



Contribution ID: 92

Type: Parallel Flash talk

Towards the cross-section measurement of the charged current muon antineutrino single pion production in the T2K near detector

Friday, 19 February 2021 11:35 (5 minutes)

The goal of the presented analysis is the measurement of the muon antineutrino single π^- production interactions on CH ($\bar{\nu}_\mu + N \rightarrow \mu^+ + \pi^- + X$) in the T2K off-axis near detector. This interaction mode is the second largest at T2K energies and studies are ongoing to include such events in T2K oscillation analysis which for $\bar{\nu}_\mu$ beam mode is currently limited to Charged Current (CC) quasi-elastic events. For this reason, a more detailed understanding of this interaction channel using near detector data is becoming increasingly vital. The measurement will be a double differential cross-section in muon kinematics and will be extracted using a binned likelihood fit. The event selection strategy developed for this analysis along with the validation studies performed to check the analysis robustness are discussed in this presentation.

Collaboration name

T2K

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Session Classification: Cross Sections

Track Classification: Neutrino Masses and Mixings