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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  $\nu_\mu$  disappearance and  $\nu_e$  appearance. Recently, T2K excluded values of  $\delta_{CP}$  at  $3\sigma$  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  $\theta_{23}$  and  $\Delta m_{32}^2$  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  $\nu_\mu$  and  $\bar{\nu}_\mu$  disappearance analysis using a 3- and 2-flavour oscillation model.

### **Experiment/Collaboration**

T2K Collaboration

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