



Department of Mathematics  
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# Seminar

## *Fourier transforms of measures on the Brownian graph*

*Professor Jonathan Fraser*  
*University of St Andrews*

**Abstract:** Roughly speaking, a set is 'Salem' if it carries a measure whose Fourier transform decays like  $x^{s/2}$  where  $s$  is the Hausdorff dimension of the set (this is the fastest possible decay). Salem sets are often found via random processes, such as the image or level sets of a random function; like Brownian motion, for example. Kahane asked in 1993 whether or not the graph of the classical 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 almost surely not a Salem set, and secondly I will give the optimal almost sure rate of Fourier decay for measures on the Brownian graph (which is less than  $s/2$ ).

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

Date: 11 August 2017 (Friday)  
Time: 3:30pm – 4:30pm  
Venue: Rm. 219, Lady Shaw Building  
The Chinese University of Hong Kong, Shatin

*All are Welcome*