Abstract Submitted
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Neutron Unbound States in the N=20 Island of Inversion[1] ROBBIE SEATON-TODD, ANTHONY KUCHERA, Davidson College, NATHAN FRANK, JOHN MCDONAUGH, Augustana College, PAUL DEYOUNG, WIILIAM VON SEEGER, Hope College, THOMAS BAUMANN, DAYAH CHRISMAN, PAUL GUEYE, Michigan State University, MONA COLLABORATION — Radioactive beams are used to study the properties of neutron-rich nuclei out to the neutron drip line, particularly where the N=20 shell gap disappears, known as the "island of inversion." This region is of interest because the mechanisms driving these changes in nuclear shell structure are not fully understood. An experiment at the National Superconducting Cyclotron Laboratory was conducted, using a ^{33}Mg secondary beam, to better characterize the structure of these exotic nuclei, by populating neutron-unbound excited states in this region. Experimental reaction targets in which rare nuclei and their decay are observed are made thicker for more reactions to occur or thinner for better energy resolution. To observe both good resolution and more reactions a segmented target comprised of alternating Be reaction targets and Si detectors was used. Additionally, the Modular Neutron Array, the Large multi-Institutional Scintillator Array (MoNA-LISA), and the Sweeper Magnet were used to perform invariant mass spectroscopy to reconstruct the decay energies of populated unbound states. Results, including decay energies of select nuclei, will be discussed.

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Robbie Seaton-Todd
Davidson College

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