

Plenary course Statistics of fractional models
(including preliminary stochastic calculus of fractional processes)

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1. Elements of fractional calculus. Fractional Brownian motion and its basic properties. Representation of fBm w.r.t. a Wiener process. Some applied problems leading to fractional models.
2. Integration with respect to fractional Brownian motion. Elements of stochastic calculus for fBm. Stochastic differential equations involving fBm. General conditions of existence-uniqueness.
3. The simplest examples of SDE with fBm: Ornstein–Uhlenbeck, Gompertz and other models.
4. Various methods of estimation of a Hurst index of fBm in the linear models and in SDE involving fBm.
5. and 6. Drift parameter estimation in the fractional diffusion models.
7. How to distinguish the sign of the drift parameter?
8. Parameter estimation in the mixed diffusion-fractional diffusion models.

References

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