

Abstract Submitted
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First Observation of Three-Neutron Sequential Emission from ^{25}O ¹ C. SWORD, J. BRETT, P.A. DEYOUNG, Hope College, N. FRANK, H. KARRICK, Augustana College, A.N. KUCHERA, Davidson College, THE MONA COLLABORATION — An active area of nuclear physics research is to evaluate models of the nuclear force by studying the structure of neutron-rich isotopes. In this experiment, a 101.3 MeV/u ^{27}Ne beam from the National Superconducting Cyclotron Laboratory collided with a liquid deuterium target. The collision resulted in two-proton removal from the ^{27}Ne beam which created excited ^{25}O that decayed into three neutrons and an ^{22}O fragment. The neutrons were detected by arrays of scintillating plastic bars, while a 4-Tesla dipole magnet placed directly after the target redirected charged fragments to a series of charged-particle detectors. From measured velocities of the neutrons and ^{22}O fragments, the decay energy of ^{25}O was calculated on an event-by-event basis with invariant mass spectroscopy. Using GEANT4, we simulated the decay of all nuclei that could have been created by the beam collision. By successfully fitting simulated decay processes to experimental data, we determined the decay processes present in the experiment.

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