Contribution ID: **85** Type: **Poster**

Search for astronomical neutrino from the Gamma-ray burst with Super-Kamiokande

Gamma-ray bursts (GRB) are one of the most luminous astronomical events in the universe. GRB is a candidate for sources of ultra-high energy cosmic rays, but the detailed mechanism of emission of gamma-ray is not determined well. Neutrinos are expected to be emitted from the GRB object for many theoretical models. Therefore, the detection of neutrino enables us to discriminate among prompt emission mechanisms. The Super-Kamiokande is a large water-Cherenkov detector, which consists in 50 kton ultra-pure water and about 13000 Photomultiplier tubes. The detector is running since 1996, and it has a sensitivity to neutrinos with energies ranging from 4.5 MeV to 10 TeV. Atmospheric neutrinos are dominant above 100 MeV for the Super-Kamiokande experiment. In this poster, the neutrino signal correlated with GRB prompt emission was searched for 20 years Super-Kamiokande neutrino observation data, using timing and spatial information.

Mini-abstract

Search for neutrinos correlated with Gamma-ray bursts in Super-Kamiokande was carried out.

Experiment/Collaboration

Super-Kamiokande Experiment

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Session Classification: Poster Session 2