

# INVESTIGATION OF REACTIONS ON $^{112}\text{Sn}$ NUCLEUS INITIATED BY $^3\text{He}$ IONS OF 50 MeV WITH EMISSION OF DEUTERONS, TRITONS AND $\alpha$ -PARTICLES

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Investigation of the mechanisms forming the inclusive cross sections of nuclear reactions induced by charged particles of low and medium energy remains an urgent task of experimental nuclear physics. In addition to its importance for fundamental research, information on the inclusive reaction cross sections has been widely applied use, such as designing of hybrid nuclear power plants.

The purpose of this work has been the experimental investigation of inclusive spectra of deuterons, tritons and  $\alpha$ -particles emitted from  $^3\text{He}$  induced reactions on  $^{112}\text{Sn}$  nucleus at  $E_{^3\text{He}}=50$  MeV in angular range  $15^\circ$ – $150^\circ$  with the step  $15^\circ$  on isochronous cyclotron U-150M of Institute of Nuclear Physics. The standard two-detector telescope has used for registration and identification of product of nuclear reactions. The self-supporting foil of  $^{112}\text{Sn}$  with thickness of  $1.88 \text{ mg/cm}^2$  has used in these experiments.

The analysis of experimental cross-sections of reactions is carried out in accordance with exciton model for pre-equilibrium nuclear reactions that describes the emission of particles from an equilibrating composite nucleus. Additional components are calculated semi-empirically to account for direct nucleon transfer reactions and direct knockout processes involving cluster degrees of freedom. A satisfactory agreement between experimental and calculated values has been achieved.

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