

Meeting: 1003, Atlanta, Georgia, SS 33A, AMS Special Session on Topics in Geometric Function Theory, I

1003-31-803 **John F Rossi***, Department of Mathematics, Blacksburg, VA 24060. *Applications of Potential Theory to problems in numerical linear algebra.* Preliminary report.

If A is a very large matrix, solving $Ax = b$ relies on indirect (iterative) methods such as GMRES. Convergence rates can be estimated by computing the logarithmic capacity of a domain containing the spectrum of A . We employ indirect methods using Arnoldi iteration and Krylov subspaces to find eigenspaces of A and to compute $f(A)$ for f analytic. We relate the convergence rates of these methods to notions of capacity. (Received September 29, 2004)