

Abstract Submitted  
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**Toward Ultracold Mixtures and Polar Molecules from Lithium and Ytterbium Atoms** ALEXANDER KHRAMOV, ANDERS HANSEN, WILLIAM DOWD, VLADYSLAV IVANOV, SUBHADEEP GUPTA, University of Washington — We are building a system for the combined cooling and trapping of lithium and ytterbium atoms. We plan to study interspecies interactions and also prepare diatomic polar LiYb molecules. Such molecules are important as novel strongly interacting quantum systems, for sensitive tests of the standard model of physics, and as building blocks for quantum computers. Our apparatus is based on separate effusive ovens and Zeeman slowers for the two species, a common ultrahigh vacuum chamber for simultaneous trapping of the two species, and the requisite magnetic and optical fields to induce strong interactions between trapped atoms. We will present our experimental setup including the achievement of simultaneous magneto-optical trapping of lithium and ytterbium atoms, and report on our latest experiments on dual species trapping and cooling in a far off resonance optical trap. This work is supported by the National Science Foundation, Sloan Research Foundation, and the University of Washington Royalty Research Fund.

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