THE ANALYSIS OF (t, p) REACTIONS ON ^{16}O NUCLEUS

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The (t, p) reaction on ^{16}O nucleus with excitation of the low levels of formed nucleus ^{18}O was studied in [1] experimentally in details. It was shown that within the assumption of dineutron transfer as whole it is impossible to get the complex adequate description of the experimental angular distributions in the frame of DWBA by means of a variation of optical potentials parameters and introduction of normalizing coefficients.

The (t, p) reaction on light nuclei leads to formation of a neutron-rich nuclei. The nucleus ^{16}O is the second after ^{4}He doubly magic nucleus. It is necessary to expect that as well as in case of a nucleus ^{6}He, excess neutrons may have two spatial configurations differing in the position of the neutrons with respect to the core - a two-neutron configuration, and a cigar-like configuration [2]. To each of configurations there corresponds the formation mechanism: the dineutron configuration will be formed by one-step reaction mechanism (fig. 1*a*), and cigar-shaped by two-step reaction mechanisms of sequential neutrons transfer (fig. 1*b*).

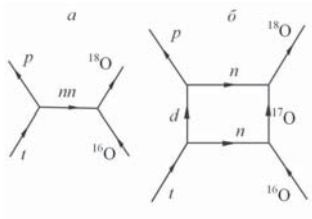

Fig. 1. Diagrams illustrating the mechanisms of transfer dineutron cluster in ^{16}O (t, p)^{18}O reaction:a- stripping dineutron, b- independent neutron transfer.

We carried out the analysis of angular dependences of ^{16}O(*t*, *p*)^{18}O reaction cross sections taking into account one - and two-step mechanisms [2]. Results show that the coherent sum of both mechanisms of excess neutrons transfer allows to describe the reaction cross section without introduction of additional normalizations.

1. M.E.Cobern, L.C.Bland *et al.* // Phys. Rev. C. 1981. V.23. P.2387.
2. L.I.Galanina, N.S.Zelenskaya // Physics of Particles and Nuclei. 2012. V.43. P.147.