

The ANNIE Experiment - Results from Phase I

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) at Fermilab will use 30 tons of gadolinium-enhanced water to capture and detect the otherwise invisible neutrons produced in complex neutrino-nucleus interactions in addition to traditional water-Cherenkov charged particle detection. The number of these final-state neutrons helps constrain the interaction type and the kinematics of the target nucleus, which are major sources of uncertainty in event reconstruction and simulation. The recently completed Phase I measured background neutrons associated with the neutrino beam, including “dirt neutrons” from neutrino interactions outside the detector and “skyshine neutrons” from the beam which scatter into the experimental hall. Phase I used pure water with a movable instrumented vessel of gadolinium-loaded liquid scintillator to measure the neutron flux at various locations within the tank. This poster will discuss the ANNIE detector and present the Phase I results.

Authorship annotation

for the ANNIE Collaboration

Session and Location

Wednesday Session, Poster Wall #120 (Auditorium Gallery Left)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)