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Dephasing of exchange coupled spin qubits by electron-phonon coupling[1] XUEDONG HU, University at Buffalo, SUNY — Exchange coupled spin qubits in semiconductor nanostructures can be dephased by *charge fluctuations* in the semiconductor environment because of the fundamental Coulombic nature of the Heisenberg coupling. Even when charge fluctuations are suppressed through material improvement, such orbital-degree-of-freedom related fluctuations can still come from electron-phonon interaction in the semiconductor. Here we explore pure dephasing between the two-electron singlet and triplet states for two exchange-coupled spin qubits in a double quantum dot.

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