POSITIVE PION ABSORPTION ON THE DEUTERON AT 30 AND 10 MeV PION ENERGY

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by

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ABSTRACT

The differential cross section of the reaction, $\pi^+ + d \rightarrow p + p$ was measured at 30 and 10 MeV pion lab kinetic energy at the Low Energy Pion (LEP) channel of the Los Alamos Meson Physics Facility (LAMPF).

The angular distribution for the 30 MeV part of the experiment was measured at 18, 24, 36 and 54° lab angles, and at 18, 24, 30, 36, 42 and 66° lab angles for the 10 MeV part.

The values of the differential cross sections for both parts were fitted to a polynomial of the form,

$$(\frac{d\sigma}{d\Omega})_{cm} = A_0 + A_2 P_2 (\cos(\Theta)).$$

The S- to the P-wave amplitudes (A_2/A_0) were 1.04±0.10 and 0.50±0.15 for 30 and 10 MeV respectively.

The integrated cross section was 5.04±0.11 (mb) for 30 MeV. Only the relative angular distribution of the differential cross section was achieved for the 10 MeV part.