

M_{\vee} - MATRICES : A GENERALIZATION OF M-MATRICES BASED ON EVENTUALLY NONNEGATIVE MATRICES*

D. D. OLESKY[†], M. J. TSATSOMEROS[‡], AND P. VAN DEN DRIESSCHE[§]

Abstract. An M_{\vee} - matrix has the form $A = sI - B$, where $s \geq \rho(B) \geq 0$ and B is eventually nonnegative; i.e., B^k is entrywise nonnegative for all sufficiently large integers k . A theory of M_{\vee} - matrices is developed here that parallels the theory of M-matrices, in particular as it regards exponential nonnegativity, spectral properties, semipositivity, monotonicity, inverse nonnegativity and diagonal dominance.

Key words. M-matrix, Eventually nonnegative matrix, Exponentially nonnegative matrix, Perron-Frobenius.

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[†] Department of Computer Science, University of Victoria, Victoria, B.C., Canada V8W 3P6 (dolesky@cs.uvic.ca).

[‡] Mathematics Department, Washington State University, Pullman, WA 99164-3113, U.S.A. (tsat@wsu.edu).

[§] Department of Mathematics and Statistics, University of Victoria, Victoria, B.C., Canada V8W 3R4 (pvdd@math.uvic.ca).