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Chiral Effective Field Theory calculations of weak transitions in light nuclei GARRETT KING, SAORI PASTORE, MARIA PIARULLI, Washington University, St. Louis, ROCCO SCHIAVILLA, Old Dominion University and Jefferson Laboratory, R. B. WIRINGA, Argonne National Laboratory — We present *ab initio* calculations of weak transitions in $A \leq 10$ nuclei–including beta decays of ^{6}He, ^{8}Li, ^{8}B, ^{8}He, and ^{10}C and electron-capture in ^{7}Be–using Variational and Green's Function Monte Carlo methods. Calculations of matrix elements employ the Norfolk potential, a high-quality local chiral interaction containing two- (NN) and three-body ($3N$) forces, and consistent one- and two-body axial currents. We investigate the sensitivity of the matrix elements to choices of different cutoffs and different strategies to constrain the NN and $3N$ potentials. For $A < 10$, the inclusion of two-body axial currents results in a small additive contribution to the one-body matrix element for these various choices, except for in the $A = 8$ systems where we find a significant contribution from two-body axial currents. In the case of $A = 10$, we find that our results vary depending on the adopted nuclear interactions. In addition, we present calculations of one- and two-body transition densities. These studies provide a validation of nuclear many-body correlations and currents entering *ab initio* calculations and impact studies of neutrinoless double beta decay and searches for beyond standard model physics.

Garrett King
Washington University, St. Louis

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