

Abstract Submitted
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Towards dipolar collisions between magnetically trapped OH and buffer gas cooled ND₃ MARK YEO, BRIAN SAWYER, BENJAMIN STUHL, JILA / University of Colorado, DAVID PATTERSON, JOHN DOYLE, Harvard University, JUN YE, JILA / University of Colorado — Cold molecule research has been progressing at a rapid pace with many new and exciting topics being developed. The long range dipole-dipole interaction between cold polar molecules allows us to exquisitely control their collisional dynamics using an external electric field. We have successfully trapped Stark decelerated OH molecules in a permanent magnetic trap at a temperature of 70 *mK* and a density of 10^6 cm^{-3} . We have also developed a cold, bright continuous beam of polar molecules by buffer gas cooling and electrostatically guiding ND₃. This yields a flux of 10^{10} molecules per second at a temperature of $\sim 5 \text{ K}$. Harnessing these two techniques, we report progress towards the observation of collisions between these two dipolar species. Furthermore, we investigate the tuning of the collision cross sections via a variable external electric field superposed on the magnetic trap.

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