Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Magneto-optical properties of core/shell quantum dots doped with radial position controlled magnetic impurities[1] GARY SANDERS, CHRIS STANTON, University of Florida — We present a theory for the electronic and magneto-optical properties of spherical quantum dots consisting of an inner core surrounded by an outer shell. This core/shell quantum dot is doped by magnetic Mn impurities all of which are implanted at a preselected radius on a spherical surface withinthe dot. The spherical symmetry of the dot is broken by the application of an external magnetic field. The electronic states in the presence of a magnetic field are treated in an effective mass model which includes the s-d and p-d exchange interaction with localized Mn d electrons. The strain in the quantum dot due to lattice mismatch between core and shell regions is assumed to be pseudomorphic and the effect of this strain field on the electronic states is also included. The optical properties of the quantum dot are computed using the effective mass electronic states and Fermi's golden rule.

[1]Supported by NSF through grant DMR-1105437.

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Date submitted: 13 Nov 2013 Electronic form version 1.4