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ALGEBRAIC CONNECTIVITY OF TREES WITH A PENDANT EDGE OF INFINITE WEIGHT*

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Abstract. Let G be a weighted graph. Let v be a vertex of G and let G^v_ω denote the graph obtained by adding a vertex u and an edge $\{v, u\}$ with weight ω to G. Then the algebraic connectivity $\mu(G^v_\omega)$ of G^v_ω is a nondecreasing function of ω and is bounded by the algebraic connectivity $\mu(G)$ of G. The question of when $\lim_{\omega\to\infty} \mu(G^v_\omega)$ is equal to $\mu(G)$ is considered and answered in the case that G is a tree.

Key words. Weighted graphs, Trees, Laplacian matrix, Algebraic connectivity, Pendant edge.

AMS subject classifications. 5C50, 5C40, 15A18.

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