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Optical slowing of calcium monofluoride molecules AAKASH RAVI, EUNMI CHAE, BOERGE HEMMERLING, LOIC ANDEREGG, BENJAMIN AUGENBRAUN, GARRETT DRAYNA, NICHOLAS HUTZLER, Harvard University, ALEJANDRA COLLOPY, YEWEI WU, SHIQIAN DING, JUN YE, JILA, University of Colorado Boulder, WOLFGANG KETTERLE, Massachusetts Institute of Technology, JOHN DOYLE, Harvard University — We report white-light slowing of calcium monofluoride molecules. A single main laser (606 nm) plus two additional vibrational repump lasers (628 nm) are employed. The slowing lasers are spectrally broadened to address the molecules' velocity spread and hyperfine splittings. We use a background-free two-photon fluorescence detection scheme to make high signal-to-noise measurements of our molecular beam's longitudinal velocity distribution. This method is applied to slow CaF produced by a two-stage cryogenic buffer gas beam source by > 30 m/s to near the capture velocity of a molecular magneto-optical trap (MOT). Due to the presence of magnetic dark states which inhibit optical cycling, we will use an AC-MOT. We characterize the performance of this AC-MOT used in the trapping of Li and Yb.

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