

Abstract Submitted
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Shell-Model Effective Interactions from the No-Core Shell Model¹ BRUCE BARRETT, ALEXANDER LISETSKIY, MICHAEL KRUSE, University of Arizona, PETR NAVRÁTIL, Lawrence Livermore National Laboratory, JAMES VARY, Iowa State University — The extension of the No-Core Shell Model (NCSM) approach [1] to heavier nuclei (i.e., to the sd- and pf-shells) is a challenging problem. Standard shell-model calculations usually employ either empirical or theoretical effective 2-body matrix elements (TBME), which contain excluded many-body correlations. We show how a NCSM investigation in a $4\hbar\Omega$ model space can yield TB sd-shell ME, which exactly reproduce the many-body correlations present in the original calculation. We demonstrate how the effective Hamiltonian derived in the $4\hbar\Omega$ NCSM at the 2-body cluster level should be modified to properly account for the many-body correlations produced by truncating to a single major shell. The capability of these standard sd-shell TBME for ^{18}F , obtained by direct projection, to reproduce the results of large scale NCSM calculations for F, Ne and Na isotopes will be shown.

1. P.Navrátil, *et al.*, Phys. Rev. C **62**, 054331 (2000).

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