

Abstract Submitted
for the 4CF09 Meeting of
The American Physical Society

Importance truncation in the No-Core Shell Model¹ MICHAEL KRUSE, University of Arizona, PETR NAVRATIL, Lawrence Livermore National Laboratory, BRUCE BARRETT, University of Arizona — The No-Core Shell Model is an ab-initio technique, capable of calculating observable quantities of light nuclei ($A \leq 12$) very accurately. However, for heavier nuclei, the computational requirements become unfeasible. The problem lies in the massive size of the basis space employed. Importance truncation allows us to make a good a priori guess of which basis states might be relevant for certain observables. We are thus able to dramatically reduce the size of the required basis, opening up the possibility to perform structure calculations of heavier nuclei and also astrophysical reactions.

¹M.K.G.K and B.R.B: NSF grants PHY0244389 and PHY0555396. P.N. acknowledges support in part by the U.S. DOE/SC/NP (Work Proposal N. SCW0498) and USDOE Grant DE-FC02-07ER41457; Prepared by LLNL under Contract No. DE-AC52-07NA27344.

Michael Kruse
University of Arizona

Date submitted: 28 Sep 2009

Electronic form version 1.4