

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Studies of electron spin in GaAs quantum dots DANIEL CRAFT, JOHN COLTON, TYLER PARK, PHIL WHITE, Brigham Young University — We have studied electron spins in GaAs quantum dots with a pump-probe technique that normally yields the T1 spin lifetime, the time required for initially polarized electrons to relax and randomize. Using a circularly polarized laser tuned to the wavelength response of the quantum dot we can “pump” the spins into alignment. After aligning the spins we can detect them using a second, linearly polarized “probe” laser. By changing the delay between the two lasers we can trace out the spin response over time. In contrast with other samples (bulk GaAs and a GaAs quantum well), where the spin response decayed exponentially with time, initial data on the quantum dots has shown an unexpected, oscillating behavior which dies out on the order of 700 ns, independent of both temperature and magnetic field.

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Date submitted: 10 Dec 2012

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