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Measurement of the charged-current electron (anti-)neutrino cross-section on plastic with the T2K neutrino beam in the off-axis near detector ND280

Summary

The intrinsic electron neutrino contamination of the T2K neutrino beam provides the single largest background in the measurement of electron neutrino appearance at the far detector. These electron neutrinos can be measured directly in the T2K near detector, ND280. With the transition to antineutrino running the selection of both electron neutrinos and electron anti-neutrinos are important. Measurements of the intrinsic electron (anti-)neutrino backgrounds from both neutrino and antineutrino beam mode will be presented with details on the event selection and rejection of the large backgrounds of muons, photons, protons and pions. The selected events are used to measure the inclusive charged-current electron neutrino and electron anti-neutrino cross-sections, the latter being the first measurement since 1979.

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