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Response of IceTop tanks to low-energy particles

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Abstract content

IceTop is the surface component of the IceCube neutrino telescope at the South Pole. It will serve as an air-shower array that consists of cylindrical tanks of clear ice. Electrons, positrons, gamma rays and muons produce Cherenkov radiation directly or through interaction products. It is therefore important to have a good understanding of these processes. A thorough knowledge will permit the calculation of the response function, allowing good estimates of the array trigger rates.

The continuous recording of a single tank rate also provides a means for IceTop to function as a large area low energy cosmic ray monitor. It serves the twofold purpose of detecting a) changes in the local interplanetary medium environment and b) the arrival of transient particles from solar events. We will present a simulation for this detector configuration and compare results to these measurements. The analysis will attempt to quantify the potential capabilities of IceTop as an observatory for Solar and Heliospheric phenomena.

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

IceCube

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. 1 (SH), pages 237-240

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