

ISOMERIC RATIOS IN PHOTONUCLEAR REACTIONS ON MERCURY ISOTOPES Hg

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There is very little experimental data on isomeric ratios in photonuclear reactions on mercury isotopes in the literature, especially for energies of the order of 50-60 MeV. To obtain isomeric ratios during the reactions of $^{nat}\text{Hg}(\gamma, \text{inkp})$, a γ -activation experiment was conducted on irradiation of a sample of natural mercury with a bremsstrahlung beam from the RTM-55 linear electron accelerator of SINP MSU with an upper limit of 55 MeV.

Table 1 shows the isomeric ratios IR obtained as a result of the experiment (the isomeric ratios IR is the yields ratio of the formation of final isotopes in the isomeric and ground states (Y_m/Y_g)). Isomeric ratios can also be defined through thesections ratio (σ_m/σ_g). Here Y_m , Y_g and σ_m , σ_g are the yields and excitation cross sections of the isomeric and ground states, respectively.

To study the behavior of isomeric ratios, the cross sections calculations of the formation of the basic and isomeric states $^{195,197}\text{Hg}$ were carried out using the TALYS program 2 (Table 1). The accuracy of the obtained data is influenced by two factors: theoretical parameters, the main of which is the density of core levels calculated using the Fermi gas model and taken into account in the calculation using the TALYS program, and the use of the Seltzer-Berger braking spectrum for calculations instead of the real braking spectrum in thick targets.

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