

Abstract Submitted
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Experimentally efficient methods for estimating the performance of quantum measurements EASWAR MAGESAN, PAOLA CAPPELLARO, Massachusetts Institute of Technology — Efficient methods for characterizing the performance of quantum measurements are important in the experimental quantum sciences. Ideally, one requires both a physically relevant distinguishability measure between measurements and a straightforward experimental procedure for estimating the distinguishability measure. We propose the average measurement fidelity and error as distinguishability measures and provide protocols for obtaining bounds on these quantities. The protocols are estimable using experimentally accessible quantities and scalable in the size of the quantum system. We explain why the bounds should be valid in large generality and illustrate the method via numerical examples.

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