SOME FEATURES OF BETA-DECAY STRENGTH FUNCTION IN HALO NUCLEI

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The probability of the β-transition is proportional to the product of the lepton part described by the Fermi function $f(Q_\beta - E)$ and the nucleon part described by the β-decay strength function $S_\beta(E)$. Until recently, experimental investigations of the $S_\beta(E)$ structure were carried out using total absorption gamma-ray spectrometers ($TAGS$) and total absorption spectroscopy methods, which had low energy resolution. With $TAGS$ spectroscopy, it became possible to demonstrate experimentally the resonance structure of $S_\beta(E)$ for Gamow–Teller (GT) β-transitions [1]. However, $TAGS$ methods have some disadvantages arising from low energy resolution of $TAGS$ spectrometers. Modern experimental instruments allow using nuclear spectroscopy methods with high energy resolution to study the fine structure [2] $S_\beta(E)$.

In this report the fine structure of $S_\beta(E)$ in halo nuclei is analysed. When the parent nuclei has nn Borromean halo structure, than the Gamow-Teller resonance and pygmy resonances in GT β-decay strength function $S_\beta(E)$

in daughter nuclei may have structure corresponding to np tango [3,4] halo. When neutron excess is high enough, resonances in $S_\beta(E)$ may simultaneously have both nn Borromean halo component and np tango halo component and form so-called mixed halo [3,4]. Analysis of the $S_\beta(E)$ structure in halo nuclei allow to determine the most suitable region for the Wigner $SU(4)$ spin-isospin symmetry. Value $Z/N \approx 0.5 - 0.6$ may correspond to the $SU(4)$ spin-isospin symmetry region.

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