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From T2K to Hyper-K: Status and Prospects for Long Baseline Neutrino Physics in Japan [INVITED]

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The T2K experiment is a long baseline neutrino experiment in Japan that detects neutrino oscillations over a 295 km baseline with the Super-Kamiokande detector. In 2013 T2K showed evidence for the oscillation of muon neutrinos into electron neutrinos. This measurement established the possibility of CP violation in neutrino oscillations. Currently the T2K and NOvA experiments are operating with both neutrino and antineutrino beams to search for CP asymmetries in the oscillation probabilities. The next generation of long baseline experiments, Hyper-K and DUNE, will use even larger, more sensitive detectors to make searches for CP violation in neutrino oscillations and precision measurements of the parameters governing oscillations. I will review the status of the T2K experiment and discuss the prospects for the Hyper-K experiment. I also review important steps for systematic error reduction to achieve the full physics sensitivity of next generation neutrino oscillation experiments.

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