SHARP CONDITIONS FOR THE EXISTENCE OF AN EVEN $[a, b]$-FACTOR IN A GRAPH

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ABSTRACT

Let a and b be positive integers. An even $[a, b]$-factor of a graph G is a spanning subgraph H such that for every vertex $v \in V(G)$, $d_H(v)$ is even and $a \leq d_H(v) \leq b$. Matsuda conjectured that if G is an n-vertex 2-edge-connected graph such that $n \geq 2a+b+\frac{a^2-3a}{b}-2$, $\delta(G) \geq a$, and $\sigma_2(G) \geq \frac{2an}{a+b}$, then G has an even $[a, b]$-factor. In this talk, we provide counterexamples, which are highly connected. Furthermore, we give sharp sufficient conditions for a graph to have an even $[a, b]$-factor. For even an, we conjecture a lower bound for $\lambda_1(G)$ in an n-vertex graph to have an $[a, b]$-factor.

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