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Laser cooling and trapping CH radicals JOSEPH SCHNAUBELT, JAMIE SHAW, DANIEL MCCARRON, Univ of Connecticut - Storrs — Molecular laser cooling and trapping offers a general technique to produce ultracold molecules and is applicable to a variety of species with different internal structures. Our latest experiment aims to capitalize on this generality by laser cooling and trapping CH radicals for tests of ultracold organic chemistry. The low mass and blue optical transitions in this species lead to high recoil velocities which can significantly reduce the number of scattered photons required to slow and trap a molecular beam from a cryogenic buffer gas beam source. Our proposed optical cycling schemes use bichromatic laser light on the $X^2\Pi$-$A^2\Delta$ transition to apply coherent stimulated forces and the radiative force from optical cycling on the $X^2\Pi$-$B^2\Sigma^-$ transition. We will present the challenges associated with rotational branching in this species alongside an update on our experimental progress.

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