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Photoproduction and Photodisintegration Processes of the Deuteron WILLIAM BRISCOE, JESSICA GOHS, The George Washington University, EVIE DOWNIE, JOHN ANNAND, The University of Glasgow, CRYSTAL BALL COLLABORATION, MAMI A2 COLLABORATION, TAPS COLLABORATION — In 2002 the (SLAC) Crystal Ball multiphoton spectrometer was moved from Brookhaven National Laboratory to Mainz to take advantage of the excellent facilities at MAMI. The combination of TAPS and the Crystal Ball forms a truly 4π detection system for protons and neutrons. A photon beam with energies between 400 and 855 MeV has been used with a liquid deuterium target to investigate several photoproduction and photodisintegration processes. Among these are coherent π^0 production on the deuteron, π^0 production off the individual quasi-free nucleons, and the photodisintegration of the deuteron into a proton and a neutron. While each of these processes has physics interest, the latter can also be used to calibrate the detection efficiency of the Crystal Ball and TAPS for neutrons. We will report on the preliminary physics and the calibration results from the first measurements made with the deuterium target.

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