

Abstract Submitted
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Quantum Degenerate Strontium in a 3D Optical Lattice¹ J.A. AMAN, B.J. DESALVO, T.C. KILLIAN, Rice Univ — We present our experiments with quantum degenerate neutral strontium in a 3-D optical lattice formed with 532nm light. Precision control and manipulation of quantum degenerate gases in optical lattices allows for the realization and investigation of tunable many-body systems. Strontium, in particular, has been studied extensively in optical lattices due to the narrow $5s^2^1S_0 \rightarrow 5s5p^3P_j$ transitions for use as an atomic clock. However, in the present work, we take advantage of these narrow transitions together with strontium's unique isotopic properties to investigate interaction regimes inaccessible to alkali atoms. Among the topics we plan to explore are formation of ultracold molecules using an optical Feshbach resonance as well as the effects of dissipation on atom dynamics.

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James Aman
Rice Univ

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