

Ohio University

OHIO Open Library

All Forum Articles

College of Arts & Sciences Forum

9-1-2019

INPP Seminar | Electronic Sum Rules and Response Functions from the Symmetry-adapted Nucleon Shell Model, Sept. 12

Ohio University College of Arts & Sciences

Follow this and additional works at: https://ohioopen.library.ohio.edu/cas_forum_all

Recommended Citation

Ohio University College of Arts & Sciences, "INPP Seminar | Electronic Sum Rules and Response Functions from the Symmetry-adapted Nucleon Shell Model, Sept. 12" (2019). *All Forum Articles*. 6829. https://ohioopen.library.ohio.edu/cas_forum_all/6829

This News Article is brought to you for free and open access by the College of Arts & Sciences Forum at OHIO Open Library. It has been accepted for inclusion in All Forum Articles by an authorized administrator of OHIO Open Library. For more information, please contact debord@ohio.edu.

INPP Seminar | Electronic Sum Rules and Response Functions from the Symmetry-adapted No-core Shell Model, Sept. 12

September 1, 2019

Categories: Events

Tags: Institute of Nuclear and Particle Physics, NPP Seminar, physics and astronomy events, Robert Baker

The Institute of Nuclear and Particle Physics (INPP) presents Robert Baker of Ohio University on, “Electronic Sum Rules and Response Functions from the Symmetry-adapted No-core Shell Model”, on Tuesday, Sept. 10, at 4 p.m. in Edwards Accelerator Lab, Roger W. Finlay Conference Room.

Abstract: Recent developments in ab initio nuclear structure have provided us with a variety of many-body methods capable of describing nuclei into the medium-mass region of the chart of nuclides. One of these, the symmetry-adapted no-core shell model (SA-NCSM), capitalizes on inherent symmetries of the nucleus and is well-suited to examine the underlying physics of dynamical quantities, such as sum rules and response functions. I will discuss work with the ab initio SA-NCSM to examine these quantities in up to and including intermediate-mass, open-shell nuclei from a first-principle perspective. Specifically, by combining inputs from the SA-NCSM with the Lanczos sum rule method and the Lanczos response function method, we are able to calculate these quantities in light nuclei and our results show to be in good agreement with existing exact methods. Expanding toward intermediate-mass nuclei, calculations for the response functions of ^{16}O and ^{20}Ne reveal the advantages of the SA-NCSM when examining giant resonances and I will briefly point to applications for nuclear compressibility starting from these microscopic calculations of response functions.