ON 3-COLORED DIGRAPHS WITH EXACTLY ONE NONSINGULAR CYCLE

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Abstract. The class of connected 3-colored digraphs containing exactly one nonsingular cycle is considered in this article. The main objective is to study the smallest Laplacian eigenvalue and the corresponding eigenvectors of such graphs. It is shown that the smallest Laplacian eigenvalue of such a graph can be realized as the algebraic connectivity (second smallest Laplacian eigenvalue) of a suitable undirected graph. The nonsingular unicyclic 3-colored digraph on n vertices, which minimize the smallest Laplacian eigenvalue over all such graphs is determined in this article.

Key words. Laplacian matrix, Mixed graph, Weighted directed graph, 3-Colored digraph, First eigenvector.

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

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