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

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Hyper-Kamiokande (Hyper-K) is the next upgrade of the currently operating Super-Kamiokande experiment. Hyper-K is a large water Cherenkov detector with a fiducial volume which will be approximately 10 times larger than its precursor. A system of small photomultipliers as implemented in the KM3NeT experiment, the so called multi-PMT module (mPMT), is considered as an option to improve the Hyper-K physics capability. The resulting segmentation of the sensitive area features several attractive advantages compared to the conventional single-PMT concept due to a superior photon counting, extension of dynamic range, intrinsic directional sensitivity, while uncorrelated single-hit noise such as dark rate can be suppressed by using local coincidences among individual PMTs. In this contribution the development of a mPMT module for Hyper-K is discussed.

Collaboration name

Hyper-Kamiokande proto collaboration

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