

Abstract Submitted  
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**Dynamic Temperature Profiler in  
ProtoDUNE** RANJAN DHARMAPALAN, University of Hawai'i, DUNE COL-  
LABORATION — Precise monitoring of the liquid argon temperature is crucial for  
large neutrino detectors such as the Deep Underground Neutrino Detector (DUNE)  
employing liquid argon time projection chamber (LarTPC) technology. Liquid argon  
temperature impacts the ionization electron drift velocity, liquid argon flow, purity  
distribution and thus the overall energy calibration. The dynamic temperature pro-  
filer is a 7 m vertical array of 24 sensors which measure cryogenic temperatures with  
a precision of a few mK. The profiler is motorized and moves vertically, while in  
the detector, and cross-calibrates neighboring sensors. The high precision allows  
monitoring of the recirculation efficiency and purification of liquid argon while pro-  
viding input to the fluid flow simulations. This talk reports on the operation of the  
dynamic temperature profiler in the ProtoDUNE experiment at CERN.

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