

11th International Workshop on Ring Imaging Cherenkov Detectors (RICH2022)



Contribution ID: 79

Type: **presentation**

Photodetection and electronic system for the Hyper-Kamiokande Water Cherenkov detectors

Tuesday 13 September 2022 14:25 (25 minutes)

Hyper-Kamiokande is a next-generation neutrino experiment that is under construction in Japan. Its multi-decade physics program addresses appealing, unsolved questions in physics, like the discovery of CP-violation in the leptonic sector and searches for proton decay. It will be used to make a long-baseline neutrino oscillation measurement using the upgraded J-PARC accelerator, upgraded T2K near detector, a new Intermediate Water Cherenkov detector and the new far detector. The Hyper-Kamiokande far detector will be the world's largest underground water Cherenkov detector, with a fiducial volume 8 times the size of the currently running Super-Kamiokande detector. It will be hosted in the Tochibora mine, 295 km away from the J-PARC. Hyper-Kamiokande's far detector will have two optically separated volumes. The inner volume will be instrumented with 20,000 new 50 cm photomultiplier tubes (PMTs) that offer significant performance improvements. In addition, approx. 1000 multi-PMT modules will be installed, which will improve the calibration capabilities of the detector. The outer volume will be instrumented with about 8,000 3-inch PMT's. The readout electronics of the far detector will be placed underwater, and extensive R&D is on-going to ensure high reliability of the developed systems. The talk will present an overview of the photodetection and readout systems of the Hyper-Kamiokande detector. We will also briefly mention additional calibration possibilities thanks to the use of multi-PMT modules.

Author: KISIEL, Jan Emil (University of Silesia (PL))

Presenter: KISIEL, Jan Emil (University of Silesia (PL))

Session Classification: Cherenkov detectors in astroparticle physics

Track Classification: Cherenkov light imaging in neutrino and astroparticle physics experiments