

CHERENKOV - DE/DX - RANGE MEASUREMENTS ON
COSMIC RAY IRON GROUP NUCLEI

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ABSTRACT

We present a balloon experiment which combined a large area plastic detector unit (4400 cm²) with electronic dE/dx-C data.

The correlation of the electronic data with the range data of the plastic detector stack was achieved by rotating plastic detector disks which provided in this way the "passive" plastic detector with an incorporated time determination. The constant flux of cosmic ray particles with charge Z greater than 2 was used to gauge the time resolving system of the experiment.

Stopping cosmic ray iron group nuclei in the energy range 400 to 700 MeV/nuc have been identified using their electronic scintillator and Cherenkov signals and their etch conelengths and range data. The precise knowledge of the particle's trajectory proposes refined pathlength corrections to th electronic data.

This three parameter analysis provides an absolute mass scale to check whether the iron peak nuclei have the mass 56.