An application of the fast Fourier transform to option pricing

Yuri Thamsten[1], Max O. Souza[1]

[1] Instituto de Matemática e Estatística, UFF

We review a couple of numerical methods based on the Fast Fourier Transform (FFT) for option pricing when the asset dynamics follows a Lévy process. Following [1], we expose an approach that allows one to harness the computational power of the FFT. We proceed by treating the option price analogous to a probability density function, which in turn allows it to be obtained for various strikes through FFT calculations. In addition, we illustrate the method with the Variance Gamma model.

References

[1] P. CARR, D. B. MADAN, *Option valuation using the fast Fourier transform*, Journal of computational finance

[2] Y. K. KWOK, K. S. LEUNG, H. Y. WONG, *Efficient Options Pricing Using the Fast Fourier Transform*, Handbook of computational finance