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Towards slowing and trapping of a buffer-gas beam of CaF AAKASH RAVI, LOIC ANDEREGG, EUNMI CHAE, GARRETT DRAYNA, BOERGE HEMMERLING, NICK HUTZLER, Harvard University, WOLFGANG KETTERLE, Massachusetts Institute of Technology, ALEJANDRA COLLOPY, MATTHEW HUMMON, BO YAN, MARK YEO, JUN YE, JILA, University of Colorado Boulder, JOHN DOYLE, Harvard University — Cryogenic buffer-gas beam (CBGB) sources [1] are now routinely used to create slow atomic and molecular beams. While atoms from a CBGB can be loaded directly into a magneto-optical trap (MOT) without any Zeeman slower [2], additional slowing stages are required to load molecules due to their lower capture velocity (< 10 m/s). Here, we report on our progress to slow a beam of CaF molecules using laser light at 606 nm in combination with two vibrational repumpers at 548 nm and 628 nm. The slowing lasers are broadened to cover the source's velocity spread and to remain resonant while molecules are being slowed. Our approach for slowing is similar to those for SrF and YO [3-5]. Since CaF requires remixing of the magnetic sub-states to keep it in the optical cycle, we additionally implement an alternating-current (AC) MOT for trapping.

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[5] M. Yeo, et al., arXiv:1501.04683 (2015)

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