

UPPER CUT-OFF RIGIDITY FOR COROTATION ANISOTROPY
DURING SOLAR ACTIVITY CYCLES 20 AND 21

H. S. Ahluwalia¹ and J. F. Riker²

¹ Department of Physics and Astronomy, The University of
New Mexico, Albuquerque, N.M. 87131, U.S.A.

² B.D.M. Corporation, Albuquerque, N.M., 87106, U.S.A.

ABSTRACT

At the Eleventh International Conference on Cosmic Rays held at Budapest in 1969, we discussed the results of our study of the solar diurnal variations of cosmic rays observed during the ascending phase of solar activity cycle twenty (Ahluwalia and Ericksen, 1970). We reported that the diurnal variation, observed underground during 1965-68 period, results from an extra-terrestrial anisotropy having a continuously increasing upper cut-off rigidity R_C . However, the coupling functions applicable to underground telescopes were controversial then. This situation has improved now. So we have re-examined those results and extended them to cover the period 1965-78. In this study we have used the coupling functions given by Murakami et al. (1979) for underground muons and those given by Lockwood and Weber (1967) for neutron monitors. We show that a great deal of care should be exercised in calculating the value of R_C . Although numerical values of R_C are a little different, the trend for 1965-68 period remains unchanged. Highest value of R_C occurs in 1970 and the lowest value occurs in 1976. Our results are discussed.

Ahluwalia, H.S., and Ericksen, J.H., 1970, Acta Phys. Acad. Scient. Hung., 29, Suppl. 2, 139.

Murakami, K., Nagashima, K., Sagisaka, K., Mishima, Y., and Inoue, A., 1979, Nuovo Com., 2C, 635.

Lockwood, J.A., and Weber, W. R., 1967, J. Geophys. Res., 72, 3395.