Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Properties of alkali atoms trapped in solid parahydrogen[1]
SUNIL UPADHYAY, UGNE DARGYTE, JONATHAN WEINSTEIN, University of Nevada, Reno — Alkali atoms trapped in solid parahydrogen exhibit excellent spin coherence properties at high electron spin densities. We have studied potassium, rubidium, and cesium atoms trapped in parahydrogen. Different species exhibit order-of-magnitude differences in optical pumping and ensemble spin dephasing times. Using dynamical decoupling techniques, the spin coherence time can be extended by orders of magnitude. These properties and other measurements in parahydrogen will be presented. Future applications in quantum sensing and precision measurement will be discussed.

[1]This material is based upon work supported by The National Science Foundation under Grants PHY 1607072 and 1912425.

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Date submitted: 30 Jan 2020 Electronic form version 1.4