

# Deployment of water-based liquid scintillator in ANNIE

*Friday, 21 June 2024 17:30 (2 hours)*

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) is a neutrino detector at the Booster Neutrino Beam (BNB) at Fermilab. It is a gadolinium-doped water Cherenkov detector designed for measuring the neutron multiplicity in neutrino-nucleus interactions, as well as measuring the charged-current cross section of muon neutrinos. In addition, ANNIE has a strong focus on testing new detector technologies, amongst which is Water-based Liquid Scintillators (WbLS). It is a novel detection medium that allows the simultaneous detection of scintillation and Cherenkov light. To test the detection capabilities of WbLS, a 366 L cylindrical vessel filled with WbLS was deployed in ANNIE. The successful observation of both scintillation and Cherenkov light in ANNIE corresponds to a proof-of-concept for the hybrid event detection concept. This allows for the future development of dedicated algorithm for vertex reconstruction and particle identification algorithms. Additionally, a number of dedicated analyses are planned in ANNIE, that will make use of both the Cherenkov and scintillation component. This poster presents an overview of the WbLS activity in ANNIE.

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