

THE REACTION $^{10}\text{B}(t, p)^{12}\text{B}$

B. Stepančić, D. Ćirić*, K. Subotić and D. Stanojević

Boris Kidrič Institute of Nuclear Sciences of Beograd

*Faculty of Technical Sciences, University of Novi Sad

The experimental study of the reaction $^{10}\text{B}(t, p)^{12}\text{B}$ was carried out on the Cockcroft-Walton 1.5 MeV accelerator in the "B. Kidrič" Institute - Vinča. The outgoing channels, in which the p_0 , p_1 , p_5 and p_6 groups appear, were measured. The measurements were made in the energy interval of the incident beam from 0.5 to 1.25 MeV which corresponds to an excitation energies of compound ^{13}C nucleus from 24.2 to 24.8 MeV.

The products of reactions were detected by semi-conductor counters. As a target the B_2O_3 was used, vaporized to Al foil. Due to the presence of oxygen, the cross-section defined relatively, with respect to the cross-section of the $^{16}\text{O}(t, p)^{18}\text{O}$ reaction, in accordance with the procedure proposed by Kobzev¹⁾.

The excitation functions were measured at the angle of 110° for p_1 and p_5 groups and are shown in Fig. 1. The angular distributions were measured for the energies of 900 keV and of 110 keV. Fig. 2 shows the distribution for p_2 , p_1 , p_5 and p_6 groups from $^{10}\text{B}(t, p)^{12}\text{B}$ reaction at 900 keV incident energy. Here C.M. system was used. The experimental values were elaborated on the basis of compound theory and by the use of the least squares method. The expansion over the Legendre polynomial was taken up to the fourth order terms. The values of the coefficients of expansion lead to the conclusion that besides the even momenta, the odd momenta also contribute to the reaction. The observed absence of the symmetry in the angular distribution data, shown in Fig. 2, indicates that in the processes investigated, the contributions of the direct transfer mechanism cannot be neglected with respect to the contributions of the pure compound mechanism.

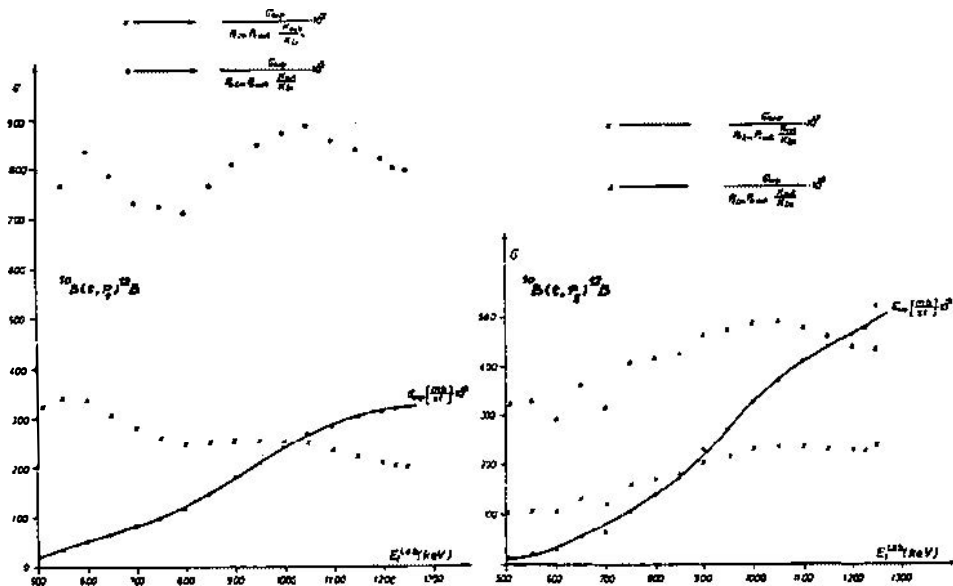


FIG. 1

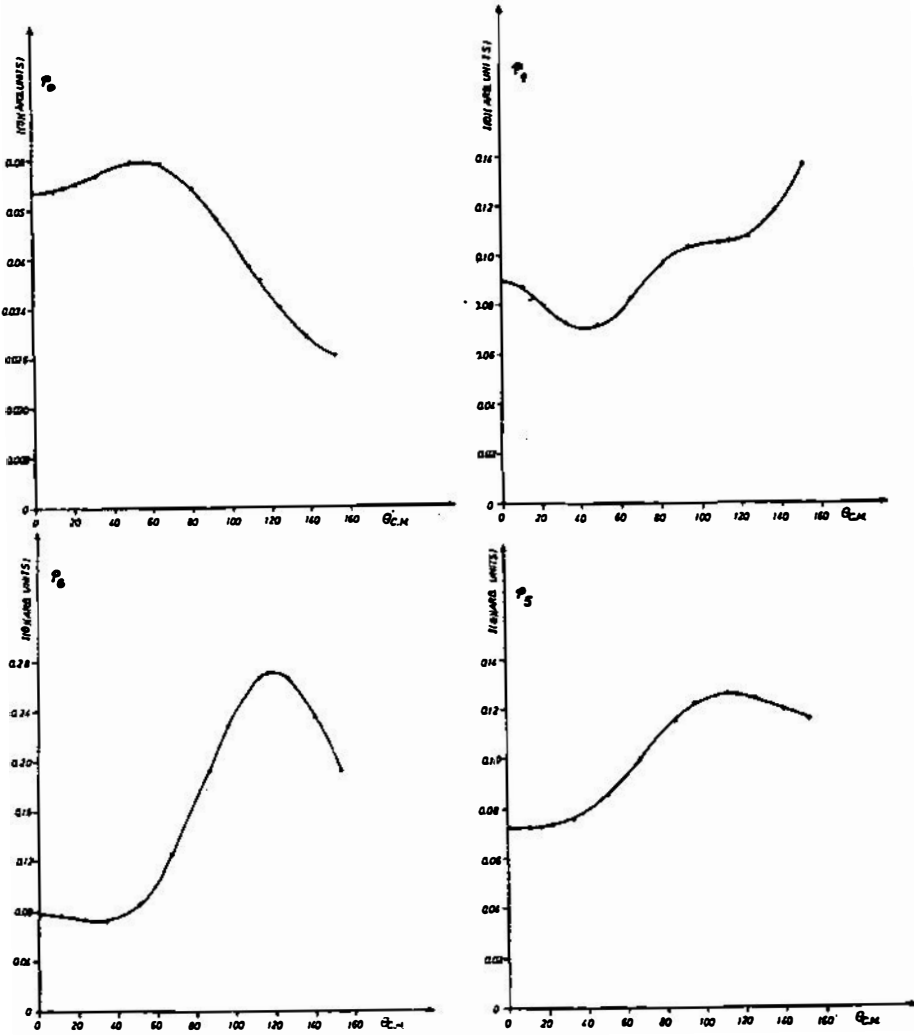


FIG. 2

Reference:

1. A. Kobzev et al. *Jad. Phys.* 3(1967) 510.