^{246}Am β^- decay (39 min) 2008Ro21,1968Fi03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 198,449 (2024)	31-Jul-2022

Parent: ^{246}Am: E=0; J^π=(7$^-$); $T_{1/2}$=39 min *3*; Q(β^-)=2377 *syst*; %β^- decay=100

^{246}Am-Q(β^-): 2377 *18* (syst,2021Wa16).

2008Ro21: ^{246}Am was produced in the reaction ^{244}Pu(α,pn). E(α)=42−MeV beam from the ATLAS facility at Argonne bombarded the ^{244}Pu target and the americium product was chemically isolated, and mass separated in the electromagnetic separator. Measured Eγ, Iγ, $\gamma\gamma$-coin, conversion electrons using two Clover HPGe detectors a focal plane detector and a double-sided silicon strip detector.

1971Mu05: Recalibrated data taken from 1968Fi03.

1968Fi03: ^{246}Am was produced in the reaction ^{244}Pu(α,d). Americium was chemically separated. The γ rays were measured with a Ge(Li) detector. Several of the gammas measured were not assigned by 1968Fi03 but were instead assigned by 1971Mu05.

Others: 1967Or02.

^{246}Cm Levels

E(level)‡	J^π†	$T_{1/2}$†	E(level)‡	J^π†	E(level)‡	J^π†	$T_{1/2}$†
0.0#	0$^+$	4706 y *40*	500.1# *5*	8$^+$	980.5@ *3*	5$^-$	
42.852# *5*	2$^+$	123.2 ps *23*	841.7@ *3*	2$^-$	1051.3@ *4*	6$^-$	
142.05# *18*	4$^+$		876.45@ *23*	3$^-$	1129.0@ *4*	7$^-$	
295.3# *4*	6$^+$		923.4@ *4*	4$^-$	1179.1& *5*	8$^-$	1.12 s *24*

† From Adopted Levels.

‡ Deduced by the evaluator from least-squares fit to γ-ray energies, assuming an uncertainty of 0.3 keV for γ rays from 2008Ro21.

Band(A): K^π=0$^+$ g.s. Rotational Band.

@ Band(B): K^π=2$^-$ Octupole Vibrational Band.

& K^π=8$^-$ isomer.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(1198 *syst*)	1179.1	100	6.09 *4*	av Eβ=391.3 *68*

† Absolute intensity per 100 decays.

γ(^{246}Cm)

Iγ normalization: Deduced by the evaluator assuming no β^- feeding to the g.s. rotational band. ΣIγ(1+α) for transitions from levels above 500 keV to g.s. rotational band are equal to 100.

K-X rays (1968Fi03)

E(X-ray)	I(X-ray; relative)
104.6 *5*	Kα_2 x ray
109.3 *5*	Kα_1 x ray
123.0 *5*	Kβ_3 x ray
127.4 *5*	Kβ_1 x ray
	Total≈ 14 (1968Fi03)
	relative to Iγ(679.2)

E_γ[‡]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
42.852 *5*		42.852	2^+	0.0	0^+	E2	1064 *15*	α(L)=770 *11*; α(M)=216.8 *30* α(N)=60.3 *8*; α(O)=14.56 *20*; α(P)=2.379 *33*; α(Q)=0.00584 *8* E_γ: From Adopted Gammas.
(50)		1179.1	8^-	1129.0	7^-			
(78)		1129.0	7^-	1051.3	6^-			
99.2 *2*	9 *2*	142.05	4^+	42.852	2^+	E2	19.43 *33*	α(L)=14.05 *24*; α(M)=3.97 *7* α(N)=1.105 *19*; α(O)=0.268 *5*; α(P)=0.0444 *7*; α(Q)=0.0001817 *29* %Iγ≈6.1
127.4[a] *5*	≈6	1051.3	6^-	923.4	4^-	E2	6.15 *14*	α(L)=4.44 *10*; α(M)=1.255 *29* α(N)=0.349 *8*; α(O)=0.0847 *19*; α(P)=0.01416 *32*; α(Q)=7.34×10^{-5} *14* %Iγ≈4.1 Mult.: As given in the Adopted Gammas which is deduced from α(L1)exp + α(L2)exp=3.4 *5*, α(L3)exp=1.6 *2* (2008Ro21).
127.4[a] *5*	≈6	1179.1	8^-	1051.3	6^-	E2	6.15 *14*	α(L)=4.44 *10*; α(M)=1.255 *29* α(N)=0.349 *8*; α(O)=0.0847 *19*; α(P)=0.01416 *32*; α(Q)=7.34×10^{-5} *14* %Iγ≈4.1 Mult.: As given in the Adopted Gammas which is deduced from α(L1)exp + α(L2)exp=3.4 *5*, α(L3)exp=1.6 *2* (2008Ro21).
148.5[#] *3*		1129.0	7^-	980.5	5^-			
153.5 *5*	48 *5*	295.3	6^+	142.05	4^+	[E2]	2.83 *6*	α(K)=0.1740 *24*; α(L)=1.92 *4*; α(M)=0.542 *11* α(N)=0.1508 *31*; α(O)=0.0366 *7*; α(P)=0.00616 *12*; α(Q)=3.95×10^{-5} *7* %Iγ≈33
205 *1*	68 *7*	500.1	8^+	295.3	6^+	[E2]	0.896 *21*	α(K)=0.1414 *22*; α(L)=0.547 *14*; α(M)=0.153 *4* α(N)=0.0426 *11*; α(O)=0.01037 *26*; α(P)=0.00177 *4*; α(Q)=1.657×10^{-5} *33* %Iγ≈46
628.8[#] *3*	5 *1*	1129.0	7^-	500.1	8^+	[E1]	0.00997 *14*	α(K)=0.00801 *11*; α(L)=0.001479 *21*; α(M)=0.000356 *5* α(N)=9.72×10^{-5} *14*; α(O)=2.454×10^{-5} *34*; α(P)=4.71×10^{-6} *7*; α(Q)=3.05×10^{-7} *4* %Iγ≈3.4
679.2[#] *3*	100	1179.1	8^-	500.1	8^+	[E1]	0.00866 *12*	α(K)=0.00697 *10*; α(L)=0.001275 *18*; α(M)=0.000307 *4* α(N)=8.38×10^{-5} *12*; α(O)=2.116×10^{-5} *30*; α(P)=4.07×10^{-6} *6*; α(Q)=2.66×10^{-7} *4* %Iγ≈68
685.1[#] *3*	≈4	980.5	5^-	295.3	6^+	[E1]	0.00853 *12*	α(K)=0.00686 *10*; α(L)=0.001254 *18*; α(M)=0.000302 *4* α(N)=8.24×10^{-5} *12*; α(O)=2.081×10^{-5} *29*; α(P)=4.00×10^{-6} *6*; α(Q)=2.62×10^{-7} *4* %Iγ≈2.7
734.4[#] *3*		876.45	3^-	142.05	4^+	E1	0.00752 *11*	α(K)=0.00606 *8*; α(L)=0.001100 *15*; α(M)=0.000264 *4* α(N)=7.22×10^{-5} *10*; α(O)=1.825×10^{-5} *26*; α(P)=3.52×10^{-6} *5*; α(Q)=2.327×10^{-7} *33*
756.0[#] *3*	25 *2*	1051.3	6^-	295.3	6^+	[E1]	0.00714 *10*	α(K)=0.00576 *8*; α(L)=0.001042 *15*;

Continued on next page (footnotes at end of table)

^{246}Am β^- decay (39 min) 2008Ro21,1968Fi03 (continued)

$\gamma(^{246}Cm)$ (continued)

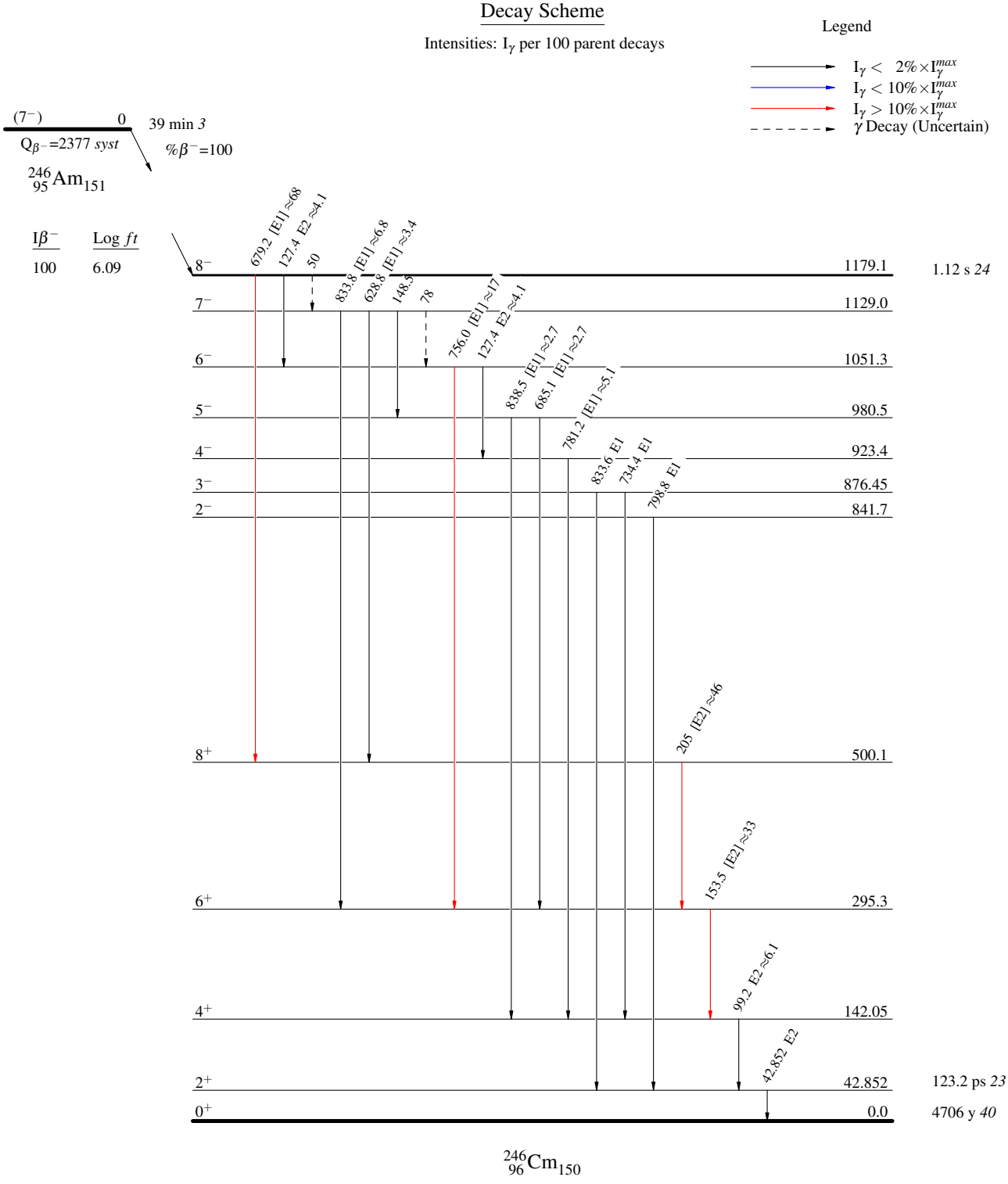
E_γ[‡]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
								α(M)=0.0002504 *35* α(N)=6.84×10^{-5} *10*; α(O)=1.728×10^{-5} *24*; α(P)=3.33×10^{-6} *5*; α(Q)=2.214×10^{-7} *31* %Iγ≈17
781.2 *3*	7.5 *8*	923.4	4$^-$	142.05	4$^+$	[E1]	0.00674 *9*	α(K)=0.00544 *8*; α(L)=0.000980 *14*; α(M)=0.0002355 *33* α(N)=6.43×10^{-5} *9*; α(O)=1.626×10^{-5} *23*; α(P)=3.14×10^{-6} *4*; α(Q)=2.094×10^{-7} *29* %Iγ≈5.1
798.8[#] *3*		841.7	2$^-$	42.852	2$^+$	E1	0.00648 *9*	α(K)=0.00523 *7*; α(L)=0.000941 *13*; α(M)=0.0002259 *32* α(N)=6.17×10^{-5} *9*; α(O)=1.560×10^{-5} *22*; α(P)=3.01×10^{-6} *4*; α(Q)=2.016×10^{-7} *28*
833.6[#] *3*		876.45	3$^-$	42.852	2$^+$	E1	0.00601 *8*	α(K)=0.00485 *7*; α(L)=0.000870 *12*; α(M)=0.0002088 *29* α(N)=5.70×10^{-5} *8*; α(O)=1.442×10^{-5} *20*; α(P)=2.79×10^{-6} *4*; α(Q)=1.876×10^{-7} *26*
833.8[#] *3*	≈10	1129.0	7$^-$	295.3	6$^+$	[E1]	0.00600 *8*	α(K)=0.00485 *7*; α(L)=0.000869 *12*; α(M)=0.0002087 *29* α(N)=5.70×10^{-5} *8*; α(O)=1.442×10^{-5} *20*; α(P)=2.79×10^{-6} *4*; α(Q)=1.875×10^{-7} *26* %Iγ≈6.8
838.5 *3*	≈4	980.5	5$^-$	142.05	4$^+$	[E1]	0.00595 *8*	α(K)=0.00480 *7*; α(L)=0.000861 *12*; α(M)=0.0002066 *29* α(N)=5.64×10^{-5} *8*; α(O)=1.427×10^{-5} *20*; α(P)=2.76×10^{-6} *4*; α(Q)=1.858×10^{-7} *26* %Iγ≈2.7

[†] From Adopted Gammas. The high-energy (interband) transitions have probable E1 multipolarity based on observed low K x ray intensity of <1.6% (2008Ro21).
[‡] From 1968Fi03, recalibrated by 1971Mu05, unless otherwise specified.
[#] From 2008Ro21.
[@] Additional information 1.
[&] For absolute intensity per 100 decays, multiply by ≈0.68.
[a] Multiply placed.

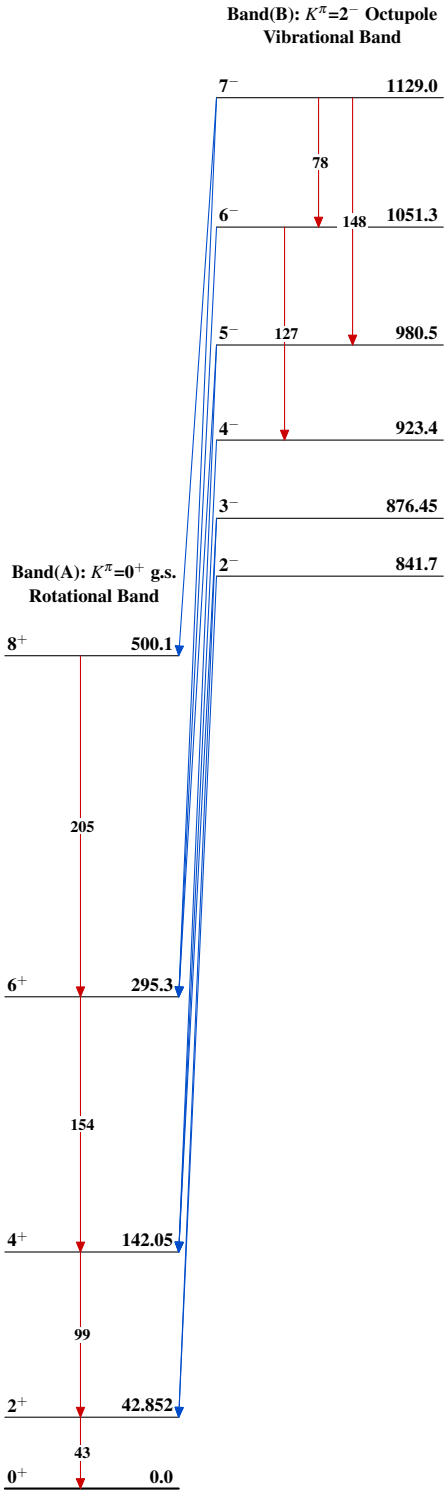
^{246}Am β^- decay (39 min) 2008Ro21,1968Fi03

Decay Scheme

Intensities: I_γ per 100 parent decays



^{246}Am β^- decay (39 min) 2008Ro21,1968Fi03



$^{246}_{96}Cm_{150}$