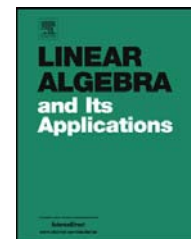




Contents lists available at ScienceDirect

Linear Algebra and its Applications

www.elsevier.com/locate/laa


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



A. Rafiei

Department of Applied Mathematics, Hakim Sabzevari University, Sabzevar, Iran

ARTICLE INFO

Article history:

Received 16 March 2013

Accepted 28 November 2013

Available online 22 December 2013

Submitted by M. Benzi

MSC:

65F10

65F50

65F08

Keywords:

Krylov subspace methods

Preconditioning

Pivoting

Left-looking version of *AINV* preconditioner

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.

© 2013 Elsevier Inc. All rights reserved.

1. Introduction

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

$$Ax = b, \quad (1)$$

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.

E-mail addresses: rafiei.am@gmail.com, a.rafiei@hsu.ac.ir.

URL: <http://profs.hsu.ac.ir/rafiei/>.

0024-3795/\$ – see front matter © 2013 Elsevier Inc. All rights reserved.

<http://dx.doi.org/10.1016/j.laa.2013.11.046>