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INERTIALLY ARBITRARY TREE SIGN PATTERNS OF ORDER 4*

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Abstract. An $n \times n$ sign pattern matrix A is an inertially arbitrary pattern if for every nonnegative triple (n_1, n_2, n_3) with $n_1 + n_2 + n_3 = n$, there is a real matrix in the sign pattern class of A having inertia (n_1, n_2, n_3). An $n \times n$ sign pattern matrix A is a spectrally arbitrary pattern if for any given real monic polynomial $r(x)$ of degree n, there is a real matrix in the sign pattern class of A with characteristic polynomial $r(x)$. In this paper, all 4×4 tree sign pattern matrices that are inertially arbitrary are characterized. As a result, in this paper, it is shown that a 4×4 tree sign pattern matrix is inertially arbitrary if and only if it is spectrally arbitrary.

Key words. Sign pattern matrix, Inertially arbitrary pattern, Spectrally arbitrary pattern, Tree sign pattern.

AMS subject classifications. 15A18, 15A29.

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