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Ultracold Polar Molecules

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Ultracold gases are powerful model systems for exploring interesting quantum many-body phenomena, and ultracold polar molecules open the possibility of studying systems with long-range interactions. At JILA, we make fermionic KRb molecules starting from an ultracold gas mixture of K and Rb atoms. We have observed and investigated atom-exchange chemical reactions in the ultracold polar molecule gas, and we are exploring polar molecules in optical lattice traps.