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Search for Neutrino-Induced Cascades with AMANDA data taken in 2000-2004

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Abstract content

The Antarctic Muon And Neutrino Detector Array (AMANDA) is a Cherenkov detector deployed in the Antarctic ice cap at the South Pole. The charged-current interaction of high-energy electron or tau neutrinos, as well as neutral-current interactions of neutrinos of any flavor, can produce isolated electromagnetic or hadronic cascades. There are several advantages associated with the cascade channel in the search for a "diffuse" flux of astrophysical neutrinos. The energy resolution of AMANDA allows us to distinguish between a hard astrophysical spectrum and a soft atmospheric spectrum. In addition, the flux of atmospheric electron neutrinos is lower by an order of magnitude relative to atmospheric muon neutrinos, while the background from downward-going atmospheric muons can be suppressed due to their track-like topology. The low background in this channel allows us to attain 4π acceptance above energies of ˜50 TeV. We present the analysis of AMANDA data collected during 2000-2004. Compared to our previous analysis, this data set is a factor of five larger, resulting in a correspondingly improved sensitivity for the flux of astrophysical neutrinos.

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

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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 1461-1464

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