Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Kitao, Y. Tendow and A. Hashizume	NDS 96,241 (2002)	1-Dec-2001

Q(β^-)=−5.0×10^3 *3*; S(n)=9655 *18*; S(p)=2383 *15*; Q(α)=1.18×10^3 *10* 2012Wa38

Note: Current evaluation has used the following Q record −5.00E3 309648 172.52E3 121248 143 1995Au04.

Mass excess of −73888 keV *10* is given by 1995Au04. The value of −73893 keV *11* measured by 1999Am05 with Penning-Trapp mass spectrometer.

^{120}Cs Levels

Cross Reference (XREF) Flags

A ^{120}Ba ε decay
B (HI,xnγ)

E(level)[c]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	2$^{(+)}$	61.3 s *11*	A	%ε+%β^+=100; %β^+p=7×10^{-6} *3*; %$\beta^+\alpha$=2.0×10^{-5} *4* μ=+3.87 *2*; Q=+1.45 *2* %$\beta^+\alpha$ from (1975Ho09). Other: ≤0.00001 (1972Ra16). %β^+p from (1975Ho09). μ,Q: laser induced optical pumping of atomic beam (1989Ra17); μ value relative to μ=+2.582 *1* for ^{133}Cs (7/2$^+$ g.s.), Q value includes the Sternheimer correction (1989Ra17). Other: μ=3.92 *5* by atomic beam magnetic res with magnetic state selection (1978Ek03). J$^\pi$: from atomic beam (1977Ek02,1976EkZX). π from shell model and μ. 1977Ek02 suggest configuration=π 3/2[422]+ ν 1/2[411]. T$_{1/2}$: from weighted av of 64 s *3* (1977Ge03), 60 s *2* and 61.3 s *14* (1969Ch18). Other: 58.3 s *1* (1972Ra16).
0.0+x	(7$^-$)	57 s *6*	B	%ε+%β^+=100 Additional information 1. Assignment of (7$^-$) to the 57-s isomer is tentative. J$^\pi$: β^+ feedings to (6$^+$) and 8$^+$ state. T$_{1/2}$: from 1977Ge03.
102.40+x *18*	(8$^-$)		B	J$^\pi$: (M1+E2) γ to (7$^-$).
102.58 *18*			A	
134.8? *3*			A	
179.40+x *18*	(8$^-$)		B	J$^\pi$: (M1+E2) γ's to (7$^-$) and (8$^-$).
179.44 *15*	(1$^+$)[e]		A	
192.77 *16*	(1$^+$)[e]		A	
237.20+x[b] *25*	(8)[d]		B	J$^\pi$: D+Q γ to (8$^-$).
248.90 *20*			A	
269.91 *18*			A	
271.4+x[†] *3*	(8$^-$)[d]		B	J$^\pi$: (M1+E2) γ to (8$^-$).
284.9+x[@] *3*	(9$^+$)[d]		B	J$^\pi$: (E1) γ to (8$^-$).
285.2 *3*			A	
319.15 *19*	1$^+$		A	J$^\pi$: log *ft*<5.9 from 0$^+$.
326.1+x *4*	(9)		B	J$^\pi$: γ to (8$^-$), (M1+E2) γ to (8).
336.5+x[#] *4*	(10$^+$)[d]		B	J$^\pi$: (M1+E2) γ to (9$^+$).
336.9 *3*			A	
345.15 *17*	1$^+$		A	J$^\pi$: log *ft*<5.9 from 0$^+$.
350.2+x[‡] *3*	(9$^-$)[d]		B	J$^\pi$: (M1+E2) γ to (8$^-$).
402.9+x[b] *5*	(9)[d]		B	J$^\pi$: (M1+E2) γ to (8).
407.3? *4*			A	
480.3+x[†] *3*	(10$^-$)[d]		B	J$^\pi$: (M1+E2) γ to (9$^-$), (E2) γ to (8$^-$).

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Adopted Levels, Gammas (continued)

^{120}Cs Levels (continued)

E(level)[c]	J^π	XREF	Comments
505.4+x[@] 4	(11^+)[d]	B	J^π: (M1+E2) γ to (10^+).
536.0+x[#] 4	(12^+)[d]	B	J^π: (E2) γ to (10^+).
597.9+x[b] 7	(10)[d]	B	J^π: (M1+E2) γ to (9).
612.1+x[&] 4	(10^-)[d]	B	J^π: (M1+E2) γ to (9^-).
658.0+x[‡] 4	(11^-)[d]	B	J^π: (M1+E2) γ to (10^-), (E2) γ to (9^-).
821.5+x[b] 8	(11)[d]	B	J^π: (M1+E2) γ to (10).
832.8+x[a] 4	(11^-)	B	J^π: (M1+E2) γ to (10^-).
850.3+x[†] 4	(12^-)[d]	B	J^π: (M1+E2) γ to (11^-), (E2) γ to (10^-).
851.9+x[@] 5	(13^+)[d]	B	J^π: (M1+E2) γ to (11^+), (E2) γ to (11^+).
975.8+x[#] 5	(14^+)[d]	B	J^π: (M1+E2) γ to (13^+), (E2) γ to (12^+).
1031.8+x[&] 4	(12^-)[d]	B	J^π: (M1+E2) γ to (11^-), (E2) γ to (10^-).
1071.5+x[b] 9	(12)[d]	B	J^π: (M1+E2) γ to (11).
1108.2+x[‡] 4	(13^-)[d]	B	J^π: (M1+E2) γ to (12^-), (E2) γ to (11^-).
1322.6+x[a] 5	(13^-)	B	J^π: (M1+E2) γ to (12^-), (E2) γ to (11^-).
1344.3+x[b] 10	(13)[d]	B	J^π: (M1+E2) γ to (12).
1355.7+x[@] 5	(15^+)[d]	B	J^π: (M1+E2) γ to (14^+), (E2) γ to (13^+).
1359.5+x[†] 4	(14^-)[d]	B	J^π: (M1+E2) γ to (13^-), (E2) γ to (12^-).
1597.3+x[#] 5	(16^+)[d]	B	J^π: (E2) γ to (14^+).
1613.9+x[&] 5	(14^-)[d]	B	J^π: (M1+E2) γ to (13^-), (E2) γ to (12^-).
1639.1+x[b] 11	(14)[d]	B	J^π: (M1+E2) γ to (13).
1684.9+x[‡] 4	(15^-)[d]	B	J^π: (M1+E2) γ to (14^-), (E2) γ to (13^-).
1945.1+x[a] 5	(15^-)	B	J^π: (M1+E2) γ to (14^-), (E2) γ to (13^-).
1959.1+x[b] 11	(15)[d]	B	J^π: (M1+E2) γ to (14).
1993.9+x[†] 5	(16^-)[d]	B	J^π: (E2) γ to (14^-).
2000.3+x[@] 5	(17^+)[d]	B	J^π: (M1+E2) γ to (16^+), (E2) γ to (15^+).
2305.1+x[&] 6	(16^-)[d]	B	J^π: (M1+E2) γ to (15^-), (E2) γ to (14^-).
2363.6+x[#] 5	(18^+)[d]	B	J^π: (E2) γ to (16^+).
2376.5+x[‡] 5	(17^-)[d]	B	J^π: (E2) γ to (15^-).
2674.3+x[a] 7	(17^-)	B	J^π: (E2) γ to (15^-).
2740.9+x[†] 5	(18^-)[d]	B	J^π: (E2) γ to (18^-).
2766.6+x[@] 5	(19^+)[d]	B	J^π: (M1+E2) γ to (18^+), (E2) γ to (17^+).
3169.6+x[‡] 5	(19^-)[d]	B	J^π: (E2) γ to (17^-).
3248.5+x[#] 6	(20^+)[d]	B	J^π: (E2) γ to (18^+).
3590.4+x[†] 5	(20^-)[d]	B	J^π: (E2) γ to (18^-).
3637.8+x[@] 6	(21^+)[d]	B	J^π: γ to (20^+), (E2) γ to (19^+).
4051.8+x[‡] 6	(21^-)[d]	B	J^π: (E2) γ to (19^-).
4234.6+x[#] 7	(22^+)[d]	B	J^π: (E2) γ to (20^+).
4534.0+x[†] 7	(22^-)[d]	B	J^π: (E2) γ to (20^-).
4600.9+x[@] 7	(23^+)[d]	B	J^π: (E2) γ to (21^+).
5013.4+x[‡] 7	(23^-)[d]	B	J^π: (E2) γ to (21^-).
5304.6+x[#] 12	[d]	B	
5555.7+x[†] 9	[d]	B	
5645.9+x[@] 13	[d]	B	
6044.0+x[‡] 9	[d]	B	
6439.6+x[#] 16	[d]	B	

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Adopted Levels, Gammas (continued)

^{120}Cs Levels (continued)

E(level)[c]	Jπ	XREF
6770.9+x[@] *16*	*d*	B
7126.0+x[‡] *13*	*d*	B

† Band(A): $\pi h_{11/2}\nu g_{7/2}$, α=0.
‡ Band(B): $\pi h_{11/2}\nu g_{7/2}$, α=1.
# Band(C): $\pi h_{11/2}\nu h_{11/2}$, α=0.
@ Band(D): $\pi h_{11/2}\nu h_{11/2}$, α=1.
& Band(E): $\pi h_{11/2}\nu 5/2[402]$, α=0.
a Band(F): $\pi h_{11/2}\nu 5/2[402]$, α=1.
b Band(G): $\pi g_{9/2}\nu h_{11/2}$ or $\pi g_{9/2}\nu g_{7/2}$.
c From (HI,xnγ), unless otherwise noted.
d From stretched γ-cascades and expected band assignment, in addition to the arguments given.
e (1^+) for either level is suggested from log *ft*<5.9 for the 179 level and a possible transition to this level from the 192 level.

$\gamma(^{120}Cs)$

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[#]	Comments
102.40+x	(8^-)	102.4 *2*	100 *25*	0.0+x	(7^-)	(M1+E2)	
102.58		102.6[‡] *2*	100	0.0	$2^{(+)}$		
134.8?		134.8[‡a] *3*	100	0.0	$2^{(+)}$		
179.40+x	(8^-)	77.0 *4*	10 *4*	102.40+x	(8^-)	(M1+E2)	
		179.4 *2*	100 *25*	0.0+x	(7^-)	(M1+E2)	
179.44	(1^+)	76.9 *3*	9 *4*	102.58		D	Mult.: from intensity balance in ^{120}Ba ε decay.
		179.4 *2*	100	0.0	$2^{(+)}$		
192.77	(1^+)	(13.4[‡])		179.44	(1^+)		I(γ+ce)≥59 *47*.
		192.8[‡] *2*	100 *18*	0.0	$2^{(+)}$		
237.20+x	(8)	134.8 *2*	100 *27*	102.40+x	(8^-)	D+Q	
248.90		146.0[‡a] *3*	<29	102.58			
		248.9[‡] *2*	100 *29*	0.0	$2^{(+)}$		
269.91		269.9[‡] *2*	100	0.0	$2^{(+)}$		
271.4+x	(8^-)	92.0 *2*	100 *25*	179.40+x	(8^-)	(M1+E2)	
284.9+x	(9^+)	182.5 *2*	100	102.40+x	(8^-)	(E1)	
285.2		182.6[‡] *2*	100	102.58			
319.15	1^+	126.4[‡] *2*	18 *5*	192.77	(1^+)		
		139.7[‡] *2*	100 *16*	179.44	(1^+)		
326.1+x	(9)	54.7 *4*	88 *35*	271.4+x	(8^-)		
		88.9 *4*	100 *38*	237.20+x	(8)	(M1+E2)	
336.5+x	(10^+)	(10.4)		326.1+x	(9)		
		51.6 *4*	100 *41*	284.9+x	(9^+)	(M1+E2)	
		99.3 *4*	59 *24*	237.20+x	(8)		
336.9		234.3[‡] *2*	100	102.58			
345.15	1^+	75.2[‡] *3*	43 *17*	269.91			
		152.4[‡] *2*	61 *13*	192.77	(1^+)		
		165.7[‡] *2*	100 *17*	179.44	(1^+)		
350.2+x	(9^-)	78.8 *2*	100	271.4+x	(8^-)	(M1+E2)	
402.9+x	(9)	165.7 *4*	100	237.20+x	(8)	(M1+E2)	
407.3?		122.1[‡] *2*	100	285.2			

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Adopted Levels, Gammas (continued)

γ(^{120}Cs) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[#]	Comments
480.3+x	(10$^-$)	130.1 *2*	100 *25*	350.2+x	(9$^-$)	(M1+E2)	
		208.9 *2*	22 *5*	271.4+x	(8$^-$)	(E2)	
505.4+x	(11$^+$)	168.9 *2*	100	336.5+x	(10$^+$)	(M1+E2)	
536.0+x	(12$^+$)	30.6		505.4+x	(11$^+$)		
		199.5 *2*	100 *26*	336.5+x	(10$^+$)	(E2)	
597.9+x	(10)	195.0 *4*	100	402.9+x	(9)	(M1+E2)	
612.1+x	(10$^-$)	261.9 *2*	100	350.2+x	(9$^-$)	(M1+E2)	
658.0+x	(11$^-$)	177.7 *2*	74 *18*	480.3+x	(10$^-$)	(M1+E2)	
		307.8 *2*	100 *26*	350.2+x	(9$^-$)	(E2)	Mult.: M1/E2 in 2001Mo39 seems a misprint.
821.5+x	(11)	223.6 *4*	100	597.9+x	(10)	(M1+E2)	
832.8+x	(11$^-$)	220.7 *2*	100	612.1+x	(10$^-$)	(M1+E2)	
850.3+x	(12$^-$)	192.3 *2*	28 *8*	658.0+x	(11$^-$)	(M1+E2)	
		370.0 *2*	100 *26*	480.3+x	(10$^-$)	(E2)	
851.9+x	(13$^+$)	315.9 *2*	100 *24*	536.0+x	(12$^+$)	(M1+E2)	
		346.5 *4*	1.7 *7*	505.4+x	(11$^+$)	(E2)	I_γ: other: 37 *3*, possible including γ′s from contaminant (1992Ce05).
975.8+x	(14$^+$)	123.9 *4*	8.5 *21*	851.9+x	(13$^+$)	(M1+E2)	
		439.8 *2*	100 *25*	536.0+x	(12$^+$)	(E2)	
1031.8+x	(12$^-$)	199.0 *4*	100 *25*	832.8+x	(11$^-$)	(M1+E2)	
		373.8 *4*	86 *38*	658.0+x	(11$^-$)	(M1+E2)	
		419.7 *4*	98 *25*	612.1+x	(10$^-$)	(E2)	
1071.5+x	(12)	250.0 *4*	100	821.5+x	(11)	(M1+E2)	
1108.2+x	(13$^-$)	257.9 *2*	34 *10*	850.3+x	(12$^-$)	(M1+E2)	
		450.2 *2*	100 *24*	658.0+x	(11$^-$)	(E2)	
1322.6+x	(13$^-$)	290.8 *4*	133 *50*	1031.8+x	(12$^-$)	(M1+E2)	I_γ: for doublet (290.8γ+291.3γ).
		489.8 *4*	100 *50*	832.8+x	(11$^-$)	(E2)	
1344.3+x	(13)	272.8 *4*	100	1071.5+x	(12)	(M1+E2)	
1355.7+x	(15$^+$)	379.9 *2*	100 *25*	975.8+x	(14$^+$)	(M1+E2)	
		503.8 *4*	19 *8*	851.9+x	(13$^+$)	(E2)	
1359.5+x	(14$^-$)	251.3 *4*	9 *4*	1108.2+x	(13$^-$)	(M1+E2)	
		509.2 *2*	100 *26*	850.3+x	(12$^-$)	(E2)	
1597.3+x	(16$^+$)	621.5 *2*	100	975.8+x	(14$^+$)	(E2)	
1613.9+x	(14$^-$)	291.3 *4*	73 *27*	1322.6+x	(13$^-$)	(M1+E2)	I_γ: for doublet (290.8γ+291.3γ).
		582.1 *2*	100 *27*	1031.8+x	(12$^-$)	(E2)	
1639.1+x	(14)	294.8 *4*	100	1344.3+x	(13)	(M1+E2)	
1684.9+x	(15$^-$)	325.4 *4*	13 *5*	1359.5+x	(14$^-$)	(M1+E2)	
		576.7 *2*	100 *26*	1108.2+x	(13$^-$)	(E2)	
1945.1+x	(15$^-$)	331.2 *4*	36 *14*	1613.9+x	(14$^-$)	(M1+E2)	
		622.5 *4*	100 *43*	1322.6+x	(13$^-$)	(E2)	
1959.1+x	(15)	320.0 *4*	100	1639.1+x	(14)	(M1+E2)	
1993.9+x	(16$^-$)	634.4 *2*	100	1359.5+x	(14$^-$)	(E2)	
2000.3+x	(17$^+$)	403.0[@] *4*	100[@] *25*	1597.3+x	(16$^+$)	(M1+E2)	
		644.6 *2*	50 *13*	1355.7+x	(15$^+$)	(E2)	
2305.1+x	(16$^-$)	360.0 *4*	26 *10*	1945.1+x	(15$^-$)	(M1+E2)	
		691.2 *4*	100 *43*	1613.9+x	(14$^-$)	(E2)	
2363.6+x	(18$^+$)	766.3[&] *2*	100[&]	1597.3+x	(16$^+$)	(E2)	
2376.5+x	(17$^-$)	382[a]		1993.9+x	(16$^-$)		
		691.6 *2*	100 *26*	1684.9+x	(15$^-$)	(E2)	
2674.3+x	(17$^-$)	729.2 *4*	100	1945.1+x	(15$^-$)	(E2)	
2740.9+x	(18$^-$)	747.0 *2*	100	1993.9+x	(16$^-$)	(E2)	
2766.6+x	(19$^+$)	403.0[@] *4*	100[@] *25*	2363.6+x	(18$^+$)	(M1+E2)	
		766.3[&] *2*	38[&] *9*	2000.3+x	(17$^+$)	(E2)	
3169.6+x	(19$^-$)	793.1 *2*	100	2376.5+x	(17$^-$)	(E2)	
3248.5+x	(20$^+$)	884.8 *2*	100	2363.6+x	(18$^+$)	(E2)	

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Adopted Levels, Gammas (continued)

$\gamma(^{120}Cs)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[#]	Comments
3590.4+x	(20^-)	849.5 *2*	100	2740.9+x	(18^-)	(E2)	
3637.8+x	(21^+)	389.2 *5*	100 *11*	3248.5+x	(20^+)		
		871.3 *4*	83 *33*	2766.6+x	(19^+)	(E2)	
4051.8+x	(21^-)	882.2 *2*	100	3169.6+x	(19^-)	(E2)	
4234.6+x	(22^+)	986.1 *4*	100	3248.5+x	(20^+)	(E2)	
4534.0+x	(22^-)	943.6 *4*	100	3590.4+x	(20^-)	(E2)	
4600.9+x	(23^+)	963.1 *4*	100	3637.8+x	(21^+)	(E2)	
5013.4+x	(23^-)	961.6 *4*	100	4051.8+x	(21^-)	(E2)	
5304.6+x		1070 *1*		4234.6+x	(22^+)		
5555.7+x		1021.7 *5*	100	4534.0+x	(22^-)		
5645.9+x		1045 *1*		4600.9+x	(23^+)		E_γ: transition contaminated.
6044.0+x		1030.6 *5*	100	5013.4+x	(23^-)		
6439.6+x		1135 *1*		5304.6+x			
6770.9+x		1125 *1*		5645.9+x			
7126.0+x		1082 *1*		6044.0+x			

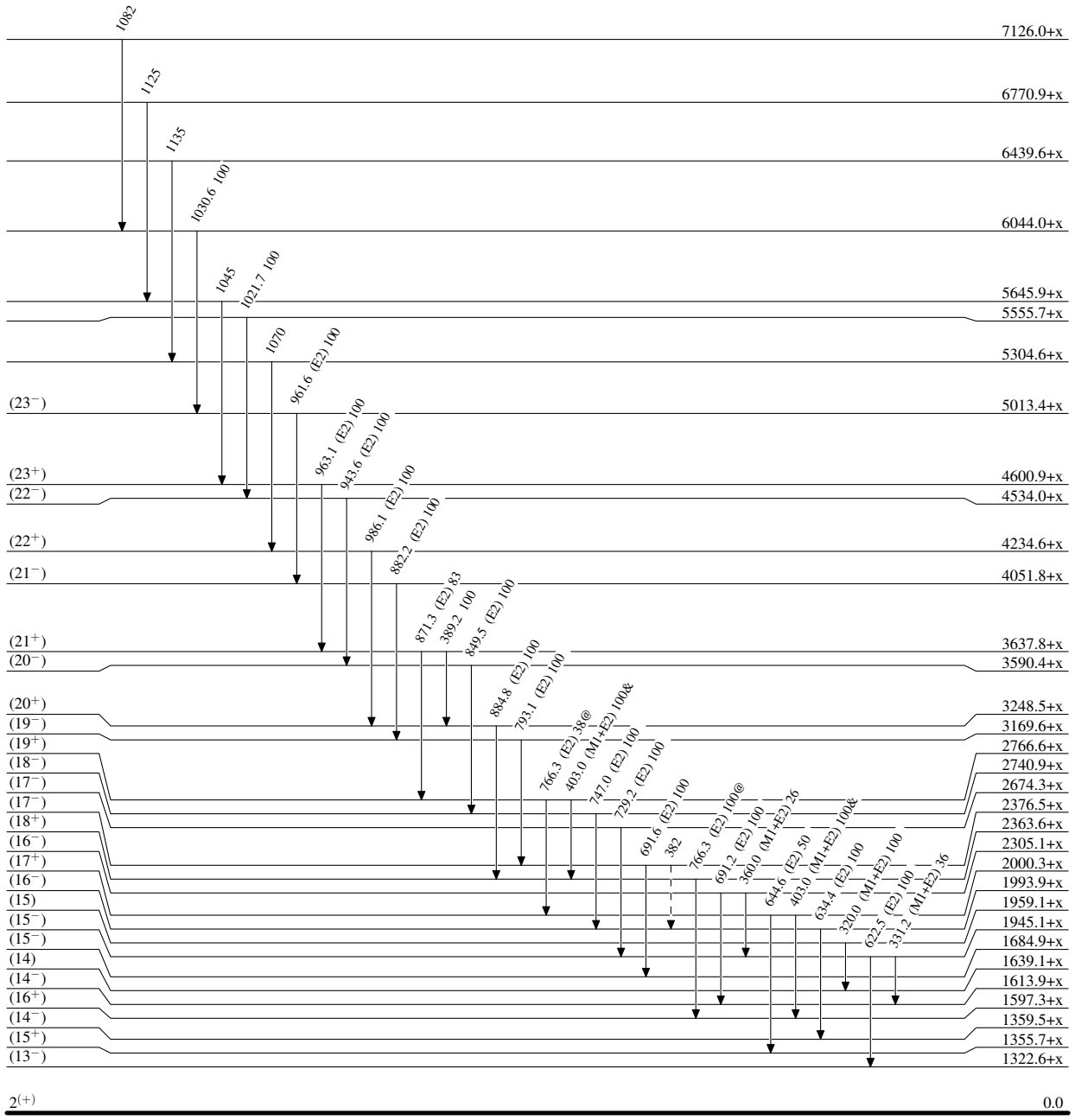
[†] From (HI,xnγ), unless otherwise noted.
[‡] From ^{120}Ba ε decay.
[#] From DCO or $\gamma(\theta)$ in (HI,xnγ), unless otherwise noted.
[@] Multiply placed with undivided intensity.
[&] Multiply placed with intensity suitably divided.
[a] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend
- - - - - - ► γ Decay (Uncertain)

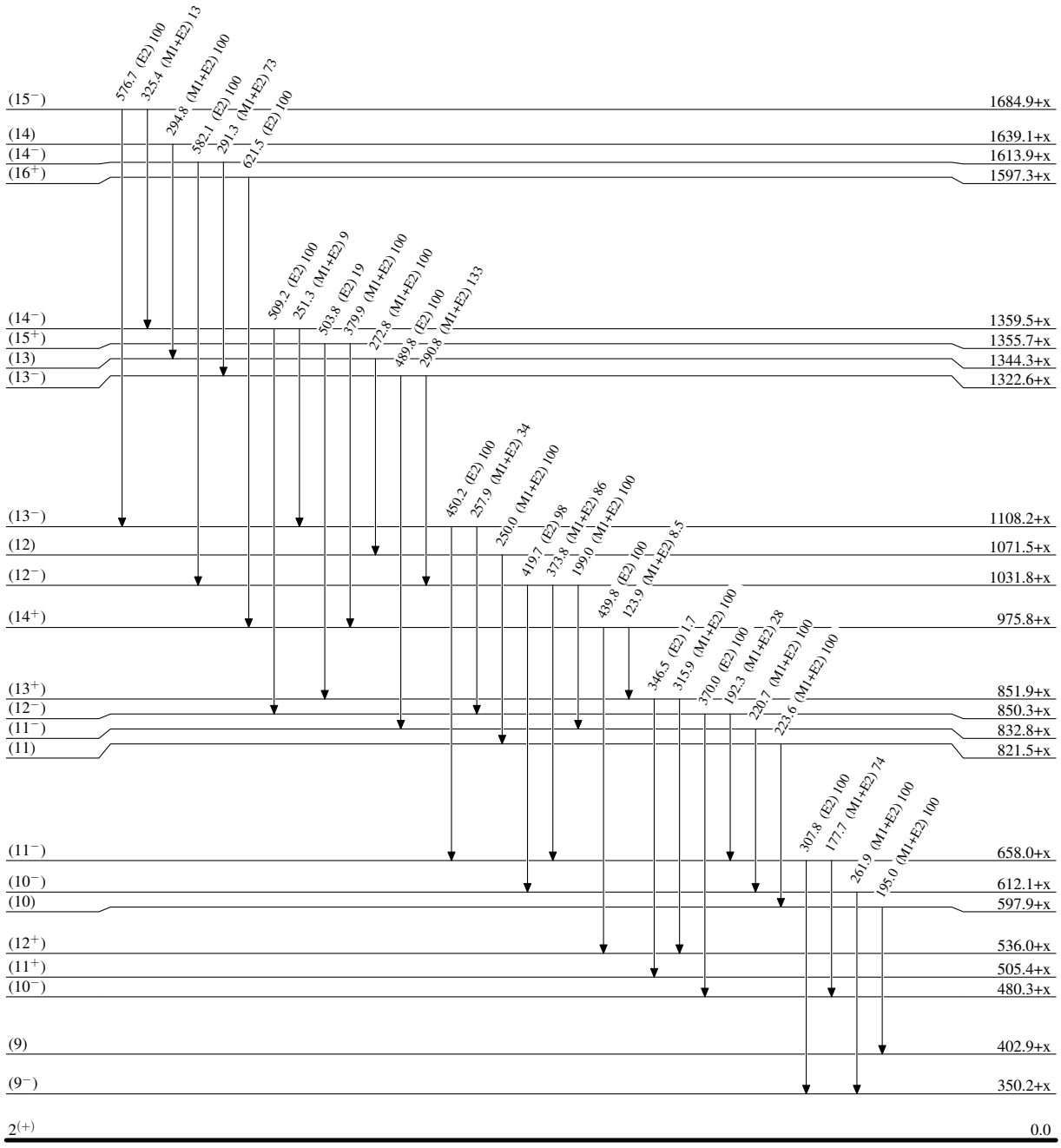


$^{120}_{55}Cs_{65}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



$^{120}_{55}Cs_{65}$

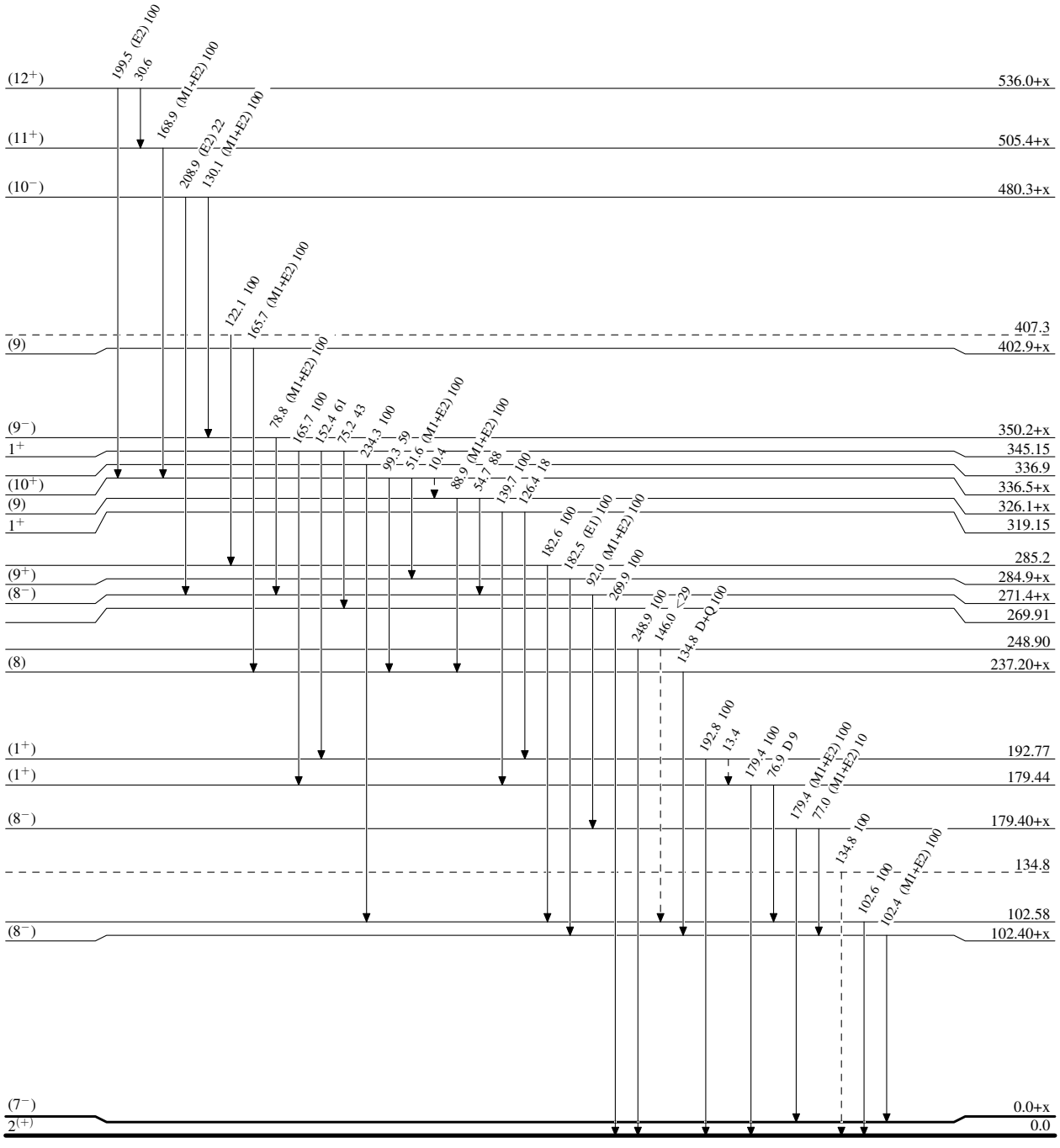
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

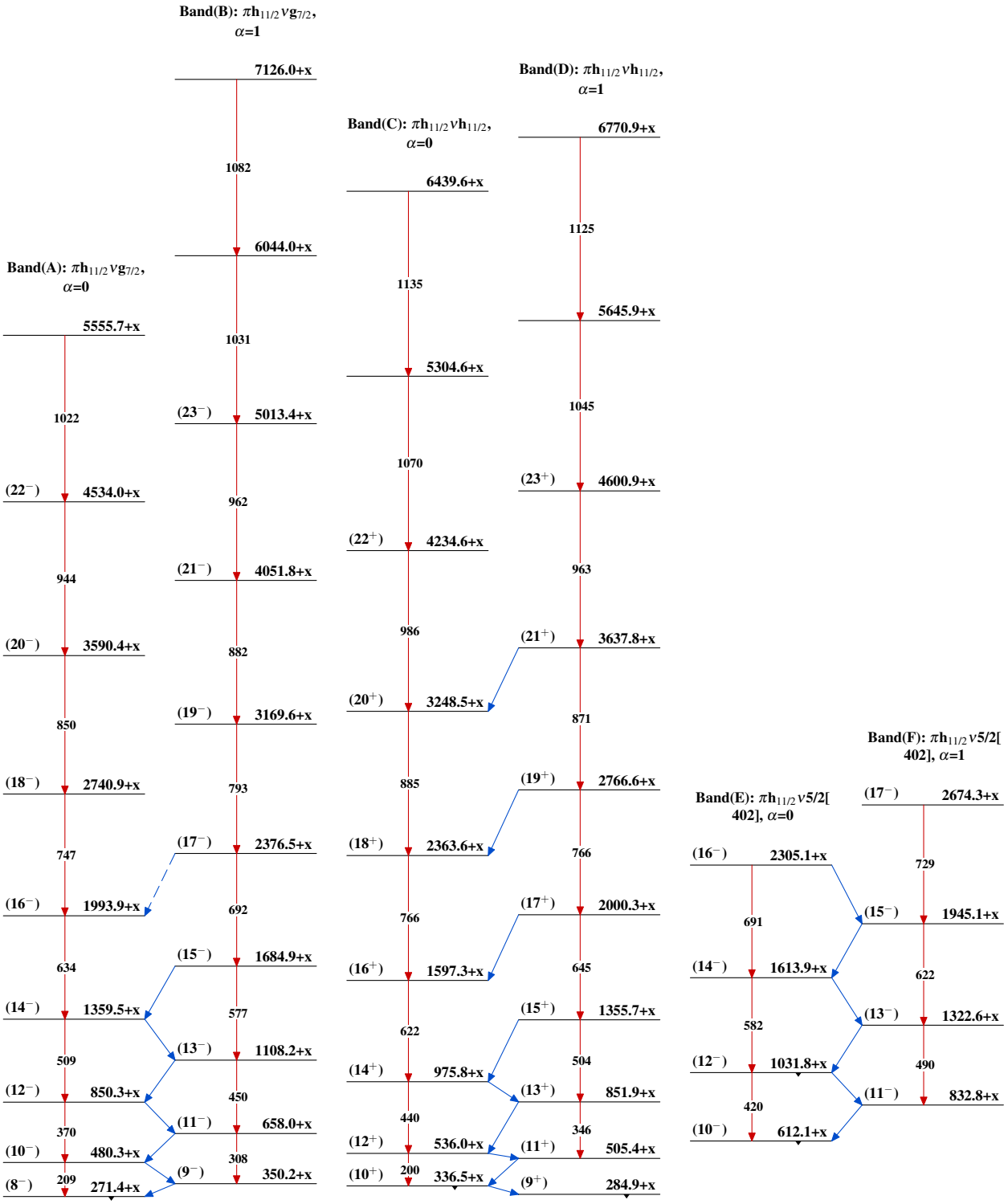
Legend

- - - - - - ► γ Decay (Uncertain)



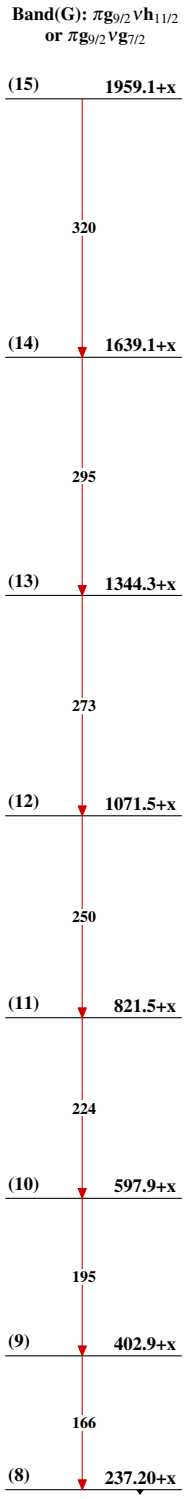
$^{120}_{55}Cs_{65}$

Adopted Levels, Gammas



$^{120}_{55}Cs_{65}$

Adopted Levels, Gammas (continued)



$^{120}_{55}Cs_{65}$