

Abstract for an Invited Paper  
for the SES11 Meeting of  
The American Physical Society

### **The T2K Experiment**

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The T2K experiment is designed to study neutrino oscillation. In particular, it is designed to measure the final, previously unmeasured oscillation mixing angle, known as  $\theta_{13}$ . This mixing angle is responsible for allowing muon neutrinos to oscillate to electron neutrinos. T2K features a nearly pure beam of muon neutrinos, produced at the J-PARC accelerator complex in Tokai, on the East coast of Japan. This beam travels 295 km through the earth, and emerges at the Super-Kamiokande detector, in the mountains in Western Japan, where the neutrinos are detected. At this far detector, the appearance of electron neutrinos from the  $\nu_\mu$  beam can indicate non-zero  $\theta_{13}$ . Six electron neutrino candidate events were observed at Super-Kamiokande, with an expected background of 1.5. The probability of observing six or more events from just background is just 0.7%.