ON THE SPECTRAL MOMENT OF GRAPHS WITH $K$ CUT EDGES

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Abstract. Let $A(G)$ be the adjacency matrix of a graph $G$ with $\lambda_1(G), \lambda_2(G), \ldots, \lambda_n(G)$ its eigenvalues in non-increasing order. Call the number $S_k(G) := \sum_{i=1}^{n} \lambda_i^k(G)$ the $k$th spectral moment of $G$. Let $S(G) = (S_0(G), S_1(G), \ldots, S_{n-1}(G))$ be the sequence of spectral moments of $G$. For two graphs $G_1$ and $G_2$, we have $G_1 \prec_s G_2$ if $S_i(G_1) = S_i(G_2)$ for $i = 0, 1, \ldots, k-1$ and $S_k(G_1) < S_k(G_2)$ for some $k \in \{1, 2, \ldots, n-1\}$. Denote by $\mathcal{G}_n^k$ the set of connected $n$-vertex graphs with $k$ cut edges. In this paper, the first, the second, the last and the penultimate graphs, in the $S$-order, are determined among $\mathcal{G}_n^k$, respectively.

Key words. Spectral moment, Cut edge, Clique.

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