

## CONDITIONS FOR A TOTALLY POSITIVE COMPLETION IN THE CASE OF A SYMMETRICALLY PLACED CYCLE\*

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**Abstract.** In earlier work, the labelled graphs  $G$  for which every combinatorially symmetric totally nonnegative matrix, the graph of whose specified entries is  $G$ , has a totally nonnegative completion were identified. For other graphs, additional conditions on the specified data must hold. Here, necessary and sufficient conditions on the specified data, when  $G$  is a cycle, are given for both the totally nonnegative and the totally positive completion problems.

**Key words.** Totally nonnegative matrices, Totally positive matrices, Partial matrix, Matrix completion problem, Cycles.

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