

**Consistency of the drift parameter estimator for the discretized
Ornstein–Uhlenbeck process involving fractional Brownian
motion with Hurst index $H \in (0, \frac{1}{2})$**

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Abstract

We consider Langevin equation involving fractional Brownian motion with Hurst index $H \in (0, \frac{1}{2})$. Its solution is the fractional Ornstein-Uhlenbeck process and with unknown drift parameter θ . We construct the estimator that is similar in form to maximum likelihood estimator for Langevin equation with standard Brownian motion. Observations are discrete in time. It is assumed that the interval between observations is n^{-1} , i.e. tends to zero (high frequency data) and the interval of observations increases to infinity as n^m with $m > 1$. It is proved that for positive θ the estimator is strongly consistent for any $m > 1$ and for negative θ it is consistent for $m > \frac{1}{2H}$.