

AN ITERATIVE METHOD FOR GENERALIZED KKT SYSTEMS

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Abstract

We consider a broad class of block-structured linear systems that includes as special cases saddle-point problems of Karush-Kuhn-Tucker (KKT) type, as well as nonsymmetric systems that arise in the solution of the Navier-Stokes equations.

Recently, Bai, Golub, and Ng have proposed the Hermitian-skew Hermitian splitting method (HSS) to solve non-Hermitian positive definite linear systems. In this talk we will show how this method can be extended to generalized KKT systems even in the presence of a singular Hermitian part. We will discuss the problem of picking good convergence parameters, inexact inner solves, and Krylov subspace acceleration.

Numerical experiments with matrices from various application areas will be used to illustrate our approach.