

STUDIES OF ISOMERIC STATES OF NUCLEI ON THE PROTON BEAM OF THE PHASOTRON AND ELECTRON BEAM OF THE LINAC-200 ACCELERATORS AT JINR USING THE ^{209}Bi , ^{238}U , ^{165}Ho TARGETS

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The experiments in the framework of the project "Energy and Transmutation" were carried out with the use of the Phasotron and LINAC-200 accelerators at JINR. The samples were placed in the neutron fields produced by the interaction of the proton beam with the lead target or in the bremsstrahlung radiation fields, which were produced in the lead converters irradiated with the electron beams. Gamma spectra of the activated samples were measured using HPGe detectors. The measurement times were from a few minutes to several hours. The yields of the nuclei and their half-life times were studied. Gamma spectra were measured using HPGe detectors on the spectrometric complex at YASNAPP-LNP and LHEP JINR.

- The bismuth and lead residual nuclei in the ^{209}Bi target as the results of (γ, xn) reactions were identified to $A = 199$.

- In the (γ, f) fission and (n, γ) capture reactions, when using the ^{238}U target, more than 30 nuclei of fragments were identified and the fission curve was obtained (see the report of the conference).

- In the irradiation of ^{165}Ho in the field of the bremsstrahlung radiation with an energy of 100 MeV, the decay of the nuclei and their isomeric states were observed to $A = 156$.

In the result of the experiments on the bremsstrahlung radiation, we observed all the isomeric states in the nuclei of the holmium with $A = 155 \div 165$ [1, 2, 3].

The decay of some nuclei of the holmium and their isomers are shown in Figure 1.

Fig. 1. The decay of the Holmium nuclei.

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2. V.G. Kalinnikov et al., // "NUCLEUS-2006". Sarov, 339 (2006).

3. V.I. Stegailov et al., // LV National conference on nuclear physics. St-Petersburg, 72 (2005).

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