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The DUNE vertical drift TPC

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The DUNE experiment is a future long-baseline neutrino oscillation experiment aiming at measuring the neutrino CP violation and establishing the neutrino mass hierarchy, as well as at a rich physics programme from supernovae over low-energy physics to beyond standard model searches.

The baseline technology for the first far detector is a proven single-phase horizontal drift liquid Argon TPC based on standard wire-chamber technology.

For the second far detector, a new technology, the so-called "vertical drift" TPC is currently being developed: It aims at combining the strengths of the two technologies tested in the ProtoDUNE cryostats at the CERN neutrino platform into a single design, a vertical-drift single-phase liquid Argon TPC using a novel perforated-PCB anode design. This design maintains excellent tracking and calorimetry performance while significantly simplifying the complexity of the TPC construction.

This talk will introduce the concept of the vertical drift TPC, present first results from small-scale prototypes and a first full-scale anode module, as well as outlining the plans for future prototypes and the next steps towards the full second DUNE far detector.

In-person participation

Yes

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