

Abstract Submitted  
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**Measurement of Neutron Detection Efficiency of Crystal Ball and TAPS Detector System**<sup>1</sup> BERHAN DEMISSIE, Center for Nuclear Studies, Department of Physics The George Washington University, Washington, DC 20052 For the Crystal Ball @ MAMI Collaboration — Accurate Cross section measurement of reactions such as  $\pi^0$  and  $\pi^0\eta$  production on the neutron requires accurate simulation of detector acceptances. The neutron detection efficiency of the combined Crystal Ball and Two Arm Photon Spectroscopy, TAPS, detector system currently employed by the A2 collaboration in the Tagged Photon hall at MAMI accelerator in Mainz, Germany, is measured to test the accuracy of such simulation. To this end, photo disintegration of the deuteron -  $d(\gamma, p)n$  and  $\pi^0$  production off the deuteron -  $d(\gamma, p, \pi^0)n$  channels are investigated. Preliminary neutron detection efficiency results are produced using liquid deuterium target data with 885 beam energy which are to be compared using recent liquid deuterium target data with 1557 beam energy. Ultimately, the efficiencies will be compared to results obtained from a GEANT-4 simulation of the complete detector setup in order to validate the neutron response provided therein.

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