Abstract Submitted
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Electroweak transitions in nuclei from first principles[1] GRIGOR SARGSYAN, KRISTINA LAUNEY, Louisiana State University, Baton Rouge, TOMAS DYTRYCH, Nuclear Physics Institute, 250 68 Rez, Czech Republic, JERRY DRAAYER, Louisiana State University, Baton Rouge — We present beta decay rates and recoil matrix elements calculated using the *ab initio* symmetry-adapted no-core shell model (SA-NCSM). The SA-NCSM utilizes emergent symmetries in nuclei in order to reduce the dimensionality of the model space. This, in turn, allows one to reproduce the low-energy nuclear dynamics with only a small fraction of the model space, and hence making solutions to heavier nuclei feasible. The symmetry-adapted basis of the SA-NCSM is well suited for describing electromagnetic and beta-decay transitions enabling us to use the full capability of the model and perform calculations for up to pf-shell nuclei. This work discusses calculations of beta recoil matrix elements from first principles that help to probe fundamental interactions. It also focuses on a study of the g_A quenching problem for bare interactions (no renormalization involved) and with collective correlations that are well described within the model, as well as on a study of ^{48}Ca and ^{48}Ti of interest to neutrinoless double beta decays.

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