Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Charge sensing in Si/SiGe quantum dots using single electron transistors FENG PAN, TIM GILHEART, ALEXANDER RIMBERG, Dartmouth College, Hanover, NH 03755, LISA MCGUIRE, CHRISTIE SIMMONS, University of Wisconsin-Madison, Madison, WI 53706, MARK ERIKSSON, DON SAVAGE, University of Wisconsin-Madison, Madison, WI 53706 — Silicon-based solid-state qubit schemes have obvious economic appeal as well as compelling physical motivations, such as a long spin-spin dephasing time. Proposed silicon qubit schemes include quantum dots coupled to fast readout devices, such as quantum point contacts or single electron transistors (SETs). Recently, Si/SiGe quantum dots defined by Schottky gates deposited on a Si/SiGe heterostructure containing a high mobility two-dimensional electron gas have been characterized. Here we report the integration of a SET with such a Si/SiGe quantum dot. Recent measurements, including transport and sensing of the dot charge with the SET, will be discussed. [1] Slinker, K. A. et al. New J. Phys. 7 246 (2005) [2] Klein, L. J. et al. J. Appl. Phys. 99, 23509 (2006) [3] Sakr, M. R. et al. Appl. Phys. Lett. 87, 223104 (2005) [4] Berer, T. et al. Appl. Phys. Lett. 88, 162112 (2006)

Tim Gilheart
Dartmouth College

Date submitted: 20 Nov 2006 Electronic form version 1.4