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Assembly, Test and Analysis Development of the T2K Upgrade

Tuesday 22 August 2023 16:00 (20 minutes)

The near detector of T2K (ND280) is undergoing a major upgrade. A new scintillator tracker, named super-FGD, with fine granularity and 3D-reconstruction capabilities has been assembled at J-PARC. The new Time Projection Chambers are under construction, based on the innovative resistive Micromegas technology and a field cage made of extremely thin composite walls. New scintillator panels with precise timing capability have been built to allow precise Time of Flight measurements.

The detector is currently in assembly phase following a detailed effort of characterization during detector production. The results of multiple tests of the detectors with charged beams, neutron beam, cosmics and X-rays will be presented. Among these results, we could mention the first measurement of neutron cross-section with the superFGD and the first detailed characterization of the charge spreading in resistive Micromegas detectors.

Thanks to such innovative technologies, the upgrade of ND280 will open a new way to look at neutrino interactions thanks to a significant improvement in phase space acceptance and resolution with an enhanced purity in the exclusive channels involving low-momentum protons, pions and neutrons. Sensitivity results and prospects of physics capabilities will be also shown.

Collaboration / Activity

T2K collaboration

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