EVENTUAL CONE INVARIANCE*

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Abstract. Eventually nonnegative matrices are square matrices whose powers become and remain (entrywise) nonnegative. Using classical Perron-Frobenius theory for cone preserving maps, this notion is generalized to matrices whose powers eventually leave a proper cone $K \subset \mathbb{R}^n$ invariant, that is, $A^m K \subseteq K$ for all sufficiently large $m$. Also studied are the related notions of eventual cone invariance by the matrix exponential, as well as other generalizations of M-matrix and dynamical system notions.

Key words. Eventually nonnegative matrix, Exponentially nonnegative matrix, Perron-Frobenius, Proper cone.

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