

Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Improved numerical projection of angular momentum¹ KEVIN O'MARA, CALVIN JOHNSON, San Diego State University — Nuclear many-body states have good angular momenta, but many theoretical building blocks such as deformed Slater determinants do not. Hence one must numerically project out states of good angular momenta, usually through a computationally taxing three-dimensional integral. We took an existing code for angular-momentum projected Hartree-Fock² and improved its performance, partly through judicious ordering of the loops, precomputing arrays of important combinatorics, and careful application of parallelization. We also investigated a novel inversion scheme. This work is potentially applicable to multiple approaches in many-body calculations,³ and should also be generalizable to particle number projection.

¹Supported by SDSU Summer Undergraduate Research Program and by DOE award number DE-FG02-96ER40985.

²J. T. Staker and C. W. Johnson, arXiv: 1304.7292

³T. Otsuka, et al. Prog. Part. Nucl. Phys. 47, 319 (2001); J. Dobaczewski and P. Olbratowski. Comp. phys. Comm. 167, 214 (2005); J. M. Yao, et al. Phys Rev C 81, 044311 (2010)

Kevin O'Mara
San Diego State University

Date submitted: 28 Jul 2015

Electronic form version 1.4