Rank deficiency and the Euclidean geometry of quantum states
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and Control, University of New Mexico — Quantum state tomography requires
characterizing a collection of parameters whose size grows rapidly with the size of the
quantum system under consideration. In practice one hopes that prior information
about the system can reduce the number of parameters in need of characterization—
for example, one might expect to find high-quality quantum systems in states of low
rank. Interest in tomographic schemes that return rank-deficient estimates leads
us to explore some geometric properties of the space of quantum states that are
analogous to solid angles in three-dimensional Euclidean geometry.

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