School of Mathematics
Tata Institute of Fundamental Research

18 February, 2019

Special Mathematics Colloquium

Speaker	:	*Chiranjib Mukherjee*
Affiliation	:	*University of Münster, Germany*
Title	:	*Gaussian multiplicative chaos on the Wiener space and the KPZ equation*
Date & Time	:	*Friday, 22 February, 2019*
Time	:	*02.00 p.m. to 03.00 p.m.*
Venue	:	*Lecture Room (AG-69)*

Abstract

In the classical finite dimensional setting, a Gaussian multiplicative chaos (GMC) is obtained by tilting an ambient measure by the exponential of a centred Gaussian field indexed by a domain in the Euclidean space. In the two-dimensional setting and when the underlying field is "log-correlated", GMC measures share close connection to the 2D Liouville quantum gravity and its studies have seen a lot of revived interest in the recent years.

A natural question is to construct a GMC in the infinite dimensional setting, where techniques based on log-correlated fields in finite dimensions are no longer available. In the present context, we consider a GMC on the classical Wiener space, driven by a (mollified) Gaussian space-time white noise. In $d \geq 3$, in a previous work with A. Shamov and O. Zeitouni, we showed that the total mass of this GMC, which is directly connected to the (smoothened) Kardar-Parisi-Zhang equation, converges for small noise intensity to a well-defined strictly positive random variable, while for larger intensity (i.e. for strong-disorder) it converges to zero. We will report on joint work with Yannic Bröker (Münster) where we study the endpoint distribution of a Brownian path under the GMC measure and show that, as temperature stays low (i.e., for strong disorder), the endpoint GMC distribution localizes in few spatial islands and becomes asymptotically purely atomic.

Milind Pilankar