NEWTON TWO-STAGE PARALLEL ITERATIVE METHODS FOR NONLINEAR PROBLEMS

Josep Arnal, Violeta Migallón and José Penadés
Departamento de Ciencia de la Computación e Inteligencia Artificial,
Universidad de Alicante,
E-03071 Alicante, Spain,
e-mail: {arnal, violeta, jpenades}@dccia.ua.es

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Abstract

Two-stage parallel Newton iterative methods to solve nonlinear systems of the form $F(x) = 0$ are introduced. These algorithms are based on the multisplitting technique and on the two-stage iterative methods. Convergence properties of these methods are studied when the Jacobian matrix $F'(x)$ is either monotone or an H-matrix. Furthermore, in order to illustrate the performance of the algorithms studied, computational results about these methods on a distributed memory multiprocessor are discussed. The platform used is an IBM RS/6000 SP with 12 nodes. The parallel environment has been managed using the MPI library of parallel routines.

References

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