Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 30th June 12:30

Online meeting (Webex)

Universality for degenerate graphs

Peter Allen

(London School of Economics)

A graph Γ is universal for a family $\mathcal{F}$ of graphs if for each $F \in \mathcal{F}$ there is a copy of $F \in \Gamma$ (not necessarily induced, and the copies are not necessarily disjoint).

Alon and Capalbo considered the case that $\mathcal{F}$ is the family of n-vertex graphs with maximum degree k, and showed that there is a universal graph for this family with $O\left(n^{2-2/k}\right)$ edges, which is sharp. Alon asked what the answer is if one replaces 'maximum degree' with 'degeneracy'.

We give a probabilistic construction of a universal graph for the family of n-vertex D-degenerate graphs with $\tilde{O}\left(n^{2-1/D}\right)$ edges, which is optimal up to the polylog. In this talk, I will describe the construction and give most of the details of the proof of its universality.

This is joint work with Julia Boettcher and Anita Liebenau.

Meeting link:

https://tugraz.webex.com/tugraz/j.php?MTID=m3162bb7e6bef850e659f657a18095a1c

Meeting number: 2733 453 3442

Password: bSDVGJDp976

Joshua Erde, Mihyun Kang