**STUDY OF THE BETA DECAY STRENGTH FUNCTION STUCTURE BY TAGS AND HIGH RESOLUTION NUCLEAR SPECTROSCOPY METHODS**

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The β-decay strength function Sβ(*Е*) governs [1-3] the nuclear energy distribution of elementary charge-exchange excitations and their combinations like proton particle (π*p*)–neutron hole (ν*h*) coupled into a momentum *I*π : [π*p* ν*h*]*I*π and neutron particle (ν*p*)–proton hole (π*h*) coupled into a momentum *I*π : [ν*p* π*h*)]*I*π. The strength function for the Gamow-Teller (GT) β-transitions describes [π*p* ν*h*]1+ or [ν*p* π*h*]1+ excitations. Successful applications of the total absorption γ-spectroscopy (TAGS) for Sβ(*Е*) resonance structure study and methods of TAGS spectra analysis were summarized in [1]. Development of the experimental technique allows application of methods of nuclear spectroscopy with high energy resolution for the Sβ*(E)* fine structure measurement [2-5]. It was demonstrated [2-6] that the high-resolution nuclear spectroscopy methods give conclusive evidence of the resonance structure of Sβ*(E)* both for the GTand First Forbidden (FF) β-transitions. High-resolution nuclear spectroscopy methods [3-6] made it possible to observe the reveal splitting of the peak in theSβ*(E)* for the GT β+/EC-decay of the deformed nuclei into two components. Resonance structure of the *S*β(*E*) for β-decay of halo nuclei was analyzed in [7-9]. It was shown that when the parent nucleus has *nn* Borromean halo structure, then after Gamow-Teller (GT) β–- decay of parent state or after *M*1 γ-decay of Isobar Analogue Resonance (IAR) the states with *np* tango halo structure or mixed *np* tango + *nn* Borromean halo structure can be populated.

In this report the fine structure of Sβ(*E*) is analysed. Resonance structure of Sβ(*E*) for GT and FF β-decays, structure of Sβ(*E*) for halo nuclei, quenching [9] of the weak axial-vector constant *gAeff*, and splitting of the peaks in Sβ(*E*) for deformed nuclei connected with the anisotropy of oscillations of proton holes against neutrons (peaks in Sβ(*E*) of GT β+/EC – decay) or of protons against neutron holes (peaks in Sβ(*E*) of GT β– –decay) are discussed.

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