

Abstract Submitted
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GHz Optical Spin Transceiver¹ PATRICK IRVIN, PETRU FODOR, JEREMY LEVY, University of Pittsburgh, COSMQC TEAM — The ability to measure spin coherence in semiconductor nanostructures is important for determining the feasibility of spin-based quantum computing architectures. Quantum dots are often referred to as 'solid-state atoms' because of their sharp absorption and emission lines that resemble those of single atoms. Electron spins localized on these quantum dots may be useful for storing quantum information, but their small optical cross section makes detection challenging. In order to take advantage of resonant enhancement of spin detection using the magneto-optical Kerr effect, we have developed a GHz Optical Spin Transceiver (GHOST) which uses a cw optical probe to measure Kerr signals in the time domain with 5 GHz bandwidth. Initial results will be presented for a test sample consisting of n-doped GaAs.

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