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Title: The skew Brownian permuton: a new universal limit for random constrained permutations and its connections with Liouville quantum gravity

Consider a large random permutation satisfying some constraints or biased according to some statistics. What does it look like? In this seminar we make sense of this question introducing the notion of permuton. Permuton convergence has been established for several models of random permutations in various works: we give an overview of some of these results, mainly focusing on the case of pattern-avoiding permutations.

The main goal of the talk is to present a new family of universal limiting permutons, called skew Brownian permuton. This family includes (as particular cases) some already studied limiting permutons, such as the biased Brownian separable permuton and the Baxter permuton. We also show that some natural families of random constrained permutations converge to some new instances of the skew Brownian permuton.

The construction of these new limiting objects will lead us to investigate an intriguing connection with some perturbed versions of the Tanaka SDE and the SDEs encoding skew Brownian motions. We finally explain how it is possible to construct these new limiting permutons directly from a Liouville quantum gravity decorated with two SLE curves. Building on the latter connection, we compute the density of the intensity measure of the Baxter permuton.