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Density Functional Theory for Fermions close to the Unitary Regime ANIRBAN BHATTACHARYYA, THOMAS PAPENBROCK, Univ. of Tennessee Knoxville/ORNL — We consider interacting Fermi systems close to the unitary regime and compute the corrections to the energy density that are due to a large scattering length and a small effective range. Our approach exploits the universality of the density functional and determines the corrections from the analyical results for the harmonically trapped two-body system. The corrections due to the finite scattering length compare well with the result of Monte Carlo simulations. We also apply our results to symmetric neutron matter.

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