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**Measuring the Muon Neutrino Charged Current Cross Section on Water using the Near Detector of T2K** RAJARSHI DAS, Colorado State University, T2K COLLABORATION — The Near Detector of the T2K Long Baseline Neutrino Oscillation Experiment comprises of several sub-detectors working together to study neutrino interactions. The neutrinos are provided by a powerful off-axis, accelerator generated neutrino beam located at the J-PARC facility in Tokai, Japan. The first sub-detector in the path of travelling neutrinos, the Pi-Zero Detector (P0D), is made of layers of scintillating plastic, lead, brass and bags of water. The next sub-detector, the Tracker, consists of alternating Time Projection Chambers (TPC) and Fine Grained scintillator Detectors (FGD). We outline the procedure for extracting a muon neutrino charged current cross section on water-only by selecting muons originating in the P0D and travelling through the Tracker. We compare data collected while the P0D water bags are filled with water against data from P0D water bags filled with air. A detailed detector simulation utilizing NEUT and GENIE neutrino interaction generators is used in conjunction with a Bayesian Unfolding scheme to correct for detector effects in the data. The end result is a model-independent double differential neutrino cross section as a function of muon momentum and direction.

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