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SUBGRAPH DENSITIES IN GRAPHS WITHOUT A FORBIDDEN SUBGRAPH

A generalized Turán problem asks for two given graphs H and F what is the maximum number of copies of H in graphs not containing F as a subgraph. Despite many results for particular graphs, not much is known in general. Lidický and Murphy stated a conjecture providing conditions on H and F under which the maximum is asymptotically attained at a blow-up of a complete multipartite graph. In the talk we will present counterexamples to their conjecture and provide some alternative general conjectures. We also prove an asymptotically tight bound on the number of copies of any bipartite graph of radius at most 2 in triangle-free graphs.

This is joint work with Ervin Győri, Nika Salia and Casey Tompkins.