

Far-Detector Neutral Current π_0 Events for T2K's Oscillation Analysis

Wednesday 9 April 2025 12:00 (15 minutes)

Current neutrino experiments are making world-leading measurements of the PMNS parameters and are continuing to collect data and improve their analyses to push towards the precision era. In such efforts, new data targeting neutral current π^0 interactions are being added to the T2K oscillation analysis. This sample constrains the π^0 background in the electron neutrino appearance dataset as well as the unoscillated neutral current background in muon disappearance samples. In addition, understanding these π^0 events may allow poorly reconstructed electron-like events to be added into the analysis. Work on the inclusion of this sample is currently ongoing and may be presented.

Furthermore, for precision measurements, solely relying on the assumption of unitarity will no longer be viable in the precision era but needs to be tested. To achieve this, new presentations are needed that can directly test unitarity or allow theorists and global fitters more precise combinations without assuming unitarity. Some of such possible presentations will also be briefly discussed.

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