

Abstract Submitted
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Purity Monitoring for ProtoDUNE-SP WENJIE WU, University of California, Irvine, DUNE COLLABORATION — The Deep Underground Neutrino Experiment (DUNE) is a next-generation long-baseline neutrino oscillation experiment which aims to measure the oscillation patterns of ν_μ/ν_e and $\bar{\nu}_\mu/\bar{\nu}_e$ over a range of energies. DUNE far detectors are based on liquid argon TPC (LArTPC) technology. In July 2020, DUNE's single-phase prototype ProtoDUNE-SP at CERN finished its 2-year Phase-1 running, which successfully collected test beam data and cosmic ray data. The DUNE collaboration is preparing the ProtoDUNE-SP Phase-2 run, expected to start in late 2022. The purity of liquid argon is essential for the successful operation of a LArTPC, the requirement of which is determined by the maximum drift length of ionization electrons. A purity monitor is a miniature TPC that measures the lifetime of electrons generated from the photocathode via the photoelectric effect. It enables continuously monitoring of the state of the detector, especially while filling the cryostat and when liquid argon recirculation systems are operating. The purity monitoring system in ProtoDUNE-SP Phase-1 consists of three purity monitors. It continuously monitored liquid argon purity throughout the entire lifetime of ProtoDUNE-SP Phase-1, which was critical to the experiment's successful commissioning,

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