Simulation of generalized fractional Brownian motion

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Abstract: We consider simulation of \( \psi \)-sub-Gaussian processes that are weakly self-similar with stationary increments in the sense that they have the covariance function \( R(t, s) = \frac{1}{2} \left( t^{2H} + s^{2H} - |t - s|^{2H} \right) \) for some \( H \in (0, 1) \). Here such processes are referred to as processes of generalized fractional Brownian motion, since the second order structure of the processes is that of the fractional Brownian motion.

This study is a continuation of joint research performed together with Tommi Sottinen in [1].

The simulation is based on a series expansion of the fractional Brownian motion due to Dzhaparidze and van Zanten [2].

Keywords: fractional Brownian motion, \( \psi \)-sub-Gaussian processes, self-similarity, series expansion, simulation.

References


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