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Michael Tait* (mtait@cmu.edu). *8 theorems in extremal spectral graph theory.*

Theorems in extremal graph theory ask to optimize a combinatorial invariant over a fixed family of graphs. In this talk, we discuss how to prove several theorems in this area where the graph invariant in question is a function of the eigenvalues or eigenvectors of the graph. Two representative results we will discuss are a proof of a conjecture of Boots and Royle from 1991, that the planar graph of maximum spectral radius (of its adjacency matrix) is the join of an edge and a path, and a proof of a conjecture of Aldous and Fill from 1994 on the maximum "relaxation time" of a random walk.

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