ENERGI GRAF KINCIR $W_d(3,m)$

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Abstract
The characteristic polynomial of a graph $G$ with $n$ vertices is defined as $\phi(G : \lambda) = \det(\lambda I - A(G))$, where $A(G)$ is the adjacency matrix of $G$ and $I$ is the unit matrix. The roots of the characteristic equation $\phi(G : \lambda) = 0$, denoted by $\lambda_1, \lambda_2, \ldots, \lambda_n$ are the eigenvalues of $G$. The energy $E = E(G)$ of a graph $G$ is defined as

$$E(G) = \sum_{i=1}^{n} |\lambda_i|.$$  

If $E(G) \leq 2(n - 1)$ then $G$ is called a nonhyperenergetic graph. In this article, we show that the windmill graph $W_d(3,m)$ is the nonhyperenergetic graph, where the windmill graph $W_d(k,m)$ is a graph constructed for $k \geq 2$ and $n \geq 2$ by joining $m$ copies of the complete graph $K_k$ at a shared vertex.

Keywords: adjacency matrix, characteristic polynomial, eigenvalues, energy of graph, windmill graph.