

Fourier transforms of measures on the Brownian graph

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Roughly speaking, a set is *Salem* if it carries a Borel probability measure whose Fourier transform decays like $|x|^{-s/2}$ where s is the Hausdorff dimension of the set (the Fourier transform of such measures cannot decay faster than this). Salem sets are often found via random processes, such as a random perturbation of a Cantor set or the level sets of a random function. Jean-Pierre Kahane asked whether or not the graph of Brownian motion is almost surely a Salem set. In this talk I will discuss this problem: first I will show that the answer is 'no, it is not almost surely a Salem set', and secondly I will give the optimal almost sure rate of Fourier decay for measures on the Brownian graph.

The first part of the talk is joint work with Tuomas Orponen (Helsinki) and Tuomas Sahlsten (Bristol) and the second part is joint with Tuomas Sahlsten.