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Estimation of systematic uncertainties for the data analysis in the near detector of the T2K neutrino experiment

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The Tokai-to-Kamioka (T2K) [1] is a flagship long-baseline accelerator experiment located in Japan. T2K is designed to measure neutrino oscillation parameters and further probe CP violation in the lepton sector of the Standard Model. The near detector ND280 [1] is an essential part of the experimental facility. The detector studies various interaction channels, the flavor content and energy spectrum of the un-oscillated neutrino beam. Its data are used to tune parameters of the cross-section and flux models, thereby reducing systematic uncertainties and enhancing the precision of neutrino oscillation measurements. ND280 is a complex apparatus consisting of several modules. The structure leads to various sources of systematic uncertainties related to simulation and tracking of neutrino interaction products. The methods used to estimate the systematic errors and to propagate them through the stages of the oscillation analysis will be presented in the poster.

[1] Abe K. et al. [T2K Collaboration], “The T2K experiment”, Nuclear Instruments and Methods in Physics Research, vol. 659, 2011.

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