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P4.028 Hyper-kamiokande and neutrino astrophysics

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on behalf of Hyper-Kamiokande collaboration

Hyper-Kamiokande (Hyper-K) is a proposed next generation underground large water Cherenkov detector. We propose to build two cylindrical water tanks in our experimental period, which are filled filled with ultra pure water and surrounded with newly developed photo sensors. In total, it will provide the fiducial volume of 0.19-0.37 Mt. The energies, positions and directions of charged particles produced by neutrino interactions are detected using its Cherenkov light in water. Our detector 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. Hyper-K will play a considerable role in the next neutrino physics frontier, even in the neutrino astrophysics. The detection with its large statistics of astrophysical neutrons, i.e., solar neutrino, supernova burst neutrino and supernova relic neutrino will be remarkable information for both of particle physics and astrophysics. In this presentation, we will discuss about physics potential of Hyper-K at neutrino astrophysics and expected performance with the detector simulation.