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In situ imaging of Quantum Degenerate ^{133}Cs - ^6Li Bose-Fermi Mixture GEYUE CAI, KRUTIK PATEL, University of Chicago, BRIAN DE-SALVO, Indiana University, CHENG CHIN, University of Chicago — We report our experimental progress on the investigation of Bose-Einstein condensates of ^{133}Cs atoms immersed in degenerate Fermi gases of ^6Li atoms. We employ a high resolution imaging system and a digital micro-mirror device (DMD) in order to detect and control Bose-Fermi mixtures. The microscope with numerical aperture of 0.6 is expected to reach a resolution below 1 micron for both species. In addition, the DMD is capable of preparing generic optical potentials at the same length scale. The system enables novel schemes to characterize the long range nature of the fermion-mediated interactions between bosons and offers a versatile platform to resolve new quantum phases and dynamics of interacting Bose-Fermi mixtures.

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