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Title
PION-PROTON TOTAL CROSS SECTIONS NEAR 4 BEV

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Publication Date
1955-02-15
February 15, 1955

UCRL-2875

Abstract

Pion-Proton Total Cross Sections Near 4 Bev. K. C. BANDTEL, H. A.
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Measurements are in progress of the total cross section subtended by protons
and other nuclei for collision with pions of energies in the region of 4 Bev.
When the Berkeley bevatron is operating at $10^{10}$ protons per pulse a negative
pion beam of 4.4 Bev energy is available at 50 feet from the target with an
intensity of about 0.4 pions per cm$^2$ per pulse. These conditions are typical
of the energy-selected positive and negative pion beams in use. The muon
contamination in these beams is at present estimated to be in the neighborhood
of four percent, though further work on this point remains to be done.
At the time of writing of this abstract, the $\pi^-$/proton cross section measured
at 4.4 Bev is $30 \pm 5$ millibarns, and by the time of presentation of this work
the limits of error should be reduced, and cross section values for other
nuclei are expected to be available. Measurements are made with a geometry
which is calculated with respect to the coulomb scattering of the mesons, and
also with regard to the elastically scattered and secondary charged particles
which might be detected in the final counter telescope.
This work was performed under the auspices of the U. S. Atomic Energy Com-
mission.

Meeting of American Physical Society at Washington, D. C., April, 1955
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