



Contribution ID: 33

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The ANNIE experiment

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The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) is a Gadolinium doped water Cherenkov detector located in the Booster Neutrino Beam at Fermilab with the primary goal of measuring the final state neutron multiplicity of neutrino-nucleus interactions. The measurement of the neutron yield as a function of the outgoing lepton kinematics will be useful to constrain systematic uncertainties and reduce biases for the reconstruction of neutrino scattering events in future long-baseline oscillation and cross-section experiments. In addition, the results will provide important insight into the governing processes behind neutrino-nucleus scattering and will enhance the background rejection power for future efforts in neutrino physics such as detecting the Diffuse Supernova Background and looking for possible rare baryon-number-violating processes like proton decay. ANNIE will make use of pioneering photodetectors called Large Area Picosecond Photodetectors (LAPPDs) with 50 picosecond time resolution to enhance its reconstruction capabilities and demonstrate the feasibility of this technology as a new tool in high energy physics. ANNIE Phase 2 taking first physics data will start in May 2019.

Collaboration name

ANNIE

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