

MEASUREMENT OF $^{10}\text{B}(p,\pi^0)^{11}\text{C}$ THRESHOLD CROSS-SECTIONS BY RECOIL DETECTION

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The experiment was approved in March 1976. The achromatic quadrupole and deflection magnet was constructed and installed by November 1976. In preliminary tests during December 1976 and January 1977, the ability to clearly resolve recoiling nuclei at 0° with acceptably low background was verified. For example, with a single detector of 84 microns x 150 mm², a flight path of 186 cm, a measured time resolution (TAC stopped by rf) of 0.8 n sec fwhm in 20 minute runs, and a target in/target out rate ratio of 500:1 for a 1.1 mg/cm² CH target was observed. Target-in singles rates were only 3/sec/nA. These data confirm the capability to resolve $^{11}\text{C}^{6+}$ from all other ions at the 10 nanobarn level.

During 1977 the apparatus was cannibalized by the accelerator group to use the magnet coils in an extraction system modification related to 200 MeV operation. Runs will be resumed after replacement coils are delivered.

An extension of the original measurement has been suggested by one of the group (PHP) in which the forward/backward cross section rate, for π^0 production somewhat above threshold, is determined by using a thinner target to resolve two recoil groups where energy has been lowered/raised respectively by π^0 emission.

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