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Spin Dynamics in InAs Quantum Dots JANICA WHITAKER, ALLAN BRACKER, DANIEL GAMMON, THOMAS KENNEDY, Naval Research Laboratory — Spin coherence in InAs Self-Assemble Quantum Dots (SAQD's) could be useful for optical delay lines and quantum information technology. Very uniform dots and a very accurate measurement of dephasing processes are required to realize these possibilities. To this effect we report decoherence times in InAs SAQD. Here we describe measurements of spin dynamics from a 17 layered nominally undoped wafer of InAs SAQDs with a varying dot-size. We used Time Resolved Kerr Rotation (TRKR) for a wavelength resonant with the 3D InAs Stranski-Krastanow strain mediated quantum dots. Response is observed from 0 to 5 T that corresponds to a freely precessing spin with g = 0.45, a 1.2 ns lifetime at B=0 that decreases with B, and a sine-like phase. We attribute this spin to an electron from either the ground state of a negative trion or the excited state of a positive trion. The dots are dots unintentionally doped from background doping in the MBE chamber. Work supported in part by ONR, NSA/ARO, and DARPA/QUIST. JW is an NRC/NRL Postdoctoral Research Associate.

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