

## ON A SCHUR COMPLEMENT INEQUALITY FOR THE HADAMARD PRODUCT OF CERTAIN TOTALLY NONNEGATIVE MATRICES\*

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**Abstract.** Under the entrywise dominance partial ordering, T.L. Markham and R.L. Smith obtained a Schur complement inequality for the Hadamard product of two tridiagonal totally nonnegative matrices. Applying the properties of the Hadamard core of totally nonnegative matrices, the Schur complement inequalities for the Hadamard product of totally nonnegative matrices is obtained, which extends those of T.L. Markham and R.L. Smith for tridiagonal totally nonnegative matrices [T.L. Markham and R.L. Smith. A Schur complement inequality for certain P-matrices. *Linear Algebra and its Applications*, 281:33–41, 1998.]. This result improves the refinement and range of applications for these inequalities.

**Key words.** Totally nonnegative matrix, Tridiagonal matrix, Hadamard core, Schur complement, Matrix inequality, Hadamard product, SC-closure.

**AMS subject classifications.** 15A09, 15A45, 15A48.

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