Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Quantum Dot Spin Qubits: Decoherence from Nearby Impurities[1] MARK FRIESEN, University of Wisconsin - Madison — We study the undesired exchange coupling between quantum dot spin qubits and other nearby electronic spins trapped on dopant impurities. Such coupling is a source of decoherence. The problem is treated in the context of a 2DEG heterostructure, with strong, local electric fields. For silicon-based systems, we develop the theory of the Stark effect for P:Si in a degenerate conduction band. We investigate the resulting Stark energy spectrum and the field dependence of the valley composition parameters.

[1]Work supported by ARDA/ARO and NSF-ITR.

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Date submitted: 01 Dec 2004 Electronic form version 1.4