The Simulations of Lévy Processes and Stochastic Volatility Models

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Abstract. In this thesis, we study the Lévy processes and the stochastic volatility models. Actually, they are very important and have a widespread use in finance. Some of the Lévy processes will be introduced in this thesis, the simulations which is based on the MATLAB programs are given. Besides, we will introduce some present schemes for the simulations of the stochastic volatility models, furthermore, we present a new scheme to simulate the mean-reverting square-root diffusions, it is more efficient and fast than the present schemes. A series of numerical experiments based on MATLAB programs are given to compare the suggested scheme with the present schemes.