Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Effective operators in the p-shell from *ab-initio* **approach** M.K.G. KRUSE, A.F. LISETSKIY, B.R. BARRETT, U.Arizona[†], P. NAVRÁTIL[‡], LLNL, I. STETCU[*], LANL, J.P. 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. Extension to heavier nuclei can be realized by employing the importance truncation scheme or the valence cluster expansion (VCE) approach. The VCE procedure allows to create many-body renormalized effective interaction for the standard shell model (SSM) with a core and consequently to reduce drastically the computational effort necessary to calculate the low-lying states. On the other hand, one can also create a similar SSM effective operator for radii and an electromagnetic operator, like E2 and M1. The properties of such operators, for example in terms of renormalization of proton and neutron charges as a function of model space size are not clearly understood. We employ the VCE procedure for creating E2, M1 and Gamow-Teller operators in the p-shell, using ^{5}Li, ^{5}He and ^{6}Li NCSM results, and show how these operators depend on one- and two-body contributions. [†]Supported in part by NSF grant PHY-0555396; [‡] Prepared by LLNL under contract No. DE-AC52-07NA27344 [*] Supported in part by DOE No. DE-AC52-06NA25396 [**] Supported in part by DOE grant DE-FG02-87ER40371

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Date submitted: 08 Jan 2009 Electronic form version 1.4