AN EXTENDED FEATURES OF THE GROUND-LEVEL COSMIC-RAY EVENT OF 29 SEPTEMBER 1989

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The cosmic-ray ground level enhancement on 29 September 1989 is the largest relativistic solar proton event since 1956's. Four representative pairs of neutron detector have been selected to compute the mean attenuation length for the solar protons (λ_S) produced in the considered event, over a wide range of proton rigidities. Each pair of detectors have a very similar of geomagnetic vertical cut-off rigidity rigidity and differ in terms of the altitude of the observing site. The computed values of λ_S have shown a strong correlation with the vertical geomagnetic cut-off rigidity for the observing site. Furthermore, we have studied the power spectra for the event. The time of the first maximum is dominated by the higher rigidity particles, while the lower rigidity flux reaches its maximum at the time of the second peak. In addition, at the time of the first maximum the spectrum of the event was hard and it soften throughout the remainder of the event.