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IceTop tank response to muons

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Abstract content

The calibration of the surface air shower array of IceCube - IceTop is based on identifying and understanding the muon response of each IceTop tank. Special calibration runs are carried out throughout the year and are supplemented with austral season measurements with tagging telescope for vertical muons. The vertical equivalent muon (VEM) charge value of each tank is determined and monitored by keeping track of its variation with time and temperature. We also study muons that stop and decay in the tank. The energy spectrum of the electrons from muon decay (Michel spectrum) is well known with maximum energy of 53 MeV. This energy is usually deposited inside the tank and can also be used as a calibration tool. We use both these spectra and compare them to a Monte Carlo simulation to gain a better understanding of the tank properties.

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

for the IceCube 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 1261-1264

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