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Measurement of Spin Coherence Times in Proton Irradiated 4H-SiC JACOB EMBLEY, JOHN COLTON, Brigham Young University, SAM CARTER, Naval Research Lab, KYLE MILLER, Brigham Young University, MARGARET MORRIS, Brandeis University — Silicon vacancy defects in silicon carbide (SiC) have potential for use in spintronic devices. We used optically detected magnetic resonance and a spin echo technique to measure T_2 spin coherence times for electrons in 4H-SiC. These experiments were performed at a magnetic field strength of 0.371 T and a resonant microwave frequency of 10.5 GHz. Each sample contained silicon vacancy defects that were formed through irradiation with 2 MeV protons at unique fluences (10^{13} and 10^{14} cm^{-2}). Measurements for each sample were made across a range of temperatures, from 8 K to room temperature. While we generally observed a decrease in spin coherence time with temperature, we also observed a range of temperatures (from 60 K to 160 K) for which the overall trend was reversed.

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