**STUDY OF REACTIONS WITH THE α-PARTICLE EMISSION AT *E*max=20 MeV ON NATURAL ZIRCONIUM TARGETS**

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Data of the cross sections and population yields of high-spin isomeric states in reactions with the emission of charged particles makes it possible to obtain various information both on the structure of excited levels in the continuous and discrete excitation regions and on the nuclear reaction mechanisms. Therefore, the present work aim is to study the 87,91,92Sr yields in reactions with bremsstrahlung quanta for energies in the region of the giant dipole resonance on zirconium isotopes.

The study of weighted average yields was carried out by the activation method by 20 MeV bremsstrahlung gamma quanta on targets of natural metallic zirconium.

The spectra of irradiated targets were measured using Ortec and Canberra gamma spectrometers with a (15-40)% detection efficiency compared to a 3'×3'' NaI(Tl) detector. The energy resolution of the spectrometers was 1.8–2.0 keV at the 1332 keV 60Co gamma line.

Gamma transitions from the 87mSr and 91,92Sr decays are reliably identified in the studied spectra. The weighted average yields of 87mSr and 92Sr occupation in the (γ, α)-reaction, as well as 91Sr in the (γ, α*n*) reaction, were studied for the first time on natural zirconium for 20 MeV bremsstrahlung gamma quanta. The following weighted average yields were obtained: for 87mSr (*I*π=1/2–) *Y*=6.9±0.7 µb, for 91Sr *Y*=14±3 µb, for 92Sr Y=5.5±0.6 µb.

The dominance of non-statistical processes is stated according to the simulation results within the TALYS 1.96 program code. The obtained results are discussed.