

Abstract Submitted  
for the HAW09 Meeting of  
The American Physical Society

**Renormalization of the leading-order chiral nucleon-nucleon interaction and bulk properties of nuclear matter** RUPRECHT MACHLEIDT, PEI LIU, University of Idaho — It is well known [1] that the nucleon-nucleon (NN) interaction at leading order (LO) of chiral perturbation theory can be renormalized (i.e., cutoff independence can be achieved) when certain counter terms of next-to-leading (NLO) and next-to-next-to-leading order (NNLO) are promoted to LO. It is then of interest to investigate if also the predictions for few- and many-nucleon observables turn out to be cutoff independent when calculated from the renormalized LO NN interaction. As a first test, we have calculated the binding energy per nucleon in nuclear matter as a function of density and find saturation and cutoff independence of the results.

[1] A. Nogga *et al.*, Phys. Rev. C **72**, 054006 (2005).

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Date submitted: 06 Jul 2009

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