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Secondary electron spectrum in the upper atmosphere

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Abstract content

The secondary electron flux at altitude below 10 g/cm^2 is estimated using the result of atmospheric gamma ray spectrum above 30GeV, which has been obtained by our emulsion chamber experiments at balloon altitudes. We have to subtract these electrons produced by nuclear interactions from the observed electrons, when deriving the primary electron spectrum in the Galaxy. In addition, for balloon experiments it is important to investigate the spectral changes of electrons and gamma rays in upper atmosphere. Both electron and gamma ray intensities at the depth are calculated using the shower theory and integrated over the observed range of zenith angle. Further the results are compared with those from Monte Carlo simulation. The results shows that the number of secondary electrons increases proportionally with ^2 and is about % of that of gamma rays. The ratio of secondary electrons to primary electrons increases in the TeV region, so that the high altitude is essential for TeV electron experiments.

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. 2 (OG part 1), pages 11-14

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