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INTERPOLATION BY MATRICES*

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Abstract. Assume that two sets of k vectors in $\mathbb{R}^n$ are given, namely $\{\mathbf{x}^1, \ldots, \mathbf{x}^k\}$ and $\{\mathbf{y}^1, \ldots, \mathbf{y}^k\}$, and a class of matrices, e.g., positive definite matrices, positive matrices, strictly totally positive matrices, or P-matrices. The question considered in this paper is that of determining necessary and sufficient conditions on these sets of vectors such that there exists an $n \times n$ matrix A in the given class satisfying $A\mathbf{x}^j = \mathbf{y}^j$ $(j = 1, \ldots, k)$.

Key words. Positive definite matrices, Positive matrices, Strictly totally positive matrices, P-matrices.

AMS subject classifications. 15A04, 15A57.

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