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An improved muon neutrino charged-current single positive pion cross section on water using michel electron reconstruction in the T2K near detector

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Alongside acting as the off-axis near detector for T2K, ND280 is also used to measure a variety of neutrino interaction rates, in order to give a better understanding of the individual cross sections.

I will present the status of an updated measurement of the muon neutrino cross section with one positively charged pion in the final state ($\nu_\mu \text{CC} 1\pi^+$) in ND280. The updated measurement will provide access to new regions of phase space, with the inclusion of kinematic reconstruction of the charged pion from its subsequent decay chain to Michel electrons, the first time this technique will have been used in T2K analyses. Increased statistics and updated systematic treatments will also provide a more accurate measurement.

New or updated neutrino cross section measurements can be used to compare to our current interaction models, in order to reduce model-related systematics, which will be particularly important for next generation oscillation experiments.

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