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One dimensional magneto-optical compression of a cold CaF molecular beam[1] EUNMI CHAE[2], LOIC ANDEREGG, BENJAMIN AUGENBRAUN, AAKASH RAVI, BOERGE HEMMERLING[3], NICHOLAS HUTZLER, The department of Physics, Harvard University and Centre for Ultracold Atoms, ALEJANDRA COLLOPY, JUN YE, JILA, National Institute of Standards and Technology and University of Colorado, Boulder, WOLFGANG KETTERLE, The department of Physics, Massachusetts Institute of Technology and Centre for Ultracold Atoms, JOHN DOYLE, The department of Physics, Harvard University and Centre for Ultracold Atoms — We demonstrate one dimensional, transverse magneto-optical compression of a cold beam of calcium monofluoride (CaF). By continually alternating the magnetic field direction and laser polarizations of the magneto-optical force (RF-MOT), a photon scattering rate of 2π x 0.4 MHz is achieved. A 3D model for this RF-MOT, validated by agreement with data, predicts a 3D RF-MOT capture velocity for CaF of 5 m/s.

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