



## Theoretical Statistics and Mathematics Unit

Indian Statistical Institute

203 B.T. Road, Kolkata-700108

# MONDAY COLLOQUIUM

**Date:** September 28, 2026

**Time:** 04:15 P.M.

**Venue:** L-infinity, Stat-Math Unit (5<sup>th</sup> Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

**Sourav Sarkar**

University of Cambridge, UK

### TITLE:

**Brownian regularity of the KPZ fixed point**

### ABSTRACT:

Since Kardar, Parisi and Zhang introduced the KPZ equation in their seminal paper in 1986 as a model of interface growth, the equation has made appearances everywhere from the edge of a bacterial colony in a petri dish, a fire front, the spread of water in a napkin, the top edge of a randomized game of Tetris to the advancing edge of a coffee stain on a surface; and this field has become a subject of intense research interest in both physics and mathematics for the last 20 to 25 years. The random growth processes that are expected to have the same scaling and asymptotic fluctuations as the KPZ equation and converge to the universal limiting object called the KPZ fixed point are said to lie in the KPZ universality class. Universality in disordered systems has always played a central role in the direction of research in probability and mathematical physics, a classical example being the Gaussian universality class (the central limit theorem and Donsker's Theorem), where the Brownian motion plays the analogous role of the KPZ fixed point.

A central question in the study of the KPZ universality class has been the local Brownian nature of the KPZ fixed point. Whether the KPZ fixed point looks "locally like a Brownian motion" has been a topic of intense research, even before the fixed point was formally constructed.

In this talk, I will show that the KPZ fixed point with general initial data is in fact absolutely continuous with respect to a Brownian motion in any compact interval. I will also discuss what bounds we can get on the Radon Nikodym derivative of the KPZ fixed point with respect to Brownian motion. This solves a conjecture by Hammond.

The talk will be based on joint works with Balint Virag and Pantelis Tassopoulos.

**ALL ARE CORDIALLY INVITED**

[Click here for More Seminar Information](#)