

Abstract Submitted
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Consistent chiral-EFT improved M1 operators for ab initio calculations¹ SHIPLU SARKER, SOHAM PAL, ROBERT BASILI, PIETER MARIS, JAMES P. VARY, Iowa State University, PATRICK J. FASANO, MARK A. CAPRIO, University of Notre Dame — Over the past two decades chiral Effective Field Theory (χ EFT) has been successfully applied to model the internucleon interaction, such as the LENPIC interactions, and nuclear electroweak currents to study few nucleon systems. Here we construct the effective M1 operator up to N³LO in a harmonic oscillator (HO) basis consistent with the LENPIC interaction from one-body and two-body χ EFT electromagnetic current operators, and apply that to light nuclei within the framework of the no-core shell model (NCSM). We present preliminary results for the deuteron, ³H and ³He magnetic moments, and study their convergence at each chiral order as function of the basis expansion. We also estimate the chiral truncation uncertainties of these magnetic moments and discuss the role of the χ EFT regulator.

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