Hong Kong Probability Seminar

https://sites.google.com/site/hkprobability/

> **Date:** November 23, 2018 (Friday, special scheduling)
> **Venue:** Room 2502 and Lecture Theatre F (Lift 25)
> Academic Building, HKUST

- **1:30–2:30pm, Room 2502: Rongfeng Sun (National University of Singapore)**

  Moment asymptotics for the (2+1)-dimensional directed polymer in the critical window

  Abstract: The partition function of the directed polymer model on Z^{2+1} has been shown to undergo a phase transition on an intermediate disorder scale. In this talk, we focus on a window around the critical point. Exploiting a renewal process representation, we identify the asymptotics for the second and third moments of the partition function. As a corollary, we show that, viewed as a random field, the family of partition functions admits non-trivial diffusive scaling limits, and each limit point has the same covariance structure with logarithmic divergence near the diagonal. Similar results are obtained for the stochastic heat equation on R^2, extending earlier results by Bertini and Cancrini (1998). Based on joint work with F. Caravenna and N. Zygouras.

- **2:30–3:00pm, Room 2502: Coffee break**

- **3:00–4:00pm, Lecture Theatre F (jointly with Departmental Colloquium):**

  Tomohiro Sasamoto (Tokyo Institute of Technology)

  The Kardar-Parisi-Zhang (KPZ) models and their universality

  Abstract: Fluctuations of physical interfaces exhibit universal scaling laws known as the KPZ universality. In 2010 the exact formula for the one-point height distribution was discovered by Sasamoto-Spohn and Amir-Corwin-Quastel. In this talk, we start from the basics about the KPZ equation, including its well-definedness and universality, then explain the derivation of the exact formula for the height distribution, and study its limiting behaviors. Recent developments on the topic will be discussed including the introduction and analysis of various lattice models in the KPZ universality, the connections to integrable systems and representation theory, and generalizations to multi-component systems. Finally we also mention a few outstanding problems on the subject.

The event is supported by the Department of Mathematics, HKUST.

All are welcome