THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Seminar

Spectral properties of multiplicative chaos

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Abstract

Multiplicative chaos was first introduced by Kahane in 1985 to provide a rigorous understanding of the Kolmogorov-Obukhov-Mandelbrot model of turbulence. This theory concerns a class of multifractal processes arising from the formal exponentiation of logarithmically correlated structures, and in recent years it has found numerous applications in different branches of mathematics.

In the first part of the talk, I will provide an overview of multiplicative chaos in the context of Liouville quantum gravity (LQG). I will explain its spectral geometry from a stochastic-process perspective, and in particular present a Weyl law for the leading-order asymptotics for LQG eigenvalues. In the second part of the talk, I will discuss harmonic analysis of multiplicative chaos in relation to probabilistic number theory, and explain how this allows us to understand the cancellation behaviour of random multiplicative functions. This is based on joint works with Nathanaël Berestycki (Vienna), and also Ofir Gorodetsky (Technion).

Date:	May 13, 2025 (Tuesday)
Time:	10:00 am – 11:00 am
Venue:	Room 210, Run Run Shaw Building, HKU

All are welcome