

Abstract Submitted
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Finite energy effects on dimer-dimer collisions in two-spin ultracold Fermi gases JOSE P. D'INCAO, SETH T. RITTENHOUSE, NIRAV P. MEHTA, CHRIS H. GREENE, JILA, Department of Physics, University of Colorado — We demonstrate important properties of few-body parameters which may offer deeper insight into the many-body phenomena in two-spin Fermi gases at finite temperatures. Our results indicate, for instance, that previously obtained zero energy results for the dimer-dimer scattering length can have a limited applicability to a finite temperature ultracold gas near a Feshbach resonance. In order to account for finite temperature effects we have calculated the energy dependent *complex* dimer-dimer scattering length, $a_{dd}(E)$, where the real and imaginary parts correspond to contributions from elastic and inelastic collisions, respectively. Our results were obtained by solving the four-body Schrödinger equation in the hyperspherical adiabatic representation which, despite the high complexity of the problem, offers a simple, intuitive, and quantitative picture for the collision processes. This work was supported by the National Science Foundation.

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