Contribution ID : **843** Type : **Poster**

Very High Energy cascades detection in the LPM regime with IceCube

Monday, 9 July 2007 14:45 (0:00)

Abstract content

With a volume of ~1 km3, IceCube will be able to detect very high energy neutrinos above ~1E17 eV. At these energies, bremsstrahlung and pair production are suppressed by the Landau-Pomeranchuk-Migdal effect (LPM). Therefore, nu_e and nu_tau interactions in the ice can produce several hundred meter long showers. We present an analysis of IceCube sensitivity to such events. It includes simulations of showers in the LPM regime and makes use of preliminary algorithms for energy and incident angle reconstruction. We then give the obtained effective areas for different detector configurations and discuss IceCube detection performance.

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'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 3 (OG part 2), pages 1245-1248

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Session Classification : Posters 3 + Coffee

Track Classification : OG.2.5