

# LINE INSERTIONS IN TOTALLY POSITIVE MATRIX FUNCTIONS

By

CHARLES R. JOHNSON

Department of Mathematics, College of William and Mary, Williamsburg, VA 23185,  
USA

and

RONALD L. SMITH\*

Department of Mathematics, University of Tennessee at Chattanooga, Chattanooga,  
TN 37403-2598, USA

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## ABSTRACT

Between any two rows (columns) of an  $m$ -by- $n$  totally nonnegative matrix polynomial, it is not difficult to show that a new polynomial row (column) may be inserted to form a larger, totally nonnegative matrix polynomial. The analogous question, in which ‘totally nonnegative’ is replaced by ‘totally positive’ arises in completion problems and the extension of collocation matrices, and its answer is far less clear. Here the totally positive question is answered affirmatively, and by similar techniques affirmative answers may also be given for several other classes of matrix functions.