Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 130, 21 (2015)	15-Jul-2015

Q(β^-)=−4724 *23*; S(n)=8501 *28*; S(p)=1215 *25*; Q(α)=5526 *4* 2012Wa38
S(2n)=18849 *28*, S(2p)=4901 *30*, Q(εp)=180 *24* (2012Wa38).
First identification of ^{182}Au isotope by 1970Ha18.

^{182}Au Levels

Cross Reference (XREF) Flags

- A ^{182}Hg ε decay (10.83 s)
- B ^{186}Tl α decay (27.5 s)
- C ^{152}Sm(^{35}Cl,5nγ)

E(level)	J$^\pi$[†]	T$_{1/2}$	XREF	Comments
0.0	(2$^+$)	15.5 s *4*	ABC	%ε+%β^+=99.87 *5*; %α=0.13 *5* μ=1.30 *10* (1992DeZO,1992Ro21,2014StZZ) %α: from 1995Bi01. Others: 0.038 *8* (1979Ha10), ≈0.04 (1970Ha18). T$_{1/2}$: from weighted average of 15.6 s *4* (1992Ro21), 15.3 s *10* (1995Bi01, γ timing) and 14.5 s *13* (1995Bi01,α timing). Others: 20 s 2 (1979Ha10), 22.1 s *13* (1972Fi12), 19 s *2* (1970Ha18). Additional information 1. J$^\pi$: M1 γ from (1$^+$) gives (0$^+$,1$^+$,2$^+$); 2,3,4 from g factor measurements of ^{182}Au g.s. by nuclear orientation method (1992DeZO,1992Ro21, experiment using NICOLE system at ISOLDE-CERN). μ: 1992DeZO (also 1992Ro21) measured g factors by nuclear orientation technique and by spin-relaxation method. For spin of 1,2, 3,4 and 5 values are: 0.85 *6*, 0.68 *5*, 0.53 *5*, 0.43 *5*, 0.35 *5*, respectively from nuclear orientation method and 0.73 *5*, 0.62 *5*, 0.55 *5*, 0.51 *6*, 0.46 *3*, respectively, from spin-relaxation method. From comparison of results from the two methods, 1992DeZO conclude that for spin of 2,3 or 4 the values are in better agreement than with those from spin 1 and 5 choices. Value listed here is from average g factor=0.65 *5*.
0+x[#]	(10$^-$)		C	
0+y[b]	(6$^+$)		C	
25.60 *10*	(≤3)$^{(+)}$		A	J$^\pi$: E1 γ from (1$^-$,2$^-$); γ to (2$^+$).
62.90 *10*	(1$^+$,2$^+$)		A	J$^\pi$: M1 γ from (1$^+$); γ to (2$^+$) probably M1.
98.97 *10*	(1$^+$)[‡]		A	
100.70 *12*	(0$^+$,1$^+$,2$^+$)		A	J$^\pi$: M1 γ from (1$^+$).
104.3+y[c] *7*	(7$^+$)		C	
127.00 *11*	(1$^+$,2$^+$)		A	J$^\pi$: M1 γ from (1$^+$); (M1) γ to (2$^+$).
129.49 *7*	(1$^-$,2$^-$)	≤50 ns	A C	J$^\pi$: E1 γ from (1$^+$); E1 γ to (2$^+$). T$_{1/2}$: from $\gamma\gamma$(t) or (ce)(γ)(t) in ^{182}Hg ε decay.
205.0+x[@] *4*	(11$^-$)		C	
231.4+y[b] *5*	(8$^+$)		C	
273.51 *7*	(1$^-$,2$^-$)		A	J$^\pi$: E1 γ from (1$^+$); E1 γ to (2$^+$).
308.97 *14*	(≤3)$^{(-)}$		A	J$^\pi$: E1 γ from (+) parity level.
320.0+x[#] *4*	(12$^-$)		C	
325.40 *9*	(0$^-$,1$^-$,2$^-$)		A	J$^\pi$: E1 γ from (1$^+$).
339.30 *10*	(1$^+$)[‡]		A	
362.69 *13*	(1$^+$)[‡]		A	
384.4+y[c] *6*	(9$^+$)		C	

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Adopted Levels, Gammas (continued)

^{182}Au Levels (continued)

E(level)	J^{π} †	XREF	Comments
482.01 *12*	$(0^+,1^+,2^+)$	A	J^{π}: E1−−>M1+E2−−>E1 cascade to g.s. (2^+); γ from (1^+).
543.00 *7*	(1^+)‡	A	
559.9+y[b] *6*	(10^+)	C	
575.5+x[@] *5*	(13^-)	C	
756.9+y[c] *7*	(11^+)	C	
763.5+x[#] *7*	(14^-)	C	
968.9+y[b] *7*	(12^+)	C	
1006.4+y[&] *7*	(12^+)	C	
1036.0+x[@] *7*	(15^-)	C	
1138.4+y[a] *8*	(13^+)	C	
1277.4+y[&] *8*	(14^+)	C	
1294.5+x[#] *9*	(16^-)	C	
1487.1+y[a] *8*	(15^+)	C	
1572.0+x[@] *9*	(17^-)	C	
1660.8+y[&] *9*	(16^+)	C	
1892.0+x[#] *10*	(18^-)	C	
1917.2+y[a] *9*	(17^+)	C	
2126.3+y[&] *9*	(18^+)	C	
2173.0+x[@] *10*	(19^-)	C	
2408.0+y[a] *10*	(19^+)	C	
2559.5+x[#] *11*	(20^-)	C	
2657.1+y[&] *10*	(20^+)	C	
2836.0+x[@] *12*	(21^-)	C	
2949.6+y[a] *10*	(21^+)	C	
3243.6+y[&] *11*	(22^+)	C	
3549.6+y[a] *12*	(23^+)	C	
3883.1+y[&] *12*	(24^+)	C	
4219.1+y[a] *13*	(25^+)	C	
4579.1+y[&] *16*	(26^+)	C	

† For high-spin states (J≥6), tentative assignments are from 2002Zh26 based on configurations of two bands from systematics. The 6^+ and 7^+ bandheads seem to Be assigned from deexcitation of signature-partner bands based on $\pi i_{13/2}\otimes\nu i_{13/2}$. No supporting $\gamma\gamma(\theta)$ or $\gamma(\theta)$ are available.

‡ Possible allowed β transition from 0^+ (see ^{182}Au ε decay).

[#] Band(A): $\pi h_{9/2}\otimes\nu i_{13/2}$,$\alpha$=0.

[@] Band(a): $\pi h_{9/2}\otimes\nu i_{13/2}$,$\alpha$=1.

[&] Band(B): $\pi i_{13/2}\otimes\nu i_{13/2}$,$\alpha$=0.

[a] Band(b): $\pi i_{13/2}\otimes\nu i_{13/2}$,$\alpha$=1.

[b] Band(C): Band based on (6^+),α=0.

[c] Band(c): Band based on (7^+),α=1.

Adopted Levels, Gammas (continued)

$\gamma(^{182}Au)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[#]	Comments
25.60	$(\leq 3)^{(+)}$	25.6 *1*	100	0.0	(2^+)	[M1]	71.1 *13*	α(L)=54.6 *10*; α(M)=12.70 *24* α(N)=3.17 *6*; α(O)=0.582 *11*; α(P)=0.0392 *8*
62.90	$(1^+,2^+)$	62.9 *1*	100	0.0	(2^+)	[M1]	5.03	α(L)=3.86 *6*; α(M)=0.896 *14* α(N)=0.223 *4*; α(O)=0.0411 *6*; α(P)=0.00277 *4*
98.97	(1^+)	98.9 *2*	100	0.0	(2^+)	[M1]	7.49	α(K)=6.14 *10*; α(L)=1.035 *16*; α(M)=0.240 *4* α(N)=0.0599 *9*; α(O)=0.01100 *17*; α(P)=0.000742 *12*
100.70	$(0^+,1^+,2^+)$	37.8 *1*	100	62.90	$(1^+,2^+)$	[M1]	22.5	α(L)=17.3 *3*; α(M)=4.01 *7* α(N)=0.999 *16*; α(O)=0.184 *3*; α(P)=0.01238 *20*
104.3+y	(7^+)	104 *1*	100	0+y	(6^+)			
127.00	$(1^+,2^+)$	64.1 *2*	100 *50*	62.90	$(1^+,2^+)$	[M1]	4.76 *8*	α(L)=3.65 *7*; α(M)=0.848 *15* α(N)=0.211 *4*; α(O)=0.0388 *7*; α(P)=0.00262 *5*
		127.0 *3*	38 *19*	0.0	(2^+)	(M1)	3.66	α(K)=3.01 *5*; α(L)=0.504 *8*; α(M)=0.1169 *19* α(N)=0.0291 *5*; α(O)=0.00536 *9*; α(P)=0.000362 *6*
129.49	$(1^-,2^-)$	30.5 *1*	3.7 *7*	98.97	(1^+)	(E1)	2.09 *4*	α(L)=1.60 *3*; α(M)=0.382 *7* α(N)=0.0915 *16*; α(O)=0.01432 *24*; α(P)=0.000390 *6*
		103.9 *2*	23 *2*	25.60	$(\leq 3)^{(+)}$	E1	0.377	α(K)=0.303 *5*; α(L)=0.0571 *9*; α(M)=0.01330 *20* α(N)=0.00326 *5*; α(O)=0.000560 *9*; α(P)=2.51×10^{-5} *4*
		129.5 *1*	100	0.0	(2^+)	E1	0.216	α(K)=0.1747 *25*; α(L)=0.0316 *5*; α(M)=0.00734 *11* α(N)=0.00180 *3*; α(O)=0.000313 *5*; α(P)=1.491×10^{-5} *21*
205.0+x	(11^-)	205.0 *5*	100	0+x	(10^-)			
231.4+y	(8^+)	127 *1*	33	104.3+y	(7^+)			
		231.5 *5*	100	0+y	(6^+)			
273.51	$(1^-,2^-)$	144.0 *2*	43 *6*	129.49	$(1^-,2^-)$	M1	2.56	α(K)=2.10 *3*; α(L)=0.352 *6*; α(M)=0.0816 *12* α(N)=0.0203 *3*; α(O)=0.00374 *6*; α(P)=0.000253 *4*
		248.0 *2*	38.8 *13*	25.60	$(\leq 3)^{(+)}$	(E1)	0.0425	α(K)=0.0349 *5*; α(L)=0.00580 *9*; α(M)=0.001342 *19* α(N)=0.000331 *5*; α(O)=5.88×10^{-5} *9*; α(P)=3.25×10^{-6} *5*
		273.5 *1*	100.0 *19*	0.0	(2^+)	E1	0.0335	α(K)=0.0276 *4*; α(L)=0.00454 *7*; α(M)=0.001050 *15* α(N)=0.000259 *4*; α(O)=4.62×10^{-5} *7*; α(P)=2.60×10^{-6} *4*
308.97	$(\leq 3)^{(-)}$	179.5 *2*	46 *3*	129.49	$(1^-,2^-)$	M1+E2	1.0 *5*	α(K)=0.7 *5*; α(L)=0.22 *3*; α(M)=0.053 *10* α(N)=0.0132 *23*; α(O)=0.0023 *3*; α(P)=8.E−5 *6*
		182.0 *2*	100 *7*	127.00	$(1^+,2^+)$	E1	0.0912	α(K)=0.0746 *11*; α(L)=0.01282 *19*; α(M)=0.00297 *5* α(N)=0.000732 *11*; α(O)=0.0001288 *19*; α(P)=6.68×10^{-6} *10*

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Adopted Levels, Gammas (continued)

γ(^{182}Au) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[#]	Comments
320.0+x	(12$^-$)	115.0 *5*	8	205.0+x	(11$^-$)			
		320.0 *5*	100	0+x	(10$^-$)			
325.40	(0$^-$,1$^-$,2$^-$)	51.9 *1*	78 *4*	273.51	(1$^-$,2$^-$)	M1	8.83	α(L)=6.79 *11*; α(M)=1.575 *24* α(N)=0.392 *6*; α(O)=0.0721 *11*; α(P)=0.00487 *8*
		195.9 *2*	100 *11*	129.49	(1$^-$,2$^-$)	(M1)	1.077	α(K)=0.885 *13*; α(L)=0.1473 *21*; α(M)=0.0341 *5* α(N)=0.00851 *13*; α(O)=0.001565 *23*; α(P)=0.0001058 *16* Mult.: E0+M1 or abnormal M1; K/L=4.8.
339.30	(1$^+$)	212.3 *2*	66 *6*	127.00	(1$^+$,2$^+$)	M1	0.860	α(K)=0.707 *10*; α(L)=0.1175 *17*; α(M)=0.0273 *4* α(N)=0.00679 *10*; α(O)=0.001249 *18*; α(P)=8.44×10^{-5} *12* a(Ll)=0.16.
		240.4 *3*	15 *2*	98.97	(1$^+$)	[M1]	0.610	α(K)=0.501 *8*; α(L)=0.0831 *12*; α(M)=0.0193 *3* α(N)=0.00480 *7*; α(O)=0.000883 *13*; α(P)=5.97×10^{-5} *9*
		339.3 *2*	100.0 *23*	0.0	(2$^+$)	M1	0.238	α(K)=0.196 *3*; α(L)=0.0322 *5*; α(M)=0.00746 *11* α(N)=0.00186 *3*; α(O)=0.000342 *5*; α(P)=2.32×10^{-5} *4*
362.69	(1$^+$)	233.2 *3*	67 *3*	129.49	(1$^-$,2$^-$)	(E1)	0.0493	α(K)=0.0405 *6*; α(L)=0.00677 *10*; α(M)=0.001568 *23* α(N)=0.000387 *6*; α(O)=6.86×10^{-5} *10*; α(P)=3.75×10^{-6} *6*
		235.7 *1*	100 *4*	127.00	(1$^+$,2$^+$)	M1	0.644	α(K)=0.530 *8*; α(L)=0.0878 *13*; α(M)=0.0204 *3* α(N)=0.00507 *8*; α(O)=0.000933 *14*; α(P)=6.31×10^{-5} *9*
		362.7 *3*	72.0 *17*	0.0	(2$^+$)	M1	0.199	α(K)=0.1637 *24*; α(L)=0.0269 *4*; α(M)=0.00622 *9* α(N)=0.001550 *22*; α(O)=0.000285 *4*; α(P)=1.94×10^{-5} *3*
384.4+y	(9$^+$)	153 *1*	100	231.4+y	(8$^+$)			
		280.0[@] *5*	57	104.3+y	(7$^+$)			
482.01	(0$^+$,1$^+$,2$^+$)	173.1 *2*	100	308.97	(≤3)$^{(-)}$	E1	0.1035	α(K)=0.0845 *12*; α(L)=0.01461 *21*; α(M)=0.00339 *5* α(N)=0.000834 *12*; α(O)=0.0001466 *21*; α(P)=7.51×10^{-6} *11*
543.00	(1$^+$)	61.0 *1*	2.2 *11*	482.01	(0$^+$,1$^+$,2$^+$)	[M1]	5.50	α(L)=4.22 *7*; α(M)=0.981 *15* α(N)=0.244 *4*; α(O)=0.0449 *7*; α(P)=0.00303 *5*
		180.3 *3*	1.1 *3*	362.69	(1$^+$)	[M1]	1.358	α(K)=1.116 *17*; α(L)=0.186 *3*; α(M)=0.0431 *7* α(N)=0.01075 *16*; α(O)=0.00198 *3*; α(P)=0.0001335 *20*
		203.7 *1*	1.6 *3*	339.30	(1$^+$)	(M1)	0.965	α(K)=0.794 *12*; α(L)=0.1320 *19*; α(M)=0.0306 *5* α(N)=0.00762 *11*; α(O)=0.001402 *20*; α(P)=9.48×10^{-5} *14*
		217.6 *1*	100 *8*	325.40	(0$^-$,1$^-$,2$^-$)	E1	0.0585	α(K)=0.0480 *7*; α(L)=0.00808 *12*; α(M)=0.00187 *3*

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Adopted Levels, Gammas (continued)

$\gamma(^{182}Au)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[#]	Comments
								α(N)=0.000461 *7*; α(O)=8.17×10^{-5} *12*; α(P)=4.40×10^{-6} *7*
543.00	(1$^+$)	269.5 *1*	13.2 *5*	273.51	(1$^-$,2$^-$)	E1	0.0347	α(K)=0.0286 *4*; α(L)=0.00471 *7*; α(M)=0.001089 *16* α(N)=0.000269 *4*; α(O)=4.79×10^{-5} *7*; α(P)=2.69×10^{-6} *4*
		413.5 *1*	84 *8*	129.49	(1$^-$,2$^-$)	E1	0.01293	α(K)=0.01073 *15*; α(L)=0.001698 *24*; α(M)=0.000391 *6* α(N)=9.68×10^{-5} *14*; α(O)=1.743×10^{-5} *25*; α(P)=1.050×10^{-6} *15*
		442.3 *2*	11.4 *3*	100.70	(0$^+$,1$^+$,2$^+$)	M1	0.1169	α(K)=0.0964 *14*; α(L)=0.01575 *23*; α(M)=0.00364 *6* α(N)=0.000908 *13*; α(O)=0.0001671 *24*; α(P)=1.136×10^{-5} *16*
		480.0 *3*	16.0 *8*	62.90	(1$^+$,2$^+$)	M1	0.0942	α(K)=0.0777 *11*; α(L)=0.01266 *18*; α(M)=0.00293 *5* α(N)=0.000729 *11*; α(O)=0.0001343 *19*; α(P)=9.14×10^{-6} *13*
		543.0 *2*	10.3 *6*	0.0	(2$^+$)	M1	0.0681	α(K)=0.0562 *8*; α(L)=0.00912 *13*; α(M)=0.00211 *3* α(N)=0.000525 *8*; α(O)=9.67×10^{-5} *14*; α(P)=6.59×10^{-6} *10*
559.9+y	(10$^+$)	175.5 *5*	22	384.4+y	(9$^+$)			
		328.5 *5*	100	231.4+y	(8$^+$)			
575.5+x	(13$^-$)	255.5 *5*	86	320.0+x	(12$^-$)			
		370.5 *5*	100	205.0+x	(11$^-$)			
756.9+y	(11$^+$)	197 *1*	75	559.9+y	(10$^+$)			
		372.5[@] *5*	100	384.4+y	(9$^+$)			
763.5+x	(14$^-$)	443.5 *5*	100	320.0+x	(12$^-$)			
968.9+y	(12$^+$)	409.0 *5*	100	559.9+y	(10$^+$)			
1006.4+y	(12$^+$)	249.5 *5*	14	756.9+y	(11$^+$)			
		446.5 *5*	100	559.9+y	(10$^+$)			
1036.0+x	(15$^-$)	273 *1*	45	763.5+x	(14$^-$)			
		460.5 *5*	100	575.5+x	(13$^-$)			
1138.4+y	(13$^+$)	132.0 *5*	43	1006.4+y	(12$^+$)			
		169.5 *5*	100	968.9+y	(12$^+$)			
1277.4+y	(14$^+$)	139.0 *5*	75	1138.4+y	(13$^+$)			
		271.0 *5*	100	1006.4+y	(12$^+$)			
		308.5 *5*	38	968.9+y	(12$^+$)			
1294.5+x	(16$^-$)	531.0 *5*	100	763.5+x	(14$^-$)			
1487.1+y	(15$^+$)	209.5 *5*	100	1277.4+y	(14$^+$)			
		349 *1*	89	1138.4+y	(13$^+$)			
1572.0+x	(17$^-$)	536.0 *5*	100	1036.0+x	(15$^-$)			
1660.8+y	(16$^+$)	173.5 *5*	46	1487.1+y	(15$^+$)			
		383.5 *5*	100	1277.4+y	(14$^+$)			
1892.0+x	(18$^-$)	597.5 *5*	100	1294.5+x	(16$^-$)			
1917.2+y	(17$^+$)	256.5 *5*	75	1660.8+y	(16$^+$)			
		430.2 *5*	100	1487.1+y	(15$^+$)			
2126.3+y	(18$^+$)	209.0 *5*	29	1917.2+y	(17$^+$)			
		465.5 *5*	100	1660.8+y	(16$^+$)			
2173.0+x	(19$^-$)	601.0 *5*	100	1572.0+x	(17$^-$)			
2408.0+y	(19$^+$)	281.5 *5*	43	2126.3+y	(18$^+$)			
		491 *1*	100	1917.2+y	(17$^+$)			
2559.5+x	(20$^-$)	667.5 *5*	100	1892.0+x	(18$^-$)			
2657.1+y	(20$^+$)	249.0 *5*	22	2408.0+y	(19$^+$)			

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Adopted Levels, Gammas (continued)

$\gamma(^{182}Au)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
2657.1+y	(20^+)	531.0 *5*	100	2126.3+y	(18^+)	3243.6+y	(22^+)	586.5 *5*	100	2657.1+y	(20^+)
2836.0+x	(21^-)	663.0 *5*	100	2173.0+x	(19^-)	3549.6+y	(23^+)	600.0 *5*	100	2949.6+y	(21^+)
2949.6+y	(21^+)	292.5 *5*	29	2657.1+y	(20^+)	3883.1+y	(24^+)	639.5 *5*	100	3243.6+y	(22^+)
		541.5 *5*	100	2408.0+y	(19^+)	4219.1+y	(25^+)	669.5 *5*	100	3549.6+y	(23^+)
3243.6+y	(22^+)	294.0 *5*	57	2949.6+y	(21^+)	4579.1+y	(26^+)	696[@] *1*	100	3883.1+y	(24^+)

[†] From ^{182}Hg ε decay for transitions from low-spin (J<4) states, from (^{35}Cl,5nγ) for transitions from high-spin states.
[‡] From ce data in ^{182}Hg ε decay.
[#] 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.
[@] Placement of transition in the level scheme is uncertain.

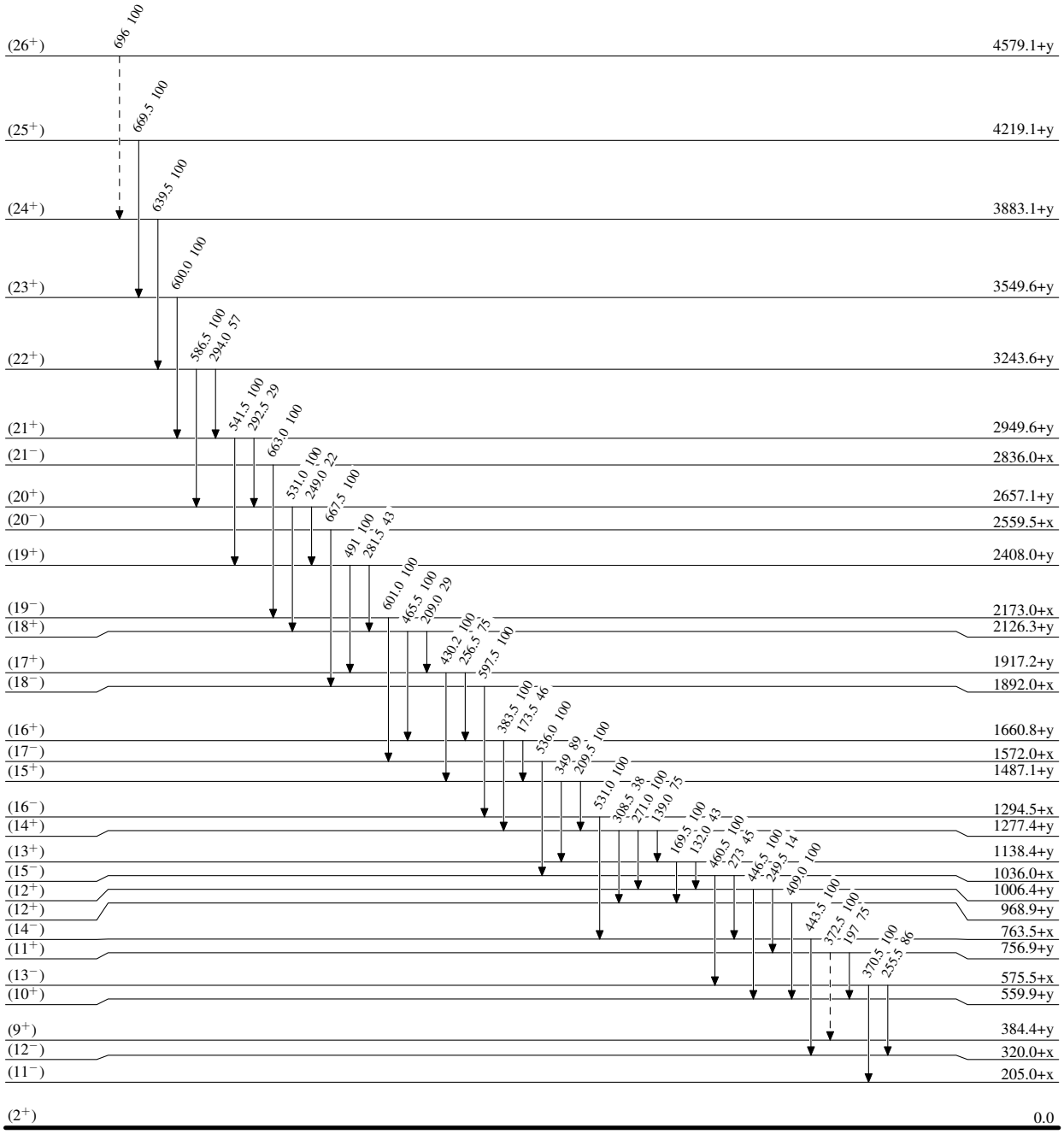
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{182}_{79}Au_{103}$

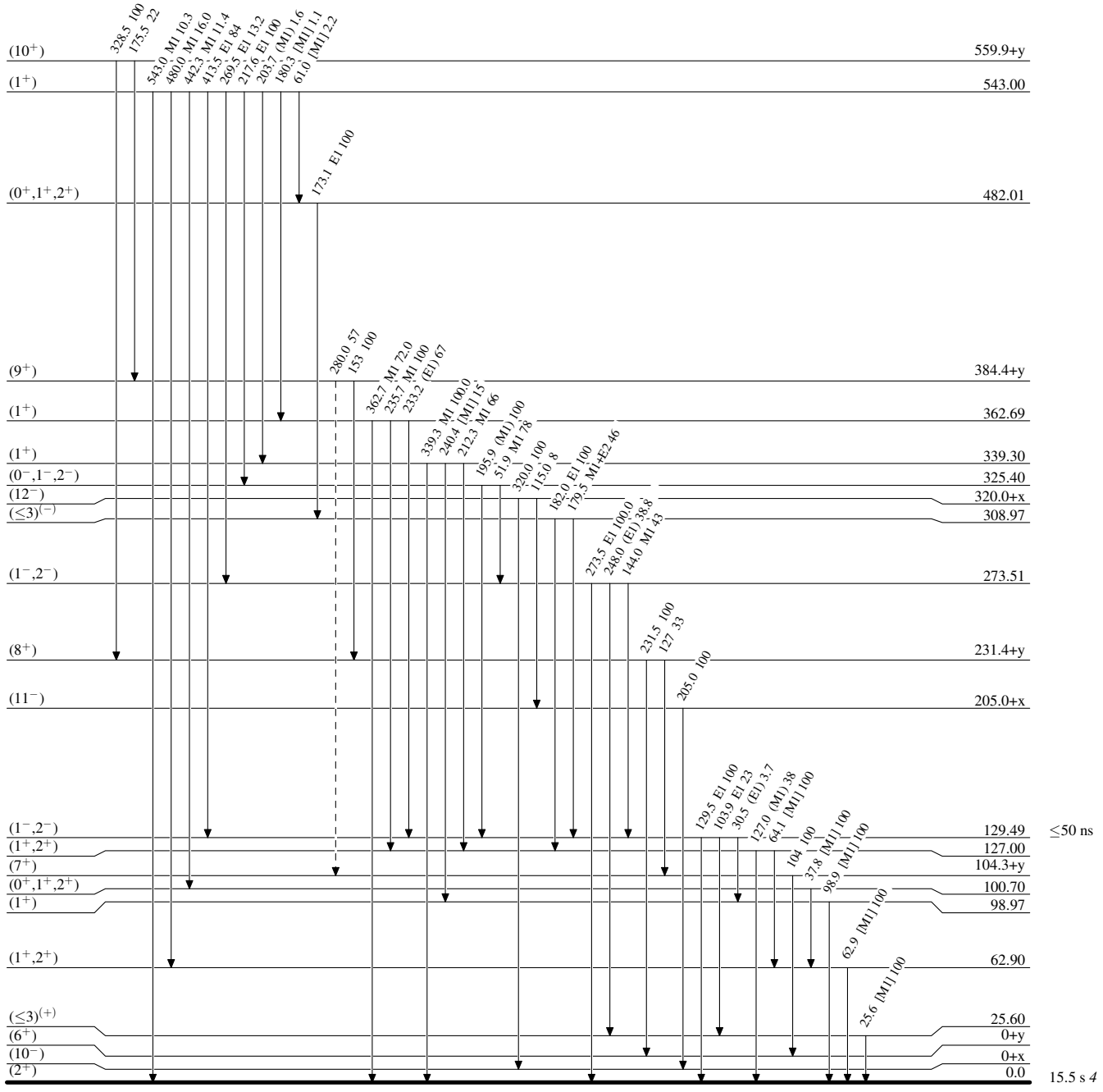
Adopted Levels, Gammas

Legend

Level Scheme (continued)

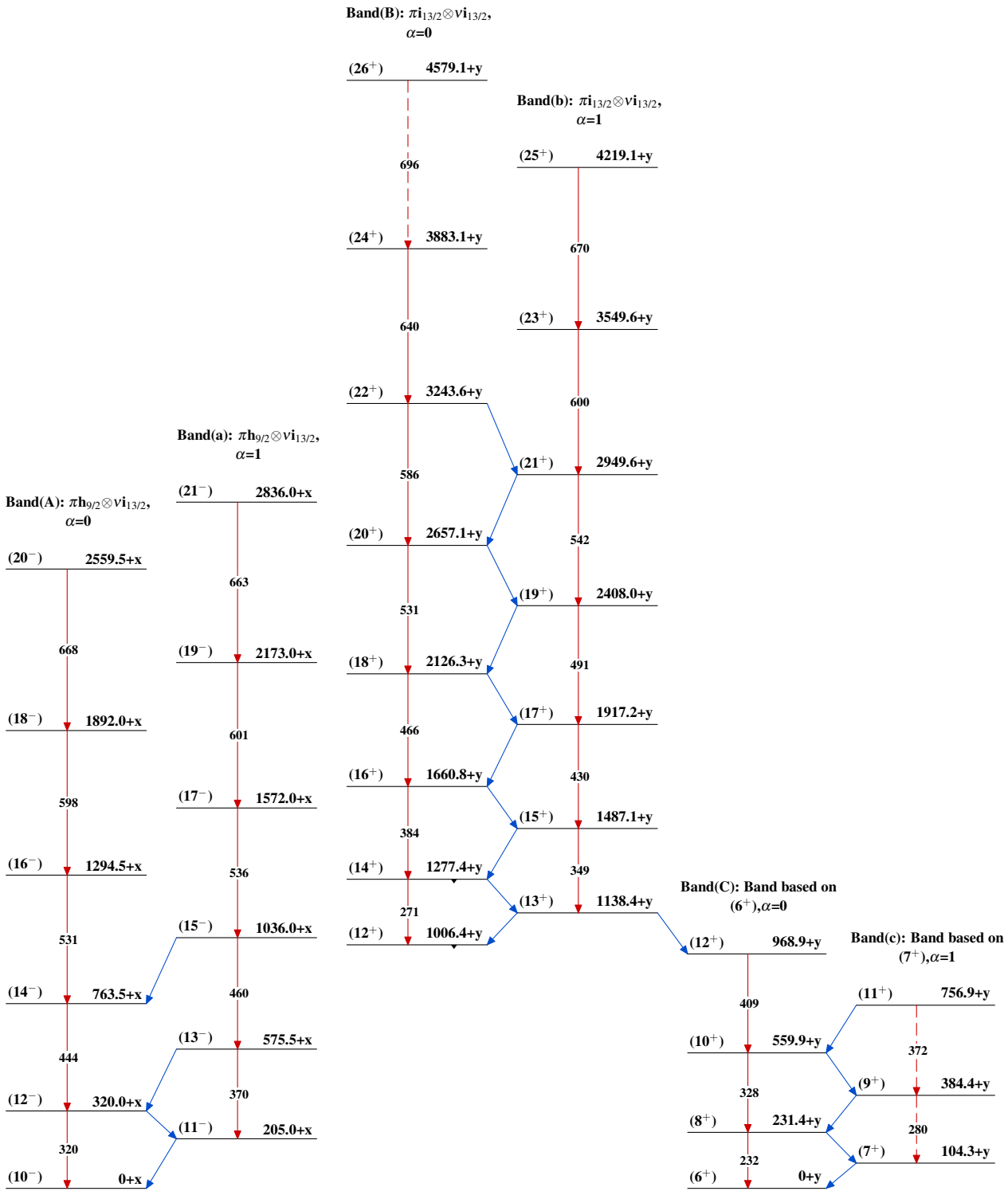
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{182}_{79}Au_{103}$

Adopted Levels, Gammas



$^{182}_{79}Au_{103}$