

APPROXIMATE INVERSES AND INCOMPLETE DECOMPOSITIONS

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Abstract

In this work we consider the approximate inverse preconditioners AISM based on the Sherman-Morrison formula [1]. We will show some of theoretical properties of the factors of AISM in function of the value of parameter s considered in the decomposition. In particular, we will show that one of the factors hides a scaled factor of the standard incomplete LDU decomposition of the system matrix A . Thus the AISM decomposition can be considered as a way to get an incomplete decomposition via a factorized approximate inverse. We will show that the LDU decomposition obtained in this way can be useful in preconditioned iterative methods. Numerical experiments illustrate the efficiency of this incomplete decomposition where some dropping strategies are used where the entries and the norms of the inverse factors are considered.

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References

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