

Abstract Submitted
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A magneto-optical trap with octupolar symmetry for sub-Doppler cooling¹ JONATHAN WRUBEL, WILLIAM TAVIS, KELLAN KREMER, Creighton University — We present our progress in implementing a 3D magneto-optical trap (MOT) with octupolar symmetry in a laser-cooling experiment for potassium. Because of the reduced symmetry of the trap, simulations suggest the trapping volume will be approximately 1000 times larger than a standard quadrupolar 3D MOT. In addition, we expect sub-Doppler cooling mechanisms to be operative over an enlarged central region because of weak magnetic fields. This sub-Doppler cooling is expected without significant loss of atoms due to the residual field gradient near the edges. We discuss the experimental design we have implemented while preserving optical access, as well as simulations of the cooling process and trap depth of the MOT.

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