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An Intermediate Water Cherenkov Detector for Hyper-Kamiokande Using the NuPRISM Concept

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The Hyper-Kamiokande (HK) experiment will detect neutrinos produced at an upgraded 1.3 MW J-PARC 30 GeV accelerator with a new water Cherenkov detector that is 8 times larger than Super-Kamiokande. This will allow HK to accumulate neutrino events 20 times faster than the currently operating T2K experiment. To take advantage of the high statistics HK will collect, systematic uncertainties on neutrino production and interaction modelling must be reduced. The Intermediate Water Cherenkov Detector (IWCD) is a 1 kiloton scale water Cherenkov detector to be located ~1 km from the neutrino source at J-PARC to study neutrino production and interactions. The IWCD has the unique feature that it can be moved to different positions relative the beam direction, enabling measurements that probe the relationship between neutrino energy and particles produced in neutrino interactions. I will describe the IWCD design, measurement program and the key technologies that will be deployed in the detector.

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Collaboration / Activity

Hyper-Kamiokande

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