Abstract Submitted for the APR17 Meeting of The American Physical Society

Symmetry Based No Core Shell Model in a Deformed Basis¹ DAVID KEKEJIAN, JERRY DRAAYER, KRISTINA LAUNEY, Louisiana State University — To address current limitations of shell-model descriptions of large spatial deformation and cluster structures, we adopt a no-core shell model with a deformed harmonic oscillator basis and implement an angular momentum projection in a symmetry-adapted scheme. This approach allows us to reach larger model spaces as a result of computational memory savings for calculations of highly deformed states, such as the Hoyle state in C-12. The method is first tested with schematic interactions, but the ultimate goal is to carry forward calculations with realistic nucleon-nucleon interactions in future work.

¹Supported by the U.S. NSF (OCI-0904874, ACI-1516338) and the U.S. DOE (DE-SC0005248), and benefitted from computing resources provided by Blue Waters and LSU's Center for Computation Technology

David Kekejian Louisiana State University

Date submitted: 30 Sep 2016

Electronic form version 1.4