T2K AND THE POTENTIAL OF LONG-BASELINE NEUTRINO OSCILLATION EXPERIMENTS

A. D. Marino

University of Colorado at Boulder

Over the past decade compelling evidence has emerged that neutrinos have non-zero masses and that neutrinos change from one flavour to another. Intense neutrino beams generated by particle accelerators are now being used to more precisely probe the spectrum of neutrino masses and mixing.

This talk will focus primarily on the Tokai-to-Kamioka (T2K) project, now under construction in Japan, which will study a beam of muon neutrinos produced at J-PARC on the east coast of Japan. With two neutrino detectors, a new detector located near the origin of the beam and the existing Super-Kamiokande detector, T2K will look for the disappearance of muon neutrinos and the appearance of electron neutrinos as the beam travels 295 km through the Earth. The T2K neutrino beam will begin operation in the spring of 2009.

The physics goals and future measurement potential of T2K and other long-baseline neutrino experiments will be presented.