

Conference Pathwise Stochastic Analysis and Applications

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## **Convergence rates for the occupation measure of fractional Brownian motion**

We establish sharp upper and lower bounds for the Kantorovich optimal transport distance between the uniform measure and the occupation measure of a path of a fractional Brownian motion with Hurst index  $H$  in a  $d$ -dimensional torus. We prove in particular that a phase transition between rates occurs if  $d = 1/H + 2$ , in analogy to the random Euclidean bipartite matching problem, i.e. when the occupation measure is replaced by i.i.d. uniform points (roughly given by infinite  $H$ ). The proof technique uses a combination of known comparison inequalities between transport distance and negative Sobolev norms and new estimates on the Fourier coefficients of the occupation measure, that may be of independent interest.

Joint work with F. MATTESINI and M. HUESMANN (U. Muenster).

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