

Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Nuclear deformation and searches of neutrinoless double-beta decay ($0\nu\beta\beta$): A case study of ^{76}Ge ¹ ROBERT V. F. JANSSENS, Argonne National Laboratory, AKA DANIEL AYANGEAKAA, University of Maryland, ANL COLLABORATION, Argonne National Laboratory, LLNL COLLABORATION, Livermore National Laboratory, LLBL COLLABORATION, Berkeley National Laboratory, MARYLAND COLLABORATION, University of Maryland — Observation of neutrinoless double-beta decay ($0\nu\beta\beta$) would both demonstrate the Majorana nature of the neutrino and provide experimental access to its absolute mass scale. Over the last decade, wavefunction contributions for leading ($0\nu\beta\beta$) candidates have been probed in a campaign of experiments utilizing transfer reactions to determine nucleon occupancies in a consistent way. While these studies have provided a great deal of information for comparison with theory, especially on contributions to the nuclear wavefunctions from competing orbitals, they lack sensitivity to the collective degrees of freedom which have been shown to be relevant in describing these nuclei. In this talk, we present results of a high-precision Coulomb excitation measurement of ^{76}Ge , performed at Argonne National Laboratory using GRETINA and CHICO2. The results are compared with state-of-the-art shell model calculations and recently obtained ($n, n'\gamma$) data, with emphasis on demonstrating the importance of nuclear deformation in determining the nuclear decay matrix elements.

¹This work is supported by the DOE, Office of Science, Office of Nuclear Physics under Contract Number DE-AC02-06CH11357, and Grant No. DE-FG02-94ER40834 and DE-FG02-08ER41556.

Akaa Daniel Ayangeakaa
University of Maryland

Date submitted: 24 Jun 2017

Electronic form version 1.4