Graz University of Technology

Institut für Diskrete Mathematik

Combinatorics Seminar

22.05.2026, 12:30

Online meeting (Webex) & AE06, Steyrergasse 30

On the Prague dimension of sparse random graphs

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The Prague dimension of a graph G is defined as the minimum number of complete graphs whose direct product contains G as an induced subgraph. Introduced in the 1970s by Nešetřil, Pultr, and Rödl – and motivated by the work of Dushnik and Miller, as well as by the induced Ramsey theorem – determining the Prague dimension of a graph is a notoriously hard problem.

In this talk, we will show that for all $\varepsilon > 0$ and p such that $n^{-1+\varepsilon} \leq p \leq n^{-\varepsilon}$, with high probability the Prague dimension of $G_{n,p}$ is $\Theta_\varepsilon(pn)$, which improves upon a recent result by Molnar, Rödl, Sales and Schacht.

Inspired by the work of Bennett and Bohman, our approach centres on analysing a random greedy process that builds an independent set of size $\Omega(p^{-1} \log pn)$ by iteratively selecting vertices uniformly at random from the common non-neighbourhood of those already chosen. Using the differential equation method, we show that every non-edge is essentially equally likely to be covered by this process, which is key to establishing our bound. Based on a joint work with Felix Joos.

Webex link:

https://tugraz.webex.com/tugraz/j.php?MTID=m6449da69552289b0d7eef2d0d2a27197

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