

Algorithms for approximate selective matrix inversion

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Keywords. Approximate matrix inversion, incomplete factorization methods, preconditioning methods.

Functions of entries of inverses of matrices like all diagonal entries of a sparse matrix inverse or its trace arise in several important computational applications such as density functional theory [2], covariance matrix analysis in uncertainty quantification [1] or when evaluating Green's functions in computational nanoelectronics [4]. We will briefly review some methods for (approximately) computing selective parts of the matrix inverse such we will further present a new algorithm for approximate selective matrix inversion that uses an approximate version of the SellInv method by Lin et al [3]. Its overall performance will be demonstrated for selected numerical examples, in particular for symmetric and indefinite application problems which frequently arise from practical applications.

References

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