Optical hyperpolarization and inductive readout of $^{31}P$ donor nuclei in natural abundance single crystal $^{29}Si$ THOMAS ALEXANDER, HOLGER HAAS, RAHUL DESHPANDE, Institute for Quantum Computing, University of Waterloo, PATRYK GUMANN, IBM Research, DAVID CORY, Institute for Quantum Computing, University of Waterloo — We optically polarize and inductively detect $^{31}P$ donor nuclei in single crystal silicon at high magnetic fields (6.7T). Samples include both natural abundance $^{29}Si$ and an isotopically purified $^{28}Si$ sample. We observe dipolar order in the $^{29}Si$ nuclear spins through a spinlocking measurement. This provides a means of characterizing spin transport in the vicinity of the $^{31}P$ donors.

Thomas Alexander
Univ of Waterloo

Date submitted: 29 Jan 2016  Electronic form version 1.4