

广义鞍点问题基于PSS的约束预条件子

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ON PSS-BASED CONSTRAINT PRECONDITIONERS FOR GENERALIZED SADDLE POINT PROBLEMS

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- 摘要
- 参考文献
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全文: PDF (481 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 对于(1,1)块为非Hermitian阵的广义鞍点问题,本文给出了一种基于正定和反对称分裂(Positive definite and skew-Hermitian splitting, PSS)的约束预条件子.该预条件子的(1,1)块由求解非Hermitian正定线性方程组时的PSS迭代法所构造得到.文中分析了PSS约束预条件子的一些性质并证明了预处理迭代法的收敛性.最后用数值算例验证了该预条件子的有效性.

关键词: 广义鞍点问题 正定反对称分裂 迭代法 约束预条件子

Abstract: In this paper, a PSS-based constraint preconditioner, in which the (1,1) block of the preconditioner is constructed by the PSS iterative method for solving the non-Hermitian positive definite linear systems, is presented for the generalized saddle point problems with non-Hermitian (1,1) blocks. The invertibility of the PSS-based constraint preconditioner is analyzed and the convergence of the preconditioned iteration method is proved. Numerical experiments are illustrated to show the efficiency of the preconditioner as well as the corresponding preconditioned iterative method.

Key words: generalized saddle point problem PSS iterative method constraint preconditioner

收稿日期: 2011-09-05;





基金资助:

苏州大学国家自然科学基金预研基金(SDY2011B01),江苏省普通高校研究生创新项目(CX10B_029Z),苏州大学优秀博士学位论文选题立项(23320957),西交利物浦大学科研发展基金RDF.

引用本文:

. 广义鞍点问题基于PSS的约束预条件子[J]. 计算数学, 2012, 34(2): 183-194.















. ON PSS-BASED CONSTRAINT PRECONDITIONERS FOR GENERALIZED SADDLE POINT PROBLEMS[J]. Mathematica Numerica Sinica, 2012, 34(2): 183-194.

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