

AN UPPER BOUND ON THE REACHABILITY INDEX FOR A SPECIAL CLASS OF POSITIVE 2-D SYSTEMS*

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Abstract. The smallest number of steps needed to reach all nonnegative local states of a positive two-dimensional (2-D) system is the local reachability index of the system. The study of such a number is still an open problem which seems to be a hard task. In this paper, an expression depending on the dimension n as well as an upper bound on the local reachability index of a special class of systems are derived. Moreover, this reachability index is greater than any other bound proposed in previous literature.

Key words. Hurwitz products, Influence digraph, Local reachability index, Nonnegative matrices, Positive two-dimensional (2-D) systems, Reachability.

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