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November 23 @ 5:00 pm - 6:00 pm UTC+0

Title: “The Aldous–Lyons conjecture on recurrent unimodular random graphs”.

Abstract: This talk is concerned with the geometry of the (wired) Uniform Spanning Tree (UST) on an infinite graph, and in particular with a property called one-endedness, which says that the removal of a finite subset does not produce multiple infinite clusters. The question of the one-endedness for the UST is the analogue of the question of percolation at criticality.

I will discuss recent work with Diederik van Engelenburg (Vienna) in which we show that for recurrent, stationary random graphs, the following conditions are equivalent: (a) existence and uniqueness of the potential kernel, (b) existence and uniqueness of harmonic measure from infinity, (c) a new anchored Harnack inequality, and (d) one-endedness of the wired Uniform Spanning Tree. (All these terms will be introduced in the talk).

In particular this gives a proof of the anchored (and in fact also elliptic) Harnack inequality on the UIPT. This also complements and strengthens some results of Benjamini, Lyons, Peres and Schramm. As an application of this result, we also show that the uniform spanning tree is one-ended on any recurrent, reversible graph. This completes the proof of a conjecture of Aldous and Lyons (which was settled in the transient case by Hutchcroft).