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A local preconditioned alternating direction iteration method for generalized saddle point problems

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Abstract

In this paper, a local preconditioned alternating direction iteration method is presented for solving the generalized saddle point problems. By using the new method, we only need solve two linear sub-systems of linear equations with symmetric and definite positive coefficient matrices per iteration step for solving the generalized saddle point problems. The convergence of the new iteration method is analyzed and some spectral properties of the preconditioned matrix are discussed. Numerical examples are reported to confirm the efficiency of the proposed method.