Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **2553** Type: **Oral (Non-Student) / Orale (non-étudiant(e))**

WITHDRAWN - Water Cherenkov Detector Calibration for Super-Kamiokande and Hyper-Kamiokande

The future Hyper-Kamiokande neutrino oscillation experiment has the potential to discover CP violation in the lepton sector. In order to distinguish the small difference between neutrino and antineutrino oscillation, the experiment is designed to achieve an unprecedented statistical uncertainty of 3%. Correspondingly, a systematic uncertainty below this level is necessary for a robust and precise measurement. Water Cherenkov detector calibration will become one of the limiting systematics and will require significant improvements. This talk will review the various Super-Kamiokande calibration data, including laser and radiation sources, and Canadian initiatives on photosensor characterization and photogrammetry for detector geometry determination. These initiatives are expected to bolster our low-level understanding and facilitate a bottom-up modeling of the detector that consistently describes all data. A prototype Hyper-K intermediate water Cherenkov detector is planned to be installed in a CERN beamline to test these calibration techniques and demonstrate a percent-level understanding.

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Session Classification: R2-10 Neutrinos and more (PPD) | Neutrinos et davantage (PPD)

Track Classification: Particle Physics / Physique des particules (PPD)