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(I) Neutrino Physics and Beyond at T2K and Hyper-Kamiokande

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The Kamiokande, Super-Kamiokande (Super-K) and SNO+ experiments have established large-scale water Cherenkov detectors as powerful tools for the study of neutrinos and the search for new physics processes. Operating since 2009, the T2K experiment has used an accelerator source of neutrinos to study neutrino oscillations with the Super-K detector. In 2020, the successor to T2K and Super-K, Hyper-Kamiokande (Hyper-K), was approved in Japan. Hyper-K will have a sensitive mass 8 times larger than Super-K, and receive a neutrino beam with 2.5 times the intensity of T2K. The unprecedented statistics collected at Hyper-K will allow for precision measurements of neutrino oscillations, including the most sensitive search for CP violation. Hyper-K will also have significantly improved sensitivity for nucleon decay searches, burst and diffuse supernova neutrino detection and dark matter searches, amongst a broad physics program. In this talk, I will review the status of the T2K experiment and the status and plans for the construction of the Hyper-K detector and experiment. I will highlight the Canadian contributions to the Hyper-K project, including contributions to the Intermediate Water Cherenkov Detector, photosensors, calibration systems, and data analysis techniques using machine learning.

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