

Abstract

Spectral characterizations for regular graphs

Willem Haemers

Tilburg University, The Netherlands

An important activity in algebraic graph theory is to establish which properties are characterized by the spectrum of the adjacency matrix. Of special interest are properties that include regularity. Two famous examples of such problems are: Being strongly regular, and being the incidence graph of a projective plane. We will survey several of these properties. The focus will be on counter examples which consist of pairs of cospectral regular graphs, where one has a given property and the other one not. We will also show existence of NP-hard graph properties which are characterized by the spectrum.