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Angular Distribution of the Protons from the Deuteron - Deuteron Reaction

A. Ellett

State University of Iowa

R. D. Huntoon

State University of Iowa

D. S. Bayley

State University of Iowa

J. A. Van Allen

State University of Iowa

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HIGH VOLTAGE APPARATUS FOR NUCLEAR PHYSICS

A. ELLETT, R. D. HUNTOON,¹ D. S. BAYLEY,
J. A. VAN ALLEN, V. J. YOUNG

The design and performance of a transformer-rectifier voltage quadrupling installation for potentials up to 600 KV will be described.

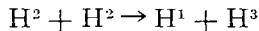
¹ Now at New York University.

DEPARTMENT OF PHYSICS,
STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

ANGULAR DISTRIBUTION OF THE PROTONS FROM THE DEUTERON — DEUTERON REACTION

A. ELLETT, R. D. HUNTOON,¹ D. S. BAYLEY, J. A. VAN ALLEN

A collimated beam of deuterons, of accurately controlled energy, has been directed into a chamber filled with deuterium gas at a pressure of 0.5 mm. of Mercury. High Energy protons are produced in the well known nuclear reaction:



The number of such protons ejected per unit solid angle from disintegrations occurring in a selected volume has been measured as a function of angle with the incident beam.

For a bombarding energy of 325 kilovolts we find the angular distribution to be represented by $1 + 1.35 \cos^2 \vartheta$, where ϑ is the angle with the beam as assigned by an observer at rest with respect to the center of mass of the colliding deuterons.

The theoretical significance of the result will be discussed.

Data for 250 and 400 kilovolts should also be available for presentation at the meeting.

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DEPARTMENT OF PHYSICS,
STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.