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STOCHASTIC VOLATILITY: APPROXIMATION AND GOODNESS-OF-FIT TEST

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Abstract: Let X be the unique solution started from x_0 of the stochastic differential equation $dX_t = \theta(t, X_t)dB_t + b(t, X_t)dt$ with B a standard Brownian motion. We consider an approximation of the volatility $\theta(t, X_t)$, the drift being considered as a nuisance parameter. The approximation is based on a discrete time observation of X and we study its rate of convergence as a process. A goodness-of-fit test is also constructed.

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Key words and phrases: Non-parametric estimation, goodness-of-fit test, stochastic volatility, discrete time observation.