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## Neutrino Physics and R&D at ANNIE

Thursday, 23 March 2023 13:40 (5 minutes)

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) is a 26-ton gadolinium-loaded water Cherenkov neutrino detector located in the Fermilab Booster Neutrino Beam. The experiment is performing a suite of targeted neutrino-nucleus interaction measurements while also serving as an R&D testbed for the future large-scale neutrino program. Ongoing measurements include characterization of neutrino-induced neutron production and backgrounds for DSNB and proton decay searches, and joint measurements with LArTPCs located in the same beamline to extract precision water/argon cross section ratios and improve nuclear modeling. The R&D program has included deployment of a Gd-loaded water target, Large-Area Picosecond Photodetectors (LAPPDs), and novel water-based liquid scintillator (WbLS) targets, all highly relevant to the future program. As a smaller experiment and collaboration, ANNIE can provide high-impact measurements and a flexible testbed for the evolving needs of the community, along with outstanding opportunities for holistic training of early career scientists. On account of these benefits, it is imperative that experiments of this scale receive robust and predictable support in the coming years.

### Please select if remarks will be in person or on zoom

On zoom

### Do you describe your self as early career?

### Please add details of experiment/project that this abstract corresponds to?

ANNIE

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