

Spectral Turán problems

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Abstract

In this talk we will consider a spectral version of the classical Turán problem: given a fixed graph F , how large can the largest eigenvalue of the adjacency matrix be over all n -vertex graphs which do not contain F as a subgraph? As the largest eigenvalue of the adjacency matrix is an upper bound for the average degree of a graph, any upper bound on this quantity also gives an upper bound on the Turán number $\text{ex}(n, F)$, and in fact several theorems in this area imply and strengthen classical results in extremal graph theory. We will discuss recent progress on this problem including what the similarities and differences between it and the classical Turán problem are and what future work may be done.

This talk will include joint work with Sebastian Cioabă, Dheer Noal Desai, Lihua Feng, Liying Kang, Yongtao Li, Zhenyu Ni, Jing Wang, and Xiao-Dong Zhang

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References