Some Results Concerning Heavy Unstable Nuclear Fragments Ejected from Interaction of 4.5 GeV $\pi^-$ in Emulsion.

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1. — Introduction.

The present paper summarizes the results of an investigation carried out on a stack of 600 $\mu$m Ilford G-5 emulsions, exposed to 4.5 GeV negative $\pi^-$ mesons produced by the Berkeley Bevatron. An area of about 200 cm$^2$ has been scanned for interactions of $\pi^-$ on heavy nuclei. The intensity of the beam in the observed region has been found to be between $(10^5 \div 10^6)$ $\pi^-$'s over a cross-section of one cm$^2$. About 36 000 stars produced by primary $\pi^-$'s and associated with at least 5 black prongs have been observed. We have assumed that these were caused by heavy element disintegrations.

The purpose of this work consisted in studying the nature, the emission spectra and angular distributions of unstable nuclear fragments and hyperfragments produced in these type of events.
1.1. Calibration of the emulsions. – The experimental methods used in mass and charge determinations do not differ from those currently used by research workers in this field (see f.i. Castagnoli et al. (1)) and will not be described in any detail. We report here briefly on the calibration curves obtained in our emulsion, mainly to allow the reader to estimate the weight to be attributed to our results.

Fig. 1. shows the dependence on $R/m$ of the number $\bar{n}$ of gaps, of the total gap length $\bar{X}$ and of the specific gap length $\bar{\omega}$ per 200 $\mu$m.

Fig. 1. – Dependence on $R/m$ of the number $\bar{n}$ of gaps, of the total gap length $\bar{X}$ and of the specific gap length $\bar{\omega}$ per 200 $\mu$m.