

Abstract Submitted
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Simple multi-parameter unitary estimation SERGIO BOIXO, UNM,
ROLANDO SOMMA, LANL — We consider multi-parameter estimation of a general unitary operation acting on a set of qubits. We show a simple quantum circuit that estimates operators at the optimal Heisenberg limit, i.e., achieving a sensitivity for determining the parameters that scales as $1/N$, where N is the number of times the unknown unitary is applied. The circuit makes use of one extra qubit (ancilla) which is initially prepared in a pure state, while the system qubits are initially prepared in the totally mixed state.

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