Scaling limits for parking on Frozen Erdős–Rényi Cayley trees with heavy tails

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In a recent contribution, Contat and Curien (2021) studied parking problem on uniform rooted Cayley tree with n vertices and m cars arriving sequentially, independently, and uniformly on its vertices. In a previous contribution, Lackner and Panholzer (2016) established a phase transition for this process when $m \approx \frac{n}{2}$. Contat and Curien couple this model with a variant of the classical Erdős–Rényi random graph process which enables describing the phase transition for the size of the components of parked cars using a ("frozen") modification of the multiplicative coalescent. They show the scaling limit convergence towards the growth-fragmentation trees canonically associated to the $\frac{3}{2}$-stable process that appeared previously in the study of random planar maps. We study their novel model in the presence of group arrival of cars with heavy tail, and derive the appropriate metric space scaling limits, following Conchon-Kerjan et al. (2020) and Bhamidi et al. (2018), with comparing the behaviour of the extended tree parking approach to more commonly studied Bienaymé–Galton–Watson trees.

References

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