Excitation of low-level nuclear state 14.4 keV ^{57}Fe by radiation of plasma created by the powerful femtosecond laser pulse

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Diploma thesis abstract

The conversional decay of excited nuclei (57Fe, E=14.4 keV) was investigated. Excitation was created by radiation of plasma, which provided by powerful femtosecond laser impulse (W=2 mJ, $\tau = 50$ *fs*, I=1017 Wt/cm2). The diagnostics of plasma lets us to appreciate the temperatures of "hot" electrons and x-ray radiation as 13 ± 2 keV. The flow of electrons and x-rays from plasma bombarded the surface of a second target (57Fe, 98%). Electrostatic spectrometer registered the electrons from the second target. In measured spectrums there are maximums on the energy of conversional electrons. Period of maximum's existence (100 ns) equals to lifetime of excited nuclear state (98 ns).