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**Efficient State Tomography for Continuous Variable Systems**

CHAO SHEN, LUYAO JIANG, STEFAN KRASTANOV, VICTOR V. ALBERT, REINIER HEERES, BRIAN VLASTAKIS, ROB SCHOELKOPF, LIANG JIANG, Yale University — We propose an efficient and error robust scheme for state tomography of a continuous variable system, which is dispersively coupled to a two-level system. Our adaptive tomography protocol offers a significant speed up compared to the conventional Wigner tomography for a practically interesting class of states, such as Schrodinger cat states. In the presence of typical experimental errors, the number of measurements required is still close to the information theoretic limit. Our proposals can be readily implemented in platforms such as superconducting transmon qubit inside a microwave cavity.

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