



University
of Victoria

PHYSICS AND ASTRONOMY COLLOQUIUM (In Person Only)

Xiaoyue Li
TRIUMF

“Unlocking the physics potential of Hyper-Kamiokande”

Abstract

Ever since the first measurements were made of these ghostly particles, neutrinos have captivated physicists because of their unusual properties. One notable peculiarity is that neutrinos can seemingly change flavours as they propagate — a phenomenon known as neutrino oscillation. Decades of neutrino experiments have revealed a great deal of their nature, yet many unanswered questions remain: Is there CP-violation in the lepton sector? Which neutrino is the lightest? Are there neutrinos beyond the three generations? The answers to these questions may hold the key to discovering physics beyond the Standard Model and deepen our understanding of the universe, but answering them requires detectors much more powerful than those currently in operation. In this talk, I will start by discussing ongoing long-baseline neutrino experiments, and then delve into the next-generation experiment Hyper-Kamiokande (Hyper-K) and how it aims to tackle these questions and more. I will also highlight various strategies we are employing to overcome the obstacles in realizing the full potential of Hyper-K, including the Water Cherenkov Test Experiment (WCTE) at CERN and its potential contributions.

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