

Abstract Submitted
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Scaling behavior of spin-dependent scattering off Neutral Donors in Silicon Field-Effect Transistors¹ C. C. LO, J. BOKOR, University of California, Berkeley, T. SCHENKEL, Lawrence Berkeley National Laboratory, J. HE, A. M. TYRYSHKIN, S.A. LYON, Princeton University — Spin-dependent scattering of conduction electrons by neutral impurities is a promising route towards donor nuclear spin-state readout for donor qubits in silicon. Using electron spin resonance techniques, the donor nuclear spin-state can be extracted from the position of the resonance signal. Contrary to readout schemes involving Coulomb/spin blockade or other single electron phenomenon, spin-dependent scattering can be observed and studied in the presence of an ensemble of donors. In our experiments we study neutral impurity scattering of two-dimensional conduction electrons by donor impurities in field-effect transistors [1]. In this talk, we will discuss the scaling behavior of donor resonance signals using electrically detected magnetic resonance techniques in devices with different sizes. [1] C. C. Lo et al, *App. Phys. Lett.*, 91, 242106 (2007)

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