

The level structure of ^{134}Cs

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The level scheme of $^{134}_{55}\text{Cs}_{79}$ (1) has been revised using a new results from the thermal neutron capture experiments.

The conversion electron spectrum in the energy range 20 to 620 keV has been measured with the beta magnetic spectrometer BILL at the high flux reactor of the ILL, Grenoble. The bent crystal γ -ray spectrometers GAMS1 and GAMS2/3 have been used to measure secondary γ -rays in the region $30 < E_{\gamma} < 1500$ keV. The primary γ -ray spectrum have been measured with the pair-spectrometer at Grenoble. The new data from γ - γ prompt coincidence experiment in the energy region 50 to 700 keV were obtained at LNPI, Gatchina. Earlier coincidence data (2) from the experiment performed in Belgrade, were used to the placement of some transitions populating the isomeric state of 176.404 keV.

The level scheme of ^{134}Cs is presented containing 41 levels (3). Seven of these states are new and more new I^{π} assignments were made.

The positive parity quasiproton-quasineutron multiplet $\tilde{\pi}g_{7/2} \nu d_{3/2}$ has been tentatively identified, together with previously (1) known $\tilde{\pi}g_{7/2} \nu h_{11/2}$ and $\tilde{\pi}d_{5/2} \nu h_{11/2}$ negative parity two-quasiparticle multiplets.

Special attention has been paid to the transitions inside the quasiproton-quasineutron multiplets. The $M1$ transitions resulting from the proton-neutron contribution are of a single particle magnitude and they are predominant. The E2 contribution is extremely small. The $\Delta I=2$ E2 transitions occur only if there is no $M1$ transitions to compete with them and they are the fastest E2 transitions. E2 transitions of $\Delta I=1$ are smaller than the corresponding single-particle transitions.

References

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