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Predicting the T2K far detector event rate using near detector data

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Summary

The Tokai to Kamioka (T2K) experiment is a long baseline neutrino oscillation experiment, using a nearly pure muon neutrino beam produced by the J-PARC accelerator. The neutrinos are produced on the east coast of Japan and then detected after travelling 295 km to the far detector, Super-Kamiokande (SK). A suite of detectors located 280 meters from the neutrino production target is used to measure both the neutrino beam direction and the neutrino interaction rate. Together these provide the predicted, unoscillated event rate at SK with a total uncertainty of around 6%. This talk will present the results of the T2K near detector fit used for this prediction, describing the fit method, how it informs the T2K neutrino interaction model and the expected improvements for future T2K oscillation analyses.

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