

Pricing of Two-Asset Options Under Exponential Lévy Model

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Time : 3.30pm – 4.30pm
Venue: SPMS-Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

This talk presents a finite element method for a partial integro-differential equation (PIDE) to price two-asset options with underlying price processes modeled as an exponential Lévy process. We provide a variational formulation in a weighted Sobolev space, and establish existence and uniqueness of the FEM-based solution. Then we discuss the localization of the infinite domain problem to a finite domain, and an explicit-implicit time-discretization of the PIDE in the domain, where the space-discretization is done through a standard continuous finite element method, and provide a localization error estimate from infinite domain to finite domain and a discretization error estimate for the numerical solution of the localized problem where two assets are assumed to have uncorrelated jumps. Numerical experiments for normal jump diffusion model, double exponential jump diffusion model and Variance Gamma model are performed with smooth and nonsmooth initial conditions.

Speaker Biography

Zhou Jinghui currently works as research fellow at SPMS, NTU. Prior to joining NTU, he pursued his Ph.D at the Dept. of Math at NUS. His research interests are in scientific computing and numerical analysis with applications to quantitative finance and liquid crystals.

Host: Mathematical Imaging and Vision Research Group, Division of Mathematical Sciences,
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