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PATH PRODUCT AND INVERSE M-MATRICES*

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Abstract. It is known that inverse M-matrices are strict path product (SPP) matrices, and that the converse is not true for matrices of order greater than 3. In this paper, given a normalized SPP-matrix A, some new values s' for which $A+s'I$ is an inverse M-matrix are obtained. Our values s' extend the values s given by Johnson and Smith [C.R. Johnson and R.L. Smith. Positive, path product, and inverse M-matrices. *Linear Algebra Appl.*, 421:328–337, 2007.]. The question whether or not a 4×4 SPP-matrix is a P-matrix is settled.

Key words. M-matrix, Inverse M-matrix, Path product matrix, P-matrix.

AMS subject classifications. 15A48, 15A57.

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