

$^{54}\text{Fe}(d,p\gamma)^{55}\text{Fe}$ Reaction Measured with DAPPER

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Accurate models of neutron capture are important tools in stockpile science, advanced reactor design, nuclear forensics, and nuclear astrophysics. Since direct measurements can only be made on stable and long-lived nuclei, but many key reactions occur on short-lived nuclei, indirect techniques offer an opportunity to improve calculations far from stability. To this end, we developed the detector array for photons, protons, and exotic residues (DAPPER) at Texas A&M University to measure photon strength functions. The core of DAPPER is a high-efficiency, highly segmented array of BaF₂ for gamma ray measurement; charged ejectiles are measured in silicon. We measured reaction products of $^{54}\text{Fe}(d,p\gamma)^{55}\text{Fe}$ in which we also used a fast ionization chamber to measure heavy residues at zero degrees. This poster will present the calibration and preliminary analysis toward obtaining the photon strength function for ^{55}Fe .