

Abstract Submitted  
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**A dual-species MOTion trap**<sup>1</sup> 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 quadrupole trap. This MOTion trap will allow us to trap neutral atoms in the MOT, ionize them using ns-duration pulsed lasers, and trap the resulting plasma in the quadrupole trap. 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  $\text{Yb}^+$  and  $\text{Ca}^+$  ions as a means of determining plasma transport properties in a strongly coupled plasma environment. Using carefully aligned probe laser beams and spatial imaging of the ion uorescence, we anticipate being able to distinguish between the coherent ion micromotion and the thermal ion motion in the plasma.

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