

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Single plane SIC-POVM tomography of double slit qubits** KAREN FONSECA-ROMERO, EDWIN CHAPARRO, DANIELA ANGULO, Universidad Nacional de Colombia - Sede Bogota — The determination of the density matrix of an ensemble of identically prepared quantum systems by means of a series of measurements, known as quantum tomography, is optimal when, for example, the measurement setup is simpler or when the number of copies used is minimum. We consider the problem of optimal quantum tomography, in the sense of a minimal number of outcomes, of double slit qubits of light and matter waves using intensity measurements on a single plane. By modeling spatial qubits as gaussian wavepackets and assuming free evolution from the preparation plane to the detection plane, we show that a judicious choice of the detection plane and of the double slit geometry allows a symmetric, informationally complete, four-state tomography. Finally, we report possible sets of values which could be used in actual experiments.

Karen Fonseca-Romero  
Universidad Nacional de Colombia - Sede Bogota

Date submitted: 31 Oct 2016

Electronic form version 1.4