Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Convergence of ab initio calculated $M1$ observables: The role of symmetry, structure and selection rules[1] ZHOU ZHOU, PATRICK J. FASANO, MARK A. CAPRIO, University of Notre Dame, ANNA E. MCCOY, TRIUMF, PIETER MARIS, JAMES P. VARY, Iowa State University — In order to test *ab initio* no core shell model predictions against experiment, we must first obtain well converged calculations of observables. In particular, $M1$ observables converge more rapidly than long range (e.g., $E2$) electromagnetic observables. In order to understand how the $M1$ convergence and predicted strengths relate to underlying structure of the nucleus, we study the contributions of the different components of the $M1$ operator. Each of these components is subject to different selection rules on angular momentum (orbital and spin), isospin and SU(3) quantum numbers. We use the Lanczos decomposition method to determine the dominant LS and SU(3) contributions to the calculated wave functions and thus understand the relevant selection rules for each transition. We present analysis of calculated $M1$ moments and low-lying transitions in p-shell nuclei, obtained with the Daejeon16 interaction.

[1]Supported by US DOE under Award Nos. DE-FG02-95ER-40934, DE-FG02-87ER40371, and DE-SC0018223 (SciDAC-4/NUCLEI), and by the NRC of Canada. Computational resources provided by NERSC (US DOE Contract No. DE-AC02-05CH11231).

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Date submitted: 08 Jul 2020 Electronic form version 1.4