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Numerical methods for the computation of analytic singular value decompositions. (English)

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ETNA, *Electron. Trans. Numer. Anal.* 1, 72-88 (1993).

Summary: An analytic singular value decomposition (ASVD) for a path of matrices $E(t)$ is an analytic path of factorizations $E(t) = X(t)S(t)Y(t)^T$, where $X(t)$ and $Y(t)$ are orthogonal and $S(t)$ is diagonal. The diagonal entries of $S(t)$ are allowed to be either positive or negative and to appear in any order. For an analytic path matrix $E(t)$ an ASVD exists, but this ASVD is not unique. We present two new numerical methods for the computation of unique ASVD's. One is based on a completely algebraic approach and the other on one-step methods for ordinary differential equations in combination with projections into the set of orthogonal matrices.

MSC:

65F15 Numerical computation of eigenvalues and eigenvectors of matrices

Cited in 8 Documents

Keywords:

analytic singular value decomposition; analytic path matrix

Software:

EISPACK; LAPACK

Full Text: [EuDML](#) [EMIS](#)