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Development of a sCMOS Position-Sensitive UCN Detector[1]
DARSH DINGER, ADAM HOLLEY, Tennessee Technological University, UCNτ COLLABORATION — Position-Sensitive Detection (PSD) of particles on a two-dimensional detection plane can be useful in experiments that require characterization of free-moving particles. PSD can aid in the study of systematic effects such as depolarization and phase space evolution in trapping experiments such as the ultracold neutron (UCN) free neutron lifetime experiment UCNτ. PSD is demonstrated using a relatively inexpensive scientific complementary-symmetry metal-oxide-semiconductor (sCMOS) camera from PCO to image an Ag enriched ZnS scintillator coated in ^{10}B from a distance of 1.2 meters away. This scintillator was excited using an ^{241}Am source which emits alpha particles at 5.48 MeV. The optical design of this PSD system will be discussed, along with details of signal characterization.

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