



Verified Bounds for Singular Values, in Particular for the Spectral Norm of a Matrix and its Inverse

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Abstract—The singular value decomposition and spectral norm of a matrix are ubiquitous in numerical analysis. They are extensively used in proofs, but usually it is not necessary to compute them. However, there are some important applications in the realm of verified error bounds for the solution of ordinary and partial differential equations where reasonably tight error bounds for the spectral norm of a matrix are mandatory. We present various approaches to this together with some auxiliary useful estimations.