

ON SINGULAR VALUES OF PARAMETER DEPENDENT MATRICES

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Abstract

We consider the *Analytic Singular Value Decomposition*, ASVD, of matrix valued functions. ASVD is smooth up to isolated parameter values at which either a multiple singular value or a zero singular value turns up on the path. These exceptional points are called *non-generic*, see [1]. They were classified in [2]. Note that ASVD-computations, see e.g. [1], [2], require information on *all* singular values on the path and hence the algorithms were not able to cope with large sparse input data. In [3], we investigated a pathfollowing of just *one* simple singular value and the corresponding left/right singular vector. A breakdown of the continuation is related to non-generic points on the path. We apply Singularity Theory to analyze and classify these non-generic points. Our analysis will include the questions concerning *structural stability*. The classification will result in precise localization technique of these points. We compare our classification list with [2].

References

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