Electronic Transactions on Numerical Analysis.
Volume 18, pp. 198-208, 2004.

ISSN 1068-9613.

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LDU DECOMPOSITIONS WITH L AND U WELL CONDITIONED [*]

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Abstract. We present, for some classes of matrices, LDU-decompositions whose unit triangular factors L and U are simultaneously very well conditioned. Our examples include diagonally dominant matrices by rows and columns and their inverses, Stieljes matrices and M-matrices diagonally dominant by rows or columns. We also show a construction of an accurate computation of the LDU-decomposition for any M-matrix diagonally dominant by rows or columns, which in turn can be applied to obtain an accurate singular value decomposition.

Key words. conditioning, diagonal dominance, pivoting strategies, accuracy, singular value decomposition.

AMS subject classifications. 65F05, 65F35, 15A12.

[*]Received November 2, 2003. Accepted for publication May 15, 2004. Recommended by F. Marcellán. Research partially supported by the Spanish Research Grant BFM2003-03510.

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