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Light nuclei with improved order-by-order chiral interactions[1]
PIETER MARIS, JAMES VARY, Iowa State University — We present recent results for light nuclei [1] obtained with improved NN interactions derived from chiral effective field theory up to N^4LO [2]. The many-body calculations are performed order-by-order in the chiral expansion. We show results for the ground state energies and the low-lying spectrum; in addition we discuss other observables such as magnetic and quadrupole moments. We discuss both the theoretical uncertainties due to the truncation of the chiral expansion, as well as the numerical uncertainties associated with the many-body method. Depending on the value chiral order, additional renormalization using the Similarity Renormalization Group is needed in order to improve numerical convergence of the many-body calculations.

[1] S. Binder *et al.*, arXiv:1505.07218 [nucl-th].
[2] E. Epelbaum, H. Krebs, and U.-G. Meißner, Eur. Phys. J. A51 (2015) 5, 53; *ibid* arXiv:1412.4623 [nucl-th].

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