

MEASUREMENT OF LOW ENERGY COSMIC RAYS ABOARD SPACELAB-1

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Abstract

In December 1983 the first Spacelab mission was launched for a duration of 10 days. Aboard was the Kiel experiment "Isotopic Stack" designed for measurement of heavy cosmic ray nuclei with nuclear charge equal to or greater than 3 and energies up to some 100 MeV/nuc. One part of the stack was rotated in well defined steps registered by an angle encoder to receive information on impact times of the nuclei. Using this time resolving system "geomagnetically forbidden" particles can be detected.

In this work the chemical composition and energy spectra of mainly CNO particles are examined using a rotated 300 μm thick CR-39 foil beneath a fixed 100 μm thick Kodak-Cellulose Nitrate foil. About 600 cm^2 have been scanned yielding nearly 100 nuclear tracks within an energy range of approximately 8 to 30 MeV/nuc.

The calibration is done by means of a postflight irradiation with 410 MeV/nuc ^{56}Fe at Berkeley Laboratory, California, USA.

Relative abundances and energy spectra will be presented.

Keywords : Spacelab-1, heavy cosmic rays, plastic track detectors