Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya	NDS 180, 1 (2022)	1-Oct-2021

Q(β^-)=−10500 *SY*; S(n)=12230 *SY*; S(p)=4350 *40*; Q(α)=1360 *40* 2021Wa16
ΔQ(β^-)=200, ΔS(n)=200 (2021WA16).

^{126}Ce Levels

Cross Reference (XREF) Flags

A ^{126}Pr ε decay
B (HI,xnγ)

E(level)†	J$^\pi$@	$T_{1/2}$‡	XREF	Comments
0.0&	0$^+$	51.0 s *4*	AB	%ε+%β^+=100 $T_{1/2}$: weighted average of 50 s *4* (1987GeZX), 50 s *6* (1978Bo32) and 51.0 s *4* (2002Ko02). x ray and γ counting (1987GeZX), x ray counting (1978Bo32), γ counting (2002Ko02).
169.59& *3*	2$^+$	0.55 ns *9*	AB	
519.04& *8*	4$^+$	15.0 ps *14*	AB	
954.4g *4*	(2$^+$)#		A	
1014.95& *10*	6$^+$	6 ps *2*	AB	
1154.7g *4*	(3$^+$)#		A	
1337.14g *22*	(4$^+$)#		A	
1625.47& *11*	8$^+$	2 ps *1*	B	
1877.1b *4*	4$^{(-)}$		B	
1882.2a *3*	5$^{(-)}$		B	
2031.6c *3*	5$^{(-)}$		B	
2199.58a *21*	7$^{(-)}$	8 ps *3*	B	g=0.75 (1987IsZX); 1987IsZX assumed that 574-keV γ connects 10$^+$ level in the ground state band and measured $T_{1/2}$ and g. However, because 1998Mo30, 2001Wi10 and 2003Pe06 confirmed that the 574-keV γ connects 8$^+$ level in the ground state band, measured $T_{1/2}$ and g are given to this level by evaluators.
2209.0b *3*	6$^{(-)}$		B	
2313.08& *12*	10$^+$		B	
2412.6d *6*	(6$^-$)		B	
2432.0c *3*	7$^{(-)}$		B	
2612.5e *8*	(7$^-$)		B	
2629.05a *23*	9$^{(-)}$	4 ps *2*	B	
2658.4b *4*	8$^{(-)}$		B	
2841.4d *8*	(8$^-$)		B	
2949.4c *5*	9$^{(-)}$		B	
2991.10& *14*	12$^+$		B	
3094.9e *8*	(9$^-$)		B	
3148.04a *24*	11$^{(-)}$		B	
3200.3b *4*	10$^{(-)}$		B	
3283.9f *4*	12$^+$		B	
3354.7d *9*	(10$^-$)		B	
3598.30& *16*	14$^+$		B	
3649.6e *9*	(11$^-$)		B	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{126}Ce Levels (continued)

E(level)†	Jπ@	XREF	E(level)†	Jπ@	XREF	E(level)†	Jπ@	XREF
3751.86[a] 25	13(−)	B	5487.5[d] 17	(16−)	B	9136.6[&] 7	26+	B
3837.5[b] 5	12(−)	B	5764.7[f] 8	18+	B	9628.4[b] 13	(26−)	B
3973.5[d] 10	(12−)	B	5765.2[b] 8	18(−)	B	10143.9[a] 10	(27−)	B
4034.7[f] 4	14+	B	5851.1 21		B	10335.8[&] 9	28+	B
4285.91[&] 17	16+	B	6009.4[&] 3	20+	B	10879.7[b] 16	(28−)	B
4317.1[e] 12	(13−)	B	6041.6[a] 5	19(−)	B	11316.0[a] 11	(29−)	B
4400.7[b] 5	14(−)	B	6555.5[b] 9	20(−)	B	11625.8[&] 13	(30+)	B
4440.8[a] 4	15(−)	B	6937.2[a] 5	21(−)	B	12530.5[a] 15	(31−)	B
4687.5[d] 14	(14−)	B	6991.0[&] 4	22+	B	13003.2[&] 17	(32+)	B
4892.9[f] 6	16+	B	7460.9[b] 10	22(−)	B	13809.5[a] 18	(33−)	B
5067.1[b] 6	16(−)	B	7915.7[a] 7	23(−)	B	14467.9[&] 20	(34+)	B
5095.16[&] 21	18+	B	8026.2[&] 4	24+	B	15167.8[a] 21	(35−)	B
5207.5[a] 4	17(−)	B	8486.0[b] 12	(24−)	B	16019[&] 3		B
5364.9 11	18+	B	8992.5[a] 9	25(−)	B	16610[a] 3		B

† From a least-squares fit to the adopted E(γ)′s.
‡ From (HI,xnγ), unless otherwise noted.
# From systematics of neighboring Ce nuclides (1995Os03).
@ From band structure and γ multipolarities, unless otherwise noted.
& Band(A): Ground-state band. $\pi(h_{11/2})^2$ from 12^+ to 24^+.
[a] Band(B): $\pi g_{7/2}\pi h_{11/2}$.
[b] Band(C): $\pi d_{5/2}\pi h_{11/2}$, α=0.
[c] Band(c): $\pi d_{5/2}\pi h_{11/2}$, α=1.
[d] Band(D): $\nu g_{7/2}\nu h_{11/2}$, α=0.
[e] Band(d): $\nu g_{7/2}\nu h_{11/2}$, α=1.
[f] Band(E): $\nu h^2_{11/2}$.
[g] Band(F): γ band.

γ(^{126}Ce)

All γ data are from the (HI,xnγ) data set, except as noted.

E_i(level)	J^π_i	E_γ†	I_γ	E_f	J^π_f	Mult.@	α&	Comments
169.59	2+	169.59‡ 3	100	0.0	0+	E2	0.322	α(K)=0.236 4; α(L)=0.0678 10; α(M)=0.01487 21; α(N)=0.00321 5; α(O)=0.000469 7 B(E2)(W.u.)=138 24
519.04	4+	349.45‡ 7	100	169.59	2+	E2	0.0304	α(K)=0.0247 4; α(L)=0.00444 7; α(M)=0.000950 14; α(N)=0.000208 3 B(E2)(W.u.)=185 17
954.4	(2+)	785.1# 5	100# 21	169.59	2+			
		954.2# 4	60# 10	0.0	0+			
1014.95	6+	495.90‡ 5	100	519.04	4+	E2	0.0110	α(K)=0.00920 13; α(L)=0.001446 21; α(M)=0.000306 5 B(E2)(W.u.)=8.E+1 3

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{126}Ce)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[@]	α[&]	Comments
1154.7	(3^+)	985.1[#] *4*	100[#]	169.59	2^+			
1337.14	(4^+)	818.1[#] *2*	100[#]	519.04	4^+			
1625.47	8^+	610.50 *5*	100	1014.95	6^+	E2	0.0064	α(K)=0.00537 *8*; α(L)=0.000795 *12*; α(M)=0.0001675 *24* B(E2)(W.u.)=9.E+1 *5*
1877.1	$4^{(-)}$	1358.4 *10*	100	519.04	4^+			
1882.2	$5^{(-)}$	867.5 *5*	100 *8*	1014.95	6^+			
		1364 *1*	14 *8*	519.04	4^+			
2031.6	$5^{(-)}$	149.6 *5*	14 *3*	1882.2	$5^{(-)}$			
		154.6 *5*	37 *3*	1877.1	$4^{(-)}$			
		1016.7 *5*	100 *3*	1014.95	6^+			
		1514 *1*	<1.3	519.04	4^+			
2199.58	$7^{(-)}$	317.9 *5*	23.0 *20*	1882.2	$5^{(-)}$	E2	0.0406	α(K)=0.0328 *5*; α(L)=0.00616 *10*; α(M)=0.001322 *20*; α(N)=0.000288 *5* B(E2)(W.u.)=1.0×10^2 *4*
		573.92 *24*	100 *3*	1625.47	8^+			
		1185.2 *5*	14 *4*	1014.95	6^+			
2209.0	$6^{(-)}$	177.7 *5*	52.4 *16*	2031.6	$5^{(-)}$			
		326.7 *5*	31.8 *16*	1882.2	$5^{(-)}$			
		331.9 *5*	46 *3*	1877.1	$4^{(-)}$	Q		
		1194.3 *5*	100 *5*	1014.95	6^+			
2313.08	10^+	687.61[a] *5*	100[a]	1625.47	8^+	Q		
2412.6	(6^-)	381.0 *5*	100	2031.6	$5^{(-)}$			
2432.0	$7^{(-)}$	223.3 *5*	81 *7*	2209.0	$6^{(-)}$			
		232.3 *10*	16 *3*	2199.58	$7^{(-)}$			
		400.6 *5*	100 *7*	2031.6	$5^{(-)}$			
		805.9 *5*	65 *16*	1625.47	8^+			
2612.5	(7^-)	199.9 *5*	100	2412.6	(6^-)			
2629.05	$9^{(-)}$	315.7 *5*	17.4 *15*	2313.08	10^+			
		429.48 *10*	100.0 *20*	2199.58	$7^{(-)}$	E2	0.0165	α(K)=0.01364 *20*; α(L)=0.00225 *4*; α(M)=0.000479 *7*; α(N)=0.0001051 *15* B(E2)(W.u.)=2.2×10^2 *13*
2658.4	$8^{(-)}$	226.4 *5*	33 *3*	2432.0	$7^{(-)}$			
		449.5 *2*	100 *6*	2209.0	$6^{(-)}$	Q		
2841.4	(8^-)	228.8 *5*	100 *4*	2612.5	(7^-)			
		428.6 *10*	<20	2412.6	(6^-)			
2949.4	$9^{(-)}$	291.3 *5*	43 *5*	2658.4	$8^{(-)}$			
		517.1 *5*	100 *5*	2432.0	$7^{(-)}$	Q		
2991.10	12^+	678.00 *8*	100	2313.08	10^+	Q		
3094.9	(9^-)	253.6 *5*	100 *7*	2841.4	(8^-)			
		482.5 *5*	73 *7*	2612.5	(7^-)			
3148.04	$11^{(-)}$	518.99 *7*	100	2629.05	$9^{(-)}$	Q		
3200.3	$10^{(-)}$	541.9 *2*	100	2658.4	$8^{(-)}$	Q		
3283.9	12^+	292.7 *5*	54 *9*	2991.10	12^+			
		971.4 *5*	100 *9*	2313.08	10^+	Q		
3354.7	(10^-)	260.0 *5*	37 *3*	3094.9	(9^-)			
		513.1 *5*	100 *9*	2841.4	(8^-)			
3598.30	14^+	607.20 *7*	100	2991.10	12^+	Q		
3649.6	(11^-)	294.5 *5*	61 *13*	3354.7	(10^-)			
		554.8 *5*	100 *5*	3094.9	(9^-)			
3751.86	$13^{(-)}$	603.82 *7*	100	3148.04	$11^{(-)}$	Q		
3837.5	$12^{(-)}$	637.2 *2*	100	3200.3	$10^{(-)}$	Q		
3973.5	(12^-)	323 *1*	42.2 *22*	3649.6	(11^-)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{126}Ce) (continued)

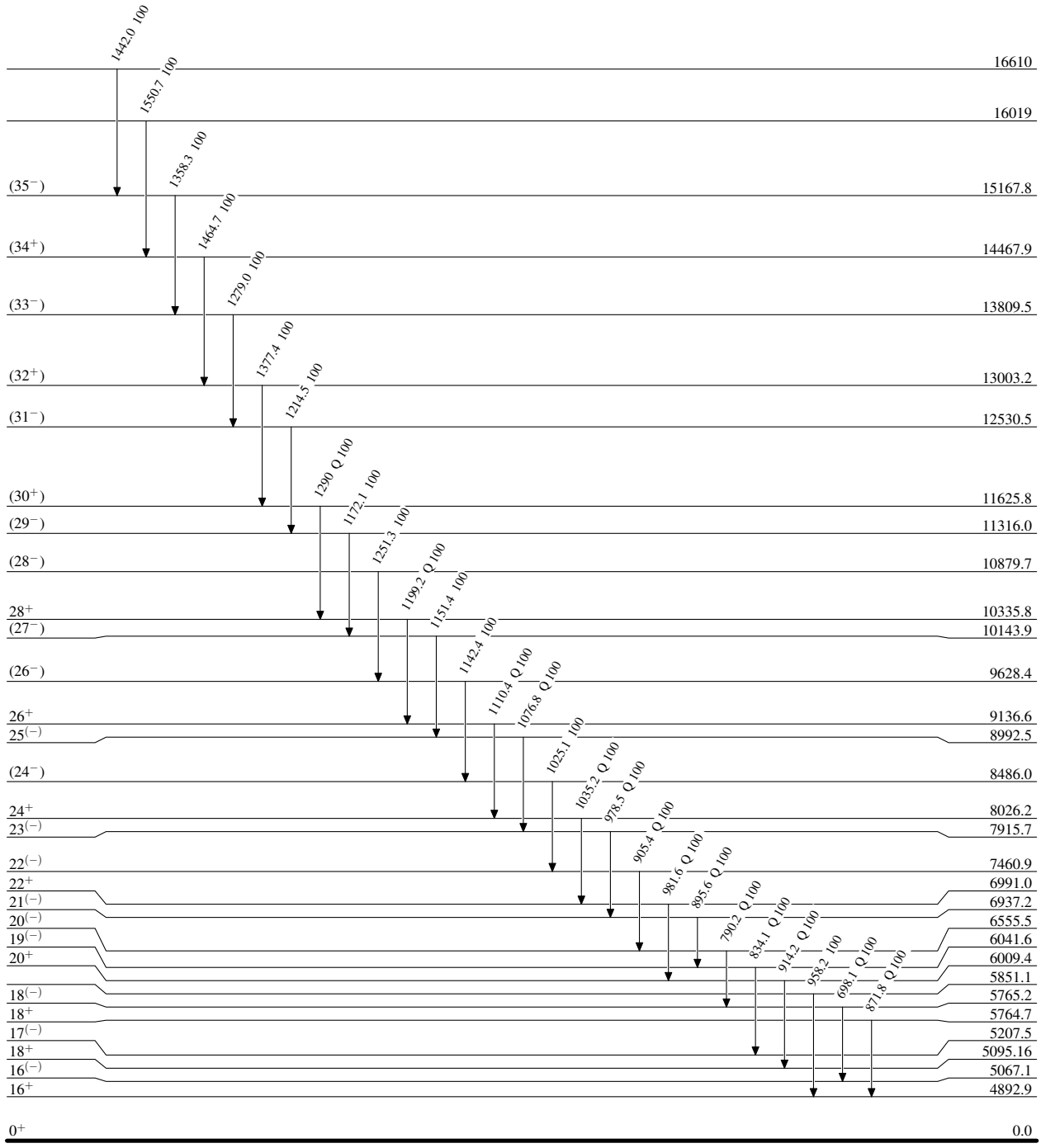
E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult. [@]
3973.5	(12$^-$)	619.1 *5*	100 *9*	3354.7	(10$^-$)	
4034.7	14$^+$	436.4 *5*	54 *8*	3598.30	14$^+$	
		751.4 *5*	54 *8*	3283.9	12$^+$	Q
		1043.1 *5*	100 *8*	2991.10	12$^+$	Q
4285.91	16$^+$	687.61[a] *5*	100[a]	3598.30	14$^+$	Q
4317.1	(13$^-$)	344 *1*	100 *11*	3973.5	(12$^-$)	
		667 *1*	<19	3649.6	(11$^-$)	
4400.7	14$^{(-)}$	563.2 *2*	100	3837.5	12$^{(-)}$	Q
4440.8	15$^{(-)}$	688.9 *2*	100	3751.86	13$^{(-)}$	Q
4687.5	(14$^-$)	714 *1*	100	3973.5	(12$^-$)	
4892.9	16$^+$	858.2 *5*	100	4034.7	14$^+$	
5067.1	16$^{(-)}$	666.4 *2*	100	4400.7	14$^{(-)}$	Q
5095.16	18$^+$	809.24 *13*	100	4285.91	16$^+$	Q
5207.5	17$^{(-)}$	766.7 *2*	100	4440.8	15$^{(-)}$	Q
5364.9	18$^+$	1079 *1*	100	4285.91	16$^+$	Q
5487.5	(16$^-$)	800 *1*	100	4687.5	(14$^-$)	
5764.7	18$^+$	871.8 *5*	100	4892.9	16$^+$	Q
5765.2	18$^{(-)}$	698.1 *5*	100	5067.1	16$^{(-)}$	Q
5851.1		958.2 *20*	100	4892.9	16$^+$	
6009.4	20$^+$	914.2 *2*	100	5095.16	18$^+$	Q
6041.6	19$^{(-)}$	834.1 *2*	100	5207.5	17$^{(-)}$	Q
6555.5	20$^{(-)}$	790.2 *5*	100	5765.2	18$^{(-)}$	Q
6937.2	21$^{(-)}$	895.6 *2*	100	6041.6	19$^{(-)}$	Q
6991.0	22$^+$	981.6 *2*	100	6009.4	20$^+$	Q
7460.9	22$^{(-)}$	905.4 *5*	100	6555.5	20$^{(-)}$	Q
7915.7	23$^{(-)}$	978.5 *5*	100	6937.2	21$^{(-)}$	Q
8026.2	24$^+$	1035.2 *2*	100	6991.0	22$^+$	Q
8486.0	(24$^-$)	1025.1 *5*	100	7460.9	22$^{(-)}$	
8992.5	25$^{(-)}$	1076.8 *5*	100	7915.7	23$^{(-)}$	Q
9136.6	26$^+$	1110.4 *5*	100	8026.2	24$^+$	Q
9628.4	(26$^-$)	1142.4 *5*	100	8486.0	(24$^-$)	
10143.9	(27$^-$)	1151.4 *5*	100	8992.5	25$^{(-)}$	
10335.8	28$^+$	1199.2 *5*	100	9136.6	26$^+$	Q
10879.7	(28$^-$)	1251.3 *10*	100	9628.4	(26$^-$)	
11316.0	(29$^-$)	1172.1 *5*	100	10143.9	(27$^-$)	
11625.8	(30$^+$)	1290 *1*	100	10335.8	28$^+$	Q
12530.5	(31$^-$)	1214.5 *10*	100	11316.0	(29$^-$)	
13003.2	(32$^+$)	1377.4 *10*	100	11625.8	(30$^+$)	
13809.5	(33$^-$)	1279.0 *10*	100	12530.5	(31$^-$)	
14467.9	(34$^+$)	1464.7 *10*	100	13003.2	(32$^+$)	
15167.8	(35$^-$)	1358.3 *10*	100	13809.5	(33$^-$)	
16019		1550.7 *19*	100	14467.9	(34$^+$)	
16610		1442.0 *20*	100	15167.8	(35$^-$)	

[†] From (HI,xnγ) except where noted otherwise.
[‡] Weighted av from ^{126}Pr ε decay and (HI,xnγ).
[#] From ^{126}Pr ε decay.
[@] From (HI,xnγ).
[&] 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.
[a] Multiply placed with intensity suitably divided.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

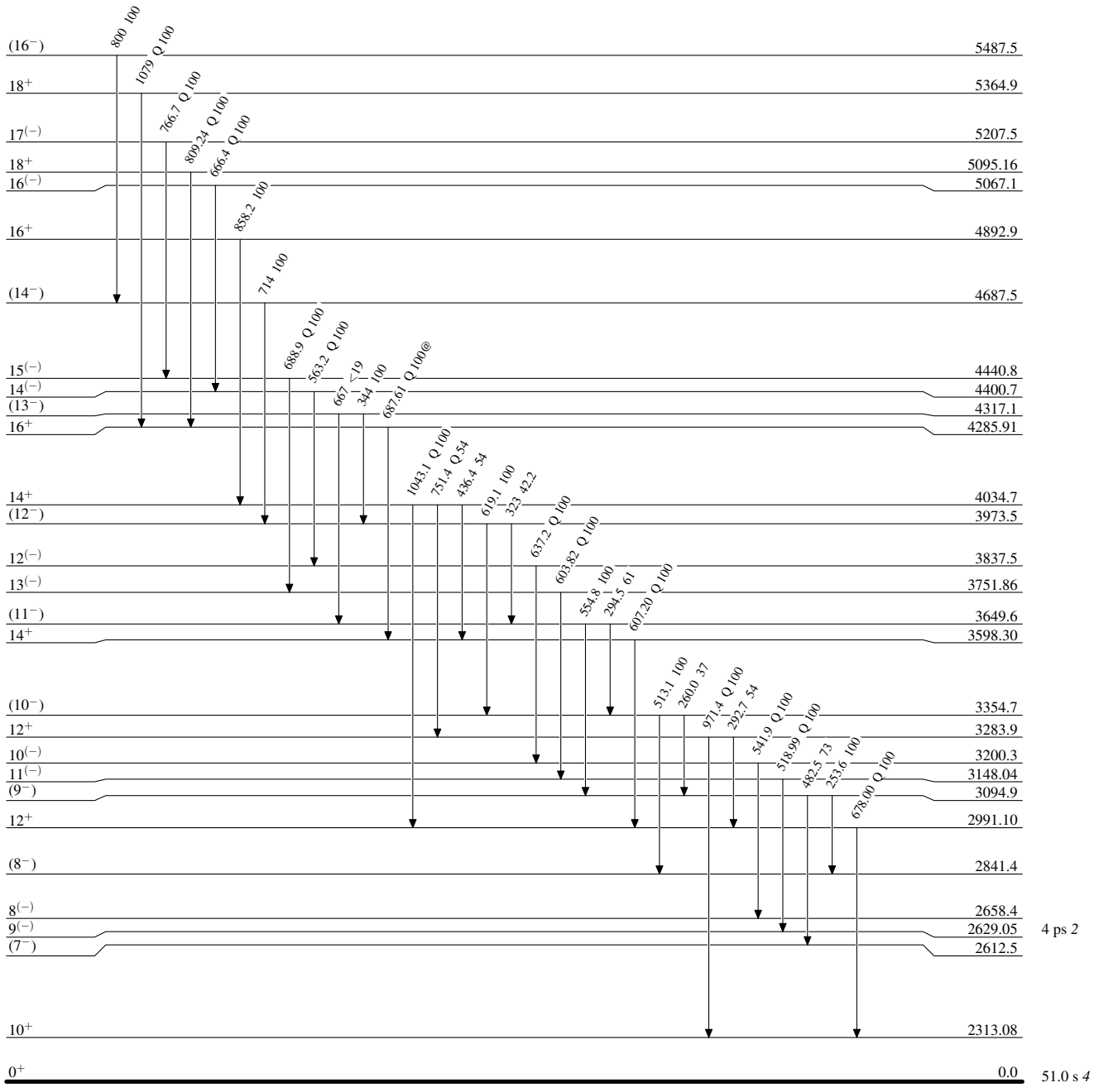


$^{126}_{58}Ce_{68}$

Adopted Levels, Gammas

Level Scheme (continued)

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

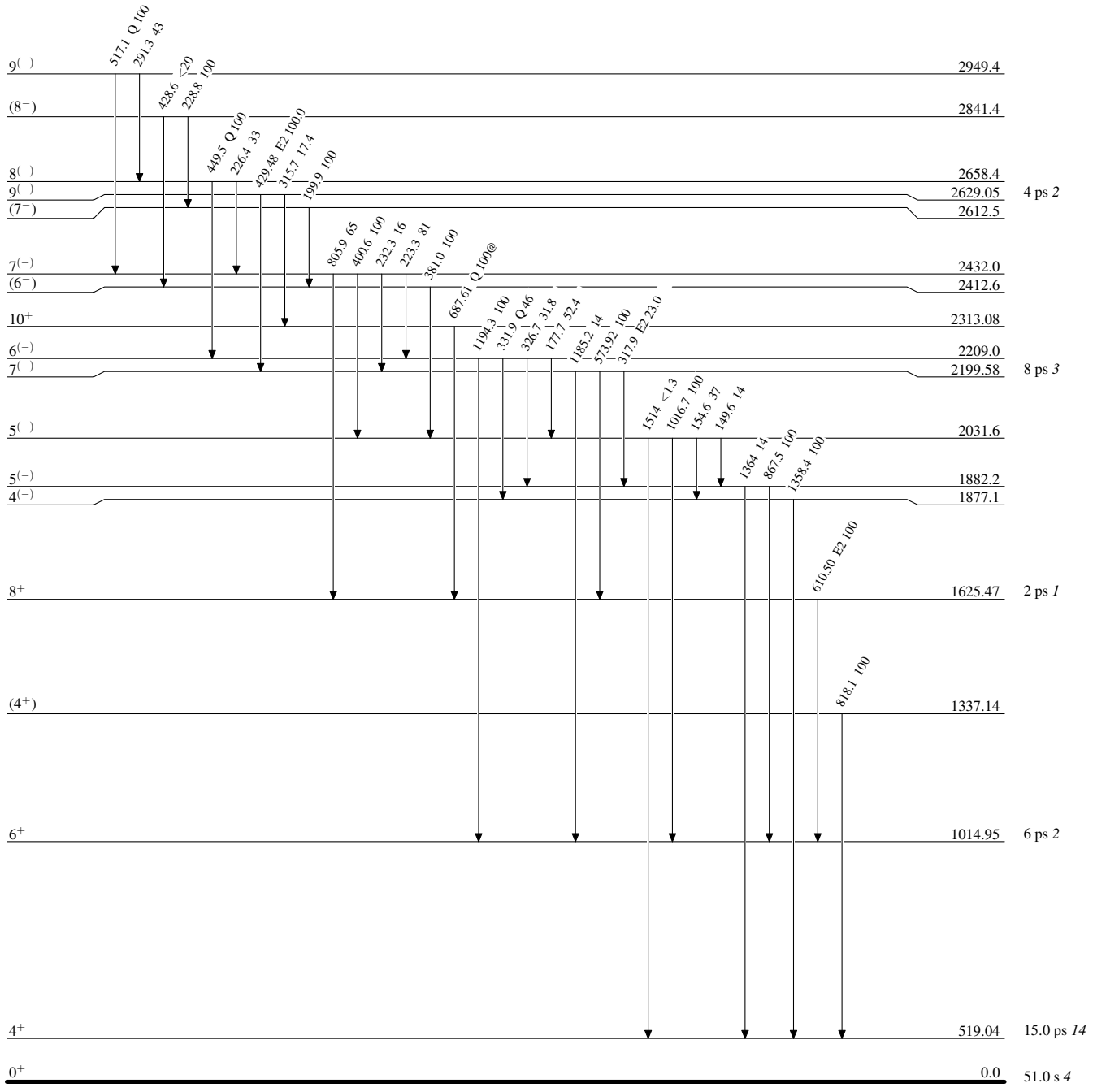


$^{126}_{58}Ce_{68}$

Adopted Levels, Gammas

Level Scheme (continued)

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

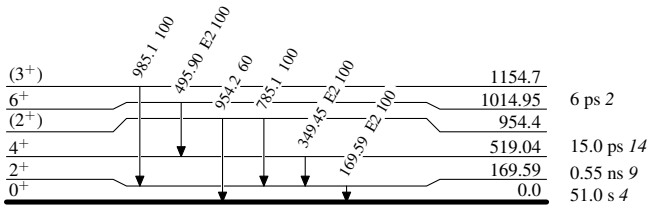


$^{126}_{58}Ce_{68}$

Adopted Levels, Gammas

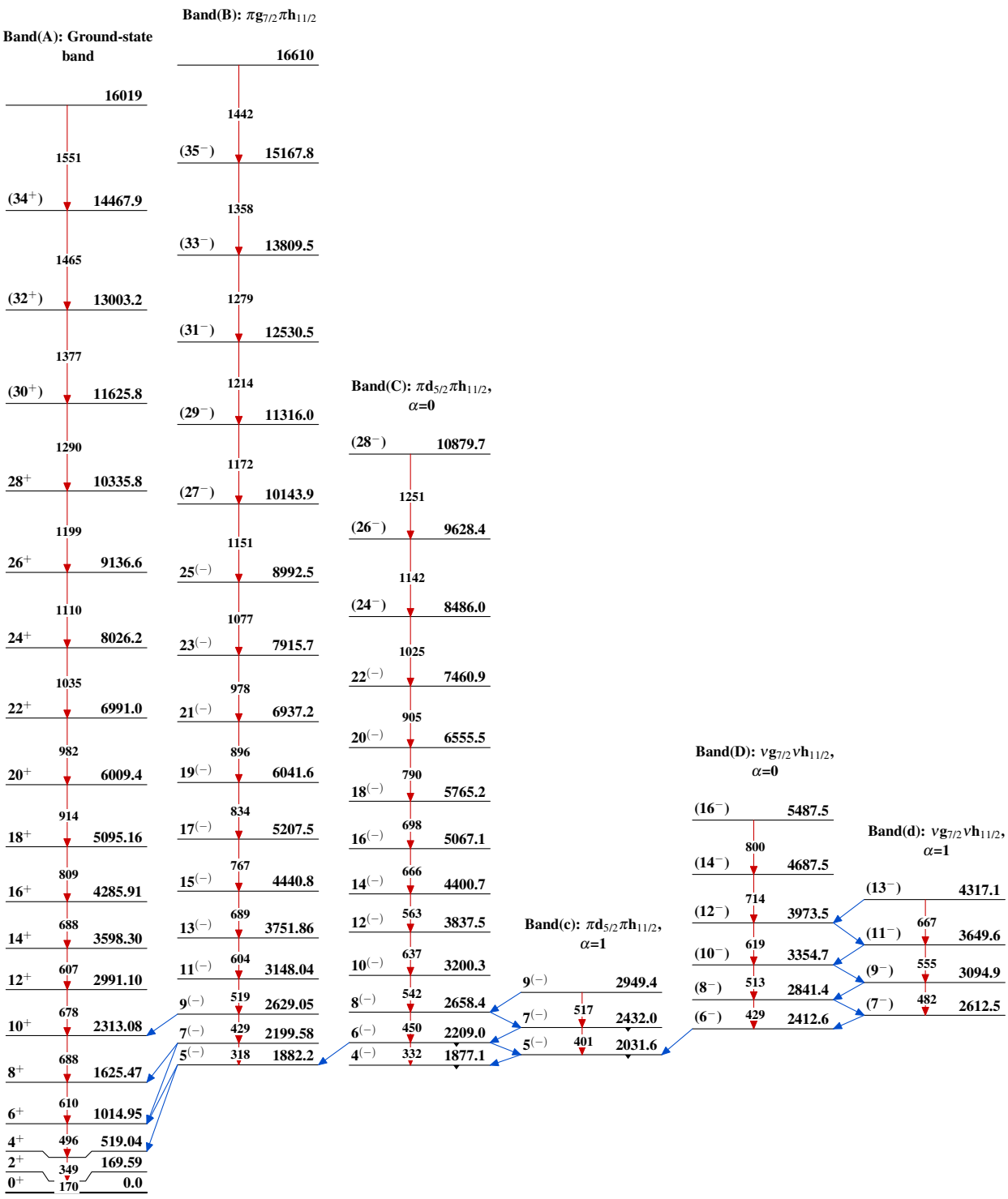
Level Scheme (continued)

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

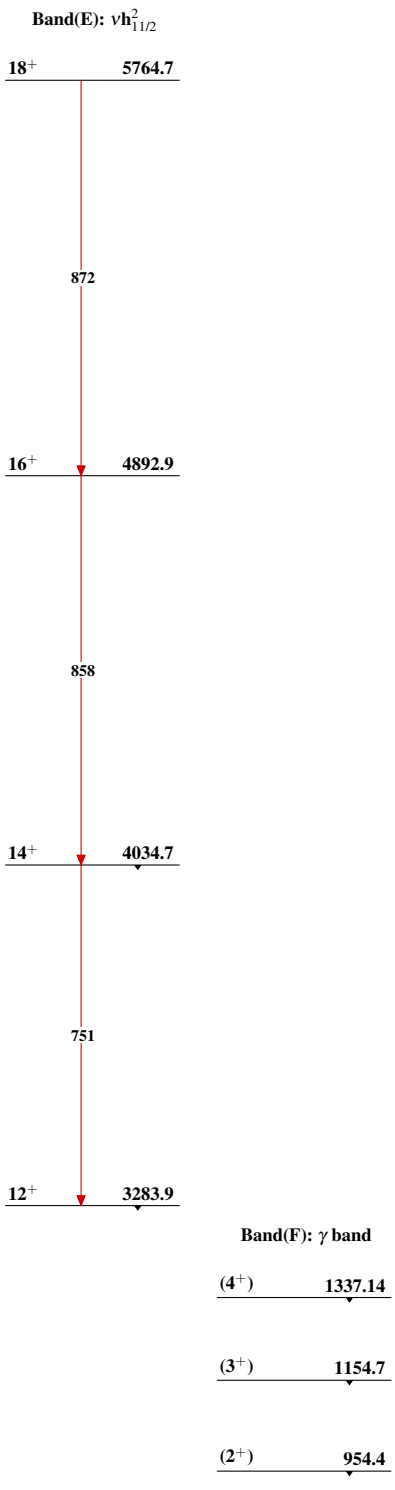


$^{126}_{58}Ce_{68}$

Adopted Levels, Gammas



Adopted Levels, Gammas (continued)



$^{126}_{58}Ce_{68}$