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Fluorescence in air with moisture and its effect on the energy determination of ultrahigh-energy cosmic rays

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Abstract content

Photon yields in moist air are measured with Sr90 beta source and compared with those in dry air. Considerable reduce in the photon yields is found due to water vapor. Since the ultrahigh energy cosmic ray observatories (HiRes, Auger, TA) with fluorescence technique on ground are at high altitude, the effect of the water vapor may be negligible. However, for the experiments from space like JEM-EUSO, the decrease of photon yield in moist air should be taken into account to interpret the longitudinal developments of extensive air showers near the sea surface, although the effects around the shower maximum for most showers may be small. In this paper, the pressure dependence of the photon yields in moist air will be reported and the effects on the energy determination of cosmic rays will be discussed.

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. 5 (HE part 2), pages 953-956

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