

Abstract Submitted
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Self-consistent verification of quantum measurements properties¹

MARCUS DA SILVA, Raytheon BBN Technologies — Measurements are an important aspect of quantum mechanics, as they represent the controlled extraction of information about quantum systems. Recent approaches for quantum tomography, such as gate-set tomography, have demonstrated that it is possible to recover a self-consistent description of a quantum system (including measurements) without assuming perfect knowledge about any of its components. However, these approaches typically focus on destructive measurements, and the inherent gauge freedom of quantum experiments makes many of the familiar properties quantum measurements (e.g., efficiency and projectiveness) difficult or impossible to verify. Here we describe how the characterization of *non-destructive* measurements avoids some of these problems, and propose alternate measurement properties that have the advantage of being gauge invariant, so that can be verified through experiments.

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Marcus da Silva
Raytheon BBN Technologies

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