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Muon Neutrino Disappearance Measurement at T2K

In this poster, we present the T2K numu-disappearance analysis using the Run1-4 T2K data (6.57e20 protons on target). T2K is a long-baseline neutrino oscillation experiment, where a beam of mostly muon neutrinos travels 295 km west from the J-PARC facility to Super-Kamiokande, a water Cherenkov detector with 22.5 ktonnes fiducial mass. One of the experiment's aims is to measure the amount of numu-disappearance. To this end, an analysis was performed on 120 events observed at Super-K assuming the full three-flavor oscillation framework. This analysis finds that the best fit numu-disappearance parameters are sin^2(\theta_{23})=0.514^{+0.055}{-0.056} (0.511\pm0.055) and dm^2{32}=(2.51\pm0.10)x10^{-3} eV^2 (dm^2_{13}=(2.41\pm.010)x10^{-3} eV^2) for the normal (inverted) hierarchy. This analysis puts the current best constraints on the value of the mixing angle \sin^2(\theta_{23}).

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