



Contribution ID: 386

Type: talk

Flux and Neutrino interaction model constraints using the T2K near detectors

Thursday 23 July 2015 11:45 (15 minutes)

Since 2014, the T2K long-baseline neutrino oscillation experiment in Japan has been running with reversed horn current to produce a beam enhanced in muon antineutrinos. Near detectors located 280 meters from the target study the neutrino interactions prior to the onset of neutrino oscillations. By selecting muon (anti)-neutrino charged current interactions in various channels of pion multiplicity, the neutrino flux and interaction model uncertainties are greatly reduced. In particular, the large contamination of neutrino interactions in the antineutrino mode can be measured and constrained, a critical handle in the study of antineutrino oscillations at T2K. We present the results of a combined analysis of data from both neutrino-enhanced and antineutrino-enhanced running using an updated neutrino interaction model to incorporate multi-nucleon and other nuclear effects.

additional information

I am submitting this as Chair of the T2K Speakers Board. Abstracts selected as talks will have speakers allocated according to T2K collaboration procedure.

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Session Classification: Neutrino Physics

Track Classification: Neutrino Physics