

Abstract Submitted  
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**Effective Shell-Model interactions for the p-shell from the No-Core Shell Model**<sup>1</sup> A.F. LISETSKIY, M.K.G. KRUSE, B.R. BARRETT, University of Arizona, P. NAVRATIL, LLNL, I. STETCU, LANL, J. VARY, Iowa State U. — The *ab initio* no-core shell model (NCSM) is a powerful many-body technique to perform fundamental microscopic studies of the structure of light nuclei. However, it becomes rather challenging to produce converged results for nuclei with  $A \geq 12$ . In this contribution, following the idea of Ref. [2] we derive effective p-shell Hamiltonians from  $N_{\max}\hbar\Omega$  NCSM calculations for  ${}^6\text{Li}$  with  $N_{\max} = 2, 4, \dots, 14$ . We show how the averaged many-body correlations modify the p-shell two-body Hamiltonian and explore the dependence of the effective one-body and two-body matrix elements on  $N_{\max}$ . We present the results of the standard shell model calculations using derived effective Hamiltonian for p-shell nuclei with  $A > 6$  and compare it to the exact NCSM results.

[2] P.Navratil, M.Thoresen, and B.R.Barrett, Phys.Rev.C. **55**, R573 (1997).

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