Stochastic differential equations driven by fractional Brownian motions

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Abstract:

These lectures will be an introduction to the study of stochastic differential equations driven by a fractional Brownian motion with a Hurst parameter $H > 1/2$. We will focus on the following problems: Approximation of the solution by Taylor type expansions, Study of the density for the solution, Gaussian bounds on this density.

Lecture 1: Fractional Brownian motion and fractional calculus

Lecture 2: Stochastic differential equations driven by a fractional Brownian motion: Existence and uniqueness of solutions

Lecture 3: Taylor expansion for the solutions

Lecture 4: Malliavin calculus

Lecture 5: Existence of the density for the solution

Lecture 6: Some properties of the density.