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**Low rank approximation of a sparse matrix based on LU  
factorization with column and row tournament pivoting**

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In this talk we present an algorithm for computing a low rank approximation of a sparse matrix based on a truncated LU factorization with column and row permutations. We present various approaches for determining the column and row permutations that show a trade-off between speed versus deterministic/probabilistic accuracy. We show that if the permutations are chosen by using tournament pivoting based on QR factorization, then the obtained truncated LU factorization with column/row tournament pivoting,  $LU_{CRTP}$ , satisfies bounds on the singular values which