

Johnson, Olin G.; Michelli, Charles A.; Paul, George

Polynomial preconditioners for conjugate gradient calculations. (English) Zbl 0563.65020
SIAM J. Numer. Anal. 20, 362-376 (1983).

The authors explore the computational form of the preconditioned conjugate gradient algorithm for the solution of a system of linear equations $Ax = b$ where A is an $n \times n$ symmetric positive matrix. The basic theory of generalized optimal polynomial preconditioners is given. A polynomial preconditioning recurrence formula is obtained. A new family of parametrized conjugate gradient algorithms with m th degree polynomial preconditioner is given. The authors conclude that the algorithm may be easily programmed. This article should be very useful for system programmers.

Reviewer: [P.Stavre](#)

MSC:

[65F10](#) Iterative numerical methods for linear systems

Cited in **49** Documents

Keywords:

preconditioned conjugate gradient algorithm; symmetric positive matrix; recurrence formula

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