

Large Liquid Argon TPCs and the search for CP Violation in the lepton sector with long baseline experiments

Friday, February 22, 2019 2:00 PM (45 minutes)

With three-neutrino-families mixing firmly established in recent years, and the relatively large value of θ_{13} observed, the race is on to discover CP Violation in neutrino mixing in accelerator-driven long baseline neutrino oscillation experiments. NOvA and T2K will continue to provide increasingly precise measurements of the PMNS mixing matrix parameters into the next decade. DUNE will use giant Large TPCs deep underground in South Dakota to detect neutrinos from Fermilab starting early in the second half of the next decade. Hyper-K in Japan intend to use a giant underground water Cerenkov to detect the neutrino beam from J-PARC. Both experiments would resolve the neutrino mass ordering question and achieve excellent CP Violation sensitivity. The kiloton-scale single phase ProtoDUNE (NP04) at the CERN Neutrino Platform has demonstrated the LAr TPC design for the DUNE Far Detector. Construction, operation and performance of this detector will be the main focus of this contribution.

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Session Classification: Plenary 5