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Title: Demonstration of a modular liquid argon detector equipped with pixelated readout and novel light detectors for the DUNE near detector

Abstract: The Deep Underground Neutrino Experiment (DUNE) is a long-baseline neutrino oscillation experiment with a far detector site at the Sanford Underground Research Facility and a near detector (ND) site at Fermi National Accelerator Laboratory (Fermilab), separated by a baseline distance of 1300 km. The DUNE near detector site will contain a liquid argon detector (ND-LAr) with 70 optically separated time projection chambers (TPCs) in 35 distinct modules. The modular detector design required the development of novel technologies such as a pixelated charge readout and large-area dielectric light detectors. A demonstrator experiment for ND-LAr with four prototype modules in a 2x2 arrangement between upstream and downstream repurposed MINERvA tracking planes is being installed in the NuMI beam at Fermilab and starts taking data in 2023. The 2x2 demonstrator will study neutrino-Argon interactions in the few-GeV regime. Each TPC module is of size 0.7m x 0.7m x 1.4m and is equipped with a total of over 78k charge readout pixels and 96 light readout channels. Before installation they underwent extensive performance testing at the University of Bern during which over 5 million cosmic-ray events were recorded. In this talk, we present the detector technologies and design, as well as their individual and overall performance.