

# Stationarity of generalised Ornstein-Uhlenbeck processes

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## Abstract

Let  $(\xi_t, \eta_t)$  be a bivariate Lévy process. Then the generalised Ornstein-Uhlenbeck process  $(V_t)$  as defined by Carmona, Petit and Yor is given by

$$V_t := e^{-\xi_t} V_0 + e^{-\xi_t} \int_0^t e^{-\xi_s} d\eta_s.$$

If  $\xi_t = t$  and  $\eta$  is a subordinator, this gives rise to the stochastic volatility model of Barndorff-Nielsen and Shephard. On the other hand, the volatility of the COGARCH process of Klüppelberg, Lindner and Maller can be obtained when specialising to  $\eta_t = t$ .

In this talk, we shall characterise when stationary solutions of the generalised Ornstein-Uhlenbeck process exist, describe its autocorrelation function, obtain moment conditions and investigate the tail behaviour of the stationary solution. Some special cases are considered in detail. This is joint work with Ross Maller.