Contribution ID: **29** Type: **not specified**

Supernova neutrino astronomy with Hyper-Kamiokande

Wednesday 22 August 2012 16:50 (25 minutes)

The diffuse supernova neutrino background (DSNB) is the faint glow of MeV neutrinos from distant core-collapse supernovae. It has not been detected yet, but the Super-K upper limit on the flux of electron antineutrino is very close to modern predictions. Hyper-K is expected to detect dozens of DSNB neutrinos yearly. In addition, Hyper-K will open a new window of neutrinos from core collapses occurring in nearby galaxies. Combined, these provide a tantalizing set of new probes to study the fate of core collapses, the supernova neutrino emission, and the cosmic core-collapse rate.

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Session Classification: Hyper-K Physics Potential