

Abstract Submitted  
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**Transverse spin relaxation of rubidium atoms in solid parahydrogen**<sup>1</sup> SUNIL UPADHYAY, JONATHAN WEINSTEIN, University of Nevada, Reno — We grow parahydrogen matrices doped with rubidium atoms at densities on the order of  $10^{17}$  cm<sup>-3</sup>. We prepare the atomic spin state of the implanted rubidium atoms with optical pumping, and measure the spin state with optical spectroscopy. The combination of high atomic densities and optical addressability make this a promising experimental platform for applications such as magnetometry. We measure  $T_2^*$  and  $T_2$  times for this system using free-induction decay and spin-echo techniques, and observe a strong dependence of  $T_2$  on the density of orthohydrogen impurities in the parahydrogen matrix.

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