Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

Thursday, 18 June 2026, 16:30
Lipschitz-Saal (LWK 1.016)

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Estimating the history of a random recursive tree

We estimate the arrival time of vertices in a uniform random recursive tree from its unlabeled structure. Using centrality-based rankings, we derive tail bounds for the relative estimation error that are uniform in the vertex and the tree size. For the ranking induced by Jordan centrality, the probability that the estimate exceeds the true arrival time by a factor S decays on the order of $1/S$, while the probability that it is smaller than the true arrival time by a factor $1/S$ decays exponentially in S. We introduce a refined centrality measure whose overestimation probability decays on the order of $(\log S)/S^2$, at the cost of a heavier lower tail of order $1/S^2$. These results identify a tradeoff between upper- and lower-tail performance in arrival-time estimation. Joint work with Simon Briend and Joost Jorritsma