

The Intermediate Water Cherenkov Detector for the Hyper-Kamiokande long-baseline neutrino oscillation program

Friday 19 July 2024 20:40 (20 minutes)

The Hyper-Kamiokande experiment will study long-baseline neutrino oscillations with the primary focus of a search for the leptonic CP violation, following the successful T2K experiment. Thanks to an 1.3MW beam produced at J-PARC and an 184 kilotonne fiducial mass of the far detector, the event rates will be 20 times higher than those of T2K, and the search will be systematically limited mainly due to the uncertainties on $\nu_e/\bar{\nu}_e$ cross sections for water target. To make full use of the high data statistics, an intermediate water Cherenkov detector (IWCD) will be built around 1km away from the neutrino source. The detector will have a 63 tonne fiducial mass, allowing the cross sections to be measured with the required precision. It will be able to scan mean neutrino energies by changing its vertical position, enabling measuring the relationship between the neutrino energies and the observed energies. This talk will detail the detector design and the current status.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

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Yes

Primary author: AKUTSU, Ryosuke (Institute of Particle and Nuclear Studies, High Energy Accelerator Research Organization)

Presenter: AKUTSU, Ryosuke (Institute of Particle and Nuclear Studies, High Energy Accelerator Research Organization)

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