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Ultracold four-body collisions of two-spin fermionic atoms JOSE P. D'INCAO, NIRAV P. MEHTA, JILA, University of Colorado, Boulder, SETH T. RITTENHOUSE, CHRIS H. GREENE, Department of Physics and JILA, University of Colorado, Boulder — We have performed *ab initio* calculations for the four fermions system in two different spin states. From these calculations we were able to extract the scattering length dependence for the scattering observables which are relevant for current experiments in ultracold fermionic quantum gases. We have calculated, for instance, the dimer-dimer scattering length and explored the finite energy dependence concening the experimental range of temperatures in the strongly interacting regime. Due to the finite range of our interatomic model we also were able to explore finite scattering length corrections to the dimer-dimer scattering length. This work was supported by the National Science Foundation.

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