

Abstract Submitted  
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**Quantum process estimation via compressed sensing with convex optimization**<sup>1</sup> CHARLES BALDWIN, AMIR KALEV, IVAN DEUTSCH, University of New Mexico — Quantum process tomography is the standard method for diagnosing an unknown process. However, it is extremely resource intensive requiring  $O(d^4)$  measurement outcomes for a  $d$  dimensional Hilbert space. In previous work, researchers have applied compressed sensing techniques allowing us to make use of previous knowledge of the system in order to reduce the resources required. We study different procedures for reconstructing a process matrix from compressed sensing in the form of convex-optimization. We show that different estimation applied to the same data are sensitive to different types of noise. The estimators could, therefore, be used as indicators of particular error models.

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