

Abstract Submitted
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Bi-alkali chemical pathways at ultracold temperatures¹ EDMUND MEYER, JOHN BOHN, JILA — The production of ultracold polar molecules such as KRb ² has reinvigorated the need for an understanding of the chemical pathways available to the collision of 2 KRb molecules. We present a systematic study of the the alkali-metal family of dimers (Li-Cs) and their respective trimer states. We take as an example the K₂Rb molecule and construct surfaces for the two lowest doublet states in C_{2v} geometries. We find that the only possible pathway for chemical reactions is through the bond switching mechanism, i.e. the two heteronuclear molecules collide and produce two homonuclear molecules. Even this pathway is closed for some species of bi-alkali-metal dimers.

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²K.-K. Ni, S. Ospelkaus, M. H. G. de Miranda, A. Pe'er, B. Neyenhuis, J. J. Zirbel, S. Kotochigova, P. S. Julienne, D. S. Jin, and J. Ye, Science 322: 231-235, (2008)

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