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Magnetic trapping of Stark decelerated OH BENJAMIN LEV, BRIAN SAWYER, ERIC HUDSON, BENJAMIN STUHL, MANUEL LARA, JOSH DUNN, CHRIS GREENE, JOHN BOHN, JUN YE, JILA/NIST/U. of Colorado — Ultracold, ground state polar molecules promise to revolutionarily impact AMO physics with the study of ultracold molecular collisions and quantum chemistry, implementation of quantum information processing, and the possibility of lattice-spin model simulations. Our research has focused on the use of a Stark decelerator to slow a supersonic expansion of OH. At a mean packet velocity of 20 m/s, we obtain a $\sim$10 mK sample at densities greater than 10^5 cm^{-3}. The decelerator terminates at an anti-Helmholtz coil pair which we have used to demonstrate magnetic trapping of the polar molecule OH in the presence of tunable electric fields. We will present our latest results on trapping dynamics as well as discuss the feasibility of molecular cavity-assisted laser cooling, which may provide access to the ultracold regime.

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