Contribution ID: **401** Type: **Oral talk (15 min + 5 min questions)**

STUDY OF EXCITATION FUNCTIONS FOR TRANSFER REACTIONS 197Au(3He, d)198Hg AND 197Au(3He, t)197Hg WITH 3He BEAMS AT ENERGY UP TO 30 MeV

In charge-exchange reactions, only charges of atomic nuclei change, while the total number of nucleons is preserved. Charge-exchange reactions are a particular case of transfer reactions. Charge-exchange reactions (3He, t) as well as reactions (n, p) play a special role. These reactions lead to excitation of isobar-analogue and other single-particle states in the residual nucleus.
The integral cross sections for such reactions can reach the values of 100 mb at the energy of the beam of bombarding particles near the Coulomb barrier and up to 10 MeV/nucleon [1].
The excitation functions for the reactions 45Sc(3He, t)45Ti, 194Pt(3He, t)194Au, and 197Au(3He, t)197Hg were measured in [1]. It was shown that charge-exchange reactions belong to the class of peripheral reactions [2].
At the U-120M cyclotron of the Institute of Nuclear Physics in Řež, Czech Republic, experiments were carried out to measure emission of deuterons and tritons at different angles in the reactions 197Au(3He, d)198Hg and 197Au(3He, t)197Hg. The measurements showed that the energy and angular distributions of deuterons and tritons are sensitive to the impact parameter of the colliding nuclei and to the transferred angular momentum. The angular distributions of emitted deuterons for the reaction 197Au(3He, t)197Hg have a maximum at the grazing angle for this reaction (68° in the laboratory system).

1. N. K. Skobelev, Yu. E. Penionzhkevich, V. Burjan, and J. Mrázek, Bulletin of the Russian Academy of Sciences: Physics 84, 425 (2020).
2. N. K. Skobelev, Yu. E. Penionzhkevich, I. Siváček, T. Issatayev et al., Physics of Particles and Nuclei 53, 382 (2022).

The speaker is a student or young scientist

No

Section

1. Experimental and theoretical studies of nuclear reactions

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