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Radio frequency charge sensing in a Si double quantum dot device[1] C. PAYETTE, K. WANG, Y. DOVZHENKO, J.R. PETTA, Department of Physics, Princeton University — Coherent spin manipulation has recently been demonstrated in a variety of silicon based devices.[2,3] We fabricate accumulation mode double quantum dot devices and use radio frequency reflectometry to perform fast charge sensing in the few-electron regime. Our devices employ a nearby single quantum dot as a charge sensor. Charge transitions in the double dot result in a $\sim$60% relative change in the charge sensor conductance when the sensor is operated in the Coulomb blockade regime, compared to a $\sim$1% conductance change when the sensor is operated as a traditional quantum point contact. Further development of these techniques may enable us to perform single shot spin readout in a silicon quantum dot.

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[2]B. M. Maune *et al.*, Nature **481**, 344 (2012).
[3]J. J. Pla *et al.*, Nature **489**, 541 (2012).

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