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Efficient continuous-variable state tomography using Padua points¹ OLIVIER LANDON-CARDINAL, LUKE C.G. GOVIA, AASHISH A. CLERK, McGill University — Further development of quantum technologies calls for efficient characterization methods for quantum systems. While recent work has focused on discrete systems of qubits, much remains to be done for continuous-variable systems such as a microwave mode in a cavity. We introduce a novel technique to reconstruct the full Husimi Q or Wigner function from measurements done at the Padua points in phase space, the optimal sampling points for interpolation in 2D. Our technique not only reduces the number of experimental measurements, but remarkably, also allows for the direct estimation of any density matrix element in the Fock basis, including off-diagonal elements.

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