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Coherent Configurations and Extremal Graph Theory

In this talk, we will discuss some of the ways that the theory of coherent configurations can contribute to extremal graph theory, specifically to so-called degenerate Turàn-type problems on graphs. These are problems where, given a number of vertices n and a bipartite graph B, one tries to maximize the number of edges of a graph with n vertices with no copy of B as a subgraph. Constructing such graphs is very difficult, we will discuss how coherent configurations are a natural tool to use in this search.