

Abstract Submitted
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A dual-species hybrid MOT/Paul trap¹ TYLER BENNETT, SARAH HILL, ROBERT SPRENKLE, SCOTT BERGESON, Brigham Young University — We report on progress to create a hybrid dual-species calcium and ytterbium magneto-optical trap (MOT) superimposed onto a linear Paul trap. This configuration will allow us to trap neutral atoms in the MOT, ionize them using ns-duration pulsed lasers, and then trap the resulting plasma in the Paul trap. By driving the trap at two frequencies we will eliminate centrifugal separation inherent in simultaneous trapping of different mass ions. The primary goal of this experiment is to measure collisional momentum transfer between the Yb^+ and Ca^+ ions as a means of determining the Coulomb logarithm in a strongly coupled plasma environment. Using carefully aligned probe laser beams and by spatially imaging ion fluorescence, we anticipate being able to distinguish between the coherent ion micromotion and the thermal ion motion in the plasma.

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