

Abstract Submitted
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Monitoring Liquid Argon Time Projection Chambers With A Raspberry Pi Camera¹ CRYSTAL PATTESON, Appalachian State University

— The MicroBooNE detector is the first of three liquid argon (LAr) time projection chambers (TPCs) that are central to the short-baseline neutrino program at Fermilab. These chambers consist of thousands of stainless steel or beryllium-copper sense wires that detect ionization electrons produced when neutrinos interact with liquid argon nuclei inside the detector. The wires are several hundred microns in diameter to several meters in length. The construction of such LAr TPCs often takes place in an assembly hall, which is different from the detector hall where the experiment will operate, as was the case with MicroBooNE. Since in situ access to the chamber and its wires in the beamline enclosure can be limited, we investigate the possibility of using a Raspberry Pi single-board computer connected to a low-cost camera installed inside the cryostat as a cost-efficient way to verify the integrity of the wires after transport. We also highlight other benefits of this monitoring device implemented in MicroBooNE, including detector hall surveillance and verification of the status of LED indicators on detector electronics.

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