Abstract Submitted
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Field dependent studies of inelastic scattering properties in an ultracold mixture of lithium and metastable ytterbium[1] RICHARD ROY, WILLIAM DOWD, RAJENDRA SHRESTHA, ALAN JAMISON, ALAINA GREEN, SUBHADEEP GUPTA, University of Washington — The ultracold mixture of excited state alkaline-earth-like and ground state alkali atoms is a novel system in which to study two-body and few-body physics. Unlike the ground state of ytterbium, the long lived metastable $^3P_2$ state is predicted to support broad magnetic Feshbach resonances with the ground state of lithium, offering a promising route towards the production of ultracold heteronuclear ground state dimers with both magnetic and electric dipole moments. We report on measurements of the field dependence of inelastic scattering properties in this mixture over a wide range of magnetic fields. We also present progress towards a three dimensional optical lattice for the Li-Yb mixture. A tunable optical lattice provides useful tools to control and study collisions in our system, can enhance molecule production efficiency, and can serve as a platform for quantum simulation and information science. Additional potential studies include the use of Yb as an impurity probe of strongly-interacting Li fermions.

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