

SOME REGULARITIES IN THE FORWARD ANGLE YIELDS OF ISOTOPES WITH $4 < Z < 20$ IN THE REACTION OF ^{40}Ar (40 A MEV) WITH ^9Be .

Wednesday, 13 July 2022 11:10 (20 minutes)

Systematic study of forward-angle inclusive yields of nuclei with atomic numbers $4 < Z < 20$ produced in nucleus-nucleus collisions of the ^{40}Ar projectile on the ^9Be target in the Fermi energy domain (40 A MeV) was carried out. The reaction products were measured by using the double achromatic fragment-separator COMBAS [1, 2] in the spectrometry mode at FLNR, JINR (Dubna). The inclusive velocity, isotopic and element distributions were obtained. There is no unique mechanism to explain the total set of the results obtained from the experiment. Two main contributions of dissipative low energy reaction mechanisms and of fragmentation mode were observed. The simple exponential approximation realized by the Q_{gg} – systematics satisfactorily describes the total yield of the isotopes produced in stripping nucleon reactions with large negative Q_{gg} values especially for neutron-rich isotopes. The Q_{gg} – systematic can be used to predict correctly the yields of unknown drip-line nuclei. The production rates of neutron-rich isotopes of elements with $4 < Z < 20$ were determined.

1. A. G. Artukh, A. N. Vorontsov, S. A. Klygin, G. A. Kononenko, Yu. M. Sereda, B. Erdemchimeg, Physics of Particles and Nuclei Letters, 2021, Vol. 18, pp. 19–26
2. A. G. Artukh, Yu. M. Sereda, S. A. Klygin and et al, Instruments and Experimental Technique, 2011, Vol. 54, № 5, pp. 668-681

The speaker is a student or young scientist

Yes

Section

1. Experimental and theoretical studies of nuclear reactions

Primary author: BATCHULUUN, Erdemchimeg (FLNR, JINR)

Co-authors: Dr KONONENKO, Gennady (FLNR, JINR); Mr MIKHAILOVA, Tatiana (LIT, JINR); Mr SEREDA, Yuri (FLNR, JINR); Mr KLYGIN, Sergey (FLNR, JINR); Mr VORONTSOV, Andrey

Presenter: BATCHULUUN, Erdemchimeg (FLNR, JINR)

Session Classification: Poster session