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The ANNIE experiment - Status and perspectives

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The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) aims at measuring the neutron abundance in the final state of neutrino-nucleus interactions. This measurement will have a direct impact on our understanding of neutrino interactions and will lead to a better reduction of systematic errors and an improvement of signal-background discrimination in future large neutrino detectors, thus impacting long baseline oscillation experiments as well as proton decay searches and supernova detection. With a volume of about 30 tons of pure water doped with gadolinium to enhance neutron tagging efficiency, ANNIE will provide a measurement of the neutron yield of neutrino interactions as a function of the neutrino energy in the well-characterized Booster Neutrino Beam at Fermilab. The modularity of ANNIE will allow it to perform the very first live test of a novel kind of photodetectors called LAPPDs (Large Area Picosecond Photodetectors) in a neutrino detector. The technology behind the ANNIE detector will have a noticeable impact on the development of future large water Cherenkov detectors as well as on photodetection techniques for neutrino physics.

This presentation will describe the status of the first phase of the experiment, dedicated to background measurements, and the capabilities of the next physics phase expected to start next year.

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