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Development of the APOLLO Array[1] AARON COUTURE, MATTHEW DEVLIN, HYE YOUNG LEE, JOHN O'DONNELL, Los Alamos National Laboratory — The role of neutron capture reactions is critical for nucleosynthesis processes far off of stability. Unfortunately, due to the radioactive nature the target isotopes of interest and the difficulty in producing a neutron target, these reactions will never be amenable to direct measurement. Further, for most astrophysical environments favored for the r process, the required reaction networks are so large as to make direct experimental treatment of all of the reactions of interest beyond the range of what is feasible. Neutron transfer reactions, such as (d, p), combined with intense beams of radioactive ions can help to elucidate the nuclear physics at play. The HELIOS instrument at Argonne National Laboratory has been successfully used to study a range of reactions in inverse kinematics. To complement this effort, we are designing a scintillator array to be used in conjunction with HELIOS to measure gamma-decay properties following neutron transfer. The design characteristics and optimization of the array, including plans for light collection and readout under the almost 3 T field will be discussed.

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