

Sensitivity Study for Astrophysical Neutrinos at Hyper-Kamiokande

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Hyper-Kamiokande (Hyper-K) is a next generation underground large water Cherenkov detector. The detector is filled with ultra-pure water and surrounded with newly developed photo sensors. In total, it will provide the fiducial volume of 0.19 Mt, which is 8 times larger than preceding experiment Super-Kamiokande. The energies, positions, directions and types of charged particles produced by neutrino interactions are detected using its Cherenkov light in water.

Hyper-K will be located at deep underground to reduce the cosmic muon flux and its spallation products, which is a dominant background for the analysis of the low energy astrophysical neutrinos. With his fruitful physics research programs Hyper-K will play a critical role in the next neutrino physics frontier, including the neutrino astrophysics. It will provide important information for astrophysical neutrino measurements, i.e., solar neutrino, supernova burst neutrinos and supernova relic neutrino. Here, we will discuss about physics potential of Hyper-K neutrino astrophysics.

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