

Abstract Submitted
for the DAMOP06 Meeting of
The American Physical Society

Using prior information for continuous measurement quantum state reconstruction. ANDREW SILBERFARB, University of New Mexico, GREG SMITHO, University of Arizona, Tucson, IVAN DEUTSCH, University of New Mexico, POUL JESSEN, University of Arizona Tucson — Density matrices representing quantum states must be positive. This restriction can provide crucial information for a quantum state-tomography procedure, allowing one to reconstruct states for which there is otherwise insufficient information. We explain the use of semidefinite programming techniques to enforce the positivity constraint and present an example of its use in the course of quantum state reconstruction by continuous weak measurement. Both simulated and experimental results for the reconstruction will be discussed for a variety of states of a spin $F=3$ system in cesium, measured through polarization spectroscopy.

Andrew Silberfarb
University of New Mexico

Date submitted: 01 Feb 2006

Electronic form version 1.4