



## Poster session 3 – Wednesday 6 July

### P3.096 **WA105: A large demonstrator of the Liquid Argon dual-phase TPC**

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*on behalf of WA105 collaboration*

The liquid argon technology has been chosen for the DUNE underground observatory for the study of neutrino oscillations, neutrino astrophysics and proton decay. This detector has excellent tracking and calorimetric capabilities much superior to currently operating neutrino detectors.

WA105 is a large demonstrator of the dual-phase liquid argon TPC based on the GLACIER design, with a  $6 \times 6 \times 6 \text{ m}^3$  (appr. 300t) active volume. Its construction and operation test scalable solutions for the crucial aspects of this detector: ultra-high argon purity in non-evacuatable tanks, long drifts, very high drift voltages, large area MPGD, cold preamplifiers.

The TPC will be built inside a tank based on industrial LNG technology. Electrons produced in the liquid argon are extracted in the gas phase. Here, a readout plane based on Large Electron Multipliers (LEM's) provides amplification before the charge collection onto an anode plane with strip readout. This highly cost effective solution provides excellent imaging capabilities with equal charge sharing on the x and y view. PMTs located on the bottom of the tank containing the liquid argon provide the readout of the scintillation light.

This demonstrator is an industrial prototype of the design proposed for a large underground detector. WA105 is under construction at CERN and will be exposed to a charged particle beam (0.5-20 GeV/c) in the North Area in 2018. The data will provide necessary calibration of the detector performances and benchmark sophisticated reconstruction algorithms. This project is a crucial milestone providing feedback for the long baseline neutrino program DUNE.