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Identifying NuE-CC and NuEbar-CC in the LBNE Water Cerenkov Detector TYLER ALION, HONGYUE DUYANG, ANDREW SVENSON, SANJIB MISHRA, SEUNGYOONH HAN, The University of South Carolina — A 200 kt Water Cherenkov (WC) detector is one of the proposed LBNE far detectors which will be placed 1300 km from the neutrino source. We present a status of the identification of NuE Charged-Current (CC) and NuEbar-CC in the WC in the 0.5–8 GeV neutrino energy, a range pertinent to LBNE. The first and second oscillation maxima occur at 2.5 and 0.8 GeV, respectively. In the first maximum the majority of CC are composed of non quasi-elastic interactions. Neutral Current (NC) induced pions constitute the dominant background to the NuE and NuEbar appearance. This study relies upon a scan of Monte Carlo generated events including about 1,000 NuE-CC, 200 NuEbar-CC, and 10,000 NC. In a blind scan, where the signal NuE-CC and background NC events are mixed, events with one, two, and three rings are identified. The energy and angle of the selected events are smeared using the Super-Kamiokande's parametric resolution functions. Simple kinematic cuts were imposed to reduce the NC background while keeping the signal efficiency high. We present the CC identification efficiency as a function of visible neutrino energy as well as presenting a set of notable kinematic distributions.

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