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Left-looking version of *AINV* preconditioner with complete pivoting strategy

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ABSTRACT

In this paper, we apply a complete pivoting strategy to compute the left-looking version of *AINV* preconditioner for linear systems. As the preprocessing, the MultiLevel Nested Dissection reordering has also been applied. We have used this preconditioner as the right preconditioner for several linear systems where the coefficient matrices have been downloaded from the University of Florida Sparse Matrix Collection. Numerical experiments presented in this paper indicate the effectiveness of such a complete pivoting on the quality of left-looking version of *AINV* preconditioner.

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1. Introduction

Krylov subspace methods [9] are examples of iterative methods to solve the linear system of equations of the form

$$Ax = b, \tag{1}$$

where the coefficient matrix $A \in \mathbb{R}^{n\times n}$ is nonsingular, large, sparse and nonsymmetric and also $x, b \in \mathbb{R}^n$. A good preconditioner will accelerate the solution of this system.

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