Contribution ID: **204** Type: **not specified**

ANNIE Phase II Detector and Event Reconstruction

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE), deployed on the Booster Neutrino Beam (BNB) at Fermilab, has recently finished the neutron background measurement in the Phase I data taking. The primary physics goal of Phase II is to measure the multiplicity of final state neutrons from neutrino-nucleus interactions in water, which provides a strong handle to study the systematic uncertainties relevant to the neutrino energy reconstruction in the future long baseline oscillation experiments. The ANNIE Phase II detector will use Gadolinium-loaded water to detect the final state neutrons from neutrino interactions. It will also incorporate five Large Area Picosecond PhotoDetectors (LAPPDs) to improve the vertex and track reconstruction capability required by the physics goals. This presentation will give an overview of the Phase II detector upgrade and focus on the event reconstruction capability improved by the LAPPDs.

Primary author: WANG, Jingbo

Presenter: WANG, Jingbo

Session Classification: Posters & welcome receiption