Title
PION-PROTON TOTAL CROSS SECTIONS NEAR 4 BEV

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Abstract

Pion-Proton Total Cross Sections Near 4 Bev. K. C. BANDTEL, H. A. BOSTICK, B. J. MOYER, R. W. WALLACE, N. F. WIKNER. Radiation Laboratory, Department of Physics, University of California, Berkeley, California.

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 π^--proton cross section measured at 4.4 Bev is 30 ± 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.
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