THE DESCRIPTION OF CHARACTERISTICS OF TWO-PROTONS DECAY OF Fe-45 IN THE THEORY OF TWO-STEPS TWO-PROTON DECAY

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In the framework of the theory of two-steps two-proton decays of nuclei [1] taking into account only the virtual one-proton transitions of parent nuclei the total width of the two-proton decay of Fe-45 and the angular and energy distributions of the two emitted protons have been calculated. One-proton decay widths of the parent (Fe-45) and intermediate (Mn-44) nuclei have been found by use of the many-particle theory of one-proton decays of spherical nuclei [2] with taking into account the proton shell model potentials [2] and the Cooper pairing of protons by methods [3].

It is shown that the basic role in the formation of the total experimental width and experimental energy distribution of emitted protons for the two-proton decay of Fe-45 are played the shell model states $2s_{1/2}$ and $2p_{1/2}$, $2p_{3/2}$ of protons, but the contributions of proton states $1f_{7/2}$ and $1f_{5/2}$ can be neglected.

It is demonstrated that the experimental angular distribution of the emitted protons can be described with taking into account the interference of amplitudes of angular distributions of two-protons emitted from $2s_{1/2}$ and $2p_{1/2}$, $2p_{3/2}$ shell model states.

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