The ND280 Near Detector of the T2K Experiment

WILLIAM COLEMAN, Louisiana State University, T2K COLLABORATION — The Tokai to Kamioka (T2K) experiment is a long-baseline neutrino oscillation experiment designed to improve the sensitivity to $\theta_{13}$ and to determine more accurately the “atmospheric” parameters $\theta_{23}$ and $\Delta m^2_{23}$. For this purpose a high intensity $\nu_\mu$ beam ($\sim$700 MeV peak energy) produced at the JPARC accelerator complex is directed towards the Super-Kamiokande (SK) detector at a distance of 295 km. An off-axis near detector (ND280), 280 m from the production target, was designed and constructed to measure the energy spectrum, flavor content and neutral and charged current interaction rates of the un-oscillated neutrino beam. All ND280 detector components - Time Projection Chambers (TPCs), Fine-Grained Scintillator detectors (FGDs), electro-magnetic calorimeters (ECALs) and Side Muon Range Detector (SMRD) – have been commissioned and physics data taking is underway. In this presentation, the performance of ND280 and its role in the T2K analyses will be discussed.