Saturday, September 22nd

Ioannis Karatzas - "Stochastic Portfolio Theory: A Survey":
We shall present an overview of Stochastic Portfolio Theory, a rich framework for analyzing portfolio behavior and equity market structure. This theory was developed in the book by Fernholz (Springer, 2002) and the articles Fernholz (JME, 1999), Fernholz, Karatzas and Kardaras (Finance & Stochastics, 2005), Fernholz and Karatzas (Annals of Finance, 2005). It is descriptive as opposed to normative, is consistent with observable characteristics of actual portfolios, and provides an important theoretical took for practical applications.
As a theoretical tool, this framework provides fresh insights into questions of market equilibrium and arbitrage, and can be used to construct portfolios with controlled behavior. As a practical tool, it has been applied to the analysis and optimization of portfolio performance and has been the basis of very successful investment strategies at the institutional portfolio management firm INTECH for close to 20 years.
Topics to be covered include: Growth Rates, Functionally-Generated Portfolios, Diversity and Intrinsic Volatility, Relative Arbitrage, Growth Optimal Portfolios, Rank-based Equity Market Structure

Bogdan Iftimie - "Asymptotic Behaviour of Piece-Wise Continuous Solutions of S.D.E.":
Stochastic differential equations with jumps are considered and the analysis is focussed on describing the weak limit set provided a Lyapunov exponent is used and the continuous component is asymptotically stable in mean square.

Claudia Klüppelberg - "The Continuous-Time GARCH Model":
We introduce a continuous-time GARCH [COGARCH(1,1)] model which, driven by a single Lévy noise process, exhibits the same second order properties as the discrete-time GARCH(1,1) model. Moreover, the COGARCH(1,1) model has heavy tails and clusters in the extremes. The second order structure of the COGARCH(1,1) model allows for some estimation procedure based on the ARMA(1,1) autocorrelation structure of the model and other moments. The model can be fitted to high-frequency data, and the statistical analysis also provides an estimator for the volatility.

Giulia Di Nunno - "Events of Small But Positive Probability and a Version of the Fundamental Theorem of Asset Pricing":
the market modelling is based on a probability space with a probability measure P which is determined in relation to statistical data. on the other hand in mathematical finance the idealization of a "fair" market is based on the belief that the market stochastic behaviour is described by a martingale measure Q. Thus we would like the original measure P to be equivalent to some martingale measure Q, i.e. The two measures should give null-weight to the same events. This topic was largely investigated for quite a long time yielding the fundamental theorem of asset pricing.
Actually, in many applications which are mostly related to the securization of insurance products, extreme events of very small probability play a crucial role, e.g. bankruptcies, earthquakes, floods,... Thus we are not only interested in a market model where the measure P admits an equivalent martingale measure, but we would like also that the two measure give comparable weight to these extreme events of small probability.
In the framework of a continuous time (incomplete) market model, we present a version of the fundamental theorem of asset pricing in which we consider a necessary and sufficient condition for the existence of an equivalent martingale measure with a density lying within pre-considered bounds.