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Characterisation of Spatial Resolution in Drift Direction for T2K's High-Angle TPCs

Tuesday, September 30, 2025 7:00 PM (1 hour)

The near detectors of the T2K experiment in Japan have been upgraded with the installation of a set of three new detectors. The HA-TPCs have a novel lightweight composite field cage that allows thinner walls while maximizing the tracking volume and reducing the detector's material budget. Its readout system, Encapsulated Resistive Anode Micromegas (ERAMs), uses innovative resistive Micromegas technology, which enhances the detector's stability and robustness without compromising the spatial resolution. These technologies have been studied during several test beams and cosmic ray campaigns.
These detectors were installed in the 2023 autumn and 2024 spring at the J-PARC complex. Following a commissioning phase using cosmic rays and a neutrino beam. In June 2024, HA-TPCs began taking data with the fully upgraded ND280.
Residual-based analyses were performed on cosmic-ray data to evaluate spatial resolution along the drift direction and to study electric field behavior. Comparisons with Monte Carlo simulations using different noise models, along with data taken under varied electric field strengths, are presented.

Neutrino Properties

Detector for T2K near detector

Neutrino Telescopes & Multi-messenger

Detector for T2K near detector

Neutrino Theory & Cosmology

Detector for T2K near detector

Data Science and Detector R&D

Detector for T2K near detector

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Session Classification: Poster Session (with cocktail)