

TWO LOWER BOUNDS ABOUT SINGULAR SUBSPACES

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Abstract. Cai and Zhang establish two lower bounds for $\sin \Theta$ distances with spectral and Frobenius norms (Cai, T. T. and Zhang, A., Rate-optimal perturbation bounds for singular subspaces with applications to high-dimensional statistics, *The Annals of Statistics*, Vol. 46, No. 1 (2018) 60–89). We provide two lower bounds under any unitarily invariant norm. It turns out that our estimation is better in some sense.

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