



Contribution ID : 845

Type : Oral

Measurement of attenuation lengths of hadrons in air showers

Monday, 9 July 2007 12:17 (0:12)

Abstract content

Properties of high-energy hadronic interactions can be studied by measurements of the attenuation lengths of hadrons in air showers. The hadronic, electromagnetic, and muonic components of air showers are registered with the KASCADE-Grande experiment. Different methods are applied to derive attenuation lengths of hadrons from the measurements. a) The flux of unaccompanied hadrons at ground level is related to the flux of primary protons above the atmosphere. b) The dependencies of the observed unaccompanied hadron rate on atmospheric pressure and zenith angle are investigated. c) The observed numbers of electrons and muons in air showers are used to estimate energy and mass of the primary particle and the energy reaching ground level in form of hadrons is measured as function of energy. The different attenuation lengths obtained are discussed.

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

KASCADE-Grande

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. 4 (HE part 1), pages 671-674

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Session Classification : HE 3.1

Track Classification : HE.3.1