

1143-60-453

Jinqi Shen* (jqshen@umich.edu), 311 West Hall, 1085 South University, Ann Arbor, MI 48109,
and **Hsing Tailen**. *Hurst Function Estimation*.

Since the introduction by Mandelbrot and Van Ness (1968), fractional Brownian motion (fBm) has been widely used to model data that exhibit long-range dependence and scaling phenomena. Multi-fractional Brownian motion (mBm) has been proposed to be an extension of fBm allowing nonstationary increments, which has a function related to locations called Hurst function characterizing the path smoothness locally.

Our paper considers a wide range of issues concerning the estimation of the Hurst function of a mBm when the process is observed on a regular grid. A theoretical lower bound for the minimax risk of this inference problem is established for a wide class of smooth Hurst functions. We also propose a new nonparametric estimator and show that it is rate optimal. Implementation issues of the estimator including how to overcome the presence of a nuisance parameter and choose the tuning parameter from data have also been considered.

(This is a joint work with Tailen Hsing.)

References:

Mandelbrot, B. B. and Van Ness, J. W. (1968). Fractional Brownian motions, fractional noises and applications. SIAM Rev. 10 422-437. (Received August 20, 2018)