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Laser spectroscopy & optical pumping of matrix-isolated rubidium atoms ANDREW KANAGIN, PAWAN PATHAK, SAMEER REGMI, CHASE HARTZELL, JONATHAN WEINSTEIN, Univ of Nevada - Reno — Solid state systems are of particular interest in quantum information science due to their experimental simplicity. Atoms planted in noble gas or similar environments are a promising system to explore, offering high spin densities and potentially long spin coherence times [1-2]. We have implanted rubidium atoms within solid crystals of cryogenic argon and neon [1]. Furthermore, we have grown crystals with thicknesses >10<sup>4</sup> m and with rubidium densities of  $10^{17}$  cm<sup>-3</sup> [3]. As such, they are a promising environment for quantum information experiments, as well as sensors such as magnetometers. We will report on measurements of spin lifetimes and discuss our future endeavors. \* weinstein@physics.unr.edu

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> Andrew Kanagin Univ of Nevada - Reno

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