

Abstract Submitted
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Pulsed Neutron Source System for DUNE far detector calibration JINGBO WANG¹, South Dakota School of Mines Technology — In the Deep Underground Neutrino Experiment (DUNE), achieving the physics sensitivity for δ_{CP} requires a precision detector calibration that constrains the uncertainties from relevant detector response parameters. “Standard candle“ calibration sources are needed to assess the effectiveness of the detector model, but conventional methods are difficult due to the deep underground location and the large scale of the far detector. One of the novel ways is to inject neutrons into the liquid argon far detector using a Deuterium-Deuterium neutron generator. We are currently developing a Pulsed Neutron Source (PNS) system that could be externally placed outside the far detector cryostat for detector calibration. The system will inject neutrons across the entire detector volume and provide neutron capture signals with a fixed energy deposition of 6.1 MeV in the form of multi-gamma cascades. This presentation will include a description of the PNS system and the neutron generator test results at ProtoDUNE.

¹for the DUNE Collaboration

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