

Cold Electronics Readout System for the ProtoDUNE-SP LAr-TPC

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The Deep Underground Neutrino Experiment (DUNE) is an international long-baseline neutrino experiment. DUNE will consist of an intense neutrino beam produced at Fermi National Accelerator Laboratory in Batavia, Illinois. The far detector will comprise of four Liquid Argon Time Projection Chambers (LArTPC) holding in total around 40 ktons of fiducial mass and will be placed at the Sanford Underground Research Laboratory in South Dakota at 1300 kilometres downstream of the source.

The availability of two variants of the LArTPC technology, Single- and Dual-Phase, for the DUNE far detector, has led to an extensive prototype program development at the European Research Center (CERN) Neutrino Platform facility. The Single Phase (SP) TPC readout electronics are referred to as the “Cold Electronics (CE)” because they will operate in LAr, to minimize channel capacitance and noise by keeping the length of the connection between the anode wires and its corresponding electronics input to an absolute minimum. I will summarize the CE system and present preliminary results from cold electronics after the ProtoDUNE-SP beam run in late 2018.

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