

^{247}Am β^- decay 1967Or02,1968Fi03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 125, 395 (2015)	31-Mar-2014

Parent: ^{247}Am : $E=0.0$; $J^\pi=(5/2)$; $T_{1/2}=23.0$ min 13; $Q(\beta^-)=1620$ SY; $\% \beta^-$ decay=100.0

^{247}Am - $T_{1/2}$: From Adopted Levels of ^{247}Am .

^{247}Am - $Q(\beta^-)$: 1620 100 (syst, 2012Wa38).

1991Po17: Gamma emission of actinides isotopes.

1968Fi03: ^{247}Am produced by 42-MeV α on ^{244}Pu at the Argonne 60-inch cyclotron. Chemical purification was followed by evaporation on a quartz plate. Gammas were then measured with a Ge(Li) detector through a thick copper detector to reduce β -particle background.

1967Or02: ^{247}Am produced by 28-MeV α on ^{244}Pu at the Los Alamos variable-energy cyclotron. Chemical purification was followed by evaporation on teflon film. Following β decay of ^{247}Am , γ 's were measured with a Ge(Li) detector and the electron spectrum was measured with a Si(Li) detector.

 ^{247}Cm Levels

E(level) [†]	J^π [†]	$T_{1/2}$	Comments
0.0 (61.67 4)	$9/2^-$ $11/2^-$	1.56×10^7 y 5	$T_{1/2}$: From Adopted Level.
227.38 19 285.41 5	$5/2^+$ $(7/2^+)$	26.3 μs 3	$T_{1/2}$: From Adopted Levels. Others: 24 μs (1967Or02), 20 μs 4 (1968Fi03).

[†] From Adopted Level.

 β^- radiations

$I(\beta^-)$'s were deduced from intensity balance. Since the decay scheme is incomplete, $I(\beta^-)$'s given should be taken as approximate.

E(decay)	E(level)	$I\beta^-$ [†]	Log ft	Comments
(1334 SY)	285.41	63 19	≈ 6.22	av $E\beta \approx 443$
(1392 SY)	227.38	31 21	≈ 6.6	av $E\beta \approx 465$
(1620 [‡] SY)	0.0	<6	$> 8.4^{1u}$	av $E\beta \approx 522$ If $J^\pi(^{247}\text{Am g.s.})=5/2^+$ and $\log f^{1u} > 8.5$ for the β to g.s., $I(\beta^-)$ to g.s. <6%.

[†] Absolute intensity per 100 decays.

[‡] Existence of this branch is questionable.

γ(²⁴⁷Cm)

I_γ normalization: The normalization factor to convert the relative photon intensities to absolute intensities is obtained as 0.25 which is an average of NR=0.26 assuming I_β to g.s.=0 with [I_γ(226)(1+α)+I_γ(285)(1+α)+ I_γ(61.67)(1+α)]=100% and NR≥0.24 when I_β to g.s.<6 % by requiring log^f_t>8.5 with [I_γ(226)(1+α)+I_γ(285)(1+α)+ I_γ(61.67)(1+α)]≥94% The decay scheme should, however, be considered to be incomplete.

E _γ	I _γ ^a	E _i (level)	J _i ^π	E _f	J _f ^π	Mult.#	δ [#]	α ^{&}	Comments
(58.03 [@] 5)	2.1 [‡] 5	285.41	(7/2 ⁺)	227.38	5/2 ⁺	(M1+E2)	0.49 19	7.×10 ¹ 3	α(L)=55 19; α(M)=15 6 α(N)=4.1 15; α(O)=1.0 4; α(P)=0.18 6; α(Q)=0.0053 6
(61.67 5)	0.33 9	(61.67)	11/2 ⁻	0.0	9/2 ⁻	M1+E2	0.26 +12-16	38 10	α(L)=28 7; α(M)=7.2 21 α(N)=2.0 6; α(O)=0.50 14; α(P)=0.093 22; α(Q)=0.0049 3 I _γ : Calculated by the evaluator from intensity balance at the 61.67-keV level.
(165.70 [@] 5)	0.41 [‡] 4	227.38	5/2 ⁺	61.67?	11/2 ⁻	E3		30.4	α(K)=0.235 4; α(L)=21.3 3; α(M)=6.47 10 α(N)=1.83 3; α(O)=0.445 7; α(P)=0.0750 11; α(Q)=0.000469 7
226 2	23 [†] 3	227.38	5/2 ⁺	0.0	9/2 ⁻	M2+E3	0.56 17	10.4 7	α(K)=5.9 9; α(L)=3.26 20; α(M)=0.90 7 α(N)=0.252 19; α(O)=0.063 5; α(P)=0.0117 7; α(Q)=0.00056 7 I _γ (226) relative to 285γ=25 7 was measured by 1967Or02 . α(K)exp=6 3 estimated from comparison of ce and γ. α(K)exp=6 5 in ²⁵¹ Cf α decay (2003Ah07).
285 2	100 [†] 10	285.41	(7/2 ⁺)	0.0	9/2 ⁻	[E1]		0.0486 11	α(K)=0.0381 8; α(L)=0.00789 17; α(M)=0.00193 5 α(N)=0.000525 12; α(O)=0.000131 3; α(P)=2.44×10 ⁻⁵ 6; α(Q)=1.35×10 ⁻⁶ 3 From nonobservation of ce lines for 285γ, 1967Or02 suggest that 285γ is probably E1 or E2.

[†] Relative photon intensity measured by **1991Po17**.

[‡] Calculated by the evaluator from adopted relative branching.

From Adopted Gammas.

@ Transition was not observed in ²⁴⁷Am β⁻ decay; energy is from Adopted Gammas.

& **Additional information 1.**

^a For absolute intensity per 100 decays, multiply by ≈0.25.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - -→ γ Decay (Uncertain)

