

浙江大学--复旦大学概率统计联合讨论班

时间：2019年6月1日

地点：复旦大学光华东主楼 2201

上午 主持人： 应坚刚 复旦大学

10:00-10:45 徐方军 华东师范大学

题目：Kernel entropy estimation for linear processes

11:00-11:45 蔡春浩 上海财经大学

题目：Partially and directly observed autoregressive process
with dependent Gaussian noise

下午 主持人： 苏中根 浙江大学

14:00-14:45 许明宇 中国科学院

题目：Hedging distributions via BSDEs

15:00-15:45 刘大力 山东大学

题目：Non-uniform Berry-Esseen bound by exchangeable pair
approach

Kernel entropy estimation for linear processes

徐方军

Let $\{X_n : n \in N\}$ be a linear process with bounded probability density function $f(x)$. We consider the estimation of the quadratic functional $\int_R f^2(x)dx$. With a Fourier transform on the kernel function and the projection method, it is shown that, under certain mild conditions, the estimator

$$\frac{2}{n(n-1)h_n} \sum_{1 \leq i < j \leq n} K\left(\frac{X_i - X_j}{h_n}\right)$$

has similar asymptotical properties as the i.i.d. case studied in Giné and Nickl (2008). The simulation study for linear processes with Gaussian or α -stable innovations confirms our theoretical results. An application to L_2^2 divergence and extensions to multivariate linear processes are also given.

Partially and directly observed autoregressive process with dependent Gaussian noise.

蔡春浩

In this talk, we will present some statistical problems of the autoregressive models with general Gaussian dependent noise such as the drift parametric estimation and the detection of change-point. The fundamental martingale will play role in these models. This is a joint work with M. Kleptsyna, A. Brouste and L. Wang.

Hedging distributions via BSDEs

许明宇

In the classical backward stochastic differential equation (BSDE) theory, one studies the problem of hedging given random variables. In this paper, we introduce the notation of hedging distributions, that is, hedging random variables following a given distribution, via BSDEs. We also introduce a related efficient hedging problem, that is, to find the minimum cost to hedge a given distribution. The problems have been considered both under linear and nonlinear dynamics. As an example, the efficient hedging and portfolio selection problems in a market with different deposit and loan rates are studied. We also introduce the concept of law-invariant g -exception, and give a class of them explicitly. A portfolio selection problem in behavioral finance is given to demonstrate its applications. (This is a joint work with Zuoquan Xu and Xunyu Zhou).

Non-uniform Berry-Esseen bound by exchangeable pair approach

刘大力

Stein's method is a powerful technique for proving central limit theorems. Exchangeable pair approach is a key aspect of Stein's method. Recently, Shao and Zhang obtained a Berry-Esseen bound of normal and

non-normal approximation for unbounded exchangeable pairs. Their results can be extended to non-uniform cases. This report introduces some results about the non-uniform Berry-Esseen bound in normal and non-normal approximation and its applications.