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Effective theory for two fermions in a trap<sup>1</sup> IONEL STETCU, University of Washington, JIMMY ROTUREAU, BRUCE BARRETT, BIRA VAN KOLCK, University of Arizona — Systems with large scattering length  $a_2$  are of particular interest since they exhibit universal properties when particle momenta are small compared to  $1/r_0$  with r0 being the range of the interaction. This situation occurs for instance, in nuclear physics where the two-nucleon system has two S-wave channels where  $a_2 >> r_0$ . We have applied the general principles of Effective Field Theory for the description of two fermions in a harmonic oscillator trap. Our formalism is based on a controlled expansion of the interaction between the two fermions as a series of contact interactions with an increasing number of derivatives. Corrections to the interaction beyond leading order are treated in perturbation theory. Results for the energies of the two-fermion system for different values of  $a_2/b$  (b being the trap length) and  $r_0/b$  will presented.

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