

Condensed Matter Theory Center Seminar



Friday, February 16
11:15 am – 12:30 pm
2205 John S. Toll Physics Building

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“Why do spin qubits dephase?”

Abstract: Isolated spins in semiconductors can retain their quantum phase coherence for times exceeding one second. Such long coherence times make spin qubits a versatile platform for exploring quantum information processing and condensed matter physics. However, most schemes to entangle spin qubits involve endowing the spin with an electric dipole moment, rendering its energy splitting sensitive to charge noise in the semiconductor. I will give an overview of charge noise in semiconductor spin qubits, including what we know and do not know about it, and I will discuss a new strategy to entangle spin qubits using large magnetic field gradients to suppress the effects of charge noise. Using this technique, we demonstrate an entangling gate between spin qubits with a fidelity of 90%.

Host: Robert Throckmorton

Web: <http://www.physics.umd.edu/cmte/seminars.html>

