

Abstract Submitted
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Analytic expression for three body recombination rates of cold fermionic atoms JAMES STERNBERG, University of Tennessee, Knoxville, TN, J.H. MACEK, University of Tennessee, Knoxville, TN and Oak Ridge National Laboratory, Oak Ridge, TN — Recombination of fermions in cold three body collisions is investigated using an energy dependent zero range potential (EDZRP) model. Hyperspherical adiabatic potential curves were calculated for several angular momentum states. In the dominant $J^\Pi = 1^+$ case for a scattering volume of $V_p = 1 \times 10^{-6} a.u.$ these potential curves are well approximated by an analytic expression. Using this analytic approximation to the hyperspherical adiabatic potential curves and hidden crossing theory we obtain closed form expressions for the three-body recombination rate and recombination cross sections. These expressions depend only on physical parameters such as the scattering length and effective range.

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