

Abstract Submitted  
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**Probing reactive collisions between ultracold KRb molecules<sup>1</sup>**

YU LIU, MING-GUANG HU, DAVID GRIMES, ANDREI GHEORGHE, KANG-KUEN NI, Harvard University, NI GROUP TEAM — Ensembles of trapped ultracold bi-alkali molecules (AB) have been produced in many research groups around the world. Despite being prepared in their absolute quantum ground states, these molecular gases have been shown to undergo rapid two-body decay regardless of whether the chemical reaction  $AB + AB \rightarrow A_2 + B_2$  is endothermic or exothermic. The theory of "sticky collisions" has been put forth to explain such phenomena. Central to the theory is the formation of a long-lived collisional complex  $A_2B_2$  as an intermediate state. We have constructed an apparatus that combines the production of ultracold ground state KRb molecules with the ability to directly detect the products  $K_2 + Rb_2$  as well as the complex  $K_2Rb_2$ . In this talk I will present observation of reaction products and discuss our plan to probe the lifetime and dynamics of the reaction complex.

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