Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 189,1 (2023)	14-Feb-2023

Q(β^-)=895.9 *15*; S(n)=6050.0 *19*; S(p)=5194.6 *29*; Q(α)=5.16×10^3 *10* 2021Wa16
S(2n)=11417.2 *20*, S(2p)=12480 *30* (syst) (2021Wa16).

^{245}Am Levels

Cross Reference (XREF) Flags

A ^{245}Pu β^- decay
B ^{249}Bk α decay

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0[‡]	5/2$^+$	2.05 h *1*	AB	%β^-=100 T$_{1/2}$: From weighted average of 123.0 min *6* (decay, 1968Da02), 122.5 min *8* (decay, 1983Po15). Others: 125 min *5* (decay, 1955Br02), 119 min *1* (decay, 1955Fi37) and 124 min *1* (decay, 1956Bu92). J$^\pi$: M1(+E2) 327.4γ from 7/2$^+$ 327-keV level to g.s; log*ft*= 6.4 for the ^{245}Am β- feeding to the 5/2$^+$ level in ^{245}Cm rules out 9/2$^+$; HF=98 for α decay from 7/2$^+$ g.s. of ^{249}Bk excludes 7/2$^+$; from the assigned bandhead configuration.
19.209[‡] *10*	7/2$^+$		AB	J$^\pi$: M1(+E2) 308.222γ from 7/2$^+$ 327-keV level; M1 376.676γ from 9/2$^+$ 396-keV levels; band member.
28.27[#] *13*	(5/2$^-$)		AB	J$^\pi$: (E1) 28γ to 5/2$^+$ g.s.; comparison with single-particle energies in ^{239}Am, ^{241}Am, and ^{243}Am and the large hindrance factor in the ^{249}Bk α decay suggest spin flip transition (2013Ah03); from the assigned bandhead configuration.
47.083[‡] *12*	(9/2$^+$)		AB	J$^\pi$: (M1+E2) 280.385γ from 7/2$^+$ 327-keV level; band member.
70.40[#] *8*	(7/2$^-$)		AB	J$^\pi$: 817.04γ from (7/2$^+$) 887-keV level; band member.
87.66[‡] *4*	(11/2$^+$)		AB	J$^\pi$: 308.222γ from 9/2$^+$ 396-keV level; 475.1γ from 11/2$^+$ 476-keV level; band member.
124.65[#] *8*	(9/2$^-$)		AB	J$^\pi$: 762.73γ from (7/2$^+$) 887-keV level; 833.14γ from (9/2$^+$) 958-keV level; band member.
134.48[‡] *11*	(13/2$^+$)		AB	J$^\pi$: 341.00γ from 11/2$^+$ 476-keV level; band member.
154.5[@] *25*	(3/2$^-$)		B	E(level): From ^{249}Bk α decay. J$^\pi$: From the only single particle-state available in this region, 3/2$^-$[521] Nilsson state (2013Ah03); from the assigned bandhead configuration.
187.0[@] *25*	(5/2$^-$)		B	E(level): From ^{249}Bk α decay. J$^\pi$: Band member.
190.74[#] *12*	(11/2$^-$)		A	J$^\pi$: 766.59γ from (9/2$^+$) 957-keV level; band member.
231.7[@] *25*	(7/2$^-$)		B	E(level): From ^{249}Bk α decay. J$^\pi$: Band member.
292.7[@] *25*	(9/2$^-$)		B	E(level): From ^{249}Bk α decay. J$^\pi$: Band member.
327.421[&] *8*	7/2$^+$		AB	J$^\pi$: Favoured α feeding from ^{249}Bk; from the assigned bandhead configuration.
395.887[&] *11*	9/2$^+$		AB	J$^\pi$: Band member.
475.531[&] *22*	11/2$^+$		AB	J$^\pi$: 387.879γ to (11/2$^+$) 88-keV level; 428.438γ to (9/2$^+$) 47-keV level; band member.
563.04[&] *20*	(13/2$^+$)		A	J$^\pi$: 428.438γ from (13/2$^+$) 563-keV level; band member.
887.472 *13*	(7/2$^+$)		A	J$^\pi$: (E2) 560.134γ to 7/2$^+$ 327-keV level; (E2) 491.591γ to 9/2$^+$ 396-keV level;

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{245}Am Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
				859.53γ to (5/2⁻) 28-keV level; 799.87γ to (11/2⁺) 88-keV level.
920.97 *6*	(9/2⁺,11/2⁺)		AB	Jπ: 593.7γ to 7/2⁺ 327-keV level; 525.08γ to 9/2⁺ 396-keV level; 445.34γ to 11/2⁺ 476-keV level; 357.90γ to (13/2⁺) 563-keV level.
957.420 *15*	(9/2⁺)		A	Jπ: 824γ to (13/2⁺) 135-keV level; 987.60γ to 5/2⁺ g.s.
987.52 *4*	(7/2⁺,9/2⁺)		A	Jπ: 511.5γ to 11/2⁺ 465-keV level; 987.60γ to 5/2⁺ g.s.
1025.971 *18*	(7/2⁺,9/2⁻)		A	Jπ: 549.2γ to 11/2⁺ 475-keV level; 996.0γ to (5/2⁻) 28-keV level.
1065.23 *8*			A	
1111.22 *18*			A	
1185.58 *30*			A	
2.4×10^3 *4*		640 ns *60*		%SF≤100 E(level): No experimental value available. Estimated by evaluator based on systematics of SF isomers in odd americium isotopes given by 1971Br39 and calculated values by 1990Bh02 (E=2.60 MeV) and 2020Ja01 (E=2.23 MeV). Only SF decay mode was observed. See ^{244}Pu(t,2n) (1972Br35), ^{244}Pu(α,p2n) (1972Wo07). $T_{1/2}$: From measurement of the fissioning isomer produced by ^{244}Pu(α,p2n) reaction (1972Wo07). Other: 390 ns *70* (1972Br35); Decay was followed for one period, the uncertainty is statistical only, and 1972Br35 stated that a systematic error in background subtraction could have led to an underestimated $T_{1/2}$. A half-life of 640 ns *60* has also been recommended by 1973Br38 and 1990Bh02. See also 2002Si26.

† From least-squares fit to Eγ data by the evaluator except as noted.
‡ Band(A): π5/2[642] band.
# Band(B): π5/2[523] band.
@ Band(C): π3/2[521] band.
& Band(D): π7/2[633] band.

Adopted Levels, Gammas (continued)

γ(^{245}Am)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†‡]	δ[‡]	α[#]	Comments
28.27	(5/2$^-$)	28 *1*	100	0.0	5/2$^+$	(E1)		3.8 *4*	α(L)=2.78 *27*; α(M)=0.73 *7* α(N)=0.195 *20*; α(O)=0.044 *4*; α(P)=0.0059 *5*; α(Q)=0.000138 *10*
327.421	7/2$^+$	280.385 *13*	5.1 *5*	47.083	(9/2$^+$)	(M1+E2)	0.7 *+7–6*	1.1 *4*	α(K)=0.9 *4*; α(L)=0.21 *4*; α(M)=0.054 *8* α(N)=0.0147 *20*; α(O)=0.0037 *5*; α(P)=0.00068 *13*; α(Q)=3.6×10^{-5} *15*
		308.222[@] *8*	19.3 *20*	19.209	7/2$^+$	M1(+E2)	0.6 *9*	0.9 *4*	α(K)=0.7 *4*; α(L)=0.17 *4*; α(M)=0.041 *9* α(N)=0.0113 *24*; α(O)=0.0028 *6*; α(P)=5.3×10^{-4} *14*; α(Q)=3.0×10^{-5} *15*
		327.428 *8*	100 *10*	0.0	5/2$^+$	M1(+E2)	0.5 *7*	0.85 *33*	α(K)=0.66 *29*; α(L)=0.145 *34*; α(M)=0.036 *7* α(N)=0.0098 *20*; α(O)=0.0025 *5*; α(P)=0.00046 *11*; α(Q)=2.7×10^{-5} *11*
395.887	9/2$^+$	308.222[@&]		87.66	(11/2$^+$)				
		348.782 *9*	30 *3*	47.083	(9/2$^+$)	[M1]		0.862 *12*	α(K)=0.680 *10*; α(L)=0.1365 *19*; α(M)=0.0332 *5* α(N)=0.00908 *13*; α(O)=0.002286 *32*; α(P)=0.000437 *6*; α(Q)=2.77×10^{-5} *4*
		376.676 *3*	100 *11*	19.209	7/2$^+$	(M1)		0.698 *10*	α(K)=0.551 *8*; α(L)=0.1104 *15*; α(M)=0.0269 *4* α(N)=0.00734 *10*; α(O)=0.001849 *26*; α(P)=0.000353 *5*; α(Q)=2.241×10^{-5} *31*
		395.87 *15*	3.2 *11*	0.0	5/2$^+$	[E2]		0.1004 *14*	α(K)=0.0482 *7*; α(L)=0.0382 *5*; α(M)=0.01033 *15* α(N)=0.00285 *4*; α(O)=0.000691 *10*; α(P)=0.0001187 *17*; α(Q)=2.505×10^{-6} *35*
475.531	11/2$^+$	341.00 *15*	19 *3*	134.48	(13/2$^+$)	[M1]		0.917 *13*	α(K)=0.724 *10*; α(L)=0.1453 *20*; α(M)=0.0354 *5* α(N)=0.00967 *14*; α(O)=0.002434 *34*; α(P)=0.000465 *7*; α(Q)=2.95×10^{-5} *4*
		387.879 *32*	55 *13*	87.66	(11/2$^+$)	[M1]		0.644 *9*	α(K)=0.509 *7*; α(L)=0.1019 *14*; α(M)=0.02479 *35* α(N)=0.00677 *9*; α(O)=0.001705 *24*; α(P)=0.000326 *5*; α(Q)=2.067×10^{-5} *29*
		428.438[@] *22*	100 *9*	47.083	(9/2$^+$)	[M1]		0.491 *7*	α(K)=0.388 *5*; α(L)=0.0775 *11*; α(M)=0.01886 *26* α(N)=0.00515 *7*; α(O)=0.001297 *18*; α(P)=0.0002481 *35*; α(Q)=1.573×10^{-5} *22*
563.04	(13/2$^+$)	428.438[@&]		134.48	(13/2$^+$)				
		475.1 *6*	100 *43*	87.66	(11/2$^+$)	[M1]		0.371 *5*	α(K)=0.293 *4*; α(L)=0.0584 *8*; α(M)=0.01421 *20* α(N)=0.00388 *6*; α(O)=0.000977 *14*; α(P)=0.0001869 *27*; α(Q)=1.185×10^{-5} *17*
887.472	(7/2$^+$)	411.935 *41*	9.1 *9*	475.531	11/2$^+$	[E2]		0.0903 *13*	α(K)=0.0450 *6*; α(L)=0.0332 *5*; α(M)=0.00896 *13* α(N)=0.002470 *35*; α(O)=0.000600 *8*; α(P)=0.0001034 *14*; α(Q)=2.293×10^{-6} *32*
		491.591 *9*	50 *6*	395.887	9/2$^+$	(E2)		0.0579 *8*	α(K)=0.0329 *5*; α(L)=0.01835 *26*; α(M)=0.00489 *7*

$^{245}_{95}Am_{150}$-3

Adopted Levels, Gammas (continued)

γ(^{245}Am) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†‡]	α[#]	Comments
								α(N)=0.001345 *19*; α(O)=0.000328 *5*; α(P)=5.74×10^{-5} *8*; α(Q)=1.564×10^{-6} *22*
887.472	(7/2$^+$)	560.134[@] *49*	100 *9*	327.421	7/2$^+$	(E2)	0.0427 *6*	α(K)=0.0262 *4*; α(L)=0.01217 *17*; α(M)=0.00321 *4* α(N)=0.000882 *12*; α(O)=0.0002158 *30*; α(P)=3.81×10^{-5} *5*; α(Q)=1.191×10^{-6} *17*
		762.73 *10*	13.1 *13*	124.65	(9/2$^-$)	[E1]	0.00677 *9*	α(K)=0.00548 *8*; α(L)=0.000978 *14*; α(M)=0.0002346 *33* α(N)=6.37×10^{-5} *9*; α(O)=1.593×10^{-5} *22*; α(P)=2.98×10^{-6} *4*; α(Q)=1.772×10^{-7} *25*
		799.87 *10*	29 *3*	87.66	(11/2$^+$)	[E2]	0.02015 *28*	α(K)=0.01416 *20*; α(L)=0.00445 *6*; α(M)=0.001139 *16* α(N)=0.000312 *4*; α(O)=7.71×10^{-5} *11*; α(P)=1.400×10^{-5} *20*; α(Q)=5.86×10^{-7} *8*
		817.04 *10*	15.6 *16*	70.40	(7/2$^-$)	[E1]	0.00599 *8*	α(K)=0.00485 *7*; α(L)=0.000861 *12*; α(M)=0.0002063 *29* α(N)=5.60×10^{-5} *8*; α(O)=1.401×10^{-5} *20*; α(P)=2.63×10^{-6} *4*; α(Q)=1.575×10^{-7} *22*
		840.56 *10*	23.8 *25*	47.083	(9/2$^+$)			
		859.53 *15*	9.4 *9*	28.27	(5/2$^-$)	[E1]	0.00548 *8*	α(K)=0.00444 *6*; α(L)=0.000784 *11*; α(M)=0.0001878 *26* α(N)=5.10×10^{-5} *7*; α(O)=1.276×10^{-5} *18*; α(P)=2.399×10^{-6} *34*; α(Q)=1.446×10^{-7} *20*
		868.8 *4*	2.2 *6*	19.209	7/2$^+$			
		887.14[@&]		0.0	5/2$^+$			
920.97	(9/2$^+$,11/2$^+$)	357.90 *20*	12 *3*	563.04	(13/2$^+$)			
		445.34 *10*	58 *9*	475.531	11/2$^+$	[M1]	0.442 *6*	α(N)=0.00464 *6*; α(O)=0.001167 *16*; α(P)=0.0002231 *31*; α(Q)=1.414×10^{-5} *20* α(K)=0.349 *5*; α(L)=0.0697 *10*; α(M)=0.01696 *24*
		525.08 *15*	52 *6*	395.887	9/2$^+$	[M1]	0.283 *4*	α(K)=0.2237 *31*; α(L)=0.0445 *6*; α(M)=0.01082 *15* α(N)=0.00296 *4*; α(O)=0.000744 *10*; α(P)=0.0001423 *20*; α(Q)=9.02×10^{-6} *13*
		593.7 *6*	6 *3*	327.421	7/2$^+$			
		730.40 *20*	36 *6*	190.74	(11/2$^-$)	[E1]	0.00732 *10*	α(K)=0.00592 *8*; α(L)=0.001061 *15*; α(M)=0.000255 *4* α(N)=6.92×10^{-5} *10*; α(O)=1.728×10^{-5} *24*; α(P)=3.23×10^{-6} *5*; α(Q)=1.909×10^{-7} *27*
		786.54 *15*	71 *10*	134.48	(13/2$^+$)			
		796.37 *17*	48 *13*	124.65	(9/2$^-$)	[E1]	0.00627 *9*	α(K)=0.00508 *7*; α(L)=0.000903 *13*; α(M)=0.0002164 *30* α(N)=5.88×10^{-5} *8*; α(O)=1.470×10^{-5} *21*; α(P)=2.76×10^{-6} *4*; α(Q)=1.645×10^{-7} *23*
		833.14[@] *20*	≤100	87.66	(11/2$^+$)			
		874.16 *20*	26 *6*	47.083	(9/2$^+$)			
		901.9 *8*	10 *5*	19.209	7/2$^+$			
957.420	(9/2$^+$)	481.9 *10*	0.5 *25*	475.531	11/2$^+$	[M1]	0.357 *5*	α(K)=0.282 *4*; α(L)=0.0562 *8*; α(M)=0.01367 *21*

$^{245}_{95}Am_{150}$-4

Adopted Levels, Gammas (continued)

γ(^{245}Am) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†‡]	α[#]	Comments
								α(N)=0.00373 *6*; α(O)=0.000940 *14*; α(P)=0.0001798 *27*; α(Q)=1.140×10^{-5} *17*
957.420	(9/2$^+$)	560.134[@&] *49*		395.887	9/2$^+$			Poor fit, calculated final level=397.29 keV *6*.
		630.102[@] *14*	100 *13*	327.421	7/2$^+$	M1	0.1730 *24*	α(K)=0.1370 *19*; α(L)=0.0271 *4*; α(M)=0.00659 *9* α(N)=0.001801 *25*; α(O)=0.000453 *6*; α(P)=8.67×10^{-5} *12*; α(Q)=5.50×10^{-6} *8*
		766.59 *15*	13.1 *19*	190.74	(11/2$^-$)	[E1]	0.00671 *9*	α(K)=0.00543 *8*; α(L)=0.000969 *14*; α(M)=0.0002324 *33* α(N)=6.31×10^{-5} *9*; α(O)=1.578×10^{-5} *22*; α(P)=2.96×10^{-6} *4*; α(Q)=1.756×10^{-7} *25*
		824[&]	<1	134.48	(13/2$^+$)			
		833.14[@] *20*	≤19	124.65	(9/2$^-$)			
		870.5 *5*	2.5 *13*	87.66	(11/2$^+$)			
		887.14[@] *15*	26 *3*	70.40	(7/2$^-$)			
		910.46 *7*	51 *5*	47.083	(9/2$^+$)			
		938.4 *2*	38 *6*	19.209	7/2$^+$			
		957.59 *15*	36 *4*	0.0	5/2$^+$			
987.52	(7/2$^+$,9/2$^+$)	511.5 *10*	2.6 *13*	475.531	11/2$^+$			
		591.6 *3*	12.8 *26*	395.887	9/2$^+$			
		660.082 *42*	64 *9*	327.421	7/2$^+$			
		917.0 *5*	6.4 *26*	70.40	(7/2$^-$)			
		941.0 *10*	19 *13*	47.083	(9/2$^+$)			
		968.5 *7*	2.6 *13*	19.209	7/2$^+$			
		987.60 *10*	100 *10*	0.0	5/2$^+$			
1025.971	(7/2$^+$,9/2$^-$)	549.2 *6*	9 *4*	475.531	11/2$^+$			
		630.102[@&] *14*		395.887	9/2$^+$			Poor fit, calculated final level=397.29 keV *6*.
		696.8 *4*	22 *9*	327.421	7/2$^+$			
		899.3 *10*	9 *4*	124.65	(9/2$^-$)			
		953 *2*	4.3 *22*	70.40	(7/2$^-$)			
		977.2[@] *2*	100 *43*	47.083	(9/2$^+$)			Poor fit, calculated final level=48.77 keV *20*.
		996.0 *3*	53 *9*	28.27	(5/2$^-$)			
		1005.1 *3*	70 *26*	19.209	7/2$^+$			
1065.23		669.28 *10*	33 *5*	395.887	9/2$^+$			
		737.96 *20*	21 *5*	327.421	7/2$^+$			
		930.3 *6*	4.9 *25*	134.48	(13/2$^+$)			
		977.2[@&]		87.66	(11/2$^+$)			
		1018.33 *20*	100 *13*	47.083	(9/2$^+$)			
1111.22		1023.32 *20*	100 *19*	87.66	(11/2$^+$)			
		1040.2 *12*	1.2 *6*	70.40	(7/2$^-$)			
		1083.9 *5*	6.3 *13*	28.27	(5/2$^-$)			

$^{245}_{95}Am_{150}$-5

Adopted Levels, Gammas (continued)

γ(^{245}Am) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
1111.22		1111.9 *5*	10.0 *13*	0.0	$5/2^+$
1185.58		1051.3 *8*	10 *3*	134.48	$(13/2^+)$
		1097.9 *7*	33 *10*	87.66	$(11/2^+)$
		1138.5 *5*	83 *13*	47.083	$(9/2^+)$
		1166.3 *5*	100 *13*	19.209	$7/2^+$

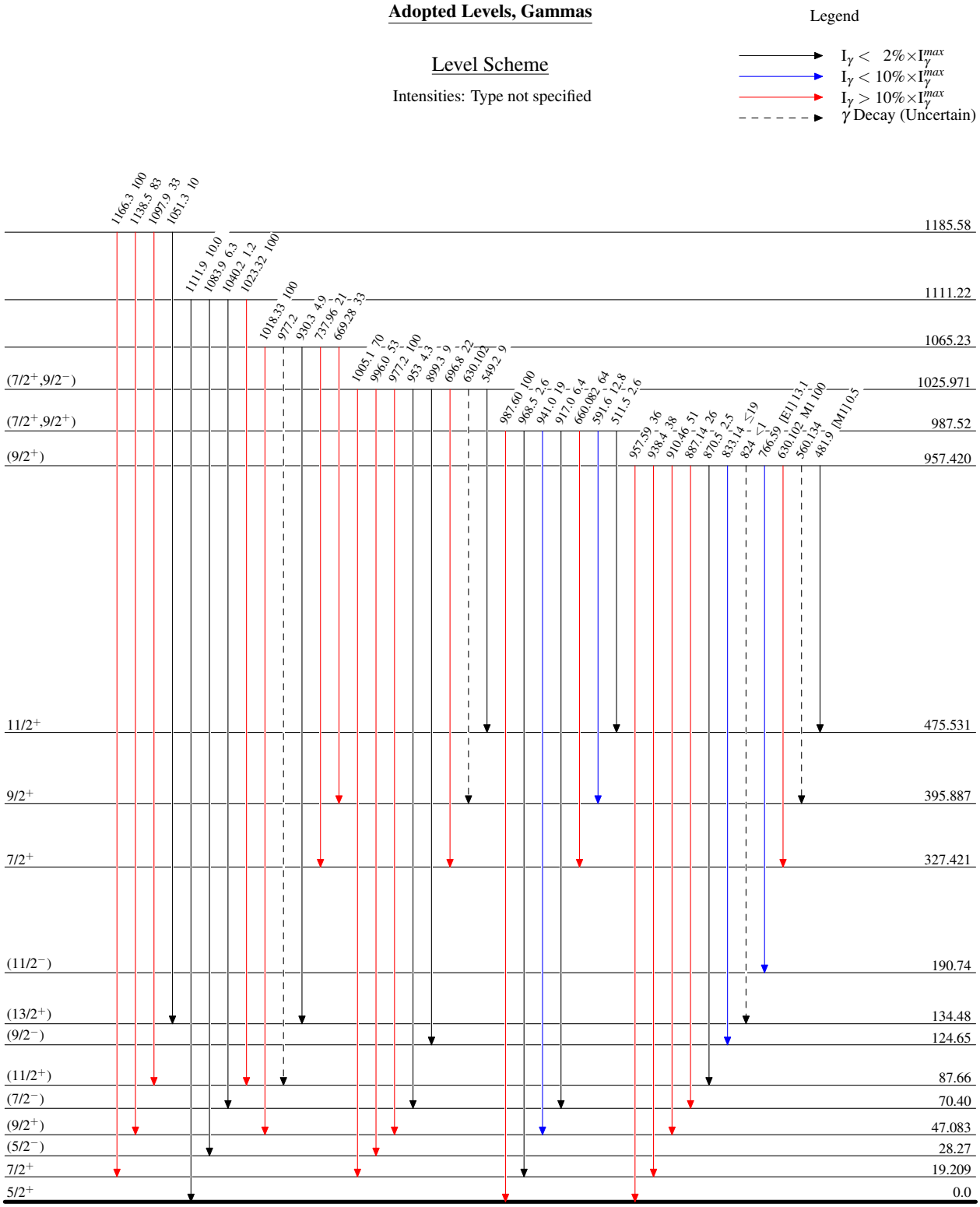
[†] From ^{245}Pu β^- decay.
[‡] From conversion electron data in ^{245}Pu β- decay.
[#] Additional information 1.
[@] Multiply placed.
[&] Placement of transition in the level scheme is uncertain.

$^{245}_{95}Am_{150}$-6

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

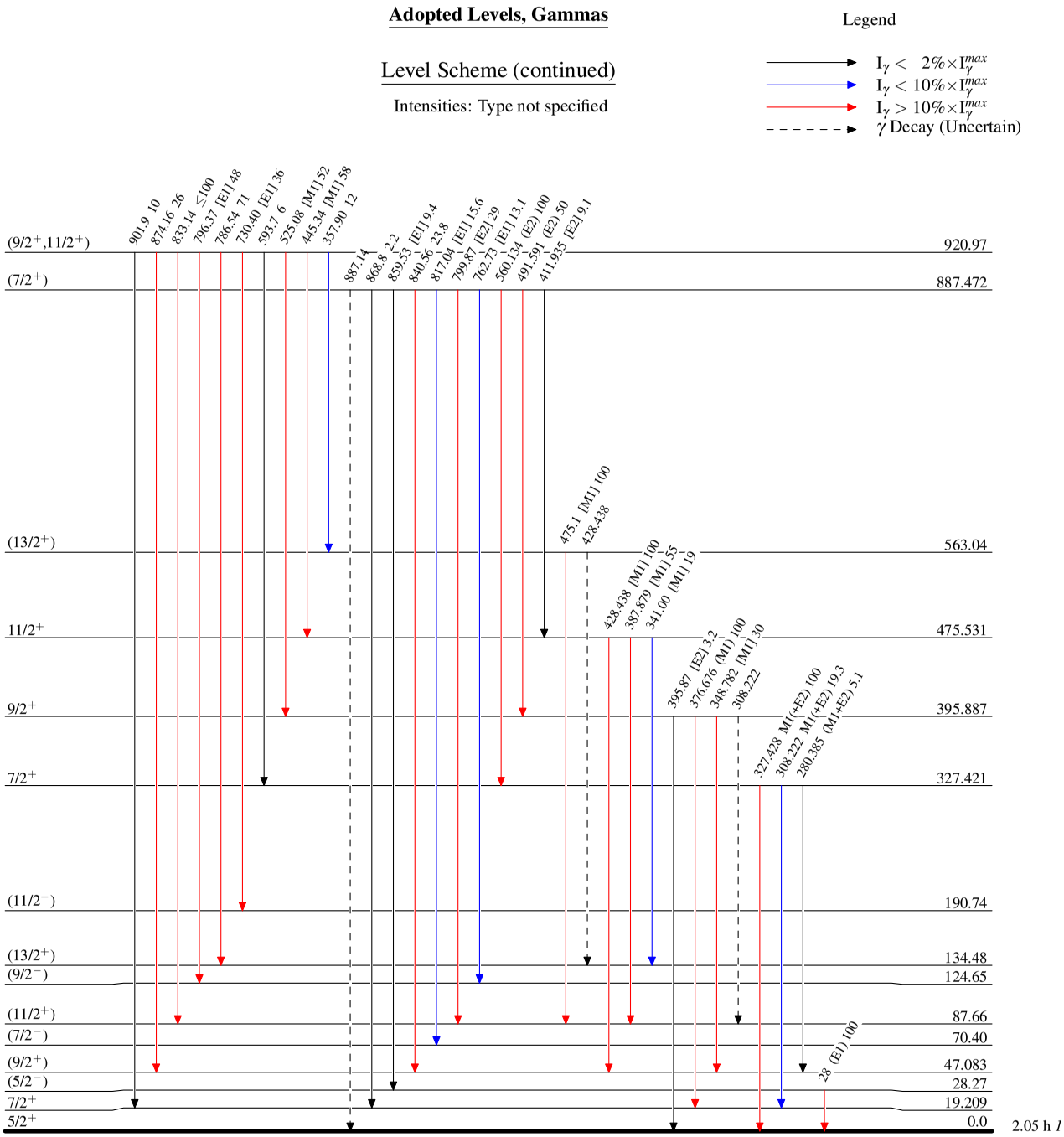


$^{245}_{95}Am_{150}$

Adopted Levels, Gammas

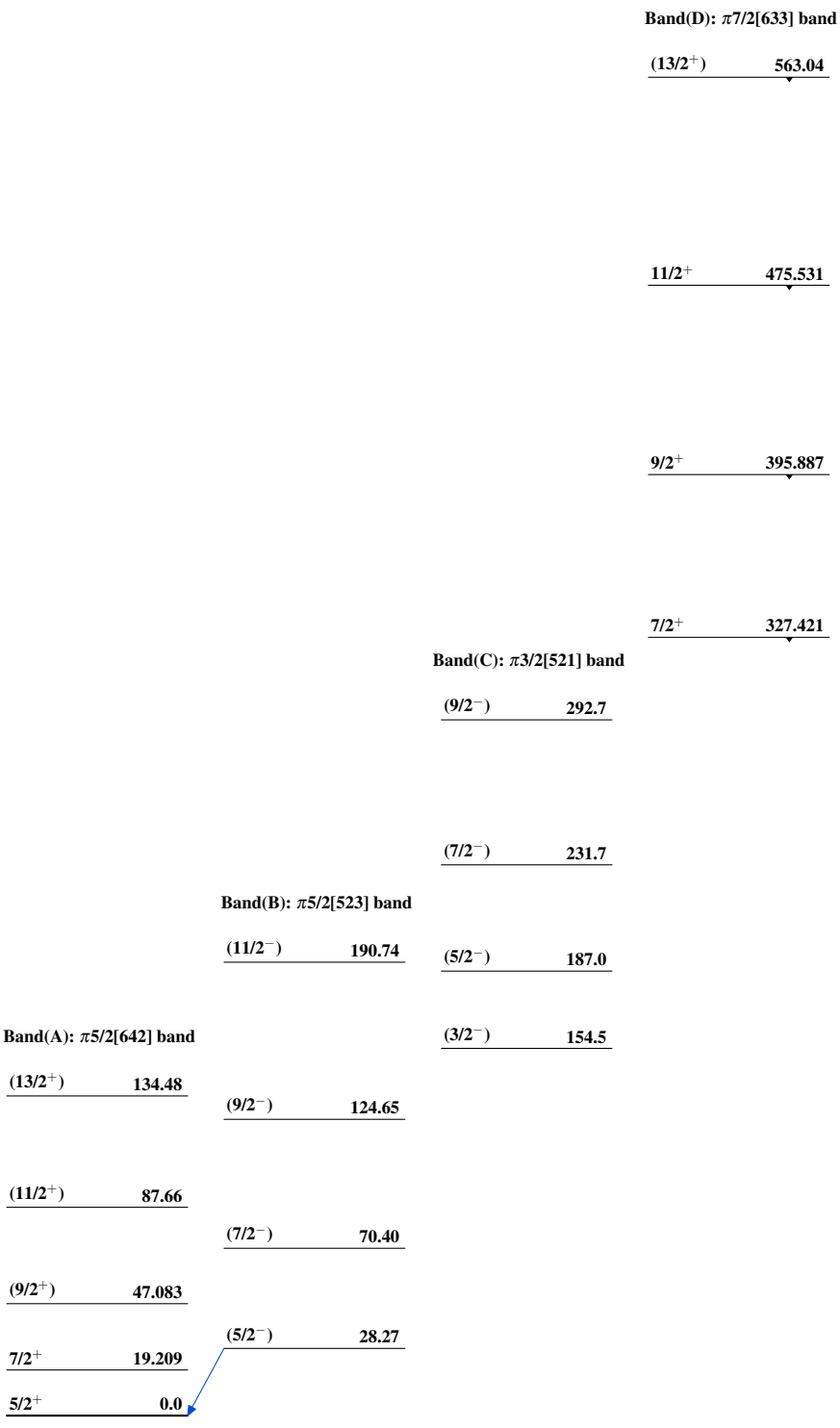
Level Scheme (continued)

Intensities: Type not specified



$^{245}_{95}Am_{150}$

Adopted Levels, Gammas



$^{245}_{95}Am_{150}$