

Abstract Submitted
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Importance truncation and the further development of the No-Core Shell Model¹ MICHAEL KRUSE, University of Arizona, PETR NAVRATIL, TRIUMF, BRUCE BARRETT, University of Arizona — The No-Core Shell Model, an ab-initio approach to calculating observables of light nuclei, has been shown to be successful in describing p-shell nuclei properties. With the inclusion of the resonating group method, the approach can be extended to describe nuclear reactions. However, the calculations require a large number of basis states for full convergence. By using perturbation theory, one can formulate a procedure, for selecting only those states that one considers “important.” This selection procedure is able to drastically reduce the size of the basis, yet captures enough of the physics present, comparing well with full space calculations. I will show calculations in which we calculate the wave functions of Helium-8 (in an importance truncation setting), which are used as input for the n+He-8 scattering calculations. Those theoretical calculations are then compared to recent experiments.

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