

Dynamics of nonnegative matrices

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We concern ourselves with linear dynamical systems, which are governed by finitely many linear operators. We begin with the dynamics of products of nonnegative matrices in Euclidean algebra, extend a well known consequence of the Perron- Frobenius theorem on the periodic points of a nonnegative matrix to products of finitely many nonnegative matrices, associated with a finite-lettered word and later to products of nonnegative matrices associated with a word of infinite length. We also investigate the dynamics of products of nonnegative matrices in max algebras. A consequence of the Perron-Frobenius theorem on periodic points of a nonnegative matrix is generalized to a max algebra and the same is then studied for finite and infinite products of nonnegative matrices.