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Cold collision of co-trapped ND_3 molecules and Rb atoms NOAH FITCH, PAUL PARAZZOLI, HEATHER LEWANDOWSKI — Interest in cold molecular collisions has increased in recent years due to the development of new techniques that allow for a high level of control over both the internal and external degrees of freedom of molecular beams. Our chosen technique for creating and controlling cold molecules is Stark deceleration. This technique utilizes time-varying inhomogenous electric fields to slow a beam of polar moleucles for subsequent trapping. After deceleration, our ND_3 molecules are loaded into a trap consisting of a static quadrupole electric field. A magnetic trap of Rb atoms is then physically superimposed with the molecular trap where collisions between the two species can be studied. We report on studies using both $^{14}ND_3$ and $^{15}ND_3$ with collision partners consisting of $^{87}Rb_{F=1}$, $^{87}Rb_{F=2}$, $^{85}Rb_{F=2}$, and $^{85}Rb_{F=3}$.

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