

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Long-lived spin coherence and nuclear modulation effects of the silicon vacancy in 4H-SiC at room temperature** SAMUEL CARTER, ONEY SOYKAL, SOPHIA ECONOMOU, EVAN GLASER, Naval Research Laboratory — The silicon vacancy in silicon carbide is currently being considered for applications in quantum information and sensing, with several studies showing room temperature spin polarization and manipulation. We perform room temperature optically-detected magnetic resonance and spin echo measurements on an ensemble of silicon vacancies to better characterize the nature of this system and determine the spin coherence properties. The spin coherence time is shown to be dependent on magnetic field, varying from a few  $\mu\text{s}$  at low fields to longer than 30  $\mu\text{s}$  at 50 mT. Strong spin echo modulation that varies with magnetic field is also observed. The modulation is attributed to the interaction with nearby nuclear spins and is well-described by a theoretical model.

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Date submitted: 14 Nov 2014

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