Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Spin measurement in an undoped Si/SiGe double quantum dot incorporating a micromagnet XIAN WU, JONATHAN PRANCE[1], DANIEL WARD, JOHN GAMBLE, DONALD SAVAGE, MAX LAGALLY, MARK FRIESEN, SUSAN COPPERSMITH, MARK ERIKSSON, University of Wisconsin-Madison — We present recent measurements on a double dot formed in an accumulation mode undoped Si/SiGe heterostructure. The double dot incorporates a proximal micromagnet to generate a stable magnetic field difference between the quantum dots. By measuring the ground state and excited state spectrum of this double dot as a function of in-plane magnetic field we identify the (1,1) and (2,0) charge degeneracy point. Using single-shot readout we measure transitions between the (2,0) singlet and the (1,1) triplet states. This method enables the identification of the crossing as a function of detuning between the (1,1) triplet states (both the first and second excited states) and the (2,0) singlet state. We also present data showing that this undoped device has good charge stability and can be measured with high frequency (up to 500MHz) voltage pulses.

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Date submitted: 09 Nov 2012 Electronic form version 1.4