

On the Asymptotics of Fast Mean-Reversion Stochastic Volatility Models in Finances

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In this talk we shall discuss some partial differential equations in finances associated to option pricing under stochastic volatility. This leads to a parabolic equation of Black and Scholes type. We consider the asymptotic behavior of options under stochastic volatility models for which the volatility process fluctuates on a much faster time scale than that defined by the risk-less interest rate. This study was initiated by Fouque, Papanicolaou and Sircar and led to very effective methods in option pricing.

After, a short review, I will report on some recent joint research with Max O. de Souza (UFF), where we identify the distinguished asymptotic limits and, in contrast with previous studies, we deal with small volatility-variance (vol-vol) regimes.