Performance of single qubit gates in an array of neutral atoms\textsuperscript{1}

YANG WANG, AISHWARYA KUMAR, XIANLI ZHANG, THEODORE A. CORCOVILOS, DAVID S. WEISS, Department of Physics, the Pennsylvania State University, University Park, PA 16802 — We have demonstrated arbitrary single qubit gates on neutral atoms trapped in a $5 \times 5 \times 5$ 3D optical lattice. We will describe two types of gates, both based on a combination of Stark-shifting target atoms with crossed optical beams and microwave pulses. Our poster will discuss gate quality, gate times, scalability issues and cross talk.

\textsuperscript{1}Supported by DARPA, QUEST and ARO.