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 prepa-
ration of input states in a quantum tomography experiment. We study two prepara-
tion 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.

Kavan Modi
The University of Texas at Austin