USING URV–DECOMPOSITIONS TO SOLVE PALINDROMIC AND EVEN EIGENVALUE PROBLEMS

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Abstract

A generalized eigenvalue problem $Ax = \lambda Bx$ is called palindromic, if $B = A^T$. It is called even, if A is symmetric, while B is skew symmetric. The eigenvalues of a palindromic problem come in pairs $(\lambda, \frac{1}{\lambda})$. The eigenvalues of an even problem come in pairs $\pm\lambda$, [1].

A URV decomposition of a matrix A is a factorization of the form $A = URV^*$ where U and V are unitary and R is triangular.

In this talk algorithms for both, the palindromic and the even problem are presented, yielding eigenvalues that fulfill the spectral symmetry even in finite precision arithmetic. Both algorithms are based upon a URV-type matrix decomposition.

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References

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