

The Pioneering Contributions of the ANNIE Experiment at Fermilab

Friday 19 July 2024 09:00 (15 minutes)

This talk highlights the contributions and recent milestones of the Accelerator Neutrino Neutron Interaction Experiment (ANNIE) to neutrino detection technology and our understanding of neutrino interaction physics. Located on the BNB at Fermilab and serving as an R&D platform, ANNIE stands out as the first near detector experiment to deploy gadolinium (Gd)-loaded water, a Large Area Picosecond Photodetector (LAPPD), multi-LAPPDs, and Water-based Liquid Scintillator (WbLS) on a neutrino beam. The physics mission focuses on studying nuclear final states, thus helping control a key systematic on long-baseline experiments. Gd loading makes ANNIE especially efficient in measuring the neutron yield from neutrino-nucleus interactions. WbLS further increases these capabilities by allowing more efficient reconstruction of nuclear recoil energies, including protons. ANNIE's location on the same beam line as multiple LArTPC experiments will enable important water-Ar cross-section comparisons.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

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