

Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Transition strengths in $^{21,22,23}\text{Mg}$ as tests of ab initio theory
JACK HENDERSON, TRIUMF, PANU RUOTSALAINEN, University of Jyväskylä, GREG HACKMAN, TRIUMF, EXPERIMENT S1480 TEAM, EXPERIMENT S1624 TEAM, EXPERIMENT S1646 TEAM — Effective charges compensate for insufficiencies arising from truncations of the nuclear model-space by performing a crude inflation of nucleon charges to account for missing electric-quadrupole ($E2$) transition strength. Recent theoretical developments in ab initio nuclear theory might allow for the calculation of this strength using evolved effective-operators arising from first-principles, removing the need for effective charges and enhancing predictive power. To that end, Coulomb excitation measurements were performed of neutron-deficient $^{21,22,23}\text{Mg}$ at TRIUMF-ISAC, with the goal of extracting precision $E2$ strengths for comparison with state-of-the-art models. Results will be presented and compared with ab initio in-medium similarity renormalization group (IM-SRG) and symplectic no-core shell-model calculations, as well as phenomenological shell-model results. Results will also be presented in the context of mirror-pairs in the sd -shell, providing a systematic evaluation of the reproduction of $E2$ strength with respect to isospin.

Jack Henderson
TRIUMF

Date submitted: 29 Jun 2017

Electronic form version 1.4