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SIGN PATTERNS THAT REQUIRE OR ALLOW POWER-POSITIVITY*

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Abstract. A matrix A is power-positive if some positive integer power of A is entrywise positive. A sign pattern $\mathcal{A}$ is shown to require power-positivity if and only if either $\mathcal{A}$ or $-\mathcal{A}$ is nonnegative and has a primitive digraph, or equivalently, either $\mathcal{A}$ or $-\mathcal{A}$ requires eventual positivity. A sign pattern $\mathcal{A}$ is shown to be potentially power-positive if and only if $\mathcal{A}$ or $-\mathcal{A}$ is potentially eventually positive.

Key words. Power-positive matrix, Eventually positive matrix, Requires power-positivity, Potentially power-positive, Potentially eventually positive, Sign pattern.

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