^{240}Am ε decay (50.8 h) 1972Ah07,1971LeZO,1972PoZS

History

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

Parent: ^{240}Am: E=0; J$^\pi$=(3$^-$); $T_{1/2}$=50.8 h *3*; Q(ε)=1385 *14*; %ε+%β^+ decay=100.0

^{240}Am-Configuration=ν1/2[631]$\otimes\pi$5/2[523], K^π=3$^-$.

^{240}Am-$T_{1/2}$: from 1972Ah07. Others: 50 h (1949Se02), 53 h (1952Hi63,1952Hi11), 51.0 h *5* (1960Gl01); 50.9 h *7* (1966Bi03), 50.7 h *8* (1972PoZS).

^{240}Am-%ε+%β^+ decay: %A=1.9E−4 *7* as recommended by 1986LoZT; ≈1.9×10^{-4} (1970Go42); %β^-<6×10^{-6} (1960Gl01).

1972Ah07: Measured Eγ, Iγ, ce, (ce)(γ) coin, mass-separated source, Ge(Li) and Si(Li) detectors. Source prepared by ^{237}Np(α,n) reaction at 30 MeV. Subsequent to chemical separation the source was run through the Argonne isotope separator to obtain enriched ^{240}Am samples. A total of 14 γ rays were reported: 42.9, 98.9 and 12 γ rays from 888 to 1295 keV. In the level scheme, eight γ rays were assigned amongst five excited states. Conversion electron intensities were given in percent per ^{240}Am decay, but no uncertainties were quoted in these intensities and the procedure to normalize ce intensities to γ-ray intensities was not explained.

1971LeZO: Measured Eγ, Iγ, $\gamma\gamma$, ce, chemically separated source, Ge(Li) detectors singles and Compton-suppressed, Si(Li) electron spectrometer, (x ray)γ coin using two NaI(Tl) detectors. A total of 31 γ rays and two conversion lines (for 42.9γ and 99.0γ) reported. Full experimental details about normalization of electron spectra and spectral (γ and ce) figures are not available in this report.

Therefore the evaluators have considered the γ-ray intensities reported in 1972Ah07 and 1971LeZO to be relative values given on an approximate absolute scale because their uncertainties do not include the cancellation effects from the decay-scheme normalization procedure. See comments on "Iγ normalization." Despite the scarcity of detailed information the agreement of γ-ray data given in 1972Ah07 and 1971LeZO is very good, especially for the intense 988- and 889-keV γ rays.

1972PoZS: Measured Eγ, Iγ, half-life, chemically separated source prepared by ^{237}Np(α,n) reaction at 50 MeV. Ge(Li) detector used. A total of 23 γ rays reported between 305 and 1296 keV. Small impurities of ^{140}La, ^{143}Ce and ^{239}Am were present in the source. Twenty γ rays were placed in a level scheme essentially based on the one from 1971LeZO. No uncertainties were quoted on γ-ray intensities, except for the ratio Iγ(889γ)/Iγ(988γ).

Other studies:

1970Go42: Measurement of α decay mode.

1966Bi03: Measured Eγ, Iγ.

1960Gl01: Measured Eγ, Iγ for three γ rays, NaI(Tl) detector.

1957Sm77: Measured ce spectrum, deduced energies of first two excited states at 42.87 *4* and 141.77 *20*.

1956Gl80: Isotopic production and measurement of γ rays.

1950St61: Isotopic production and half-life.

1949Se02: Identification and production of ^{240}Am isotope, measured isotopic half-life, isotope produced in ^{239}Pu(d,n) at 10 MeV.

^{240}Pu Levels

E(level)[†]	J$^\pi$[#]	$T_{1/2}$	Comments
0.0[@]	0$^+$		
42.87[@] *4*	2$^+$		
141.78[@] *7*	4$^+$		
294.4[@] *6*	6$^+$		
597.40[&] *7*	1$^-$		
649.0[&] *5*	3$^-$		Configuration=π5/2[642]$\otimes\pi$5/2[523], K^π=0$^-$.
742.4[‡&] *7*	5$^-$		
900.38[‡a] *7*	2$^+$		
958.97[b] *21*	(2$^-$)		
992.3[‡a] *7*	(4$^+$)		
1002.2[‡b] *3*	(3$^-$)		E(level): level population proposed by the evaluators as a result of revised placement of 959.3γ according to the level scheme from the decay of 61.9-min ^{240}Np.
1030.64[c] *6*	(3)$^+$	1.32 ns *15*	$T_{1/2}$: from 1976BuZP.

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^{240}Am ε decay (50.8 h) 1972Ah07,1971LeZO,1972PoZS (continued)

^{240}Pu Levels (continued)

E(level)[†]	Jπ[#]	Comments
		Configuration=ν1/2[631]⊗ν5/2[622].
1076.4[c] 3	(4+)	
1137.5[d] 3	(2+)	
1177.93[d] 22	(3+)	
1223.09 22	(2+)	
1232.3[d] 6	(4+)	
1262.14 25	(3+)	
1337.08? 25	(2+,3,4+)	

[†] From least-squares fit to Eγ′s.
[‡] Level from 1971LeZO only.
[#] From 'Adopted Levels'.
[@] Band(A): K^{π}=0+, g.s. band.
[&] Band(B): K^{π}=0−, octupole band.
[a] Band(C): K^{π}=0+ band.
[b] Band(D): K^{π}=(1−) band.
[c] Band(E): K^{π}=(3)+ band.
[d] Band(F): K^{π}=(2+) band.

ε,β+ radiations

The log *ft* value for 649, 3− level discussed by 2006Sa35 In terms of intrinsic states and K-forbidden transitions.

E(decay)	E(level)	Iε[†]	Log *ft*	I(ε+β+)[†]	Comments
(48[‡] 14)	1337.08?	0.0115 12	7.5 5	0.0115 12	εL=0.50 20; εM+=0.50 20
(123 14)	1262.14	0.0455 22	7.9 2	0.0455 22	εK=0.00 6; εL=0.68 3; εM+=0.32 3
(153 14)	1232.3	0.010 3	8.9 2	0.010 3	εK=0.16 10; εL=0.58 6; εM+=0.26 4
(162 14)	1223.09	0.0170 13	8.7 2	0.0170 13	εK=0.22 10; εL=0.54 6; εM+=0.24 4
(207 14)	1177.93	0.064 4	8.5 1	0.064 4	εK=0.43 5; εL=0.40 4; εM+=0.168 17
(248 14)	1137.5	0.0230 23	9.2 1	0.0230 23	εK=0.52 3; εL=0.339 19; εM+=0.136 9
(309 14)	1076.4	0.035 4	9.3 1	0.035 4	εK=0.603 14; εL=0.286 10; εM+=0.112 5
(354 14)	1030.64	98.6 11	6.1 1	98.6 11	εK=0.637 9; εL=0.262 7; εM+=0.101 3 ε(K)/ε=0.588 15 (1971LeZO) from (K-x ray)/γ ray intensities.
(383 14)	1002.2	0.039 5	9.5 1	0.039 5	εK=0.652 8; εL=0.252 5; εM+=0.0959 23
(393 14)	992.3	0.106 10	9.1 1	0.106 10	εK=0.657 7; εL=0.248 5; εM+=0.0944 21
(426 14)	958.97	0.089 6	9.3 1	0.089 6	εK=0.671 6; εL=0.239 4; εM+=0.0902 17
(485 14)	900.38	0.030 3	9.9 1	0.030 3	εK=0.689 4; εL=0.226 3; εM+=0.0846 12
(643[‡] 14)	742.4	<0.014	>10.5	<0.014	εK=0.7181 19; εL=0.2062 13; εM+=0.0756 6 I(ε+β+): 0.006 8 from intensity balance.
(736 14)	649.0	0.032 13	10.3 2	0.032 13	εK=0.7283 14; εL=0.1992 10; εM+=0.0725 4
(788 14)	597.40	0.0066 21	11.1 2	0.0066 21	εK=0.7327 12; εL=0.1961 8; εM+=0.0712 4
(1243[‡] 14)	141.78	<1	>9.3	<1	εK=0.7541 4; εL=0.1812 3; εM+=0.06471 12 I(ε+β+): based on log *ft*=9.1 and 9.9 for two other K-forbidden (ΔK=3,ΔJ=1) β transitions in the level scheme. Others: 1.4 12 from measured electron and γ-ray intensities in 1972Ah07 (assuming 4% uncertainty on measured electron intensities); 4 3

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^{240}Am ε decay (50.8 h) 1972Ah07,1971LeZO,1972PoZS (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iε[†]	Log *ft*	I($\varepsilon+\beta^+$)[†]	Comments
					from electron and γ-ray intensities of 1971LeZO. As expected, both these values are consistent with no β feeding to the 42.9 level.
(1342[‡] *14*)	42.87	<1	>9.4	<1	εK=0.7566 *4*; εL=0.17940 *24*; εM+=0.06394 *10* I($\varepsilon+\beta^+$): based on log *ft*=9.1 and 9.9 for two other K-forbidden (ΔK=3,ΔJ=1) β transitions in the level scheme. Others: −8 *4* from measured electron and γ-ray intensities in 1972Ah07 (assuming 4% uncertainty on measured electron intensities); 12 *14* from electron and γ-ray intensities of 1971LeZO. As expected both these are consistent with no β feeding to the 42.9 level.

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

$\gamma(^{240}Pu)$

Iγ normalization, I(γ+ce) normalization: The evaluators have deduced a precise and reliable value for the absolute intensity of the 988-keV γ ray based on: 1. The availability of precise relative experimental intensities for the strong 988 and 889-keV g rays given in 1972Ah07 and 1971LeZO. 2. The knowledge of the complete 240Am electron-capture decay scheme up to its Q(ε) value of 1385 keV. 3. The fact that >98% of the 240Am electron capture decay populates a single level at 1031 keV in 240Pu, which is deexcited by the 988-kev and 889-keV γ rays. The two procedures given next were used in the determination of normalization factors. These procedures include cancellation effects of correlated uncertainties, thus producing much more precise and realistic results. Procedure #1: Σ(Iγ+ce)=99 *1* for gamma rays feeding the g.s., 43- and 142-keV levels from levels above the 142-keV level. The β feeding to each of the 43- and 142-keV levels was assumed as <1% based on log *ft*=9.1-9.9 as for some other K-forbidden (ΔK=3,ΔJ=1) β transitions in the level scheme. This procedure gave normalization factor of 0.988 *15* and absolute intensity of 72.4% *9* for 987.8-keV gamma ray. Procedure #2: Σ(Iγ+ce)=99.5 *5* for gamma rays feeding the g.s. and the 43-keV level from levels above the 43-keV level. For the 99-keV γ ray, Iγ+ce was deduced from measured electron intensity and E2 multipolarity, since the measured photon intensity is not known precisely. The β feeding for the 43-keV levels was again assumed as <1%. This procedure gives normalization factor of 0.984 *12* and absolute intensity of 72.0% *6* for 987.8-keV γ ray. From the two procedures, average normalization factor=0.986 *12* and absolute intensity=72.2% *7* for 987.8-keV γ ray. This quantity is important in the measurement of the ^{241}Am(n,2n)^{240}Am and ^{241}Am(γ,n)^{240}Am reaction cross-sections.

Pu K x-ray intensities (per 100 decays of ^{240}Am) from 1972Ah07:

I(Kα_2, 99.53 keV *2*)=18.6 *6*.

I(Kα_1, 103.74 keV *2*)=29.0 *10*.

I(Kβ_1+Kβ_3, 116.25 keV *3*+117.23 keV *3*)=10.8 *4*.

I(Kβ_2+Kβ_4+K to $O_{2,3}$, 120.65 keV *3*+121.56 keV *3*)= 3.80 *15*.

Experimental conversion coefficients are from ce data of 1972Ah07, unless otherwise stated. Theoretical conversion coefficients are from BrIcc code at www.nndc.bnl.gov.

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	α[b]	$I_{(\gamma+ce)}$[a]	Comments
42.87 *4*	0.111 *2*	42.87	2+	0.0	0+	E2	901 *14*	99.98 *1*	α(L2)exp=366 *37*; α(L3)exp=333 *33*; α(M)exp=227 *23*; α(N+...)exp=81 *8* α(L)=655 *10*; α(M)=183 *3*; α(N+..)=63.7 *10* α(N)=50.1 *8*; α(O)=11.78 *18*; α(P)=1.84 *3*; α(Q)=0.00389 *6* α(N)=49.9 *9*; α(O)=11.74 *22*; α(P)=1.83 *4*; α(Q)=0.00387 *7* E_γ: from ce spectrum (1957Sm77). Other: 42.9 *1* (1972Ah07). $I_{(\gamma+ce)}$: 100−(summed intensity of γ rays to g.s. from levels above 42.9). Others: 92 from electron intensities of 1972Ah07 (uncertainties are not given by 1972Ah07 but expected to about 4% as in some other papers by the same group, e.g. 1974Po08); 112 *14* (1971LeZO). I_γ: from I(γ+ce) and α. 1972Ah07 give measured intensity of 0.09 *1*. Ice(L2)=33, Ice(L3)=30, Ice(M)=20.5, Ice(N+)=7.3 (1972Ah07). (L1+L2)/L3=1.2 *1*, L/M=3.7 *3* (1971LeZO).
98.9 *1*	1.49 *4*	141.78	4+	42.87	2+	E2	16.62	26.2 *6*	α(L1)exp+α(L2)exp=7.6 *8*; α(L3)exp=4.8 *5*; α(M)exp=3.6 *4*; α(N+...)exp=1.30 *13* ce(L)/(γ+ce)=0.684 *8*; ce(M)/(γ+ce)=0.192 *4*; ce(N+)/(γ+ce)=0.0671 *14* ce(N)/(γ+ce)=0.0527 *11*; ce(O)/(γ+ce)=0.0124 *3*; ce(P)/(γ+ce)=0.00198 *4*;

γ(^{240}Pu) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[&]	α[b]	Comments
								ce(Q)/(γ+ce)=6.93×10^{-6} *14* α(N)=0.929 *14*; α(O)=0.219 *4*; α(P)=0.0348 *6*; α(Q)=0.0001221 *18* E_γ: from γ spectrum (1972Ah07). Others: 98.9 *2* (1957Sm77), 99.0 *1* (1972Ah07) from ce spectrum. $I_{(\gamma+ce)}$: from intensity balance at 141.78 level and assuming β feeding of 0.5% 5. Others: 27.1 from conversion electron intensity data of 1972Ah07 (uncertainties are not given by 1972Ah07 but expected to about 4% as in some other papers by the same group, e.g. 1974Po08); 30 *3* (1971LeZO). I_γ: from I(γ+ce) and α. 1972Ah07 give measured intensity of 1.5 *2*. Ice(L1+L2)=11.4, Ice(L3)=7.2, Ice(M)=5.4, Ice(N+)=1.97 (1972Ah07). (L1+L2)/L3=1.67 *15* (1971LeZO).
152.4[#] *10*	0.012[#] *3*	294.4	6$^+$	141.78	4$^+$	E2	2.50 *8*	α(M)exp=0.47 *13* (1971LeZO) α(K)=0.196 *3*; α(L)=1.68 *6*; α(M)=0.468 *16*; α(N+..)=0.164 *6* α(N)=0.129 *5*; α(O)=0.0304 *10*; α(P)=0.00491 *16*; α(Q)=2.78×10^{-5} *7*
249.7[#] *10*	0.020[#] *3*	992.3	(4$^+$)	742.4	5$^-$	[E1]	0.0620 *11*	α(K)=0.0487 *8*; α(L)=0.01000 *17*; α(M)=0.00243 *5*; α(N+..)=0.000846 *15* α(N)=0.000656 *12*; α(O)=0.000160 *3*; α(P)=2.85×10^{-5} *5*; α(Q)=1.427×10^{-6} *24*
251.8[#] *10*	0.005[#] *2*	900.38	2$^+$	649.0	3$^-$	[E1]	0.0608 *11*	α(K)=0.0478 *8*; α(L)=0.00980 *17*; α(M)=0.00238 *4*; α(N+..)=0.000829 *14* α(N)=0.000643 *11*; α(O)=0.000157 *3*; α(P)=2.80×10^{-5} *5*; α(Q)=1.402×10^{-6} *23*
303.7[@] *10*	0.009[@] *2*	900.38	2$^+$	597.40	1$^-$	[E1]	0.0403 *7*	α(K)=0.0319 *5*; α(L)=0.00633 *10*; α(M)=0.001535 *25*; α(N+..)=0.000535 *9* α(N)=0.000415 *7*; α(O)=0.0001013 *17*; α(P)=1.83×10^{-5} *3*; α(Q)=9.54×10^{-7} *15* Additional information 3.
343.7[@] *10*	0.049[@] *5*	992.3	(4$^+$)	649.0	3$^-$	[E1]	0.0309	α(K)=0.0245 *4*; α(L)=0.00479 *8*; α(M)=0.001158 *18*; α(N+..)=0.000404 *7* α(N)=0.000313 *5*; α(O)=7.66×10^{-5} *12*; α(P)=1.390×10^{-5} *22*; α(Q)=7.44×10^{-7} *12* Additional information 5.
382.1[@c] *10*	0.053[@] *5*	1030.64	(3)$^+$	649.0	3$^-$	[E1]	0.0247	α(K)=0.0197 *3*; α(L)=0.00379 *6*; α(M)=0.000915 *14*; α(N+..)=0.000319 *5* α(N)=0.000247 *4*; α(O)=6.06×10^{-5} *10*; α(P)=1.105×10^{-5} *17*; α(Q)=6.04×10^{-7} *9* Additional information 7. Placed by evaluators on the basis of energy fit.
447.8[#] *10*	0.013[#] *4*	742.4	5$^-$	294.4	6$^+$			
507.9[@] *10*	0.072[@] *6*	649.0	3$^-$	141.78	4$^+$			Additional information 1.
555.4[#] *10*	≈0.01[#]	597.40	1$^-$	42.87	2$^+$			
(597.40[‡] *7*)	≈0.006	597.40	1$^-$	0.0	0$^+$			
600.7[#] *10*	0.014[#] *6*	742.4	5$^-$	141.78	4$^+$			
606.7[@] *10*	0.070[@] *8*	649.0	3$^-$	42.87	2$^+$			Additional information 2.
697.8[#]	0.035[#] *8*	992.3	(4$^+$)	294.4	6$^+$			placement based on 'Adopted Gammas'.
(758.61[‡] *8*)	0.0105	900.38	2$^+$	141.78	4$^+$			
(857.48[‡] *10*)	0.004	900.38	2$^+$	42.87	2$^+$			
888.85 *5*	25.1 *4*	1030.64	(3)$^+$	141.78	4$^+$	E2	0.01550	%Iγ=24.7 *5* α(K)exp=0.0110 *9*; α(L3)exp=0.00025 *2*; α(M)exp=0.00120 *10*;

$^{240}_{94}Pu_{146}$-5

γ(^{240}Pu) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ[&]	α[b]	Comments
									α(N+...)exp=0.00048 *4* α(K)exp=0.0112 *4* (1971LeZO) α(K)=0.01127 *16*; α(L)=0.00315 *5*; α(M)=0.000797 *12*; α(N+..)=0.000281 *4* α(N)=0.000217 *3*; α(O)=5.31×10^{-5} *8*; α(P)=9.68×10^{-6} *14*; α(Q)=4.49×10^{-7} *7* %Iγ (photon intensity/100 decays of the parent) deduced by evaluators using the same procedures as for the 988-keV γ ray. Calculations were performed with the code gabs (www.nndc.bnl.gov). If no β feeding is assumed to the 42.9- and 141.8-keV levels, then %Iγ(888.85γ)=25.1 *4*. Mult.: from K/L3=44 *5* (1972Ah07), 39 *20* (1971LeZO) and α(K)exp values from 1972Ah07 and 1971LeZO. Others: δ(E2/M1)>5 (1971LeZO), >4.5 (1972Ah07). Additional information 8. Ice(K)=0.276, Ice(L3)=0.0063, Ice(M)=0.030, Ice(N+)=0.012 (1972Ah07). E_γ: weighted average of 1971LeZO, 1972Ah07 and 1972PoZS.
(900.37[‡] *10*)	0.0015	900.38	2$^+$	0.0	0$^+$				
916.1 *2*	0.090 *6*	958.97	(2$^-$)	42.87	2$^+$				Additional information 4.
934.6[@] *5*	0.025[@] *3*	1076.4	(4$^+$)	141.78	4$^+$				Additional information 10.
938.0[@] *6*	0.007[@] *3*	1232.3	(4$^+$)	294.4	6$^+$				Additional information 18.
959.3 *3*	0.039 *5*	1002.2	(3$^-$)	42.87	2$^+$				Additional information 6. E_γ: placed by evaluators in consistency with results from 61.9-min ^{240}Np decay. The placement from 959 level proposed by 1971LeZO and 1972PoZS is in disagreement.
987.79 *6*	73.2 *10*	1030.64	(3)$^+$	42.87	2$^+$	E2(+M1)	>10	0.0128 *3*	%Iγ=72.2 *7* α(K)exp=0.0090 *7*; α(L1)exp+α(L2)exp=0.00220 *18*; α(L3)exp=0.000120 *10*; α(M)exp=0.00060 *5* α(N+...)exp=0.000260 *21* α(K)=0.00953 *20*; α(L)=0.00246 *5*; α(M)=0.000618 *11*; α(N+..)=0.000217 *4* α(N)=0.000168 *3*; α(O)=4.13×10^{-5} *7*; α(P)=7.57×10^{-6} *13*; α(Q)=3.74×10^{-7} *8* α(N)=0.000171 *5*; α(O)=4.19×10^{-5} *13*; α(P)=7.70×10^{-6} *24*; α(Q)=3.83×10^{-7} *17* This %Iγ value is the average of 72.4 *9* from procedure #1 and 72.0 *6* from procedure #2 as described in the comment for normalization of the level scheme. If no β feeding is assumed to the 42.9- and 141.8-keV levels, then %Iγ(987.79γ)=73.1 *4* Calculations were performed with the code gabs (www.nndc.bnl.gov). Mult.: from (L1+L2)/L3=18.3 *20* and K/L3=84 *9* (1972Ah07). Others: δ(E2/M1)>6 (1971LeZO), >4.5 (1972Ah07). Additional information 9. Ice(K)=0.74, Ice(L1+L2)=0.161, Ice(L3)=0.0088, Ice(M)=0.044,

γ(^{240}Pu) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Comments
						Ice(N+)=0.019 (1972Ah07). K/L=3.77 *11*; L1/L2=1.5 +*10*−*5*; (L1+L2)/L3=20 *2* (1971LeZO). E_γ: weighted average of 1971LeZO, 1972Ah07 and 1972PoZS.
1033.5 *3*	0.010 *1*	1076.4	(4$^+$)	42.87	2$^+$	Additional information 11.
1036.1 *3*	0.016 *2*	1177.93	(3$^+$)	141.78	4$^+$	Additional information 14.
1089.8[@] *10*	0.0031[@] *6*	1232.3	(4$^+$)	141.78	4$^+$	Additional information 19.
1094.7 *3*	0.016 *1*	1137.5	(2$^+$)	42.87	2$^+$	Additional information 12.
1120.3 *4*	0.011 *1*	1262.14	(3$^+$)	141.78	4$^+$	Additional information 20.
1135.1 *3*	0.049 *3*	1177.93	(3$^+$)	42.87	2$^+$	Additional information 15.
1137.4[@] *5*	0.0073[@] *20*	1137.5	(2$^+$)	0.0	0$^+$	Additional information 13.
1180.3 *3*	0.0102 *8*	1223.09	(2$^+$)	42.87	2$^+$	Additional information 16.
1190.0[c] *10*	0.0005 *3*	1232.3	(4$^+$)	42.87	2$^+$	
1195.5[@c] *4*	0.0026[@] *5*	1337.08?	(2$^+$,3,4$^+$)	141.78	4$^+$	Additional information 22.
1219.3 *3*	0.035 *2*	1262.14	(3$^+$)	42.87	2$^+$	Additional information 21.
1223.0[@] *3*	0.007[@] *1*	1223.09	(2$^+$)	0.0	0$^+$	Additional information 17.
1294.1[c] *3*	0.009 *1*	1337.08?	(2$^+$,3,4$^+$)	42.87	2$^+$	Additional information 23.

[†] Weighted averages of values from 1971LeZO and 1972Ah07 are taken when possible. Except for the two most intense transitions, values from 1972PoZS are not considered in deducing recommended values since the energies seem consistently higher (by up to 1 keV at the highest energies) and the intensities are given without uncertainties. The intensities given by 1972PoZS are in general agreement with those from 1971LeZO.

[‡] From 'adopted gammas'.

[#] γ from 1971LeZO only.

[@] From 1971LeZO. Corresponding value from 1972PoZS is In general agreement but less precise. This γ ray was not reported by 1972Ah07.

[&] From ce data of 1972Ah07 and 1971LeZO.

[a] For absolute intensity per 100 decays, multiply by 0.986 *12*.

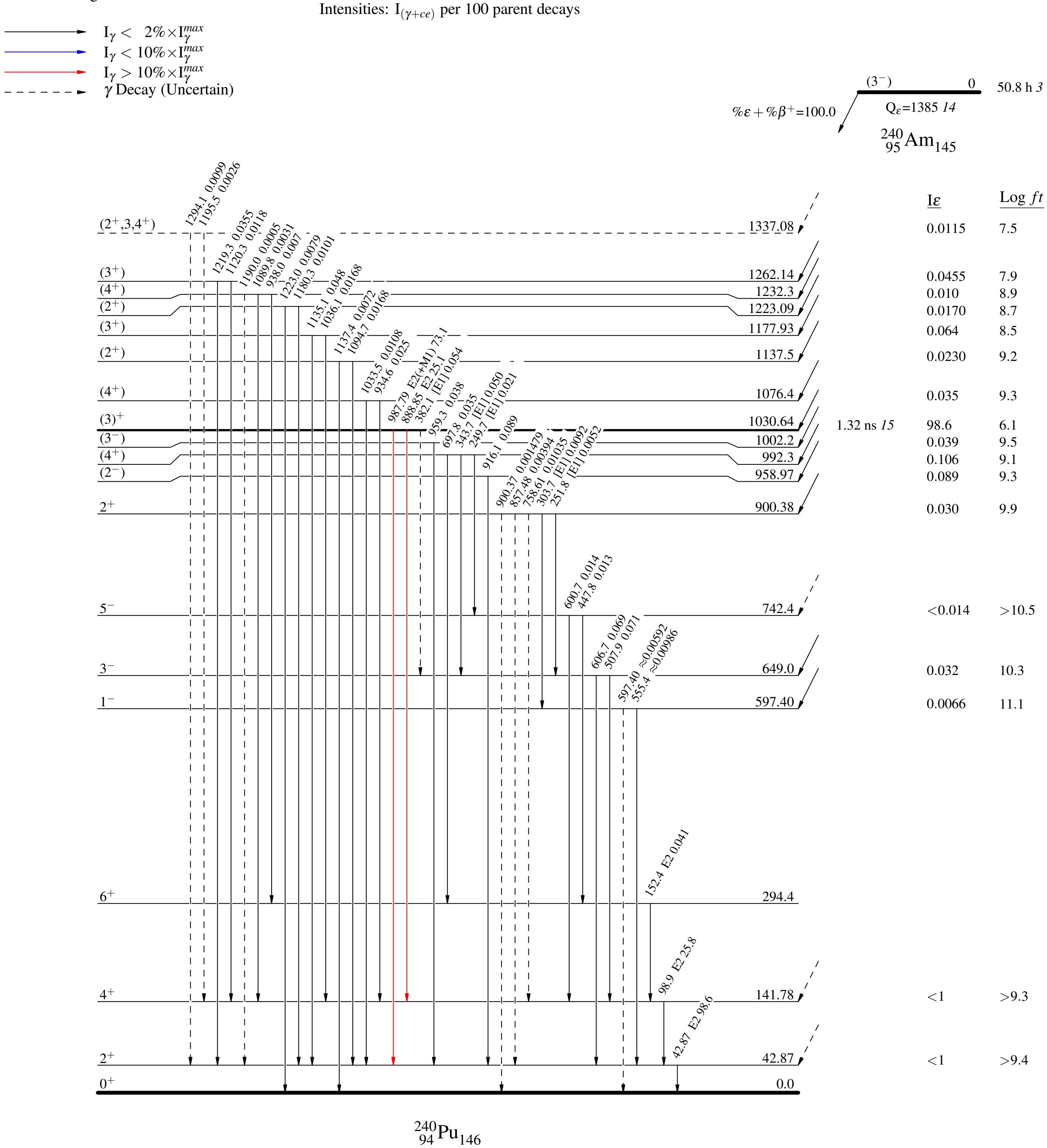
[b] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[c] Placement of transition in the level scheme is uncertain.

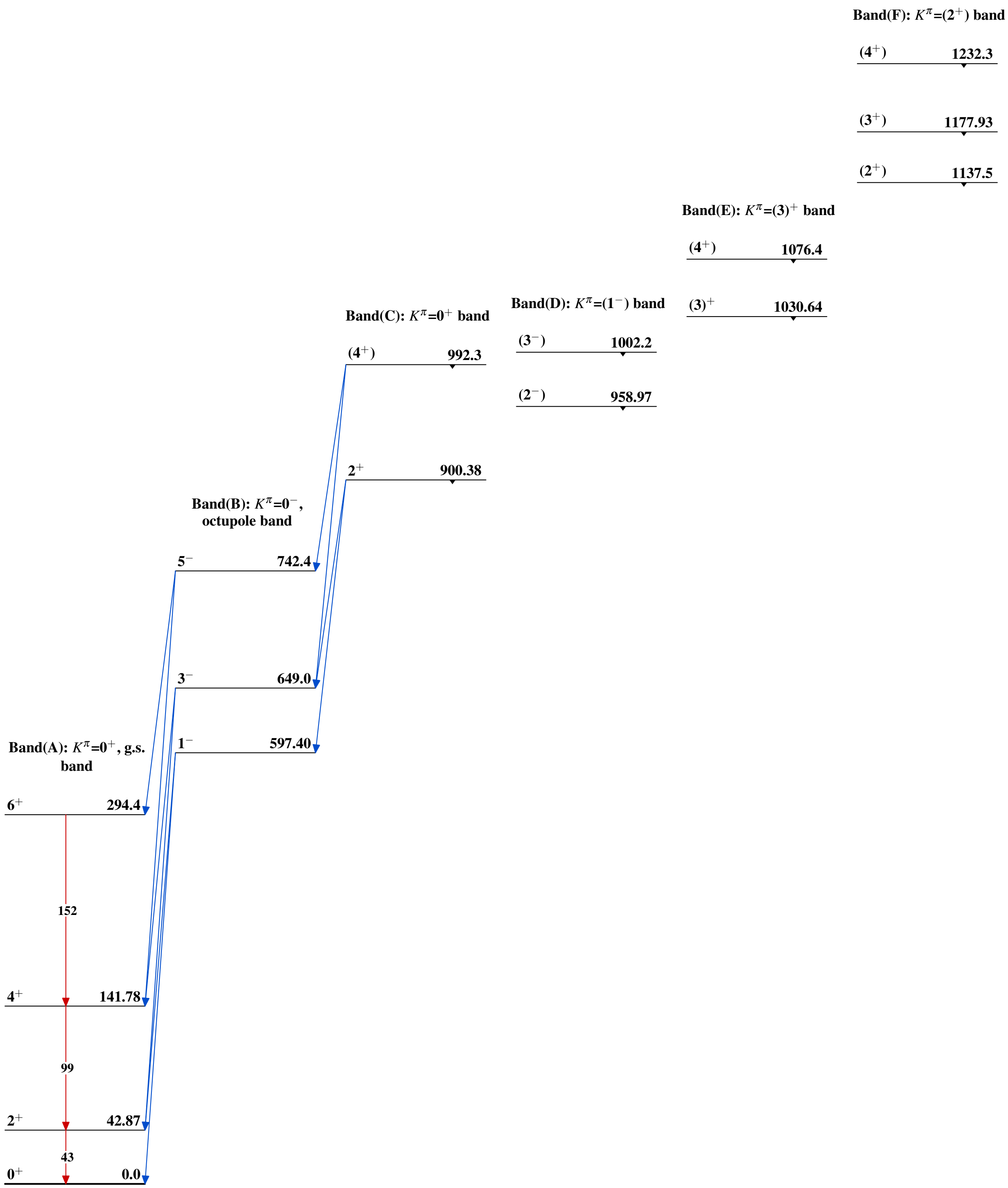
^{240}Am ε decay (50.8 h) 1972Ah07,1971LeZO,1972PoZS

Decay Scheme

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



^{240}Am ε decay (50.8 h) 1972Ah07,1971LeZO,1972PoZS



$^{240}_{94}Pu_{146}$