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First deployment of water-based liquid scintillator in ANNIE

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The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) is a Gadolinium-loaded water Cherenkov detector located in the Booster Neutrino Beam at Fermilab. Its primary physics goals are to measure the final state neutron multiplicity of neutrino-nucleus interactions for future long-baseline experiments and cross-sections relevant to atmospheric neutrino backgrounds for diffuse Supernova neutrino and proton decay searches. ANNIE is also a testbed for innovative new detection technologies. In early 2023, we temporarily installed a 365-kg acrylic vessel filled with water-based liquid scintillator (WbLS) in the main detector tank. This contribution will discuss the first WbLS data and basic properties of the WbLS determined in-situ in the experiment. It will highlight the benefits of WbLS as a target medium for future long-baseline experiments like THEIA.

Submitted on behalf of a Collaboration?

Yes

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