Yields of Radioactive Products of Transfer Reactions Induced by ^{6}He Ions on ^{197}Au Target.

N.A. Demekhina[1], A.A. Kulko[1], T.V. Chuvilskaya[2], Yu.E. Penionzhkevich[1], N.K. Skobelev[1], A.A. Shirokova[2]

[1] Joint Institute for Nuclear Research, 141980, Dubna, Russia.

[2] Skobeltsyn Institute of Nuclear Physics, Moscow State University, 119991, Moscow, Russia.

The investigation and the analysis of the excitation functions of the ground and the isomeric states obtained in the reactions ^{197}Au(^{6}He,xn)$^{200-198}$Tl and ^{197}Au(^{6}He,^{4}He xn)^{198,196,194}Au at the projectile energy 15 – 60 MeV [1] is performed. The experimental results are compared with the ones calculated using the code EMPIRE-2.18 [2]. To calculate the branching ratio of production of an isomeric and a ground state in a residual nucleus (isomeric ratio) probabilities of the population of known discrete levels of the nucleus in a gamma-cascade are taken into account. It is shown that projectile brake-up processes play an essential role in the production of the discussed nuclides along with the statistical, multi-step compound, and multi-step direct transfer reactions.

[1] Yu.E. Penionzhkevich *et al.*, Preprint JINR E7-2006-75. Dubna, 20 pp. (2006).

[2] M. Herman, www.nds.iaea.org/empire/.