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Overview of the T2K experiment

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T2K is a long baseline neutrino experiment in Japan producing a beam of (anti-)neutrinos at an accelerator complex and studying their oscillations by comparing the measured (anti-)neutrino spectrum at the near detector ND280 and at the water Cherenkov detector Super Kamiokande (Super-K), located 295 km away. Over the recent years, significant updates were applied to the T2K oscillation analysis, including: improved neutrino interaction modelling, updated flux predictions, and new selection samples in both ND280 and Super-K. In 2024 the technical upgrade of the near detector was finalised and T2K entered the second phase of the experiment. This presentation covers the current oscillation analysis results, recent cross section measurements and the experimental advantages of the ND280 upgrade.

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