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Neutrino Oscillations at the T2K and Hyper-Kamiokande Experiments

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Long baseline neutrino experiments, such as the Tokai-to-Kamioka experiment (T2K), study the phenomenon of neutrino oscillations using beams of accelerator produced muon neutrinos or muon antineutrinos. With the discovery of the muon neutrino to electron neutrino oscillation channel in 2014, the T2K experiment established the possibility to search for CP violation in neutrino oscillations. Since that time, T2K has collected data with neutrino and antineutrino beams to probe potential CP asymmetry. I will present the most recent measurements from T2K. Hyper-Kamiokande (Hyper-K), approved in 2020, is the next-generation successor of the T2K and Super-Kamiokande experiments, with an 8 times larger detector and 2.5 times higher intensity beam. In this presentation, I will describe the measurement program of the Hyper-K project, the strategy for controlling systematic uncertainties in precision measurements at Hyper-K, and the status of the project. I will focus on planned Canadian contributions to the Hyper-K experiment, including the Intermediate Water Cherenkov Detector, and multi-PMT photosensors.

Author: Dr HARTZ, Mark (TRIUMF & Kavli IPMU, University of Tokyo)

Presenter: Dr HARTZ, Mark (TRIUMF & Kavli IPMU, University of Tokyo)

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