



Departmental PhD Thesis Exam

Thursday, May 23rd, 2024 at 11am (sharp)
via Zoom / BA6183

PhD Candidate : Tom Kojar

Supervisor : Ilia Binder

Thesis title : Inverse of the Gaussian multiplicative chaos (GMC)

Abstract

In this thesis we do a fundamental study of the Gaussian multiplicative chaos (GMC) on the real line en route to an interesting problem in the field of Schramm Loewner evolution (SLE) curve. This is a singular measure that is the limit of the integral of an exponentiated Gaussian field with logarithmic covariance. It is strictly monotonic and so it has an inverse that we study its single-point and multi-point moments and correlation structure.

The interesting problem is a coupling between the Gaussian free field and the SLE curve. In the 2010-work "Conformal weldings of random surfaces: SLE and the quantum gravity zipper" S.Sheffield initiated an approach of coupling those two random objects by constructing the quantum zipper joint process. Here we follow an alternative perspective initiated around the same time in the 2009-work "Random Conformal Weldings" K. Astala, P. Jones, A. Kupiainen, E. Saksman using the Beltrami equation and the Lehto estimates. In particular, they proved a conformal welding result for the GMC measure on the unit circle. In the thesis, we prove the analogous result for the inverse of the GMC measure on the unit circle.