

Estimation of $^{238}\text{U}(\text{g},\text{F})$ and $^{238}\text{U}(\text{g},\text{n})$ reactions cross sections.

Experimental study of nuclear fission is of high importance both for applied and theoretical purposes, therefore fission is one of the most investigated process in nuclear physics. However, main attention is paid to fission under thermal and fast neutrons due to apparent practical applications, and other areas lack accurate data. Photon-induced fission or photofission is one of such bypassed areas despite its wide potential for applied developments.

The cross sections for photofission and competing photoneutron reactions on the ^{238}U have been measured mainly on quasi-monochromatic gamma ray beams by the neutron multiplicity method. There are significant differences between parameters of these cross sections obtained in different laboratories: the form of a spectrum, the amplitude and position of the maximum [1,2]. The optimal method to revise the data and estimate the cross sections of these reactions is the one that allows fission fragments to be directly measured.

The preliminary results of the measurement of the absolute yields of the $^{238}\text{U}(\text{g}, \text{n})$ reaction and the photofission $^{238}\text{U}(\text{g}, \text{F})$ on a bremsstrahlung gamma-ray beam at a maximum energy of 55.6 MeV are presented. In order to determine the yields of the photofission and the photoneutron reactions a gamma-activation technique of measuring the induced activity of the reaction products was used. A reaction on the copper monitor was used to measure the flux of gammas and the absolute values of the yields. The yield of the photofission reaction was obtained by measurement of the accumulated yields of the fission fragments at the end of the beta-decay chain of the isobar nuclei. 40 decay chains were analyzed for this purpose.

The estimation of $^{238}\text{U}(\text{g}, \text{F})$ and $^{238}\text{U}(\text{g}, \text{n})$ cross sections based on the obtained data was made.

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