

Abstract Submitted
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Electron spin lifetimes in $1e14 \text{ cm}^{-3}$ proton irradiated SiC¹ KYLE MILLER, JOHN COLTON, Brigham Young University, SAM CARTER, Naval Research Lab — Silicon vacancies created by irradiation with protons or electrons in 4H silicon carbide (SiC) are potential spintronic devices. In our experiments, electron spin states are polarized with 870 nm laser light, and we manipulate the spins with resonant microwaves at 10.47 GHz and a magnetic field of 350 mT. Spin states are detected by the change in photoluminescence from the silicon defects, and lifetimes are calculated through optically detected spin resonance and electron spin echo. We have measured T_2 lifetimes in $1e14 \text{ cm}^{-3}$ proton irradiated SiC to be about $16 \mu\text{s}$ at various temperatures, fairly independent with temperature. Future plans include studying how defect density will impact spin lifetimes.

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