

ICM-9210-42 Adaptive Richardson Iteration Based on Leja Points, D.Calvetti and L. Reichel.

ABSTRACT: An adaptive Richardson iteration method is presented for the solution of large linear systems of equations with a sparse symmetric positive definite matrix. The relaxation parameters for Richardson iteration are chosen to be reciprocal values of Leja points for an interval $[a, b]$ on the positive real axis, and the end points a and b are determined adaptively by computing certain modified moments during the iterations. Computed examples show this adaptive Richardson algorithm to converge significantly faster than a recently described adaptive Chebyshev algorithm [42], which also is based on the use of modified moments.