

INVESTIGATION OF THE EFFECT OF COHERENT ELECTROMAGNETIC RADIATION BY RADIOACTIVE DECAY OF ^{152}Eu

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Some experiments, which have been carried out in the frames of “Energy and Transmutation” project and directed to solve tasks of studying the nuclear-physical processes’ characteristics, ensuing on nuclei under the influence of coherent electromagnetic radiance, have been discussed in the report. The aim of the experiments [1, 2] is to study the mechanisms of influence of electromagnetic radiation of microwave range and laser radiation on the probability of the nuclear decay. A nuclear decay of ^{152}Eu , ^{137}Cs , ^{231}Th , ^{234}Th , ^{239}Np under the influence of laser radiances to their water solutions has been investigated. We have a great interest in studying a well-known and an investigated in details nucleus of ^{152}Eu .

The solution of ^{152}Eu has been under the influence of the laser radiance with wave length of radiation to 1064 nm, pulse repetition frequency to 10 Hz and energy in impulse to 700 mJ. Futher, we have used another laser, with wave length of radiation to 1064 nm, pulse repetition frequency to 10000 Hz and an energy in impulse 1 mJ. It is necessary to note that when we decrease a pulse repetition frequency to 1000 times, but increase the energy of the impulse to 700 times, the common tendency of the decreasing activity is kept (Fig. 1). These experimental data have been discussed in the report.

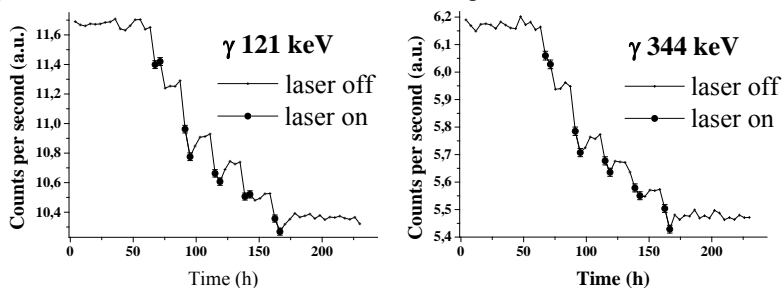


Fig. 1. The change in the intensity of the gamma 121 and 344 keV lines in ^{152}Eu .

1. E.V.Barmina *et al.* // Quantum Electronics. 2017. V.47(7). P.627. 2017.
2. Z.Gonz *et al.* // Influence of High-Power Pulse RF Irradiation on Several Types of Beta-Decay. Proc. of the 9th Intern. Workshop «Strong Microwaves and Terahertz Waves: Sources and Applications». Nizhny Novgorod. July 24. 2014.