

Applications of functionals of Brownian motion

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In this presentation we present some applications of functionals of Brownian motion to linear stochastic volatility models with correlated Brownian noises. In such models the asset price satisfies a linear SDE with coefficient of linearity being the volatility process. This class contains among others the Black-Scholes model, the Heston model and the log-normal stochastic volatility model. We derive new formulas for the density. Using our general framework we can refine the results for the log-normal stochastic volatility model with uncorrelated noises.