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# The ANNIE Experiment - Phase II Physics and R&D

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) has completed Phase I background measurements and is now progressing towards its Phase II physics measurement. Located in the Fermilab Booster Neutrino Beam (BNB), the experiment has two primary goals: (1) perform a measurement of the production of neutrons from $\nu_\mu$ interactions as a function of $Q^2$ to constrain neutrino-nucleus interaction models, and (2) demonstrate the power of new fast-timing, position-sensitive detectors by making the first deployment of Large Area Picosecond PhotoDetectors (LAPPDs) in a physics experiment. LAPPDs are in commercialization and on track to be available on the timescale of the ANNIE physics phase. This poster describes the full physics and R&D programs of ANNIE Phase II, and near term plans for the experiment.

## Authorship annotation

the Accelerator Neutrino Neutron Interaction Experiment (ANNIE) Collaboration

## Session and Location

Wednesday Session, Poster Wall #122 (Auditorium Gallery Left)

## Poster included in proceedings:

yes

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**Track Classification:** Poster (not participating in poster prize competition)