Numerical Simulation of Wishart Diffusion Processes

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Abstract : This paper deals with numerical simulation of Wishart processes for a single asset risky pricing model whose volatility is described by Wishart affine diffusion processes. The multi-factor specification of volatility will make the model more flexible enough to fit the stock market data for short or long maturities for better returns. The Wishart process is a stochastic process which is a positive semi-definite matrix-valued generalization of the square root process. The aim of the study is to model the log asset stock returns under the double Wishart stochastic volatility model. The solution of the log-asset return dynamics for Bi-Wishart processes will be obtained through Euler-Maruyama discretization schemes. The numerical results on the asset returns are compared to the existing models returns such as Heston stochastic volatility model and double Heston stochastic volatility model