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T2K Outer Detector Events TARITREE WONGJIRAD, Duke University, T2K COLLABORATION — In the long-baseline neutrino oscillation experiment, T2K, the Super-Kamiokande (Super-K) detector is used to detect neutrino interactions from a beam originating 295 km away. Super-K is a 50 kTon water Cerenkov detector originally built to observe proton decay, and to study atmospheric, solar and supernova neutrinos. As a result, it is divided into two segments: a cylindrical inner volume, termed the Inner Detector (ID), nested inside another cylindrical outer volume, termed the Outer Detector (OD). Typically, the OD's role in physics studies at Super-K is to act as a cosmic ray veto for the ID. However, in the T2K experiment neutrino interactions originating from the beam occur within a small, well-known time window. Accepting only coincident events with the beam into the T2K data sample provides a large enough suppression to the background rate that events containing light in the OD can still be considered as coming from neutrino interactions. From volume considerations alone, including such OD events provides an additional number of events comparable to the number of events expected in the ID. In this talk, I will describe the techniques used to separate neutrino events in the OD from the relatively small amount of backgrounds and present the results of these techniques from the first phase of data taking.

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