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T2K latest neutrino oscillation results

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T2K is a long baseline neutrino experiment which exploits a neutrino and antineutrino beam produced at the Japan Particle Accelerator Research Centre (J-PARC) to provide world-leading measurements of the parameters governing neutrino oscillation. Neutrino oscillations are measured by comparing neutrino rates and spectra at a near detector complex, located at J-PARC, and at the water-Cherenkov far detector, Super-Kamiokande, located 295 Km away.

The latest T2K results include multiple analysis improvements, in particular a new sample is added at the far detector requiring the presence of a pion in muon-neutrino interactions. It is the first time that a pion sample is included in the study of neutrino disappearance at T2K and, for the first time, a sample with more than one Cherenkov ring is exploited in the T2K oscillation analysis, opening the road for future samples with charged- and neutral-pion tagging. The inclusion of such a sample assures proper control of the oscillated spectrum on a larger neutrino-energy range and on subleading neutrino-interaction processes. Results of the oscillations fits and prospects for future improvements will be discussed.

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