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Large splitting iterative methods and parallel solution of variational inequalities

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Abstract

Splitting iterative methods for the sum of maximal monotone and single-valued monotone operators in a finite-dimensional space are studied: convergence, rate of convergence and optimal iterative parameters are derived. A two-stage iterative method with inner iterations is analysed in the case when both operators are linear, self-adjoint and positive definite. The results are applied for the mesh variational inequalities which are solved using a non-overlapping domain decomposition method and the splitting iterative procedure. Parallel solution of a mesh scheme for continuous casting problem is presented and the dependence of the calculation time on the number of processors is discussed.
