Triples Counting and Three-Nucleon Forces in Light Nuclei[1]

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— We report Green's function Monte Carlo studies of three-nucleon forces (3NF) in light nuclei. The 3NF components studied include the two-pion s-wave and p-wave terms (both anticommutator and commutator pieces) and one-pion/short- and short-/short-range phenomenological terms. (In chiral effective field theories, these correspond to the c_1, c_3, c_4, c_D, and c_E terms, respectively.) Their contributions to the energy of light ($A \leq 10$) nuclei is broken down by total spin S and isospin $T = 1/2$ or $3/2$ and both the uncorrelated and correlated distributions of these triples are counted. We also study the energy dependence on the short-range cutoffs of the 3NF component functions and examine various projections to isolate specific contributions of 3NF to halo nuclei.

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