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Single weakly-bound NaCs molecule in optical tweezers YICHAO YU, JESSIE ZHANG, KENNETH WANG, LEWIS PICARD, WILLIAM CAIRNCROSS, KANG-KUEN NI, Harvard University — Ultracold polar molecules have long-range, anisotropic, and tunable interactions providing a versatile platform for studying quantum many-body physics, quantum information, and quantum simulation. Optical tweezers allow us to trap atoms and molecules in flexible configurations and fully control their quantum states. The formation of weakly bound molecules in optical tweezers is an important intermediate step towards strongly interacting ground state molecules. I will present the two approaches we took to create the weakly bound molecules from atoms in the optical tweezer. I will discuss the challenges and results on creating Feshbach molecules and progress towards optical transfer to the vibrational ground state.

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