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Diffuse Astrophysical Neutrino Flux Limit from Super-Kamiokande using Ultra-High Energy Upward-Going Muons

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Abstract content

Many astrophysical models predict a diffuse flux of high-energy neutrinos from active galactic nuclei and other extra-galactic sources. At muon energies above 1 TeV, the upward-going muon flux induced by neutrinos from active galactic nuclei is expected to exceed the flux due to atmospheric neutrinos. We have performed a search for this astrophysical neutrino flux by looking for upward-going muons in the highest energy data sample from the Super-Kamiokande detector using 1679.6 live days of data. We found one extremely high energy upward-going muon event, compared with an expected atmospheric neutrino background of 0.46 plus or minus 0.23 events. Using this result, we set an upper limit on the diffuse flux of upward-going muons due to neutrinos from astrophysical sources in the muon energy range 3.16-100 TeV.

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'Olivo, 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 1361-1364

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