

Abstract Submitted
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Evidence for three nucleon interactions in light nuclei¹ JAMES VARY, PIETER MARIS, Iowa State University — Refining our experimental and theoretical knowledge of three-nucleon interactions is a necessary pre-requisite for isolating possible signatures of four-nucleon interactions. We review the accumulated results indicating where signatures of three-nucleon interactions are now established in light nuclei. We especially focus on selected electroweak transitions such as the strongly suppressed Gamow-Teller transition in Carbon-14 and the enhanced B(M1) transition to the 1+1 state in Carbon-12. Overall binding energies and selected spectral properties show additional effects of three-nucleon interactions. Since many nuclear properties appear rather insensitive to three-nucleon interaction effects, it will take a concerted effort of theorists and experimentalists to define observables that both carry sensitivity to three-nucleon interactions and that are experimentally accessible. This community effort should involve a variety of ab initio many-body approaches as well as the available candidate three-nucleon interactions. It should consider a wide scope of experimental opportunities. High precision theory and experiment can combine to maximize our gain in knowledge with leadership class computational facilities and next-generation experimental facilities such as FRIB.

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