Abstract Submitted
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Study of Neutron-rich Nuclides of Z = 13, 12[1] JOHN MCDONAUGH, NATHAN FRANK, Augustana College, ROBBIE SEATON-TODD, ANTHONY KUCHERA, Davidson College, PAUL GUEYE, MSU/NSCL, PAUL DEYOUNG, Hope College, MONA COLLABORATION COLLABORATION — Neutron-rich nuclides show features not observed in stable nuclides indicating changes in nuclear structure. Certain regions of the chart of nuclides are of particular interest such as the "islands of inversion." An experiment to produce nuclides in highly excited states was performed at the National Superconducting Cyclotron Laboratory. A ^{48}Ca beam collided with a beryllium production target, which produced multiple secondary beams such as ^{34}Al and ^{36}Si. These beam nuclides impinged on a segmented target consisting of alternating Si-PIN detectors (4 total) and beryllium targets (3 total) producing many nuclides in highly excited states that resulted in a charged fragment and one or more neutrons being emitted. Using a superconducting dipole magnet, the charged fragments were swept into several charged particle detectors while the neutrons were measured as they interacted with arrays of scintillating plastic bars called the MoNA-LISA. The fragments and the emitted neutrons are detected in coincidence and their detected properties may be pieced together by invariant mass analysis to determine the energy of the neutron-unbound nuclide prior to decay. The results of the analysis for neutron detection, isotope separation, and the energy reconstruction of the decayed nuclides will be presented.

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