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ESTIMATION OF THE MAXIMUM MULTIPLICITY OF AN EIGENVALUE IN TERMS OF THE VERTEX DEGREES OF THE GRAPH OF A MATRIX *

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Abstract. The maximum multiplicity among eigenvalues of matrices with a given graph cannot generally be expressed in terms of the degrees of the vertices (even when the graph is a tree). Given are best possible lower and upper bounds, and characterization of the cases of equality in these bounds. A by-product is a sequential algorithm to calculate the exact maximum multiplicity by simple counting.

Key words. Eigenvalues, multiplicity, symmetric matrix, tree, vertex degrees.

AMS subject classifications. 15A18, 15A57, 05C50, 05C05, 05C07

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