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Muon neutrinos and antineutrinos disappearance analysis from T2K

T2K is an experiment designed to observe neutrino oscillations with a baseline of 295 km across Japan from the J-PARC accelerator complex to the Super-Kamiokande detector.

Its main goal is to measure oscillation parameters through ν_μ disappearance and ν_e appearance. Recently, T2K excluded values of δ_{CP} at 3σ confidence for the first time.

I will present two analyses studying for the disappearance of muon neutrinos and antineutrinos, using samples of muon-like events recorded by the T2K experiment. The first analysis uses the conventional PMNS model, to extract the parameters θ_{23} and Δm_{32}^2 using two separate parametrization for neutrinos and antineutrinos, testing CPT compatibility and any unconventional matter effect.

The second analysis uses a 'two-flavour' oscillation model allowing $\sin^2(\theta_{23}) > 1$, allowing the oscillation probability to go beyond PMNS and test its consistency.

Mini-abstract

T2K ν_μ and $\bar{\nu}_\mu$ disappearance analysis using a 3- and 2-flavour oscillation model.

Experiment/Collaboration

T2K Collaboration

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