

Abstract Submitted
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Si/SiGe Quantum Dot Charge Sensing with Radio Frequency Single-Electron Transistor¹ MINGYUN YUAN, ZHEN YANG, A.J. RIMBERG, Dartmouth College, M.A. ERIKSSON, D.E. SAVAGE, University of Wisconsin — We report the operation of a radio frequency superconducting single-electron transistor (rf-SSET) as a charge sensor for single and double Si/SiGe quantum dots (QDs). The charge sensitivity is on the order of 10^{-5} to $10^{-6} e/\sqrt{Hz}$. In the reflectometry set-up, real-time electron tunneling events in a single QD are measured, which demonstrates a fast charge detection time of a few tens of microseconds. The stability diagram of a double QD is mapped out with the averaged reflected power of the rf-SSET. In addition, electron temperature is measured in a dilution refrigerator to be around 150 mK, allowing us to study spin blockade and Kondo effect.

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