Konstantinos Fokianos

Presentation - Professor Fokianos obtained a B.Sc. Degree in Mathematics from University of Ioannina, Greece, and subsequently M.A. and a Ph.D. in Statistics, from University of Maryland at College Park, USA. He is with the Department of Mathematics & Statistics, University of Cyprus since 1999 and he holds the post of Professor since 2012.

He was a visiting Assistant Professor of Statistics at The Ohio State University, USA, for period of 2.5 years and has international collaborations with many institutions all over Europe and USA. He was invited by Ludwig Maximilians University, National Institutes of Health, EPFL, University Cergy-Pontoise and University of Bergen and more recently by TU Dortmund for extended visits. He has also several shorter visits to other top academic institutions.

His research interests are focused on the analysis and methodology for time series data and in semiparametric models. His recent focus is on the analysis of integer valued time series. He is co-author, with B. Kedem, of the book *Regression Models for Time Series Analysis* published by Wiley, 2002. He has co-edited two volumes and he is the author of around 60 peer-reviewed articles. He is an elected member of the International Statistical Institute since 2005 and a series Editor for the Springer collection *Frontiers in Probability and the Statistical Sciences*. Additionally, he is in the editorial boards of Statistical Modelling, Journal of Time Series Analysis and Statistics.

 Research project - Count time series refer to data observed over regular time intervals and take integer values. For example, consider the daily number of patients admitted to a hospital or the number of transactions of some stocks, per minute. These simple examples show that measurements might fluctuate according to different observational times. Hence, we aim on introducing mixture distributions for modelling such phenomena. During the lifetime of this project we will be studying the development of new statistical models for regression analysis of mixture count time series data. Furthermore, we will be investigating the issue of model selection for count time series. Mixture models imply different behavior of the observed process at different time regimes. These problems are challenging and difficult to be addressed and there is no satisfactory answer, to the best of our knowledge. For instance, simple fitting and statistical analysis of such models can be quite complicated. We plan to contribute by introducing new models, study their dependence properties and develop statistical inference. Furthermore, while for standard time series the literature of the model selection techniques is large and quite comprehensive, little work has been done in the context of count time series. We envision that we will address, at least partially, this important problem. Overall this work contributes further to the development of time series methods in terms of theory and applications.

Events -

- *Advanced courses :*

Multivariate Time Series: This class addresses the problems of modeling and inference for multivariate time series. There will be several examplesfrom diverse fields, like medicine,

biology, finance and other. Multivariate time series analysis provides several tools and methods for analyzing data observed in multiple measurements having temporal and cross-sectional dependence. The goal is to identify a better understanding of the dynamic relationship between variables and improve accuracy of prediction.

We will use real data examples and the R language to discuss the following topics:

1. Basic concepts of multivariate time series
2. Stationary vector autoregressive processes
3. Vector autoregressive moving-average time series

This class will meet 7 times for three hours each time

- *Conferences :*

We will organize jointly with P. Doukhan the conference on Non-stationarity (see the following URL).

https://www.u-cergy.fr/fr/laboratoires/agm/actualites-du-laboratoire/conference-on-non-stationarity.html