

Level crossings of fractional Brownian motion

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The talk is based on joint work [Das+23] with Purba Das (King's College London), Rafał Łochowski (Warsaw) and Nicolas Perkowski (FU Berlin). We consider level crossings of fractional Brownian motion. Our main result is that the number of ε -level crossings at 0, after appropriate normalisation, converges to the local time at 0 multiplied by some constant \mathfrak{c}_H . Our key tool is the shifted stochastic sewing, recently obtained by Perkowski and the speaker [MP23]. I will also report an interesting conjecture on the constant \mathfrak{c}_H , which seems to capture non-Markovian nature of the fractional Brownian motion.

References

- [Das+23] P. Das, R. Łochowski, T. Matsuda, and N. Perkowski. Level crossings of fractional Brownian motion. 2023. arXiv: 2308.08274 [math.PR].
- [MP23] T. Matsuda and N. Perkowski. An extension of the stochastic sewing lemma and applications to fractional stochastic calculus. 2023. arXiv: 2206.01686 [math.PR].