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THE DETECTION OF POSITIVE MESONS PRODUCED BY THE 184" CYCLOTRON

A. S. Bishop, John Burfening*, Eugene Gardner, C. M. G. Lattes

Radiation Laboratory
University of California
Berkeley, California

APR 19 1948

Positive mesons have been produced by the 184" cyclotron and detected with photographic plates. The method of production is similar to that used for negative mesons.[1]

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[1]Eugene Gardner and C. M. G. Lattes, Science, 107, 270 (1948)

Two methods of exposure to positive mesons are available: (1) Plates are placed below the circulating beam at a smaller radius than that of the target. Positive mesons emitted from the target with the proper energy in a forward direction are 180° focussed upon the plates. (2) Plates are placed in the position initially used for exposure to negative mesons, but the shielding is modified to admit those positive mesons which are emitted from the target in the backward direction. Plates exposed in this way thus contain positive meson tracks which start at one edge and negative meson tracks which start at the opposite edge.

In about half of the cases tracks of positive secondary mesons are observed to originate from the above-mentioned positive primary mesons. It is believed that all of the primary positive mesons decay into secondary mesons, but that in some cases the secondary meson is not seen because of unfavorable angle or bad background of neutron knock-ons, or both. This paper is based on work performed under contract W-7405-eng-48 with the Atomic Energy Commission in connection with the Radiation Laboratory, University of California, Berkeley, California.

* Lieutenant Colonel, U. S. Army