

Long-baseline neutrino oscillation sensitivities with Hyper-Kamiokande

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The discovery of neutrino oscillations implies that neutrinos are massive particles, which in turn requires new physics beyond the Standard Model. Over the past two decades the study of neutrino oscillations within the PMNS paradigm has produced measurements of all three mixing angles and both mass-splittings. Neutrino oscillation also provides a mechanism to violate the CP symmetry which would be a clue towards understanding the origin of the matter-antimatter asymmetry of the universe. Measuring CP violation in neutrino oscillation is one of the goals of Hyper-Kamiokande. Hyper-Kamiokande is a next-generation water Cherenkov detector that is under construction in Japan. The baseline design has a fiducial volume 8 times the size of the currently-running Super-Kamiokande detector and is instrumented with new photosensors that offer significant improvements in performance. Combined with the upgraded J-PARC neutrino beam, Hyper-Kamiokande will be able to measure neutrino oscillations with an unprecedented statistical precision. This talk presents the sensitivity of Hyper-Kamiokande to CP violation along with the expected precision on the other oscillation parameters and mass hierarchy.

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