^{244}Cf α decay (19.4 min) 1967Si08,1967Fi04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, E. Browne	NDS 109, 2439 (2008)	31-Jul-2008

Parent: ^{244}Cf: E=0.0; $J^\pi=0^+$; $T_{1/2}$=19.4 min *6*; Q(α)=7328.9 *18*; %α decay=70 *20*

^{244}Cf-%α decay: The α branching of 70% *20* is recommended by 1998Ak04. Others: ≤100% (2003Ak04), ≈100% (2003Au02), 99% (1991Ry01).

The data set is adapted from evaluation by 1998Ak04.

1967Si08, 1967Fi04, 1956Ch43: Measured Eα, Iα, $T_{1/2}$.

Others: 2002Sh02, 1996Ma72, 1991NoZZ.

$T_{1/2}$(^{244}Cf)=19.4 min *6*, measured by 1967Si08, is adopted in 2003Ak04. Other measurement: $T_{1/2}$=20.4 min *16* (1967Fi04).

1973Ta30 estimate $T_{1/2}$(ε decay)=6×10^3 s from gross β-decay calculations. This partial half-life gives %ε(^{244}Cf)=19. 1997Mo25 estimate $T_{1/2}(\beta^+)$ > 100 s.

^{240}Cm Levels

E(level)	J^π	Comments
0.0[†]	0^+	
38[†] *5*	(2^+)	J^π: from 'Adopted Levels'.

[†] Band(A): $K=0^+$ g.s. band.

α radiations

Eα[†]	E(level)	Iα[‡@]	HF[#]	Comments
7174 *5*	38	25 *8*	2.1 *7*	Eα: 7170 *10* (1956Ch43), 7174 *4* (1967Si08), 7163 (1991NoZZ), 7176 (2002Sh02).
7209 *4*	0.0	75 *8*	1.0	Eα: 7214 *4* (1967Si08), 7207 *2* (1967Fi04), 7213 (1991NoZZ,2002Sh02).

[†] Recommended by 1991Ry01 from energies measured by 1967Si08, 1967Fi04 and 1956Ch43.

[‡] α intensity per 100 α decays, given as recommended by 1991Ry01 from the intensity ratio of Iα(7209α)/Iα(7174α)=3.3 *0*, measured by 1967Si08. The increased uncertainty, following evaluation by 1991Ry01, reflects probable contributions from other sources.

[#] r_0(^{240}Cm)=1.495 *12* is calculated from HF(7209α)=1.0, if %α=70 *20*. For $T_{1/2}$(^{244}Cf)=20.4 min *16* and %α=70 *20*, the computations give r_0(^{240}Cm)=1.493 *20*.

[@] For absolute intensity per 100 decays, multiply by 0.70 *20*.

γ(^{240}Cm)

Eγ	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α[†]	Comments
(38 *5*)	38	(2^+)	0.0	0^+	[E2]	2.4×10^3 *14*	α(L)=1.7×10^3 *10*; α(M)=4.9×10^2 *28*; α(N)=1.4×10^2 *8*; α(O)=33 *19*; α(P)=5 *3*; α(Q)=0.010 *9*

[†] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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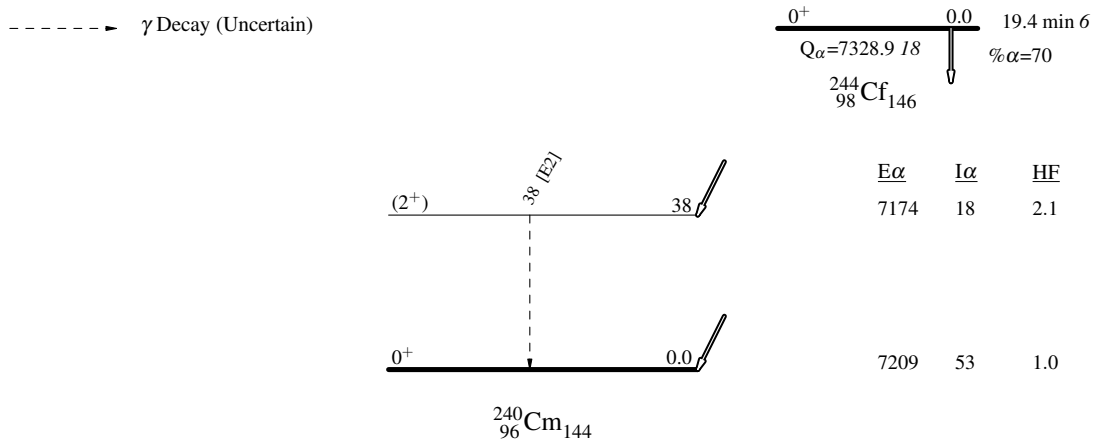
Legend

- - - - - - ► γ Decay (Uncertain)

Decay Scheme



Eα	Iα	HF
7174	18	2.1
7209	53	1.0

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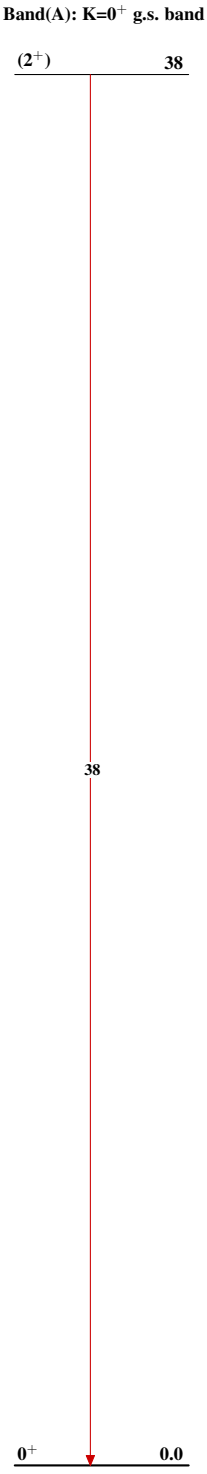

$^{240}_{96}Cm_{144}$