



Contribution ID : 1086

Type : **Poster**

Identification of Neutrino Flavor in the ANITA Experiment

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

Abstract content

The Antarctic Impulsive Transient Antenna (ANITA) experiment may be the first experiment to identify astrophysical neutrinos of energy greater than 10^{18} eV through the detection of radio Cherenkov pulses emitted by neutrino-induced particle showers in the Antarctic ice. A Monte Carlo simulation has been developed to determine the sensitivity and improve the event reconstruction capabilities of ANITA at energies up to 10^{21} eV. Charged leptons created through charged current neutrino-nucleon interactions can produce secondary showers through photonuclear interactions and hard bremsstrahlung as they propagate through the ice. Because the cross sections of these interactions depend on the flavor and energy of the charged lepton, the distribution of the showers can indicate the flavor and energy of the neutrino. Some of the simulation's results are presented.

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

ANITA

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 1523-1526

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Session Classification : Posters 3 + Coffee

Track Classification : HE.2.4