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The role of state preparation in quantum process tomography KAVAN MODI, AIK-MENG KUAH, CESAR RODRIGUEZ-ROSARIO, GEORGE SUDARSHAN, The University of Texas at Austin — We study the affects of preparation of input states in a quantum tomography experiment. We study two preparation procedures, stochastic preparation and preparation by measurements. It turns out that the stochastic preparation procedure yields linear process maps, while the results obtained from an open system that is initially prepared using von Neumann measurements is shown to be non-linear, and can only be consistently described by a bilinear process map. A new process tomography recipe is derived for preparation by measurement for qubits. The difference between preparing states for an experiment by measurement and by stochastic process is analyzed.

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