

Generalizations of the Strong Arnold Property and the inverse eigenvalue problem of a graph

Leslie Hogben, Iowa State University and American Institute of Mathematics

For a given graph G and an associated class of real symmetric matrices whose off-diagonal entries are nonzero exactly where G has edges, the inverse eigenvalue problem of G is to determine the collection of all possible spectra for such matrices. Inverse eigenvalue problems and the background of this problem will be described, together with techniques such as the fundamental work of Colin de Verdière and the Strong Arnold Property. Two extensions of the Strong Arnold Property that target a better understanding of all possible spectra and their associated multiplicities will be presented, referred to as the Strong Spectral Property and the Strong Multiplicity Property. Applications of these properties to the inverse eigenvalue problem of a graph will be discussed.

This talk is based on joint work with W. Barrett, S. Fallat, H. T. Hall, J. C.-H. Lin, and B.L. Shader.