

Graphs Determined By Their Spectra

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Abstract

M -Spectrum of a graph is the list of eigenvalues of the matrix M associated with the graph. Two graphs are M -cospectral if they share the same M -spectrum. Some of the important matrices associated with a graph are adjacency matrix, incidence matrix, (signless) Laplacian matrix, distance matrix and distance (signless) Laplacian matrix. The adjacency spectrum of a graph G is simply called as the spectrum of the graph G . A graph is determined by the M -spectrum if it does not have an M -copsectral mate up to isomorphism. The question “Which graphs are determined by their spectrum?” was posed in the year 1956, and originates from chemistry. The answer to the question concerning various graph matrices is still unknown and the problem is considered a difficult one by many spectral graph theorists. In literature, some special classes of graphs are known to be determined by the M -spectrum. In the proposed talk, spectral characterization of graphs with respect to adjacency spectra and (signless) Laplacian spectra will be discussed.