SIGN PATTERNS THAT REQUIRE EVENTUAL EXPONENTIAL NONNEGATIVITY

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Abstract. Sign patterns that require exponential nonnegativity are characterized. A set of conditions necessary for a sign pattern to require eventual exponential nonnegativity are established. It is shown that these conditions are also sufficient for an upper triangular sign pattern to require eventual exponential nonnegativity and it is conjectured that these conditions are both necessary and sufficient for any sign pattern to require eventual exponential nonnegativity. It is also shown that the maximum number of negative entries in a sign pattern that requires eventual exponential nonnegativity is \( \frac{(n-1)(n-2)}{2} + 2 \).

Key words. Matrix exponential, Exponential nonnegativity, Eventual exponential nonnegativity, Requires eventual nonnegativity, Sign pattern.