

## RESPONSE OF IONIZATION CHAMBERS AND CHERENKOV COUNTERS TO RELATIVISTIC ULTRAHEAVY NUCLEI

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**Abstract.** We shall report results from a calibration of a set of high-resolution ionization chambers and Cherenkov counters at the Lawrence Berkeley Laboratory Bevalac, in November 1986. We obtained exposures to beams of  ${}_{26}\text{Fe}$ ,  ${}_{57}\text{La}$ ,  ${}_{67}\text{Ho}$ , and  ${}_{79}\text{Au}$ , at several different energies, ranging from  $\sim 300$  MeV/amu to a maximum between 1 and 1.6 GeV/amu. The detectors were basically similar to those used in the HEAO-3 HNE (Binns *et al.* 1981) and these exposures were intended to calibrate the response of the HNE detectors to UH nuclei in the cosmic radiation. For nuclei of low atomic number ( $Z$ ), the response of these detectors scales like  $Z^2$ ; however, at high  $Z$  this scaling is expected to break down (Ahlen 1980, 1982; Derrickson *et al.* 1981).

The detector used in this experiment, as well as some preliminary data are shown in paper OG 7.2-12 (Waddington *et al.* this conference). We have improved resolution and stability compared to our previous calibration (Newport *et al.* 1985). The use of dual Cherenkov detectors rather than a single detector, allows superior rejection of particles interacting in the radiators.

The data show clearly defined signal peaks in each detector for each beam at each energy. We will report on the detailed dependence of these detector signals on nuclear charge and energy, with emphasis on deviations from the simple charge-squared scaling.

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