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Search for Supernova Relic Neutrinos at Super-Kamiokande

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Abstract content

Supernova relic neutrinos (SRN) is diffuse supernova neutrino background from all past supernova. No experiments have succeeded in detecting SRN yet. Measurement of SRN enable us investigate history of past supernova. For example, the flux of SRN shows star formation rate and supernova rate in galaxies. A search for SRN was conducted using Super-Kamiokande (SK) data. SK is a large water cherenkov detector in Kamioka, Japan. The first data taking phase of SK (SK-I) was conducted from 1996 to 2001 using 11,146 inner detector PMTs. The second phase was from 2002 to 2005 with 5,182 PMTs. The third phase has been running since July 2006 with 11,129 PMTs. The search of SRN was performed using SK-I and SK-II data and flux upper limit of $1.2 / \text{cm}^2 / \text{sec}$ and $3.7 / \text{cm}^2 / \text{sec}$ was obtained, respectively. Future prospects in SK-III is also discussed.

If this papers is presented for a collaboration, please specify the collaboration

The Super-Kamiokande collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 1401-1404

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