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Prospect of future neutrino oscillation analysis with T2K's upgraded near detector.

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T2K is a long-baseline experiment measuring neutrino and antineutrino oscillations by observing the disappearance of muon neutrinos, as well as the appearance of electron neutrinos. The ND280 near detector at J-PARC plays a crucial role to minimise the systematic uncertainties related to the neutrino flux and neutrino-nucleus interactions of the un-oscillated neutrino beam. The ND280 detector has recently been upgraded with a new suite of sub-detectors: a high granularity SuperFGD with 2 million optically-isolated scintillating cubes read out by wavelength shifting fibres and 55000 Multi-Pixel Photon Counters; two horizontal Time-Projection Chambers instrumented with resistive Micromegas, and additionally six panels of scintillating bars for precise time-of-flight measurements. These new detectors permit analyses with lower tracking thresholds, full angular acceptance and the measurement of kinematics of neutrons produced in neutrino interactions. Alongside this upgrade, the three magnetic horns that select the charge of the decay hadrons produced at the neutrino beamline had their current increased from 250kA to 320kA, leading to a purer neutrino/anti-neutrino flux. The following talk will focus on the effort done to validate and quantify the effects of those improvements in prospect of future neutrino oscillation analysis.

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