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Differential cross-section measurements of ^{18}O(g,n)+^{18}O(g,2n) reactions at 23.7 and 32.0 MeV[1] COLLIN MALONE, Duke University — Photoneutron reactions on ^{18}O allow examination of the neutron-neutron (nn) interaction and may be used as a surrogate for planning a ^{3}H photodisintegration experiment at TUNL. The relatively large ^{18}O(γ,2n) cross section allows measurements of differential cross-sections for nn coincidences at various opening angles between the neutrons without risks associated with handling a radioactive gas target. Cross sections for the sequential and simultaneous emission of the two neutrons in the ^{18}O(γ, nn) reaction are measured. The simultaneous neutron emission provides information about neutron-neutron correlations in the ^{18}O nucleus. Ab-initio calculations are needed to disentangle the simultaneous contribution from the aggregate cross section. The measurements were performed at HIγS using a 23.7 and 32.0 MeV circularly polarized photon beam. Neutrons were detected using 30 liquid scintillator detectors at reaction angles of 65, 90, and 180. Neutron energies were determined using time-of-flight techniques. These are the first differential cross-section data for ^{18}O(γ,n) and ^{18}O(γ,2n). A description of experimental techniques and preliminary results will be presented.

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Collin Malone
Duke University

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