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Fluxes of Hadrons, Muons and Electromagnetic Components at the Mountain Altitude induced by Hadrons in the Atmosphere with Energies between 100MeV and 1000 GeV

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Abstract content

By the solar flare, a large number of solar protons are usually accelerated into high energies. When the intensities of solar protons are very strong, they are observed as a phenomenon, the Ground Level Enhancement (GLE). However, it is used to be reported in the cosmic ray conferences how much percentage they increased in comparison with the flux of the galactic cosmic rays. In order to know how large solar flare arrived on the Earth at the first stage, the quick analysis is enough, however when we want to reduce the energy spectra of arrived protons, we will encounter a difficulty. The traditional procedure is not enough. The detectors are located at different places of the world, they are located at different altitude, so the attenuation of neutrons and protons in the atmosphere is different from each by each detector. We need correction taking account of such a difference, when we will obtain the energy spectra of protons. However the Monte Carlo calculation done by Shibata only gave the attenuation curve in the atmosphere for neutrons with energies between 50 MeV to 1 GeV. In this paper, we use two Monte Carlo simulation codes: the Geant 4 and the CORSICA and try to obtain a very important and useful correction data for the hadrons with energies 100MeV-1000GeV.

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

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. 1 (SH), pages 681-684

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