

Abstract Submitted  
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**Temperature Dependence of Electron Spin Coherence in 4H-SiC<sup>1</sup>**

MARGARET MORRIS, Brandeis University, JOHN COLTON, JACOB EMBLEY, Brigham Young University, SAMUEL CARTER, Naval Research Laboratory — Silicon carbide is currently being considered as a promising material for the creation of electron spin based qubits to be used in quantum computing. We examine the ability of electrons in Silicon vacancies in 4H-SiC to remain coherent, which will help us learn whether they will be able to store information long enough to be useful in quantum computing applications. Using a spin echo technique, we measure T2 lifetimes in 4H-SiC for temperatures ranging from 8K to room temperature. The Si vacancies were created through proton irradiation in two different concentrations. We have found a significant temperature dependence in both samples with a maximum lifetime of 77.6 microseconds +/- 5.9 in the sample with more concentrated Si vacancies.

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