Electronic Journal of Linear Algebra ISSN 1081-3810
A publication of the International Linear Algebra Society
Volume 16, pp. 162-170, July 2007

ELA
http://math.technion.ac.il/iic/ela

ON NONNEGATIVE SIGN EQUIVALENT AND SIGN SIMILAR FACTORIZATIONS OF MATRICES*

DANIEL HERSHKOWITZ† AND ALLAN PINKUS‡

Dedicated to Hans Schneider on the occasion of his eightieth birthday

Abstract. It is shown that every real $n \times n$ matrix is a product of at most two nonnegative sign equivalent matrices, and every real $n \times n$ matrix, $n \geq 2$, is a product of at most three nonnegative sign similar matrices. Finally, it is proved that every real $n \times n$ matrix is a product of totally positive sign equivalent matrices. However, the question of the minimal number of such factors is left open.

Key words. Sign equivalent matrices, Sign similar matrices, Totally positive matrices, Matrix factorizations.

AMS subject classifications. 15A18, 15A29.

*Received by the editors 21 March 2007. Accepted for publication on 12 July 2007. Handling Editor: Ludwig Elsner.

†Department of Mathematics, Technion - Israel Institute of Technology, Haifa 32000, Israel (hershkow@technion.ac.il).

‡Department of Mathematics, Technion - Israel Institute of Technology, Haifa 32000, Israel (pinkus@technion.ac.il).