

## Influence of cluster structure to the mechanism of nuclear reactions

Tuesday, 12 July 2022 11:00 (20 minutes)

In the interaction reactions of weakly bound cluster nuclei, the structure of these nuclei can manifest itself with a high probability. It is expressed in cross sections for these processes, in particular, in the multinucleon transfer reaction and the transfer reaction of individual clusters [1,2].

In order to study the influence of the cluster structure on the mechanism of nuclear reactions, we studied the interaction reactions  ${}^6\text{Li}+{}^9\text{Be}, {}^{12}\text{C}$  at an energy of 68 MeV. The experiment has been performed at the U-400M cyclotron, FLNR, JINR. The angular distributions of the products formed in these reactions were measured in the range of  $10-120^\circ$  in the c.m system. The following reaction channels were studied:  ${}^9\text{Be}({}^6\text{Li}, {}^6\text{Li}){}^9\text{Be}$ ,  ${}^9\text{Be}({}^6\text{Li}, {}^7\text{Li}){}^8\text{Be}$ ,  ${}^9\text{Be}({}^6\text{Li}, {}^6\text{He}){}^9\text{B}$ ,  ${}^9\text{Be}({}^6\text{Li}, {}^4\text{He}){}^{11}\text{B}$ ,  ${}^{12}\text{C}({}^6\text{Li}, {}^6\text{Li}){}^{12}\text{C}$ ,  ${}^{12}\text{C}({}^6\text{Li}, {}^7\text{Be}){}^{11}\text{B}$  in ground and excited states. The obtained experimental data were analyzed within the framework of the optical model and the DWBA method [3].

1. Yu E Penionzhkevich, R.G. Kalpakchieva, Light Exotic Nuclei Near the Boundary of Neutron Stability, World Scientific Publishing Co Pte Ltd (2021)
2. Yu E Penionzhkevich, et.al, Eur. Phys. J. A 31, 185-194 (2007)
3. NRV web knowledge base on low-energy nuclear physics.<http://nrv.jinr.ru/>.

### The speaker is a student or young scientist

Yes

### Section

1. Experimental and theoretical studies of nuclear reactions

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**Session Classification:** Experimental and theoretical studies of nuclear reactions