Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Time-resolved measurements of single electron spins using continuous wave lasers[1] PATRICK IRVIN, YANJUN MA, JEREMY LEVY, Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA 15260, JESSE BEREZOVSKY, DAVID D. AWSCHALOM, Department of Physics, UC Santa Barbara, Santa Barbara, CA 93106 — Applications such as spin-based quantum computing require that the dynamics of single spins are monitored. Single spins produce a small signal and measurement is further complicated by the background from the large number of neighboring spins. We have developed a time-resolved Kerr rotation technique that uses continuous wave lasers. This technique is able to resonantly address a particular spin. Furthermore, it provides an efficient means of data collection that allows for more signal averaging. Finally, we decrease the background and increase the light-matter interaction by utilizing a solid-immersion lens. We will describe our recent efforts to measure single spins in GaAs/AlGaAs fluctuation-type quantum dots.

[1]This work was supported by the National Science Foundation.

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Date submitted: 10 Dec 2008 Electronic form version 1.4