

INFERENCE FOR FRACTIONAL ORNSTEIN UHLENBECK PROCESSES WITH PERIODIC MEAN

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fractional Ornstein Uhlenbeck process; long range dependence; periodic mean function; least squares estimator:

Fractional Ornstein Uhlenbeck processes are popular models for applications in science and finance combining the mean reverting structure with long range dependence. We now consider an extension of the process incorporating a periodic mean function as it is for example desirable for modelling electricity prices or other commodities.

For this model we construct a least squares estimator for the drift parameters and prove consistency and asymptotic normality. The technique of the proof uses methods of stochastic analysis for the divergence type stochastic integral. In contrast to the classical fractional Ornstein Uhlenbeck process without periodic mean function the rate of convergence is slower depending on the Hurst parameter H , namely n^{1-H} .

References

- [1] Herold Dehling, Brice Franke, Jeannette H.C. Woerner (2015) *Estimating drift parameters in a fractional Ornstein Uhlenbeck Process with periodic mean*, Discussion Paper of the SFB 823, No. 34/2015.