

Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 1st August 12:30

AE06, Steyrergasse 30

Clique covers, packings, and decompositions in graphs

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In 1966, Erdős, Goodman, and Pósa showed that if G is an n -vertex graph, then at most $\lfloor n^2/4 \rfloor$ cliques of G are needed to cover the edges of G . Furthermore, this bound is best possible as witnessed by the balanced complete bipartite graph. Erdős suggested the following strengthening: every n -vertex graph admits an edge decomposition into cliques of total cost at most $\lfloor n^2/4 \rfloor$, where now each clique of size i has cost $i - 1$. We prove an asymptotically optimal version of both this conjecture and a conjecture of Dau, Milenkovic, and Puleo on covering the t -vertex cliques of a graph rather than its edges. We will also briefly discuss some follow-up work in which we solve a conjecture of Győri regarding packing edge disjoint cliques in dense graphs.

Joint work with József Balogh, Jialin He, Robert A. Krueger, and The Nguyen.

Mihyun Kang, Ronen Wdowinski