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Four-fermion problem in hyperspherical coordinates[1] NIRAV MEHTA, JOSE D'INCAO, JILA, University of Colorado, Boulder CO, 80309, SETH RITTENHOUSE, CHRIS H. GREENE, JILA and Dept. of Physics, University of Colorado, Boulder CO, 80309 — The four-particle system is the simplest few-body system which contains the fundamental physics involved in ultracold fermionic gases. We solve the quantum four-body problem in the adiabatic hyperspherical representation. Our approach yields a set of coupled-channel equations which can in turn be solved for all elastic and inelastic processes. These rates are expected to play an important role in the lifetime of molecules in ultracold fermi gases. This provides insights into the nature of ultracold fermi systems and the physics of the BCS-BEC cross-over.

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