30th International Cosmic Ray Conference



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High p_T muons from Cosmic-Ray Air Showers in IceCube

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Abstract content

Perturbative QCD predicts that there should be a significant flux of muons with high transverse momentum (p_T) produced in primary interactions of high-energy cosmic-rays. These muons arise from the semileptonic decays of heavy quarks, and from the decays of high p_T kaons and pions produced in jets. These muons can be useful to study the cosmic-ray composition in a pQCD framework.

IceCube is well suited to observing high p_T muons. The IceTop surface array measures the primary energy, direction, and location of the core of air showers, and the in-ice part of the array measures muon positions, energy (found via muon dE/dx) and direction. Along with the known production height, these quantities can be used to determine the muon p_T spectrum.

We will discuss the physics of high p_T muons in air showers, and present preliminary results on a study of high p_T muons with IceCube.

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. 5 (HE part 2), pages 1249-1252

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