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Exploring New Avenues for Particle Detection with LAPPDs and WbLS in ANNIE: Milestones and Firsts

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The Accelerator Neutrino Neutron Experiment (ANNIE) is a 26-ton Fermilab-based effort studying neutrino cross-section physics on a water target, with particular attention to final-state neutron yields. The goal of ANNIE's physics program is to better understand and constrain key systematic uncertainties on next-generation neutrino oscillation experiments. ANNIE is also a leading R&D platform studying next generation technologies for hybrid Cherenkov/scintillation neutrino detectors, with recent achievements including the first detection of neutrinos in water-based Liquid Scintillator (wbLS) and the first detection of neutrinos with Large Area Picosecond Photodetectors (LAPPDs). In this talk we present on the newest developments from ANNIE, with particular focus on the milestones achieved in making LAPPDs and wbLS application-ready for large future neutrino experiments.

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