Lei, Xiuren

On the convergence of Chebyshev semi-iterative methods. (Chinese. English summary)


Summary: We prove a sufficient condition for the convergence of Chebyshev semi-iterative (CSI) methods applied to the numerical solution of linear algebraic systems, which depends on the bounds of the eigenvalues of a particular matrix and which was given by N. R. Santos and O. L. Linhares [J. Comput. Appl. Math. 16, 59-68 (1986; Zbl 0609.65019)] with a wrong proof. In addition, we discuss the case where the eigenvalues of the iteration matrix are complex and establish some sufficient and necessary conditions for convergence of CSI methods.

MSC:

65F10 Iterative numerical methods for linear systems

Keywords:

Chebyshev semi-iterative methods; convergence; eigenvalues; iteration matrix