

Systematics in Hyper-Kamiokande experiment

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Hyper-Kamiokande is a next-generation underground water-Cherenkov detector, which is to be constructed from 2020. The physics program of Hyper-K includes a nucleon-decay search, a CP-phase measurement in the lepton sector with an accelerator neutrino beam, the determination of the neutrino mass hierarchy with atmospheric neutrinos, and the observation of astrophysical neutrinos.

Thanks to the large water volume of the detector and planned beam power upgrade of J-PARC, the CP-phase measurement is expected to be limited by systematics rather than statistics after several years of operation. The main sources of systematics are the neutrino beam flux, neutrino-nucleus interaction modeling, final-state and secondary interactions of hadrons, and detector mis-modeling.

In this talk, our current understanding of these uncertainties, ongoing work including efforts by the T2K and Super-K collaborations, and future strategies are presented.

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