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Collisions of ultracold $^{23}Na^{87}Rb$ molecules with controlled chemical reactivity[1] XIN YE, MINGYANG GUO, JUNYU HE, DAJUN WANG, Chinese Univ of Hong Kong, GOULVEN QUEMENER, MAYKEL GONZALEZ-MARTINEZ, OLIVER DULIEU, Laboratoire Aime Cotton, CNRS — The recent successful creation of several ultracold absolute ground-state polar molecules without chemical reaction channel has opened a new playground for investigating the so far poorly understood collisions between them. On one hand, these collisions are indispensable for the exploration of dipolar physics, on the other hand, they are direct manifestations of the brand-new field of ultracold chemistry. Here, we report on the study on molecular collisions with ultracold ground-state $^{23}Na^{87}Rb$ molecules prepared by transferring weakly bound Feshbach molecules with STIRAP. By tuning the Raman laser wavelength to control the internal states, samples with distinctly different chemical reactivity and inelastic channels can be prepared. Surprisingly, we found that the trap loss of the non-reactive case is nearly identical to that of the reactive case. We also developed a model based on the collision complex formation mechanism. The comparison between experiment and theory will also be presented.

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