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INTERNATIONAL CONFERENCE ON COSMIC RAYS AND THE EARTH STORM Part II

II-4-13. "Explorer XII Results"*

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* Both manuscript and preprint have not been received.

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II-4-14. A Study of the Rigidity and Charge Dependence of Primary Cosmic Ray Temporal Variations*

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The rigidity spectra and intensity of H, He, Be, B, C, N and O of the galactic cosmic radiation have been measured over a period extending from solar minimum through the recent period of maximum activity. The hydrogen and helium data have been previously published[1)2)]. However, they are reviewed here and further conclusions regarding these studies are presented. In addition, comparison is made with the results of other experiments in this area.

The flux and rigidity spectra of Be-O were measured on three high altitude balloon flights. Excellent charge resolution was obtained. It is observed that the light and medium nuclei display the same relative rigidity spectra throughout the solar cycle as do the protons and alphas. This conclusion is valid only in the region studied ($E>400$ mev/nuc) and one may well expect striking variations at lower values of heavy primary kinetic energy. The ratio of light to medium nuclei was not observed to vary appreciably over the solar cycle.

§1. Hydrogen and Helium Cosmic Ray Time Variations

In order to study the cosmic ray temporal variations the primary cosmic ray energy and charge composition should be monitored as a function of time over a significant portion of the solar cycle. In this first section the studies are limited to the hydrogen and helium component because of the great significance of their different charge to mass ratio in defining the form of the various types of modulation.

The experimental flight apparatus is a three element telescope containing a crystal scintillation counter, a lucite Cerenkov counter and a Geiger counter tray. The scintillation crystal and the Geiger counter tray are the

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