



Contribution ID: 345

Type: **Poster**

## A multi-PMT photodetector system for the Hyper-Kamiokande experiment

*Thursday, 26 May 2022 15:59 (1 minute)*

Hyper-Kamiokande (Hyper-K) is to be the next generation of large-scale water Cherenkov detectors. With a volume an order of magnitude bigger than its predecessor Super-Kamiokande (Super-K) and improved photo-sensors' system and beamline, Hyper-K aims to obtain exciting results in many fields such as the study of CP violation in the leptonic sector, the search for proton decay and the study of accelerator, atmospheric, solar neutrinos and neutrinos from astronomical origin.

For the Hyper-K far detector, to improve Hyper-K physics capability, there are plans to adopt a hybrid configuration that combines the 20" PMTs, already adopted in Super-K, with the multi-PMT (mPMT) modules, a novel technology first designed for the KM3NeT experiment.

A mPMT module based on a pressure vessel instrumented with 19 multiple small diameter (7.7 cm) photo-sensors, each one with a different orientation, readout electronics and power, offers several advantages as increased granularity, reduced dark rate, weaker sensitivity to Earth's magnetic field, improved timing resolution and directional information with an almost isotropic field of view.

In this contribution the prospects of physics capabilities with a hybrid configuration as well as the testing results on mPMT prototypes and Hyper-K's mPMT program will be discussed.

### Collaboration

Hyper-Kamiokande

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**Session Classification:** Detectors Techniques for Cosmology and Astroparticle Physics - Poster session