

A Fully Parallel Method For the Singular Eigenvalue Problem

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In this paper, a fully parallel method for finding some or all finite eigenvalues of a real symmetric matrix pencil (A, B) is presented, where A is a symmetric tridiagonal matrix and B is a diagonal matrix with $b_i > 0$ and $b_i \geq 0, i = 2, 3, \dots, n$. The method is based on the homotopy continuation with rank 2 perturbation. It is shown that there are exactly m disjoint, smooth homotopy paths connecting the trivial eigenvalues to the desired eigenvalues, where m is the number of finite eigenvalues of (A, B) . It is also shown that the homotopy curves are monotonic and easy to follow.
