



Contribution ID: 1142

Type: Poster

New 2-ring ν_e CC1 π^+ samples at the T2K Far Detector

Friday, 8 July 2022 20:10 (20 minutes)

The T2K experiment is a long-baseline accelerator neutrino experiment in Japan that measures the leptonic CP-violating phase δ_{CP} by studying ν_e appearance from the ν_μ beam at T2K's far detector, Super Kamiokande (SK). The near detector (ND280) stands 280 metres, and SK stands 295 km away from the beam production target. SK is a 50 kton water-Cherenkov detector that observes Cherenkov rings from charged particles produced in neutrino interactions with water.

Both single and multi-ring samples for ν_μ at SK are used in T2K's latest oscillation analyses, while for ν_e , only single-ring samples are used. Charged current single π^+ events form the second most dominant signal events in ν_e appearance studies, of which events with π^+ below Cherenkov threshold are used in the latest analysis (1 e-like ring and a decay electron signature). The addition of the sample with π^+ above the Cherenkov threshold, consisting of an e-like ring and a π^+ -like ring can increase the statistics of ν_e events and thus our sensitivity to δ_{CP} . In this poster, I will discuss the cuts-based selection of these 2-ring ν_e CC1 π^+ events, the backgrounds that impact the selection, and the cut optimization.

In-person participation

Yes

Primary author: S. PRABHU, Yashwanth (NCBJ Warsaw)**Presenter:** S. PRABHU, Yashwanth (NCBJ Warsaw)**Session Classification:** Poster Session**Track Classification:** Neutrino Physics