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Gamma Ray Detection in DAPPER Array for (d,pγ) Reactions[1]

M. SORENSEN, A. ABBOTT, A. B. MCINTOSH, E. BENNETT, J. GAUTHIER, K. HAGEL, S. OTA, S. J. YENNELLO, Texas AM Univ, A. COUTURE, Los Alamos National Laboratory, A. SIMON, University of Notre Dame — The photon strength function (PSF) describes the bulk quantum mechanical component of photon emission probabilities and thus it is important in describing neutron capture reactions. For some nuclei, experiments have shown an enhancement in the PSF at low energy. Experiments have shown an up-bend in the ^{56}Fe and ^{57}Fe nuclei. An up-bend in ^{60}Fe would illustrate that this feature may be more widespread. The PSF of ^{60}Fe will be probed using a ^{59}Fe(d,pγ)^{60}Fe reaction. A new detector array is currently being constructed called DAPPER (Detector Array for Photons, Protons, and Exotic Residues). In this array the proton emitted from the reaction will be detected by an annular silicon detector, while the gamma arrays from the excited residue will be detected by 128 BaF_2 detectors. Two ^{57}Fe(d,pγ)^{58}Fe test reactions were done using a few of the detectors in the DAPPER array. The gamma ray detector characterization from the test runs will be presented, along with gamma ray simulations on DAPPER.

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