

A BLOCK RAYLEIGH QUOTIENT ITERATION WITH LOCAL QUADRATIC CONVERGENCE *

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Abstract. We present an iterative method, based on a block generalization of the Rayleigh Quotient Iteration method, to search for the p lowest eigenpairs of the generalized matrix eigenvalue problem $Au = \lambda Bu$. We prove its local quadratic convergence when $B^{-1}A$ is symmetric. The benefits of this method are the well-conditioned linear systems produced and the ability to treat multiple or nearly degenerate eigenvalues.

Key words. Subspace iteration, Rayleigh Quotient Iteration, Rayleigh-Ritz procedure.

AMS subject classifications. 65F15.

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