

Scaling the Aldous-Broder chain on the high-dimensional torus

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The CRT is the scaling limit of the UST on the complete graph. The Aldous-Broder chain on a graph takes values in the space of rooted trees with vertices that is invariant under the uniform distribution on the space of rooted spanning trees.

In Evans, Pitman and Winter (2006) the so-called root growth with regrafting process (RGRG) was constructed. It was further shown that the suitable rescaled Aldous-Broder chain converges to the RGRG weakly with respect to the GH-topology. Moreover it was shown in Peres and Revelle

(2005) that (up to a dimension depending constant factor) the CRT is also the Gromov-weak scaling limit of the UST on the d -dimensional torus, $d \geq 5$. This result was recently strengthened in Archer, Nachmias and Shalev (2021+) to convergence with respect to the GH-weak topology, and therefore holds also with respect to the GH-topology. In this talk we show that the suitable rescaled Aldous Broder chain converges to the RGRG weakly with respect to the GH-topology when initially started in the trivial rooted tree.

(this is joint work with Osvaldo Angtuncio Hernandez and Gabriel Berzunza Ojeda)