Contribution ID: **131** Type: **Poster accelerator**

Energy reconstruction in DUNE-DP

The 4 10 kt Liquid Argon Time Projection Chambers (LAr-TPCs) of the future DUNE experiment will enable precise measurements of the oscillation parameters and the discovery of CP violation for leptons, thanks to their excellent 3D imaging capabilities coupled with a high-resolution calorimeter. One or more modules of the DUNE detector may exploit a dual phase (DP) LAr-TPC that, relying on the extraction of the charge produced in the liquid volume and its subsequent multiplication in argon gas, will increase the expected granularity and energy resolution. This poster summarizes the analysis technique under development for particles identification and energy reconstruction in DUNE-DP, and its preliminary validation using cosmic ray data from the CERN 4 t demonstrator. It is shown also the status of ProtoDUNE-DP, the dual-phase prototype of the DUNE detector, scheduled to take data in fall 2018, that will assess the potential of dual phase the technology for future neutrino detectors.

Authorship annotation

on behalf of the DUNE collaboration

Session and Location

Wednesday Session, Poster Wall #42 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)