

## **Determination of the total efficiency of registration of reaction products at the MASHA setup**

*Tuesday, 16 April 2019 17:00 (2 hours)*

Determination of separation efficiency of mercury and radon isotopes for MASHA setup is presented in this work. Two experiments by using the fusion reactions  $^{40}\text{Ar}+^{144}\text{Sm}$  and  $^{40}\text{Ar}+^{166}\text{Er}$ ,  $E_{\text{beam}}=5-7$  MeV/n, were carried out. In the first experiment the absolute cross sections of evaporation residues (radon and mercury isotopes) were obtained. In addition the absolute cross sections for p(xn) and alpha(xn) reactions were also measured. In the second experiment the total efficiency of MASHA setup for mercury and radon isotopes were determined by using the same reactions. The method of moving absorber made of ultra thin aluminium foils, where the reaction products were stopped, was used. The alpha decay of synthesized isotopes was detected by silicon detectors. Energy resolution of alpha-radioactive isotopes was  $\sim 100$  keV. Time moving of aluminium absorbers between two extreme positions was 0.3 s. The using of beam interruption method allowed to measure half-life of synthesized nuclei. As a result the method allowed reliable identification of reaction products.

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