

PRECONDITIONING AND ITERATIVE METHODS FOR COMPLEX LINEAR SYSTEMS

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For a class of complex symmetric systems of linear equations, by modifying the *Hermitian and skew-Hermitian splitting (HSS)* iteration method and making use of the special structure of the coefficient matrix, we have designed a class of matrix splitting iteration schemes, which is unconditional convergent for any initial guess. We have then discussed real equivalent reformulations of these matrix splitting iteration schemes applied them to solve and precondition the saddle-point linear systems arising from the Galerkin finite-element discretizations of the distributed control problems.

This talk is based on joint works with Michele Benzi and Fang Chen [1, 2].

References

- [1] Z.-Z. Bai, M. Benzi and F. Chen, *Modified HSS iteration methods for a class of complex symmetric linear systems*, *Computing*, 87 (2010), 93-111.
- [2] Z.-Z. Bai, M. Benzi and F. Chen, *On preconditioned MHSS iteration methods for complex symmetric linear systems*, *Numerical Algorithms*, 56 (2011), 297-317.