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**Ultracold Chemical Reactions of KRb Molecules** DAVID GRIMES, YU LIU, MING-GUANG HU, ANDREI GHEORGHE, KANG-KUEN NI, Harvard University — Our goal is to understand the details of the quantum dynamics of chemical reactions that take place at ultracold ( $< 1 \mu\text{K}$ ) temperatures. These dynamics take place on the potential energy surface (PES) of the reaction and fundamentally determine both the products of the chemical reaction and their quantum states. Our experimental approach combines techniques from AOM physics and physical chemistry in order to prepare reactant molecules in a single quantum state and detect product molecule quantum state distributions. We apply this approach to the chemical reaction  $\text{KRb} + \text{KRb} \rightarrow \text{K}_2 + \text{Rb}_2$  in the ultracold regime.

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