On a Generalization of the Spectral Dichotomy Method of a Matrix With Respect to Parabolas

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Abstract : This paper presents methods of spectral dichotomy of a matrix which compute spectral projectors on the subspace associated with the eigenvalues external to the parabolas described by a general equation. These methods are modifications of the one proposed in [A. N. Malyshev and M. Sadkane, SIAM J. MATRIX ANAL. APPL. 18 (2), 265-278, 1997] which uses the spectral dichotomy method of a matrix with respect to the imaginary axis. Theoretical and algorithmic aspects of the methods are developed. Numerical results obtained by applying methods presented on matrices are reported.