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## The energy released by electron capture into different atomic subshells of $^{242m}\text{Am}$ isomer for different ionization degrees

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Following the first experimental observation of  $^{93m}\text{Mo}$  isomer depletion via nuclear excitation by electron capture (NEEC), we have made theoretical investigation related to the  $^{242m}\text{Am}$  isomer ( $T_{1/2} \sim 141$  y). It is worth to underline that for  $^{242m}\text{Am}$  isomer the probability of the NEEC process can be even higher than for the  $^{93m}\text{Mo}$  isomer [1-3].

We have performed here the extensive multiconfiguration Dirac-Fock [4-9] study concerning the dependence of the energy released by electron capture into different subshells for N, O and P shell of  $^{242m}\text{Am}$  isomer on the degree of ionization and electronic configuration.

These study have a basic research character, because they are concentrated on a systematic study directed toward greater knowledge and understanding of the various aspects of a new physical phenomena, i.e. the NEEC process. The presented studies may contribute to the development of the concept of new ultra-energy-dense nuclear power sources, and  $\gamma$ -ray lasers.

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