YIELDS AND CROSS-SECTIONS OF THE (γ, n) AND (γ, p) REACTIONS ON THE Ti ISOTOPES IN THE GDR REGION

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Yields of the (γ, n) and (γ, p) reactions were measured on the stable Ti isotopes at the 55 MeV race-track microtron using registration of produced activities with a high-purity Ge γ-spectrometer (methodical details are similar to those in [1]). Results were analyzed together with available experimental data about yields and cross-sections for these reactions in the Giant Dipole Resonance (GDR) region from [2], taking into account gross-structure of the GDR, caused by nuclear deformation, isospin and cofigurational splitting [3].

For analysis of data there were also made calculations of cross sections for photonuclear reactions on the Ti isotopes using the nuclear reaction model [4].

Some results of data analysis for the integrated cross-sections of (γ, n) and (γ, p) reactions on even-even Ti isotopes are presented in the table. These results were obtained from experiments and model calculations and are presented in comparison with predictions of the dipole sum rule [5]. Incomplete exhaustion of the dipole sum rule is caused by the fact that the integrated cross sections from experiments and model calculations are for energies <~30 MeV. The fulfilled analysis shows that results of the present work permit to improve consistency of obtained earlier data.

Table. The model [4] and experimental integral (γ, n) and (γ, p) cross-sections on $^{46,\,48,\,50}$Ti and the percents of the dipole sum rule for them. The upper indexes "*" are used for the model and experimental results obtained in this work

Ti isotopes	Experiments			Model calculations		
	$\sigma_{int}(\gamma,n)$, MeV·mb	$\sigma_{int}(\gamma,p)$ MeV·mb	$[\sigma_{int}(\gamma,n)+\sigma_{int}(\gamma,p)]$, MeV·mb	$\sigma_{int}(\gamma,n)$, MeV·mb	$\sigma_{int}(\gamma,p)$, MeV·mb	$[\sigma_{int}(\gamma,n)+\sigma_{int}(\gamma,p)]$, MeV·mb
^{46}Ti	194	333	527 (76%)	250*	270*	520 (75%)
^{48}Ti	398	127*	525 (73%)	460*	100*	560 (78%)
^{50}Ti	473	96	569 (77%)	480*	20*	500 (68%)

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