Abstract Submitted
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Composition of the ^{24}O Ground State Wave Function[1] R.A. SCOTTEN, Fullerton College, E. TRAYNOR, P.A. DEYOUNG, Hope College, N.T. ISLAM, R.A. HARING-KAYE, Ohio Wesleyan University, THE MONA COLLABORATION — Recent experimental and theoretical evidence points to a closed shell at $N = 16$ for the neutron-rich oxygen isotopes based on the measured and predicted excitation energy of the first-excited 2^+ state in ^{24}O and the energy gap between the $\nu(0d_{3/2})$ and $\nu(1s_{1/2})$ single-particle states. This work seeks to test this assertion by measuring the cross section for neutron knockout from the ^{24}O ground state to the ground and first-excited states of ^{23}O (which immediately decays to the ground state of ^{22}O through neutron emission). From this we can infer the composition of the ^{24}O ground state wave function. ^{24}O nuclei were produced at the National Superconducting Cyclotron Lab (NSCL) at Michigan State University via fragmentation of a ^{48}Ca beam on a 1316 mg/cm^2 Be target, and bombarded a 481 mg/cm^2 Be target downstream to induce knockout reactions. Fragment nuclei (neutron decays) were detected by a system of charged-particle detectors (the Modular Neutron Array (MoNA)). The current status of the analysis will be discussed, including the identification of oxygen fragments, the calibrations for timing and position measurements using MoNA, and the determination of the relevant spectroscopic factors of interest.

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