Contribution ID: **272** Type: **Poster**

Measurement of the Leptonic CP Violation Phase With a New Parameterization Using T2K Neutrino Oscillation Data

The T2K experiment is designed to measure neutrino oscillations with a baseline 295 km and peak neutrino beam energy E = 0.6 GeV. One of the main goals of the experiment is to obtain the most precise confidence interval for the oscillation parameter: leptonic CP-violation phase δ_{CP} in the PMNS framework. This is achieved by performing a joint and constrained fit, using data from both the neutrino and antineutrino modes.
The CP-violation phase enters in the actual oscillation probabilities as two separate terms, which contribute differently to the oscillation probabilities, but which are internally constrained to satisfy unitarity.
In the work presented, the T2K data has been fitted with a reparametrized PMNS framework, in which the two δ_{CP} terms are treated separately. Such an approach allows testing whether the T2K neutrino oscillation data allows for any significant non-standard PMNS behaviour in terms of δ_{CP}.

Mini-abstract

A reparametrized PMNS framework to measure δ_{CP} using T2K neutrino oscillation data

Experiment/Collaboration

T2K Experiment

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Session Classification: Poster session 4