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THE ANALYTIC SVD: ON THE NON-GENERIC POINTS ON THE PATH*

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Abstract. A new technique for computing the Analytic SVD is proposed. The idea is to follow a branch of just one simple singular value and the corresponding left/right singular vector. Numerical computation may collapse at non-generic points; we will consider the case when the continuation gets stuck due to a nonzero multiple singular value. We interpret such a point as a singularity of the branch. We employ singularity theory in order to describe and classify this point. Since its codimension is one, we meet such a point "rarely."

Key words. SVD, ASVD, continuation, singularity theory.

AMS subject classifications. 65F15

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