Abstract Submitted
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Nonadiabatic effects in ultracold trimer molecules[1] HUI LI, MING LI, ALEXANDER PETROV, SVETLANA KOTOCHIGOVA, Department of Physics, Temple University — It has become possible to investigate chemical reactions between small molecules at temperatures well below 1 mK, where quantum effects and threshold phenomena begin to dominate the collision process. Recently, it has been demonstrated [1] that the collisional complexes of the ultracold alkali-metal trimers and tetrimers have conical intersections, lines of degeneracy of the potential surfaces. These intersections allow efficient nonadiabatic transitions between surfaces. The goal of the current study is to investigate conical intersection that occurs in the LiNaLi collisional complex. We, first, focus on the *ab initio* calculation of the lowest $^2A_1$ and $^2B_1$ adiabatic potential surfaces and the corresponding nonadiabatic coupling function between them. The diabatic surfaces and their coupling are produced through a diabatization process. Then the potential landscape including the conical intersection is analyzed. [1]P. S. Żuchowski and J. M. Hutson, Phys. Rev. A **81**, 060703(R) (2010).

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