

Hamiltonicity and related properties in K_{r+1} -free graphs

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Abstract

In this talk, we discuss a new result on best-possible edge density conditions sufficient to imply traceability, Hamiltonicity, chorded pancyclicity, Hamiltonian-connectedness, k -path Hamiltonicity, and k -Hamiltonicity in K_{r+1} -free graphs. The problem of determining the extremal number $\text{ex}(n, F)$, the maximum number of edges in an n -vertex, F -free graph, has been studied extensively since Turán's theorem. Edge density conditions implying these properties also had been found. We bring together these two themes. Equivalently, we introduce variants of the extremal number $\text{ex}(n, F)$ in which we require that the graphs not have some Hamiltonian-like property, and we determine their values for $F = K_{r+1}$. We then extend these results to clique density conditions. This talk is based on joint work with Rachel Kirsch.

Keywords: Hamiltonian graph, edge density, chorded pancyclic.