



## Probability Seminar

**Title:** On the two-dimensional KPZ and Stochastic Heat Equation

**Speaker:** Francesco Caravenna (University of Milano-Bicocca)

**Date:** Wed 11th November 2020 at 3:00PM

**Location:** Online

**Abstract:** We consider the Kardar-Parisi-Zhang equation (KPZ) and the multiplicative Stochastic Heat Equation (SHE) in two space dimensions, driven by space-time white noise. These singular PDEs are 'critical' and lack a solution theory, so it is standard to consider regularized versions of these equations - e.g. by convolving the noise with a smooth mollifier - and to investigate the behavior of the solutions when the regularization is removed.

Based on joint works with Rongfeng Sun and Nikos Zygouras, we show that these regularized solutions undergo a phase transition as the noise strength is varied on a logarithmic scale. In the sub-critical regime, the regularized solutions of both KPZ and SHE exhibit so-called Edwards-Wilkinson fluctuations, i.e. they converge (after centering and rescaling) to the solution of the \*additive\* Stochastic Heat Equation, with a renormalized noise strength. We finally discuss the critical regime, where many questions are open.

Zoom Link: <https://ucd-ie.zoom.us/j/83491228915?pwd=WWV3ZkNGNzVXdGxLRlR0dkdMYUtMZz0>

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