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Simultaneous Optical Trapping of Lithium and Ytterbium Atoms[1] VLADYSLAV IVANOV, ALEXANDER KHRAMOV, ANDERS HANSEN, WILLIAM DOWD, SUBHADEEP GUPTA, University of Washington — Simultaneous trapping of different atomic species forms the starting point for experiments probing strong interactions and aspects of superfluidity in mass-imbalanced ultracold mixtures, as well as the synthesis of dipolar molecules through interspecies scattering resonances. Our choice of lithium (Li) and ytterbium (Yb) atoms as the two constituent species is based on several reasons. Both Li and Yb possess stable bosonic and fermionic isotopes which can be independently brought to quantum degeneracy. Li is a one-electron atom and Yb is a two-electron atom, allowing the use of species-selective trapping methods with magnetic fields, magnetic trapping of diatomic LiYb molecules, and a large molecular electric dipole moment for studies of strongly dipolar gases. Ultracold polar LiYb is also a promising candidate for a sensitive electron electric dipole moment (EDM) measurement. We have achieved simultaneous magneto-optical trapping of lithium and ytterbium atoms by loading Zeeman slowed atomic beams from two separate beamlines. We will report on our experimental setup and latest experiments on trapping and cooling of both species in a far off resonance optical trap.

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