

## 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.

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