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UNIVERSITY OF CALIFORNIA

Radiation Laboratory

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SUMMARY OF THE RESEARCH PROGRESS MEETING OF JANUARY 4, 1951

R. K. Wakerling

March 12, 1951

Berkeley, California

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Scattering of Pi Mesons by Aluminum - H. Heckman.

In this work use was made of the proton probe in the 184-inch cyclotron tank. It was necessary to measure carefully the fringing field of the magnet and to trace the trajectories of the π^--mesons from the target for various angles of ejection. Trajectory calculations were made in an attempt to locate a band of orbits that would give a horizontal focus and a reasonably good vertical focus. It was found possible to achieve the desired horizontal focus but not appreciable vertical focusing could be secured.

Upon completion of this survey a channel was built to select the desired band of mesons. However, when the channel was tried it was found that the meson flux through it was too small to be useful. In order to get a reasonable meson flux it was necessary to give up the energy discrimination and definite focus and use wide angles and mesons of any energy present.

The experimental arrangement as now employed is illustrated in Figure 1. Mesons are created by the beam impinging upon a one-quarter inch beryllium target. The mesons are scattered from an aluminum block of cross section 4 1/2 inches by 2 inches and the scattered mesons detected by photographic emulsions imbedded in glass absorbers placed below the scatterer.

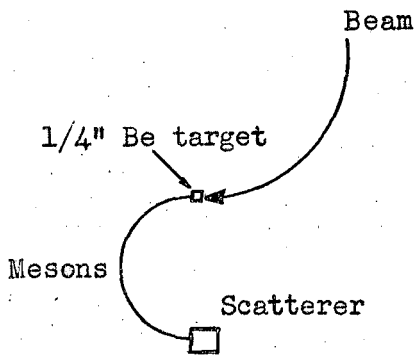
In the first run a meson flux of $272\pi^-$-mesons per square centimeter per second was achieved with the energy distribution shown in Figure 2. In the detector there were found $9\pi^-$ stars and 6 non-star forming mesons. In a run in which the scatterer was omitted no π^- stars were found and only two non-star forming mesons.

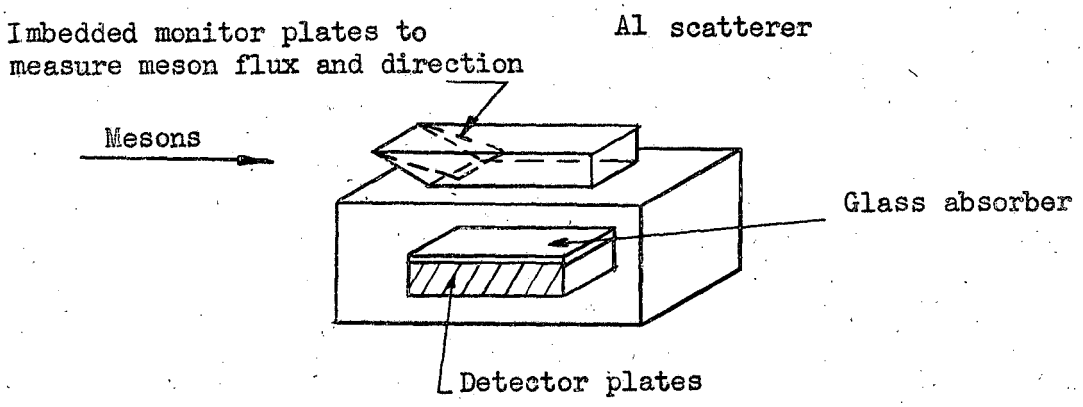
From this preliminary work there is evidence that scattered mesons

are being detected. An effort will now be made to clean up the experiment in an attempt to accumulate enough data to compute a scattering cross section. From the first data a very tentative figure of 0.5×10^{-24} cm^2 was given.

Eastern Developments in High Energy Physics - W. Panofsky.

Dr. Panofsky discussed current work being done at Cornell, Columbia, Illinois and Rochester Universities which he observed in the course of a recent trip to the East.





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