



ON THE SPECTRAL MOMENT OF BICYCLIC GRAPHS WITH GIVEN BASES

Yaping Wu

Received July 1, 2013

Abstract

A connected graph G of order n is called a bicyclic graph if the number of edges of G is $n + 1$. The base of G , denoted by \hat{G} , is the (unique) minimal bicyclic subgraph of G . Define $\mathcal{B}_n(G_0) = \{G : G \text{ is a bicyclic graph of order } n \text{ and } \hat{G} = G_0\}$. Let $A(G)$ be the adjacency matrix of a graph G , and let $\lambda_1(G), \lambda_2(G), \dots, \lambda_n(G)$ be the eigenvalues in non-increasing order of $A(G)$. The number $\sum_{i=1}^n \lambda_i^k(G)$ ($k = 0, 1, \dots, n - 1$) is called the k th spectral moment of G , denoted by $S_k(G)$. Let $S(G) = (S_0(G), S_1(G), \dots, S_{n-1}(G))$ be the sequence of spectral moments of G . For two graphs G_1, G_2 , we have $G_1 \prec_S G_2$ if for some k ($k = 1, 2, \dots, n - 1$), we have $S_i(G_1) = S_i(G_2)$ ($i = 0, 1, \dots, k - 1$) and $S_k(G_1) < S_k(G_2)$. In this paper, we give the last and the first graphs, in an S -order, of all bicyclic graphs in the set $\mathcal{B}_n(G_0)$.

Keywords and phrases: spectral moment, bicyclic graph, base.

Pioneer Journal of Algebra, Number Theory and its Applications

PSP Pioneer Scientific Publisher