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Proba-Stat-Finance Seminar
Séminaire de Proba-Stat-Finance

Title of the Talk:

Nonparamtric Estimation of Drift and/or Diffusion Coefficient(s) of SDE

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Abstract:

Parametric Estimation techniques, such as exact likelihood inference, pseudo-likelihood methods (Euler, Eulerian, local linearization), approximated likelihood methods (Kessler method, Hermite polynomials expansion of the likelihood), Bayesian method and GMM; are commonly used in academia and industry to estimate the drift term and diffusion term of Stochastic Differential Equations (SDE). Their major limitations are that they require a functional form for the drift term and diffusion term to be implement, and in addition, if the SDE doesn't have an explicit expression of the transition density, we should make a double approximation. Such assumptions increase the risk of misspecification. Nonparamatric methods on the other hand allow the estimation of both components without priori assumptions. In this study, we will present a brief survey of nonparametric methods in SDE using continuous sampling or discretization scheme such as: kernel method (local constant and local linear estimator), spectral method and decomposition on orthogonal basis.

Keywords: nonparametric estimation, SDE, transition density, kernel method, spectral method.

Some References:

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