Watkins, David S.

Some perspectives on the eigenvalue problem. (English) Zbl 0786.65032

SIAM Rev. 35, No. 3, 430-471 (1993).

This paper discusses the relationships among a number of algorithms for solving the algebraic eigenvalue problem, including the power method, subspace iteration, the QR algorithm, the Arnoldi and symmetric Lanczos methods. Their relations to the recursion of orthogonal polynomials, numerical integration, and measure selection are also discussed.

Reviewer: F.Szidarovszky (Tucson)

MSC:

65F15 Numerical computation of eigenvalues and eigenvectors of matrices
65D32 Numerical quadrature and cubature formulas
65F25 Orthogonalization in numerical linear algebra
42C05 Orthogonal functions and polynomials, general theory of nontrigonometric harmonic analysis

Keywords:

Arnoldi method; algorithms; algebraic eigenvalue problem; power method; subspace iteration; QR algorithm; symmetric Lanczos methods; recursion of orthogonal polynomials; numerical integration; measure selection

Full Text: DOI