

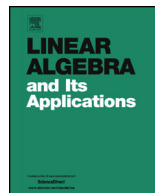


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Signless Laplacian energy of a graph and energy of a line graph [☆]Hilal A. Ganie ^a, Bilal A. Chat ^b, S. Pirzada ^{a,*}^a Department of Mathematics, University of Kashmir, Srinagar, India^b Department of Mathematics, Central University of Kashmir, Srinagar, India

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ABSTRACT

For a simple graph G of order n , size m and with signless Laplacian eigenvalues q_1, q_2, \dots, q_n , the signless Laplacian energy $QE(G)$ is defined as $QE(G) = \sum_{i=1}^n |q_i - \bar{d}|$, where $\bar{d} = \frac{2m}{n}$ is the average vertex degree of G . We obtain the lower bounds for $QE(G)$, in terms of first Zagreb index $M_1(G)$, maximum degree d_1 , second maximum degree d_2 , minimum degree d_n and second minimum degree d_{n-1} . As a consequence of these bounds, we obtain several bounds for the energy $E(\mathcal{L}(G))$ of the line graph $\mathcal{L}(G)$ of graph G in terms of various graph parameters like $M_1(G)$, ω (the clique number), n , m , etc., which improve some recently known bounds.

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1. Introduction

Let $G(V, E)$ be a simple graph with n vertices, m edges with vertex set $V(G) = \{v_1, v_2, \dots, v_n\}$ and edge set $E(G) = \{e_1, e_2, \dots, e_m\}$. In case the graph G is to be

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