6 Month Postdoctoral Position in 2007

Location ENSMP Paris, FRANCE

Research Topic

Application of the Fokker-Planck (FP) equation in mathematical finance

The Fokker-Planck (or Forward Kolmogorov) equation is well known to mathematicians and physicists. Although the value of an European option in finance can be obtained directly by solving the Feynman Kac equation or by Monte-Carlo simulations, there are cases where it is important to have a good approximation of the distribution as well.

In contrast to applied mathematicians who use finite differences or finite elements to solve this equation, physicists have developed specific methods such as path integral techniques to approximate the solution.

After reviewing the existing methods we will select one or two promising ones to test in details (in particular for dimensions greater than 3). Then we will apply these solvers to finance problems.

Key words

Path integral techniques, short time propagators, Trotter formula, eigenvalues expansions, distributed approximation functionals, finite elements…

Profile

Applied mathematician or physicist interested in numerical methods and mathematical finance.

Contact

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