

THE RESULTS OF SIMULATION OF $d + t \rightarrow {}^3\text{He} + {}^2n; {}^2n \rightarrow n + n$ REACTION

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A simple program and the results of the simulation of experimental setup intended to search for excited states of few-nucleon systems, decaying into two clusters are presented. Using this program, the $d + t \rightarrow {}^3\text{He} + {}^2n \rightarrow {}^3\text{He} + n + n$ reaction was considered. The goal of the study was to consider the possibility of performing an experiment on determining the energy of singlet quasi-bound state of dineutron 2n , decaying into two neutrons.

Based on the simulation results we proposed the optimal geometry of the experiment. During the process of simulation the experimental factors were taken into account: the sizes of the detectors, the angular, energy, and time resolution of the detectors, ionization losses of charged particles on the way from the target to the detector, and time-of-flights of particles. The influence of experimental parameters on the detected region of excitation energies of 2n and on the excitation energy resolution was considered. The final simulation of the reaction with selected geometry and detectors sizes was performed.

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