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A Magneto-Optical Trap for Diatomic Molecules MARK YEO, JILA, University of Colorado, Boulder, MATTHEW HUMMON, JILA, University of CO, Boulder, ALEJANDRA COLLOPY, BENJAMIN STUHL[1], JILA, University of Colorado, Boulder, BOERGE HEMMERLING, EUNMI CHAE, GARRETT DRAYNA, AAKASH RAVI, Department of Physics, Harvard University and Harvard-MIT Center for Ultracold Atoms, MAXIMILIAN KUHNERT, Vienna Center for Quantum Science and Technology, Atominstitut, TU Wien, MAURICE PETZOLD, Institut für Quantenoptik, Leibniz Universität Hannover, JOHN DOYLE, Department of Physics, Harvard University and Harvard-MIT Center for Ultracold Atoms, JUN YE, JILA, NIST and the University of Colorado, Boulder — The magneto-optical trap (MOT) has long been the workhorse for atomic physics and is a powerful technique to rapidly produce ultracold, dense samples of atoms. Extending this technique to produce cold, dense samples of a diverse set of molecules will revolutionize the study of strongly interacting quantum systems, precision measurement and physical chemistry. In this work, we will report on progress towards the realization of a 3 dimensional MOT for the polar molecule YO. We are implementing a chirped frequency laser slowing scheme, where the buffer gas cooled molecules are slowed to a trappable velocity of 10 m/s. The 3D trapping is generated with a quasi-cycling transition and an oscillating quadrupole magnetic field.

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