



## SEMINARIO

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### **On the use of the multivariate leptokurtic-normal distribution in hidden Markov and semi-Markov models**

**Abstract:** In this work we introduce multivariate models for the analysis of stock market returns. The proposed models, developed under hidden Markov and semi-Markov frameworks, aim to describe the temporal evolution of the returns, whereas the marginal distribution of the returns is described by a mixture of multivariate leptokurtic-normal distributions. The leptokurtic-normal distribution is a generalization of the normal distribution and possesses one additional parameter which permits the modeling the excess kurtosis, and hence can be viewed as a robust extension of the normal distribution. We outline an EM algorithm for maximum likelihood estimation which exploits recursions developed within the hidden (semi-)Markov literature. We present an application based on the analysis of a bivariate time series of stock market returns.

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**Martedì 17 Dicembre 2019, ore 18:00**

**Aula 13 - Palazzo delle Scienze, Corso Italia n°55, Catania**

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