國立中央大學數學系

專題演講

主講人：劉家安博士 (義守大學財務與計算數學系)

題目：Spectral radius and degree sequence of a graph

演講茶會: 2017年10月5日(星期四) 3:30 p.m. ~ 4:00 p.m.

茶會地點:中央大學鴻經館M306

演講時間：2017年10月5日(星期四) 4:00 p.m. ~ 5:00 p.m.

地點：中央大學鴻經館M107

Abstract：

Let G be a simple graph of order n. The spectral radius $\rho(G)$ of G is the largest eigenvalue of its adjacency matrix. For each positive integer ℓ at most n, this talk gives a sharp upper bound for $\rho(G)$ by a function of the first ℓ vertex degrees in G, which generalizes a series of previous results. Several applications of these bounds are then provided. The idea of the above result also applies to bipartite graphs. Let k, p, q be positive integers with $k < p < q+1$. We prove a conjecture stating that the maximum spectral radius of a simple bipartite graph obtained from the complete bipartite graph $K_{p,q}$ of bipartition orders p and q by deleting k edges is attained when the deleted edges are all incident on a common vertex which is located in the partite set of order q. It is further used to prove that the graph obtained by deleting an edge from a complete bipartite graph is determined by its spectrum. Some graphs are also proposed, each of which is obtained from a complete bipartite graph by adding a vertex and an edge incident on the new vertex and an original vertex, which are not determined by their spectra.

Keywords: graph, bipartite graph, adjacency matrix, spectral radius, degree sequence, determined by the spectrum (DS).

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