

Escape problem for fraction Brownian motion

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We consider a particle escape problem from a truncated harmonic potential well due to the presence of fractional Gaussian noise in the system. Our main aim is to calculate the mean escape time and the escape time probability density function, paying attention to the dependencies of these functions on the external noise intensity and its Hurst index.

We study persistent and antipersistent cases of fractional Gaussian noise marking both similarities and strong differences between them and unfold a set of unexpected peculiarities of fractional Brownian motion in the potential well alongside with its intuitively predictable ones.