

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Fabrication and Characterization of Si MOS-Based Triple Quantum Dot Devices HONG PAN, HONGWEN JIANG, University of California, Los Angeles, RUSKO RUSKOV, CHARLES TAHAN, Laboratory for Physical Sciences, UNIVERSITY OF CALIFORNIA, LOS ANGELES COLLABORATION, LABORATORY FOR PHYSICAL SCIENCES COLLABORATION — We have fabricated electrostatically defined, few electron triple quantum dot (TQD) devices in a silicon metal-oxide-semiconductor structure. The devices show good electrical stability and gate controllability. We have obtained charge stability diagrams for identifying the charging states of the TQD. In this talk, we will describe the technical challenges in the TQD fabrication and present the experimental results of tuning three dots into a resonance. We will also discuss the prospect of these devices to encode a spin qubit that uses exchange interaction alone and possible ways to perform coherent manipulations within the tunable range of inter-dot tunneling of these devices. The work is supported by ARO.

Hong Pan
University of California, Los Angeles

Date submitted: 28 Nov 2011

Electronic form version 1.4