

Abstract Submitted  
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**Coulomb displacement energies and isospin-nonconservation for fp-shell nuclei**<sup>1</sup> WILLIAM ORMAND, MICHAEL KRUSE, Lawrence Livermore National Laboratory, ALEX BORWN, Michigan State University, MORTEN HJORTH-JENSEN, University of Oslo — A new isospin nonconserving (INC) interaction for fp-shell nuclei is determined empirically by fitting to experimental Coulomb displacement energies. This interaction is based on the Coulomb interaction as well as charge-asymmetric and charge-dependent components in the nucleon-nucleon sector as found in realistic nucleon interactions such as CD-Bonn and effective field theory at N3LO. The INC components arising from the nucleon-nucleon interaction were determined through a renormalization procedure from a G-matrix calculation as well as many-body perturbation theory. The overall strength of these components is tuned to reproduce experimental b- and c-coefficients of the isobaric mass multiplet equation. A new feature of this interaction is that where possible calculations were performed using the full fp-shell; made possible with recent advances in shell-model codes and high-performance computing. With this interaction, isospin-mixing effects in the fp-shell are estimated including a new calculation of isospin-mixing corrections for Fermi transitions in the fp-shell.

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