

Cutoff Rigidities for Various Azimuth and Zenith Angles for the Expedition Route from Antarctica to Europe during Minimum of Solar Activity

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In the 1996-1997 solar minimum a cosmic ray (CR) latitude survey onboard an Italian Antarctic Research ship has been performed by using a 3NM-64 detector. In this paper we report results of computation of cutoff rigidities of non-vertically incident CR particles, together with vertical cutoffs, in "real" geomagnetic field for the backward route from Antarctica to Italy. Computations have been performed by tracing particle trajectories through the summarized magnetic field of the International Geomagnetic Reference Field model (IGRF95, IAGA Division 5 Working Group 8, 1996) and the Tsyganenko (1989) magnetospheric magnetic field model for geographic points corresponding to the daily average coordinates of the expedition ship; for zenith angles 15° , 30° , 45° and 60° , and azimuth angles from 0° to 360° in steps of 45° . Obtained results will be used to estimate the impact of non-vertically incident particles on the effective cutoff rigidities, which are widely used in studies of GCR variations.