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Two-neutron Sequential Decay of ^{24}O MICHAEL JONES, NSCL/MSU, PAUL DEYOUNG, Hope College, THOMAS BAUMANN, NSCL, JOE FINCK, Central Michigan University, ZACH KOHLEY, ANTHONY KUCHERA, NSCL/MSU, JENNA SMITH, TRIUMF, ARTEMIS SPYROU, KRYSTIN STIEFEL, NSCL/MSU, NATHAN FRANK, Augustana College, MICHAEL THOENNESSEN, NSCL/MSU, MONA COLLABORATION — A recent experiment performed at the NSCL populated a two-neutron unbound excited state in ^{24}O through a (d,d') reaction at 82 MeV/nucleon. Using invariant mass spectroscopy, a three-body state was observed in the ^{22}O + 2n system at E = 750^{+100}_{-100} keV and $\Gamma = 100^{+300}_{-100}$ keV, placing it at ∼7.68 MeV with respect to the ground state of ^{24}O. Three-body correlations for the decay of ^{24}O → ^{22}O + 2n were examined and found to show strong evidence for a sequential decay through an intermediate state in ^{23}O. A di-neutron or phase-space model for the three-body breakup is unable to describe these correlations.

Michael Jones
NSCL/MSU

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