

# INVITATION TO THE DOCTORAL SEMINAR

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

📍 N.2.01

📅 Wednesday, 9 January 2019

🕒 10:00 a.m.

## **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).

Michaela Szölgényi and the Department of Statistics look forward to seeing you at the talk!