ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

Mandelbrot-van Ness fractional Brownian motion depends smoothly on its Hurst parameter

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Chaired by Michaela Hitz | Department of Statistics

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ABSTRACT

We study the Mandelbrot-van Ness representation of fractional Brownian motion $B^H = (B_t^H)_{t\geq 0}$ with Hurst parameter $H \in (0,1)$ and show that for arbitrary fixed $t \geq 0$ the mapping $(0,1) \ni H \mapsto B_t^H \in \mathbb{R}$ is almost surely infinitely differentiable. Thus, the sample paths of fractional Brownian motion are smooth with respect to H. As a byproduct we obtain that scalar stochastic differential equations are differentiable with respect to the Hurst parameter of the driving fractional Brownian motion. We also discuss the multi-dimensional case.

This is joint work with Stefan Koch (U Mannheim).

We hope to see you there!