

Initial probe of δ_{CP} by T2K with muon neutrino disappearance and electron neutrino appearance

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T2K is a long-baseline neutrino oscillation experiment in which a muon neutrino beam is produced at the J-PARC facility and detected by Super-Kamiokande, a water Cherenkov detector with a 22.5 kton fiducial mass, after traveling 295 km. Since 2010, T2K has accumulated 6.57×10^{20} protons on target, which is 8% of the experimental goal. T2K has observed 120 ν_{μ} event candidates, which show a clear disappearance oscillation pattern, and 28 ν_e event candidates, with which ν_e appearance was established. The measurement of ν_e appearance is particularly important because it enables us to determine the δ_{CP} phase when θ_{23} and θ_{13} are known. Using the values of θ_{23} determined by the T2K disappearance measurement and θ_{13} measured by reactor $\bar{\nu}_{e}$ disappearance measurements, T2K has obtained the first constraint on the δ_{CP} phase from a ν_e appearance measurement. In addition to this result, future prospects, including running with antineutrino-mode beam and continued analysis improvements, will also be shown.

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