



Contribution ID: 47

Type: **not specified**

A High-Pressure Gaseous-Argon TPC as a Component of DUNE Near Detector

Friday, 19 March 2021 13:20 (20 minutes)

The main goals of the Deep Underground Neutrino Experiment (DUNE) are to measure CP violation in the lepton sector, to make precise measurements of neutrino oscillation parameters, to observe supernova burst neutrinos, and to detect rare processes such as proton decay. To fulfill these goals, DUNE will use a highly capable suite of near detectors with several components, one of which is the high-pressure gaseous-argon TPC (HPgTPC) surrounded by a calorimeter and a magnet. As a fine-grained tracker with a low detection threshold, HPgTPC is capable of measuring one of the most crucial sources of systematic uncertainties in neutrino oscillation measurements: nuclear effects in argon at the neutrino interaction vertex. In this talk, an overview of the HPgTPC design and the on-going R&D efforts will be presented.

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Session Classification: Gaseous Detectors

Track Classification: Gaseous Detectors