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A Magneto-Optical Trap for Diatomic Molecules MARK YEO, MATTHEW HUMMON, ALEJANDRA COLLOPY, JILA, University of Colorado, Boulder, BENJAMIN STUHL, Joint Quantum Institute, NIST and University of Maryland, BOERGE HEMMERLING, GARRETT DRAYNA, EUNMI CHAE, AAKASH RAVI, HSIN-I LU, JOHN DOYLE, Harvard University, JUN YE, JILA, 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, densesamples 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 demonstrate transverse magneto-optical trapping, in 1D and 2D, of a YO molecular beam using a quasi-cycling transition and an oscillating quadrupole magnetic field. We will then report on progress made towards the realization of a 3 dimensional molecular MOT.

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