

Pierre LeDoussal (ENS Paris, France)

Universal statistics for directed polymers and the KPZ equation from the replica Bethe Ansatz

I will first review the problem of the directed polymer (DP) in a random potential and of the Kardar Parisi Zhang (KPZ) growth equation, and their mutual relation. I will introduce the replica Bethe Ansatz method and how it has allowed us to obtain the distribution of the free energy of the DP and of the height field of the KPZ equation. For large polymer size (large KPZ time) this distribution converges to the Tracy Widom distribution of the largest eigenvalue of a gaussian random matrix. I will discuss our results for both fixed and free endpoints corresponding to growth from a droplet or from an initially flat interface.