

New Technologies for Discovery IV: The 2018 CPAD Instrumentation Frontier Workshop

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Dual-Phase LArTPC R&D for neutrino physics

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The Dual-Phase Liquid Argon Time Projection Chamber (LArTPC) aims to open new windows of opportunity in the study of neutrinos. Dual-phase LArTPCs are one of the far detector technology options foreseen for the Deep Underground Neutrino Experiment (DUNE) at Fermilab. Dual Phase (DP) refers to the extraction of ionization electrons at the interface between liquid and gaseous argon and their amplification and collection in the gas phase. Recently, there are lots of ongoing R&D activities on Dual-Phase design, namely 3x1x1 m³ pilot detector and protoDUNE-DP LArTPC detector at CERN. protoDUNE-DP will be operating at the CERN neutrino platform. It not only serves as the engineering prototype of the FD, but will also demonstrate the concept of a very large dual-phase LAr TPC and calibrate it with charged particle test beam. We will briefly discuss design, installation and status of the protoDUNE Dual-Phase detector at CERN.

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