. We discuss identification and estimation of the model and derive the asymptotic theory for the estimated loadings, the factors and the common components. We provide simulation results and applications to real data.