



ID de Contribution: 152

Type: Non spécifié

Recent results and future prospects from the T2K experiment

mercredi 29 mars 2023 14:30 (25 minutes)

T2K is a long-baseline neutrino oscillation experiment in Japan. Muon neutrinos are generated by the J-PARC proton beam, and are detected by near detector, ND280, and far detector, Super-Kamiokande. The main purposes are a precise measurement of neutrino mixing parameters and a search for the CP violation in the lepton sector.

In 2022, there were significant updates in the analysis of the neutrino oscillation. The neutrino flux prediction and neutrino interaction models were improved based on the latest knowledge and experimental data. In addition, new samples and event selections were added to the near and far detectors. As a result, the CP violation in the lepton sector was indicated at the 90% confidence level.

In order to improve the precision, upgrades of the T2K experiment are ongoing. The J-PARC accelerator and neutrino beamline are being upgraded to increase the beam power. In addition, a construction of the new near detector is ongoing to reduce systematic errors mainly due to uncertainties of the neutrino interaction models.

In this talk, we will report the recent results and future prospects from the T2K experiment.

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Classification de Session: Session

Classification de thématique: Neutrinos