Mathematics and CS Seminar

Parking on Cayley trees & Frozen Erdös-Rényi

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Consider a uniform Cayley tree τ_n with n vertices and let m cars arrive sequentially, independently, and uniformly on its vertices. Each car tries to park on its arrival node, and if the spot is already occupied, it drives towards the root of the tree and park as soon as possible. Using combinatorial enumeration, Lackner & Panholzer established a phase transition for this process when m is approximately $n/2$. We couple this model with a variation of the classical Erdös–Rényi random graph process. This enables us to completely describe the phase transition for the size of the components of parked cars using a modification of the standard multiplicative coalescent which we named the frozen multiplicative coalescent. The geometry of critical parked clusters in the parking process is also studied. Those trees are very different from usual random trees and should converge towards the growth-fragmentation trees canonically associated to 3/2-stable process that already appeared in the study of random planar maps.

The talk is based on joint work with Alice Contat.

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