

Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

The Effects of Regulators on NN and 3N forces in Chiral Effective Field Theory ALEX DYHDALO, RICHARD FURNSTAHL, Ohio State University, KAI HEBELER, INGO TEWS, TU Darmstadt — For potentials derived using Chiral Effective Field Theory, it is necessary to choose a regulator and cutoff scale for the theory. Under Weinberg’s power counting prescription, the perturbatively derived potential is iterated to all orders, leading to artifacts (e.g., residual cutoff dependence) from the regulator. We investigate different choices of regulators and their associated artifacts in the uniform system at finite density for two- and three-body forces. We find significant effects from different regulator choices at Hartree-Fock and 2nd order in the perturbative many-body energy expansion. The potential implications of regulator and scale choice on the theory’s power counting is discussed.

Alex Dyhdalo
Ohio State University

Date submitted: 30 Jun 2015

Electronic form version 1.4