Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Si/SiGe quadruple quantum dots with direct barrier gates DANIEL WARD, JOHN GAMBLE, RYAN FOOTE, DONALD SAVAGE, MAX LAGALLY, SUSAN COPPERSMITH, MARK ERIKSSON, University of Wisconsin-Madison — We have fabricated a quadruple quantum dot in a Si/SiGe heterostructure with the aim of demonstrating a two-qubit quantum gate. This device makes use of direct barrier gates, in which individual gates are placed directly over the quantum dots and tunnel barriers. This design enables rational control of both energies and tunnel rates in coupled quantum dots. In this talk we discuss the design, fabrication, and initial characterization of the device. This work was supported in part by ARO (W911NF-12-0607), NSF (DMR-1206915), and the United States Department of Defense. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the US Government.

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Date submitted: 11 Nov 2013 Electronic form version 1.4