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Graph Complement and Delta Conjectures: Progress Using Classical Results

Two major open problems in inverse eigenvalue problems for graphs concern the maximum nullity of matrices associated with graphs. Let G be a graph of order n and minimum degree δ. The first asks whether the sum of maximum nullities of G and its complement is lower bounded by $n-2$. The second asks whether the maximum nullity of G is lower bounded by δ. They are called the graph complement conjecture and the delta conjecture, respectively. In this talk, I present progress on both conjectures using classical results of Mader from 1972 and Lovasz, Saks, and Schrijver from 1989. This work is in collaboration with Francesco Barioli, Shaun M. Fallat, and Zhongshan Li.