^{235}Cm α decay (5.0 min) 2020Kh10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Jagdish K. Tuli, and Edgardo Browne	NDS 185, 560 (2022)	31-Aug-2022

Parent: ^{235}Cm: E=0; $J^{\pi}=(5/2^{+})$; $T_{1/2}$=5.0 min *+41−17*; Q(α)=7130 *20*; %α decay=1.1 *6*

^{235}Cm-J^{π}: Proposed by 2020Kh10 from configuration=5/2[633] based on systematics.

^{235}Cm-$T_{1/2}$: 300 s *+250−100* from (recoil)α_3-correlated decay curve (2020Kh10). Authors point out that with a long correlation time and background conditions in the present experiment, the decay curve analysis could be affected by random events. In evaluators′ opinion, the half-life should be viewed with caution.

^{235}Cm-Q(α): Deduced by evaluators from measured Eα=7.01 MeV *2* (2020Kh10), assuming this as a g.s. to g.s. α transition. Other: 7280 *100* (syst, 2021Wa16).

^{235}Cm-%α decay: %α=1.0 *+7−5* for ^{235}Cm α decay (2020Kh10), determined from from number of α decays of ^{235}Cm and ^{239}Cf.

Adapted from compiled dataset from 2020Kh10 in XUNDL database by E.A. McCutchan (NNDC,BNL), March 19, 2020.

2020Kh10: ^{235}Cm from the α decay chain for ^{243}Fm decay: ^{243}Fm→^{239}Cf→^{235}Cm. The ^{243}Fm activity was formed in ^{208}Pb(^{40}Ar,X),E(^{40}Ar)=192 MeV reaction, followed by separation of evaporation residues using SHIP velocity filter and time-of-flight detectors at the UNILAC linear accelerator of GSI facility, and finally implanted into a position sensitive 16-strip Si detector, surrounded by six additional Si detectors for the detection of escaped α particles or fission fragments, and an HPGe Clover detector. FWHM=25 keV for α particles. Measured Eα, (recoil)$\alpha\alpha\alpha$ and (recoil)$\alpha\alpha\alpha$(t)-correlated events, and (recoil)$\alpha\gamma$-coin from the decay of ^{243}Cm. First evidence for the identification of ^{235}Cm nuclide and its half-life determination.

According to 2020Kh10, proposed decay scheme is tentative.

Evaluators′ note about the decay scheme: except for energies of one definite α transition and another tentative α transition, no other spectral information is available in literature.

^{231}Pu Levels

E(level)	Comments
0	
324? *28*	E(level): from measured Eα=6.69 MeV *2* and Q(α)=7130 *20*.

α radiations

Eα	E(level)	Comments
6.69×10^2 *2*	324?	Eα: from five (recoil)α-correlated events (2020Kh10). 2020Kh10 deduced α-hindrance factor=1.0 *+8−5*.
7.01×10^2 *2*	0	Eα: from two (recoil)α-correlated events (2020Kh10). 2020Kh10 deduced α-hindrance factor=100 *+230−83*.