Adopted Levels, Gammas

Type	Author	Citation	Literature Cutoff Date
	History		
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli	NDS 112,1949 (2011)	1-Jun-2010

Q(β^-)=−744.5 *24*; S(n)=7168.0 *25*; S(p)=8887 *5*; Q(α)=1304 *3* 2012Wa38
Note: Current evaluation has used the following Q record −744.3 247167.9 *248887* 5 *1305* 3 2011AuZZ.
Q(β^-n)=−6588.9 *24*, Q(εp)=−12102 *9* 2011AuZZ.
Values in 2003Au03: Q(β^-)=745.8 *24*, S(n)=7169.7 *24*, S(p)=8889 *5*, Q(α)=1298 *3* Q(β^-n)=−6588.9 *24*, Q(εp)=−12102 *9*.
Some recent nuclear structure, Theory, Calculations:
2009Lo02, 2006Yu04, 2007Ji05, 1999Za09, 1998Ts05, 1995Zh26, 1992Wo11, 1992Na07, 1992Eg01, 1992Di01, 1992Co25, 1992Co21.
For recommended double beta-decay half-lives see compilation: 2010PrZZ.
See 1995Va25 for suggested configuration of states under various models.

^{142}Ce Levels

Cross Reference (XREF) Flags

A	^{142}La β^- decay	E	^{142}Ce(n,n′γ)
B	^{142}Pr ε decay	F	^{142}Ce(e,e′)
C	Coulomb excitation	G	^{142}Ce(γ,γ′)
D	^{140}Ce(t,p)	H	^{238}U(HI,xγ)

E(level)[@]	J$^\pi$[#]	T$_{1/2}$[‡]	XREF	Comments
0.0[&]	0$^+$	>5×10^{16} y	ABCDEFGH	T$_{1/2}$: Limit for 2β^- decay from 1961Ma05. Others: >1×10^{16} y (1959Se49), 5.1×10^{15} y *+51−25* (1957Ri43). 1957Ri43 report E(α)=1500 in ^{142}Ce α decay; however, 1959Se49 and 1961Ma05 did not observe any α′s (Q(α)=1310 *5*). Δ<r^2>(^{142}Ce,^{144}Ce)=0.232 *20* fm^2 (1999Is02), Δ<r^2>(^{142}Ce,^{140}Ce)=0.265 *12* (1999GaZX).
641.282[&] *9*	2$^+$	5.56 ps *12*	ABCDEFGH	μ=+0.42 *10* (1991Ba38) Q: −0.16 *5* or −0.37 *5* (1988Ve08). Other: −0.12 *9* (1970En01). J$^\pi$: L=2 in (t,p). T$_{1/2}$: from Coul ex.
1219.37[&] *3*	4$^+$	7.5 ps *7*	A CDEF H	J$^\pi$: From γ linear pol data (1992Al11). T$_{1/2}$: from Coul ex.
1536.33 *4*	2$^+$	<0.83 ps	A C EF	J$^\pi$: E2 γ to g.s.
1652.91 *4*	3$^-$[†]	>1.8 ps	A CDEF	J$^\pi$: L=3 in (t,p).
1742 *3*	5$^-$		D F	J$^\pi$: L=(5) in (t,p), confirmed in (e,e′).
1743.05[&] *6*	6$^+$		E H	J$^\pi$: From γ linear pol data (1992Al11).
2004.89 *7*	2$^+$	0.045 ps *+5−4*	A CDEF	J$^\pi$: L=2 in (t,p).
2014.5 *3*			A	E(level): level not confirmed in (n,n′γ) (1992Al11).
2031.01 *9*	0$^+$[†]	0.17 ps *+15−6*	A E	
2044.51 *6*	4$^+$[†]	0.33 ps *+11−7*	A DEF	J$^\pi$: from L(e,e′).
2111.87 *11*	4$^+$[†]	0.37 ps *+30−12*	DE	
2124.91 *8*	5$^-$[†]	>0.41 ps	DEF	J$^\pi$: from L(e,e′).
2181.95 *5*	3$^+$	0.26 ps *+55−11*	A E	
2187.54 *12*	1$^-$	0.011 ps *2*	A DE G	J$^\pi$: E1 γ to g.s. T$_{1/2}$: Others: 7.07 fs 28 from (γ,γ′).
2210.60[a] *6*	6$^+$		EF H	J$^\pi$: from L(e,e′); consistent with γ linear pol data (1992Al11).
2278.14 *8*	4$^+$[†]	0.083 ps *+49−28*	DEF	J$^\pi$: from L(e,e′).
2329.88 *10*	3$^+$	0.21 ps *+21−8*	E	
2364.91 *12*	2$^+$	0.016 ps *+3−2*	A DEF	J$^\pi$: E2 γ to g.s.

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Adopted Levels, Gammas (continued)

^{142}Ce Levels (continued)

E(level)[@]	Jπ[#]	$T_{1/2}$[‡]	XREF	Comments
2374.96 *8*	$^{+}$	>0.69 ps	E	Jπ: suggested J=6 (1995Va25) is not consistent with D+Q γ to 4^{+}.
2384.45 *7*	4^{-}	0.060 ps +*76*−*28*	E	
2398.42 *7*	1^{+}	0.076 ps +*21*−*14*	A E G	$T_{1/2}$: Others: 49.9 fs 28 from (γ,γ′). Jπ: M1 γ to g.s.
2539.72 *10*	4^{+}[†]	0.041 ps +*18*−*12*	DE	
2542.65 *19*	1	<0.014 ps	E	
2543.21 *8*	2^{+}	0.21 ps +*25*−*8*	A EF	
2570.08 *11*	5^{+}	0.12 ps +*18*−*6*	E	
2576.23 *6*	3^{+}	>0.69 ps	E	
2591.0 *3*			A F	
2592.5 *9*	(7^{-})		H	Jπ: From systematics of yrast levels of N=84 isotones.
2598.27 *10*	2^{+}[†]	>1.66 ps	E	Jπ: E2 γ to g.s.
2602.55 *6*	$(3,2)^{+}$	0.24 ps +*25*−*8*	DEF	
2606.49 *8*	4^{+}[†]	0.049 ps +*83*−*28*	E	
2624.4[&] *9*	8^{+}		H	
2667.0 *3*	1^{+}	0.054 ps +*24*−*15*	A E	Jπ: M1 γ to g.s.
2680.50 *20*	$(2,3,4)^{+}$	0.15 ps +*15*−*6*	E	
2697.03 *7*	2^{+}	0.08 ps +*6*−*3*	A EF	Jπ: from L(e,e′).
2698.58 *11*	4^{+}[†]	0.076 ps +*21*−*15*	DE	
2715.14 *7*	3^{+}	0.12 ps +*13*−*5*	E	
2725.78 *10*	5^{+}	0.049 ps +*26*−*16*	E	
2727.89 *7*	$2^{(-)}$	0.27 ps +*29*−*8*	A E	
2734.77 *9*	$(3,2)^{+}$	>0.37 ps	DE	
2741.97 *10*	$(2,3)^{+}$	0.076 ps +*28*−*14*	A EF	Jπ: 1^{-} in (e,e′).
2767.86 *8*	$(1,2,3)^{+}$	0.055 ps +*18*−*12*	A EF	
2773.92 *9*	$(3)^{+}$	>0.69 ps	DE	
2784.78 *21*	(3,4,5)	0.23 ps +*63*−*10*	E	
2792.9 *3*			A	
2800.78 *9*	$1^{(+)}$	0.010 ps *2*	A E G	Jπ: M1 γ to g.s. $T_{1/2}$: Others: 12.8 fs 5 from (γ,γ′).
2806.42 *9*	3^{+}	0.10 ps +*7*−*3*	DE	
2842.56 *12*	$(2,3)^{+}$	0.038 ps +*10*−*8*	E	
2853.34 *12*	2^{+}	0.076 ps +*42*−*21*	E	Jπ: E2 γ to g.s.
2857.6[a] *7*	(8^{+})		H	Jπ: Band assignment.
2859.75 *10*	4	>0.69 ps	DEF	
2868.97 *10*	$(4)^{+}$	>0.46 ps	E	
2887.74 *15*	3^{+}	0.041 ps +*12*−*9*	E	
2922 *4*			D	
2935.14 *21*	(2,3,4)	>0.48 ps	E	
2956.39 *15*	3^{+}	0.017 ps +*7*−*6*	E	
2986 *5*			D	
2994.0 *10*	$9^{(-)}$		H	Jπ: Stretched dipole to 8^{+}.
2999.02 *15*	1^{+}	0.017 ps +*13*−*8*	A DEFG	$T_{1/2}$: Others: 14.6 fs 14 from (γ,γ′).
3009.90 *20*		>0.69 ps	A E	
3011.93 *20*	1	0.016 ps +*6*−*4*	E G	$T_{1/2}$: Others: 20.4 fs 7 from (γ,γ′).
3042.29 *15*		0.18 ps +*34*−*8*	E	
3051.79 *15*	$(3)^{+}$	>0.69 ps	E	
3060.98 *9*	$^{+}$	0.09 ps +*11*−*4*	A EF	Jπ: 3^{-} in (e,e′).
3067 *4*			D	
3089.70 *20*	$(2,3)^{+}$	0.058 ps +*29*−*17*	E	
3101.87 *24*			A	
3106.04 *15*	3^{+}	0.053 ps +*26*−*15*	E	
3109.79 *15*		>0.69 ps	E	
3122.4 *4*			A	

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Adopted Levels, Gammas (continued)

^{142}Ce Levels (continued)

E(level)[@]	Jπ[#]	$T_{1/2}$[‡]	XREF	Comments
3125.71 *20*	(1,2,3)	>0.65 ps	E	
3144.57 *15*	3^+		E	
3153.76 *14*	2^+	0.11 ps *+15−5*	A E	Jπ: E2 γ to g.s.
3155.36 *15*		>0.69 ps	E	
3164.7 *5*			A D	
3180.37 *15*	1	>0.69 ps	A E	
3208.95 *15*	3^+	0.043 ps *+41−18*	E	
3218.21 *20*		>0.69 ps	E	
3228.64 *10*	(5^-)		DEF	Jπ: (3^-) in (n,n′γ) (1992Al11).
3300.74 *21*		>0.69 ps	E	
3304.5 *6*	2^+		A	
3313.78 *20*	1	13.3 fs *6*	A G	Jπ: From angular distribution in (γ,γ′). $T_{1/2}$: From (γ,γ′).
3380.5[a] *10*	(9^+)		H	Jπ: Band assignment.
3400.9 *10*	1	13.6 fs *5*	G	Jπ: From angular distribution in (γ,γ′).
3420.15 *23*	$1^-,2^-$		A	
3423.61 *22*			A	
3436 *4*			D	
3459.91 *21*			A	
3470.31 *24*			A	
3515.1 *7*	1	33 fs *+6−4*	G	Jπ: From angular distribution in (γ,γ′).
3536.3[a] *10*	(10^+)		H	Jπ: Band assignment.
3612.5 *3*	2^+		A D	
3633.37 *22*	1	36.7 fs *21*	A G	Jπ: From angular distribution in (γ,γ′). $T_{1/2}$: From (γ,γ′).
3643.5 *10*	1	15.2 fs *7*	G	
3648.6 *4*			A	
3675.8 *5*	1^+		A	
3688.9 *4*			A	
3703.9 *3*			A	
3717.81 *22*	1^+		A	
3719.6 *4*	1	40.9 fs *28*	A G	Jπ: From angular distribution in (γ,γ′). $T_{1/2}$: From (γ,γ′).
3732 *4*			D	
3745.8 *10*	1	37.4 fs *28*	G	
3776.7 *10*	1	33.3 fs *28*	G	
3832.6 *12*	$11^{(-)}$		H	Jπ: Stretched E2 to $9^{(-)}$.
3851.1 *6*		22.2 fs *21*	A G	Jπ: From angular distribution in (γ,γ′). $T_{1/2}$: From (γ,γ′).
3884.2 *5*			A	
3906.3[a] *11*	(11^+)		H	Jπ: Band assignment.
3914.4 *5*			A	
3975.94 *17*			A	
4043.5 *4*	2^+		A	
4045.6 *4*			A	
4048.4 *14*			H	
4356.7[a] *13*	(12^+)		H	Jπ: Band assignment.
4605.2[b] *13*	(13^-)		H	Jπ: Band assignment.
4717.2 *14*			H	
4896.2[b] *14*	(14^-)		H	Jπ: Band assignment.
5173.4[b] *14*	(15^-)		H	Jπ: Band assignment.
5514.6[b] *15*	(16^-)		H	Jπ: Band assignment.
5877.2[b] *16*	(17^-)		H	Jπ: Band assignment.

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Adopted Levels, Gammas (continued)

^{142}Ce Levels (continued)

E(level)[@]	XREF
6528.1 *18*	H
6879.9 *19*	H

† Consistent with γ linear pol data (1992Al11).
‡ From DSA in (n,n′γ), unless given otherwise.
# Unless explicitly given, J^{π} are based on $\gamma(\theta)$ measurements of 1992Al11, 1995Va25 in (n,n′γ). Pure quadrupole transitions are taken to be E2 while significantly mixed D+Q transitions are assumed to be M1+E2. See 1992Al11 for detailed arguments for many of the assignments.
@ From least-squares fit to Eγ.
& Band(A): g.s. band.
a Band(B): Band based on 6^+ state. Possible configuration=$(\pi g^1_{7/2})(\pi d^1_{5/2})\otimes(\nu f^2_{7/2})$.
b Band(C): ΔJ=1 band based on (13^-). Possible configuration=$(\pi g^{-1}_{7/2})(\pi h^1_{11/2})\otimes(\nu f^2_{7/2})$ or $(\pi g^{-1}_{7/2})(\pi h^1_{11/2})\otimes(\nu f^1_{7/2})(\nu h^1_{9/2})$.

Adopted Levels, Gammas (continued)

$\gamma(^{142}Ce)$

Mostly data are from (n,n′γ), ^{142}La β^- decay.

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
641.282	2^+	641.285 *9*	100.0	0.0	0^+	E2[@]		0.00563 *8*	B(E2)(W.u.)=21.2 *5* α(K)=0.00475 *7*; α(L)=0.000695 *10*; α(M)=0.0001463 *21*; α(N+..)=3.77×10^{-5} *6* α(N)=3.22×10^{-5} *5*; α(O)=5.11×10^{-6} *8*; α(P)=3.40×10^{-7} *5* E_γ: from 1979Bo26 (cryst).
1219.37	4^+	578.09 *4*	2.8 *1*	641.282	2^+	E2		0.00733 *11*	B(E2)(W.u.)=26.4 *25* α(K)=0.00616 *9*; α(L)=0.000925 *13*; α(M)=0.000195 *3*; α(N+..)=5.02×10^{-5} *7* α(N)=4.30×10^{-5} *6*; α(O)=6.79×10^{-6} *10*; α(P)=4.38×10^{-7} *7* E_γ: see 1983Wo09.
1536.33	2^+	895.1 *1*	100.00	641.282	2^+	M1+E2	−1.5 +*6*−*13*	0.0029 *3*	B(M1)(W.u.)>0.0050; B(E2)(W.u.)>14 α(K)=0.0025 *3*; α(L)=0.00034 *3*; α(M)=7.0×10^{-5} *6*; α(N+..)=1.82×10^{-5} *16* α(N)=1.55×10^{-5} *14*; α(O)=2.50×10^{-6} *23*; α(P)=1.85×10^{-7} *22*
		1537.4 *2*	1.010	0.0	0^+	E2[@]		0.000934 *13*	B(E2)(W.u.)>0.018 α(K)=0.000726 *11*; α(L)=9.30×10^{-5} *13*; α(M)=1.93×10^{-5} *3*; α(N+..)=9.56×10^{-5} *14* α(N)=4.28×10^{-6} *6*; α(O)=6.94×10^{-7} *10*; α(P)=5.28×10^{-8} *8*; α(IPF)=9.06×10^{-5} *13*
1652.91	3^-	433.2 *1*	14.94	1219.37	4^+	E1[#]		0.00501 *7*	B(E1)(W.u.)<0.00022 α(K)=0.00431 *6*; α(L)=0.000555 *8*; α(M)=0.0001153 *17*; α(N+..)=2.99×10^{-5} *5* α(N)=2.55×10^{-5} *4*; α(O)=4.09×10^{-6} *6*; α(P)=2.99×10^{-7} *5*
		1011.7 *1*	100.0	641.282	2^+	E1[#]		0.000827 *12*	B(E1)(W.u.)<0.00012 α(K)=0.000715 *10*; α(L)=8.90×10^{-5} *13*; α(M)=1.84×10^{-5} *3*; α(N+..)=4.80×10^{-6} *7* α(N)=4.08×10^{-6} *6*; α(O)=6.62×10^{-7} *10*; α(P)=5.08×10^{-8} *8*
1743.05	6^+	523.5 *1*	100.0	1219.37	4^+	E2[#]		0.00952 *14*	α(K)=0.00797 *12*; α(L)=0.001231 *18*; α(M)=0.000260 *4*; α(N+..)=6.68×10^{-5} *10* α(N)=5.73×10^{-5} *8*; α(O)=9.00×10^{-6} *13*; α(P)=5.62×10^{-7} *8*
2004.89	2^+	352.1 *1*	2.857	1652.91	3^-				
		1363.6 *1*	100.0	641.282	2^+	M1+E2	−0.26 +*14*−*17*	0.00144 *4*	B(M1)(W.u.)=0.127 *17*; B(E2)(W.u.)=3 *3* α(K)=0.00121 *4*; α(L)=0.000154 *5*; α(M)=3.20×10^{-5} *9*; α(N+..)=4.42×10^{-5} *7*

$^{142}_{58}Ce_{84}$-5

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									B(M1)(W.u.)=0.127 *17*; B(E2)(W.u.)=3 *3* α(K)=0.00121 *4*; α(L)=0.000154 *5*; α(M)=3.20×10^{-5} *9*; α(N+..)=4.42×10^{-5} *7* α(N)=7.10×10^{-6} *19*; α(O)=1.16×10^{-6} *4*; α(P)=9.0×10^{-8} *3*; α(IPF)=3.59×10^{-5} *5*
2004.89	2$^+$	2004.9 *2*	40.00	0.0	0$^+$	E2@		0.000808 *12*	B(E2)(W.u.)=2.5 *3* α(K)=0.000443 *7*; α(L)=5.56×10^{-5} *8*; α(M)=1.154×10^{-5} *17*; α(N+..)=0.000298 *5* α(N)=2.56×10^{-6} *4*; α(O)=4.16×10^{-7} *6*; α(P)=3.22×10^{-8} *5*; α(IPF)=0.000295 *5*
2014.5		1372.9 *7*	5.×10^1 *5*	641.282	2$^+$				
		2014.1 *10*	100.0	0.0	0$^+$				
2031.01	0$^+$	1389.7 *1*	100.0	641.282	2$^+$				
2044.51	4$^+$	825.2 *1*	3.093	1219.37	4$^+$	M1(+E2)	−0.06 *+14−23*	0.00457 *13*	B(M1)(W.u.)=0.0036 *12* α(K)=0.00393 *12*; α(L)=0.000506 *13*; α(M)=0.000105 *3*; α(N+..)=2.75×10^{-5} *7* α(N)=2.34×10^{-5} *6*; α(O)=3.81×10^{-6} *10*; α(P)=2.96×10^{-7} *9*
		1403.0 *1*	100.00	641.282	2$^+$	E2@		0.001054 *15*	B(E2)(W.u.)=7.0 *24* α(K)=0.000867 *13*; α(L)=0.0001117 *16*; α(M)=2.32×10^{-5} *4*; α(N+..)=5.25×10^{-5} α(N)=5.15×10^{-6} *8*; α(O)=8.34×10^{-7} *12*; α(P)=6.30×10^{-8} *9*; α(IPF)=4.65×10^{-5} *7*
2111.87	4$^+$	892.5 *1*	100.0	1219.37	4$^+$	M1+E2	−0.43 *+4−9*	0.00361 *9*	B(M1)(W.u.)=0.07 *6*; B(E2)(W.u.)=10 *8* α(K)=0.00310 *8*; α(L)=0.000402 *9*; α(M)=8.36×10^{-5} *19*; α(N+..)=2.18×10^{-5} *5* α(N)=1.86×10^{-5} *4*; α(O)=3.02×10^{-6} *7*; α(P)=2.32×10^{-7} *6*
2124.91	5$^-$	381.8 *1*	11.25	1743.05	6$^+$				
		471& *1*	12.50	1652.91	3$^-$				
		905.6 *1*	100.0	1219.37	4$^+$	E1@		0.001021 *15*	B(E1)(W.u.)<0.00066 α(K)=0.000882 *13*; α(L)=0.0001103 *16*; α(M)=2.29×10^{-5} *4*; α(N+..)=5.95×10^{-6} α(N)=5.06×10^{-6} *7*; α(O)=8.20×10^{-7} *12*; α(P)=6.26×10^{-8} *9*
2181.95	3$^+$	528.7 *1*	8.696	1652.91	3$^-$				
		645.6 *1*	26.09	1536.33	2$^+$	M1+E2	−0.40 *+8−11*	0.00789 *22*	B(M1)(W.u.)=0.03 *+7−3*; B(E2)(W.u.)=7 *+16−7* α(K)=0.00676 *19*; α(L)=0.000889 *21*; α(M)=0.000185 *5*; α(N+..)=4.83×10^{-5} *12* α(N)=4.11×10^{-5} *10*; α(O)=6.67×10^{-6} *16*; α(P)=5.09×10^{-7} *16*
		962.5 *1*	100.0	1219.37	4$^+$	M1(+E2)	−0.5 *+15−17*	0.0030 *7*	B(M1)(W.u.)=0.03 *+9−3*

$^{142}_{58}Ce_{84}$-6

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(K)=0.0026 *6*; α(L)=0.00033 *7*; α(M)=6.9×10^{-5} *13*; α(N+..)=1.8×10^{-5} *4*
									α(N)=1.5×10^{-5} *3*; α(O)=2.5×10^{-6} *5*; α(P)=1.9×10^{-7} *5*
2181.95	3+	1540.9 *1*	84.78	641.282	2+	M1+E2	+0.09 *+4−3*	0.001180 *17*	B(M1)(W.u.)=0.009 *+19−9*; B(E2)(W.u.)=0.02 *+4−2*
									α(K)=0.000936 *14*; α(L)=0.0001184 *17*; α(M)=2.46×10^{-5} *4*; α(N+..)=0.000100
									α(N)=5.46×10^{-6} *8*; α(O)=8.90×10^{-7} *13*; α(P)=6.98×10^{-8} *10*; α(IPF)=9.42×10^{-5} *14*
2187.54	1−	534& *1*	<0.5172	1652.91	3−				
		1546.3 *2*	70.69	641.282	2+	E1		0.000640 *9*	B(E1)(W.u.)=0.0025 *5*
									α(K)=0.000337 *5*; α(L)=4.15×10^{-5} *6*; α(M)=8.58×10^{-6} *12*; α(N+..)=0.000253 *4*
									α(N)=1.90×10^{-6} *3*; α(O)=3.09×10^{-7} *5*; α(P)=2.41×10^{-8} *4*; α(IPF)=0.000250 *4*
									I_γ: 63 *2* from (γ,γ′).
		2187.4 *2*	100.0	0.0	0+	E1@		0.000941 *14*	B(E1)(W.u.)=0.00126 *23*
									α(K)=0.000193 *3*; α(L)=2.35×10^{-5} *4*; α(M)=4.86×10^{-6} *7*; α(N+..)=0.000719 *10*
									α(N)=1.079×10^{-6} *16*; α(O)=1.757×10^{-7} *25*; α(P)=1.377×10^{-8} *20*; α(IPF)=0.000718 *10*
2210.60	6+	467.55 *2*	100	1743.05	6+				
		991.21 *6*	20	1219.37	4+	E2		0.00206 *3*	α(K)=0.001757 *25*; α(L)=0.000236 *4*; α(M)=4.93×10^{-5} *7*; α(N+..)=1.279×10^{-5} *18*
									α(N)=1.091×10^{-5} *16*; α(O)=1.754×10^{-6} *25*; α(P)=1.274×10^{-7} *18*
									E_γ: Not seen in (HI,xγ) (2007Ve14). Authors suggest Branching to be <5%.
2278.14	4+	1058.5 *1*	40.85	1219.37	4+	M1+E2	2.1 *+18−3*	0.00193 *10*	B(M1)(W.u.)=0.012 *+19−12*; B(E2)(W.u.)=28 *19*
									α(K)=0.00165 *9*; α(L)=0.000218 *10*; α(M)=4.54×10^{-5} *21*; α(N+..)=1.18×10^{-5} *6*
									α(N)=1.01×10^{-5} *5*; α(O)=1.62×10^{-6} *8*; α(P)=1.21×10^{-7} *7*
		1636.8 *2*	100.0	641.282	2+	E2@		0.000878 *13*	B(E2)(W.u.)=9 *6*
									α(K)=0.000645 *9*; α(L)=8.21×10^{-5} *12*; α(M)=1.706×10^{-5} *24*; α(N+..)=0.0001335
									α(N)=3.78×10^{-6} *6*; α(O)=6.14×10^{-7} *9*; α(P)=4.69×10^{-8} *7*; α(IPF)=0.0001290 *18*
2329.88	3+	793.4 *1*	42.86	1536.33	2+	M1+E2	0.37 *+23−18*	0.00483 *25*	B(M1)(W.u.)=0.06 *6*; B(E2)(W.u.)=7 *+11−7*
									α(K)=0.00415 *22*; α(L)=0.000538 *24*; α(M)=0.000112 *5*;

$^{142}_{58}Ce_{84}$-7

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(N+..)=2.92×10^{-5} *13* α(N)=2.49×10^{-5} *11*; α(O)=4.04×10^{-6} *19*; α(P)=3.11×10^{-7} *18*
2329.88	3$^+$	1689.2 *2*	100.0	641.282	2$^+$	M1+E2	−0.16 *13*	0.001040 *18*	B(M1)(W.u.)=0.015 *15*; B(E2)(W.u.)=0.08 *+15−8* α(K)=0.000762 *14*; α(L)=9.61×10^{-5} *17*; α(M)=2.00×10^{-5} *4*; α(N+..)=0.0001619 α(N)=4.43×10^{-6} *8*; α(O)=7.22×10^{-7} *13*; α(P)=5.67×10^{-8} *11*; α(IPF)=0.0001567 *23*
2364.91	2$^+$	350.3 *3*	<3	2014.5					
		1723.6 *2*	100.0	641.282	2$^+$	M1(+E2)	−0.03 *+9−10*	0.001022 *15*	B(M1)(W.u.)=0.20 *4* α(K)=0.000733 *11*; α(L)=9.23×10^{-5} *14*; α(M)=1.92×10^{-5} *3*; α(N+..)=0.0001777 α(N)=4.26×10^{-6} *7*; α(O)=6.94×10^{-7} *10*; α(P)=5.46×10^{-8} *8*; α(IPF)=0.0001727 *25*
		2364.8 *2*	31.58	0.0	0$^+$	E2		0.000848 *12*	B(E2)(W.u.)=2.6 *5* α(K)=0.000329 *5*; α(L)=4.10×10^{-5} *6*; α(M)=8.49×10^{-6} *12*; α(N+..)=0.000470 *7* α(N)=1.88×10^{-6} *3*; α(O)=3.07×10^{-7} *5*; α(P)=2.39×10^{-8} *4*; α(IPF)=0.000468 *7*
2374.96	+	631.8 *1*	92.3	1743.05	6$^+$	M1+E2	<−1.5	0.0077 *10*	B(E2)(W.u.)<62 α(K)=0.0066 *9*; α(L)=0.00089 *9*; α(M)=0.000185 *18*; α(N+..)=4.8×10^{-5} *5* α(N)=4.1×10^{-5} *4*; α(O)=6.6×10^{-6} *7*; α(P)=4.9×10^{-7} *8*
		1155.7 *1*	100.0	1219.37	4$^+$	M1+E2	−0.09 *+6−11*	0.00208 *4*	B(M1)(W.u.)<0.011; B(E2)(W.u.)<0.088 α(K)=0.00179 *3*; α(L)=0.000228 *4*; α(M)=4.74×10^{-5} *8*; α(N+..)=1.460×10^{-5} *23* α(N)=1.053×10^{-5} *17*; α(O)=1.72×10^{-6} *3*; α(P)=1.341×10^{-7} *23*; α(IPF)=2.22×10^{-6} *4*
2384.45	4$^-$	202.3 *1*	6.329	2181.95	3$^+$				
		731.5 *1*	100.0	1652.91	3$^-$	M1+E2	−0.8 *+3−4*	0.0053 *5*	B(M1)(W.u.)=0.5 *+6−5*; B(E2)(W.u.)=3.E+2 *+5−3* α(K)=0.0046 *4*; α(L)=0.00061 *4*; α(M)=0.000126 *8*; α(N+..)=3.29×10^{-5} *21* α(N)=2.80×10^{-5} *18*; α(O)=4.5×10^{-6} *3*; α(P)=3.4×10^{-7} *3*
		1165.3 *1*	20.25	1219.37	4$^+$				
2398.42	1$^+$	367.3 *2*	1.0	2031.01	0$^+$				
		393.6 *2*	1.4	2004.89	2$^+$				
		862.1 *1*	10.26	1536.33	2$^+$	M1(+E2)	0.03 *5*	0.00412 *6*	B(M1)(W.u.)=0.035 *10* α(K)=0.00355 *5*; α(L)=0.000456 *7*; α(M)=9.50×10^{-5} *14*; α(N+..)=2.48×10^{-5} *4* α(N)=2.11×10^{-5} *3*; α(O)=3.43×10^{-6} *5*; α(P)=2.67×10^{-7} *4*
		1757.1 *1*	17.95	641.282	2$^+$	M1+E2	−1.6 *+3−4*	0.000882 *20*	B(M1)(W.u.)=0.0021 *8*; B(E2)(W.u.)=1.0 *3*

$^{142}_{58}Ce_{84}$-8

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(K)=0.000603 *16*; α(L)=7.63×10^{-5} *19*; α(M)=1.58×10^{-5} *4*; α(N+..)=0.000187 *3* α(N)=3.51×10^{-6} *9*; α(O)=5.71×10^{-7} *15*; α(P)=4.42×10^{-8} *12*; α(IPF)=0.000183 *3*
2398.42	1$^+$	2398.5 *2*	100.0	0.0	0$^+$	M1@		0.000934 *13*	B(M1)(W.u.)=0.016 *5* α(K)=0.000361 *5*; α(L)=4.51×10^{-5} *7*; α(M)=9.36×10^{-6} *14*; α(N+..)=0.000519 *8* α(N)=2.08×10^{-6} *3*; α(O)=3.39×10^{-7} *5*; α(P)=2.67×10^{-8} *4*; α(IPF)=0.000516 *8*
2539.72	4$^+$	358.7& *1*	100.0	2181.95	3$^+$	(M1+E2)	−0.5859	0.0341	B(M1)(W.u.)=6 *3* α(K)=0.0289 *4*; α(L)=0.00409 *6*; α(M)=0.000860 *12*; α(N+..)=0.000223 *4* α(N)=0.000190 *3*; α(O)=3.05×10^{-5} *5*; α(P)=2.16×10^{-6} *3*
		1320.3 *1*	26.87	1219.37	4$^+$	E2#		0.001162 *17*	B(E2)(W.u.)=14 *7* α(K)=0.000976 *14*; α(L)=0.0001266 *18*; α(M)=2.64×10^{-5} *4*; α(N+..)=3.22×10^{-5} α(N)=5.84×10^{-6} *9*; α(O)=9.44×10^{-7} *14*; α(P)=7.10×10^{-8} *10*; α(IPF)=2.54×10^{-5} *4*
		1898.6 *2*	20.90	641.282	2$^+$	E2@		0.000812 *12*	B(E2)(W.u.)=1.8 *8* α(K)=0.000489 *7*; α(L)=6.16×10^{-5} *9*; α(M)=1.279×10^{-5} *18*; α(N+..)=0.000248 *4* α(N)=2.84×10^{-6} *4*; α(O)=4.61×10^{-7} *7*; α(P)=3.56×10^{-8} *5*; α(IPF)=0.000245 *4*
2542.65	1	2542.8 *2*	100.0	0.0	0$^+$				
2543.21	2$^+$	178.3 *3*	1.9 *5*	2364.91	2$^+$				
		355.3 *3*	<0.5	2187.54	1$^-$				
		538.3 *5*	0.5	2004.89	2$^+$				
		1006.7 *2*	2.4	1536.33	2$^+$				
		1323.9 *1*	50	1219.37	4$^+$	E2		0.001156 *17*	B(E2)(W.u.)=3 *+4−3* α(K)=0.000971 *14*; α(L)=0.0001259 *18*; α(M)=2.62×10^{-5} *4*; α(N+..)=3.30×10^{-5} α(N)=5.81×10^{-6} *9*; α(O)=9.39×10^{-7} *14*; α(P)=7.06×10^{-8} *10*; α(IPF)=2.61×10^{-5} *4* Mult.: from γγ(θ) (1983Wo09,1990La04).
		1902.1 *2*	67.4	641.282	2$^+$	M1+E2	+0.65 *5*	0.000905 *14*	B(M1)(W.u.)=0.003 *3*; B(E2)(W.u.)=0.2 *+3−2* α(K)=0.000560 *9*; α(L)=7.05×10^{-5} *11*; α(M)=1.463×10^{-5} *23*; α(N+..)=0.000259 α(N)=3.25×10^{-6} *5*; α(O)=5.29×10^{-7} *8*; α(P)=4.14×10^{-8} *7*;

$^{142}_{58}Ce_{84}$-9

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(IPF)=0.000255 *4* δ: +0.55 *+40−54* (1983Wo09). Other: +0.71 *7* (1977CoZO); data of 1982Mi01 and 1975Ba15 are not consistent with J=2, data of 1983Wo09 agree better with J=1 or 3. −0.19 *+14−10* in (n,n′γ).
2543.21	2+	2543.1 *2*	100.0	0.0	0+				
2570.08	5+	827.4& *1*	14.94	1743.05	6+	(M1+E2)	−0.5 *+21−3*	0.0042 *8*	B(M1)(W.u.)=0.03 *+8−3*; B(E2)(W.u.)=1.E+1 *+5−1* α(K)=0.0036 *7*; α(L)=0.00048 *8*; α(M)=9.9×10^{-5} *16*; α(N+..)=2.6×10^{-5} *4* α(N)=2.2×10^{-5} *4*; α(O)=3.6×10^{-6} *6*; α(P)=2.7×10^{-7} *6*
		1350.7 *1*	100.0	1219.37	4+	M1+E2	−0.6 *+16−10*	0.00139 *18*	B(M1)(W.u.)=0.05 *+10−5*; B(E2)(W.u.)=5 *+23−5* α(K)=0.00117 *15*; α(L)=0.000149 *18*; α(M)=3.1×10^{-5} *4*; α(N+..)=4.06×10^{-5} *12* α(N)=6.9×10^{-6} *9*; α(O)=1.12×10^{-6} *14*; α(P)=8.7×10^{-8} *12*; α(IPF)=3.25×10^{-5} *5*
2576.23	3+	297.8 *1*	48.39	2278.14	4+	M1+E2	1.1 *+6−4*	0.0539 *21*	B(M1)(W.u.)<0.13; B(E2)(W.u.)<9.7×10^2 α(K)=0.0446 *24*; α(L)=0.0073 *3*; α(M)=0.00155 *7*; α(N+..)=0.000396 *14* α(N)=0.000340 *13*; α(O)=5.31×10^{-5} *13*; α(P)=3.2×10^{-6} *3*
		394.0& *1*	61.29	2181.95	3+	(M1+E2)	0.5 *+5−4*	0.0270 *22*	B(M1)(W.u.)<0.11; B(E2)(W.u.)<1.9×10^2 α(K)=0.0230 *21*; α(L)=0.00317 *9*; α(M)=0.000664 *15*; α(N+..)=0.000172 *5* α(N)=0.000147 *4*; α(O)=2.36×10^{-5} *9*; α(P)=1.72×10^{-6} *20*
		531.9 *1*	100.0	2044.51	4+	M1(+E2)	0.00 *+6−9*	0.01331	B(M1)(W.u.)<0.065 α(K)=0.01143 *16*; α(L)=0.001494 *21*; α(M)=0.000311 *5*; α(N+..)=8.12×10^{-5} *12* α(N)=6.91×10^{-5} *10*; α(O)=1.124×10^{-5} *16*; α(P)=8.67×10^{-7} *13*
		923.4 *1*	38.71	1652.91	3−				
		1039.9 *1*	77.42	1536.33	2+	M1+E2	−0.8 *+4−7*	0.00234 *25*	B(M1)(W.u.)<0.0057; B(E2)(W.u.)<2.3 α(K)=0.00201 *22*; α(L)=0.000261 *25*; α(M)=5.4×10^{-5} *5*; α(N+..)=1.42×10^{-5} *14* α(N)=1.21×10^{-5} *12*; α(O)=1.96×10^{-6} *19*; α(P)=1.50×10^{-7} *18*
2591.0		1949.4 *9*	100 *13*	641.282	2+				
		2590.6 *10*	37.50	0.0	0+				
2592.5	(7−)	849.5	100.0	1743.05	6+				
2598.27	2+	1062.0 *1*	100.0	1536.33	2+	M1+E2	−0.26 *+11−7*	0.00248 *5*	B(M1)(W.u.)<0.0059; B(E2)(W.u.)<0.35 α(K)=0.00214 *4*; α(L)=0.000274 *5*; α(M)=5.69×10^{-5} *11*; α(N+..)=1.49×10^{-5} *3* α(N)=1.264×10^{-5} *23*; α(O)=2.06×10^{-6} *4*; α(P)=1.60×10^{-7} *4*

$^{142}_{58}Ce_{84}$-10

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
2598.27	2+	2598.0 *2*	85.19	0.0	0+	E2[@]		0.000899 *13*	B(E2)(W.u.)<0.030 α(K)=0.000278 *4*; α(L)=3.45×10^{-5} *5*; α(M)=7.16×10^{-6} *10*; α(N+..)=0.000579 *9* α(N)=1.588×10^{-6} *23*; α(O)=2.59×10^{-7} *4*; α(P)=2.02×10^{-8} *3*; α(IPF)=0.000577 *8*
2602.55	(3,2)+	557.7 *1*	19.12	2044.51	4+				
		1066.1 *2*	<5.882	1536.33	2+	(M1+E2)	1.2 *+23−7*	0.0021 *3*	B(M1)(W.u.)=0.0006 *+17−6*; B(E2)(W.u.)=0.5 *+10−5* α(K)=0.0018 *3*; α(L)=0.00023 *3*; α(M)=4.8×10^{-5} *7*; α(N+..)=1.25×10^{-5} *17* α(N)=1.07×10^{-5} *14*; α(O)=1.73×10^{-6} *23*; α(P)=1.31×10^{-7} *21*
		1383.3 *1*	22.06	1219.37	4+	M1+E2	1.1 *+6−4*	0.00123 *8*	B(M1)(W.u.)=0.002 *+3−2*; B(E2)(W.u.)=0.9 *+11−9* α(K)=0.00103 *7*; α(L)=0.000131 *9*; α(M)=2.73×10^{-5} *17*; α(N+..)=4.82×10^{-5} *9* α(N)=6.1×10^{-6} *4*; α(O)=9.8×10^{-7} *7*; α(P)=7.6×10^{-8} *6*; α(IPF)=4.11×10^{-5} *6*
		1961.5 *1*	100.0	641.282	2+	M1(+E2)	0.03 *3*	0.000930 *13*	B(M1)(W.u.)=0.008 *8* α(K)=0.000553 *8*; α(L)=6.95×10^{-5} *10*; α(M)=1.442×10^{-5} *21*; α(N+..)=0.000293 α(N)=3.20×10^{-6} *5*; α(O)=5.22×10^{-7} *8*; α(P)=4.11×10^{-8} *6*; α(IPF)=0.000289 *4*
2606.49	4+	1387.1 *1*	100.0	1219.37	4+	M1+E2	1.1 *+4−4*	0.00123 *8*	B(M1)(W.u.)=0.07 *+12−7*; B(E2)(W.u.)=2.E+1 *+5−2* α(K)=0.00102 *7*; α(L)=0.000131 *8*; α(M)=2.72×10^{-5} *17*; α(N+..)=4.92×10^{-5} *9* α(N)=6.0×10^{-6} *4*; α(O)=9.8×10^{-7} *7*; α(P)=7.5×10^{-8} *6*; α(IPF)=4.22×10^{-5} *6*
		1965.2 *1*	16.28	641.282	2+				
2624.4	8+	881.4	100.0	1743.05	6+	E2		0.00266 *4*	α(K)=0.00227 *4*; α(L)=0.000310 *5*; α(M)=6.49×10^{-5} *9*; α(N+..)=1.682×10^{-5} *24* α(N)=1.435×10^{-5} *20*; α(O)=2.30×10^{-6} *4*; α(P)=1.640×10^{-7} *23*
2667.0	1+	1130.6 *5*	26 *3*	1536.33	2+	M1(+E2)	−6 *+2−7*	0.00158 *3*	B(M1)(W.u.)=0.0011 *9* α(K)=0.00135 *3*; α(L)=0.000178 *4*; α(M)=3.71×10^{-5} *7*; α(N+..)=1.071×10^{-5} *19* α(N)=8.21×10^{-6} *15*; α(O)=1.325×10^{-6} *25*; α(P)=9.81×10^{-8} *20*; α(IPF)=1.073×10^{-6} *23* δ: from β^- decay; >3.0 or <−2.5 from 1982Mi01.
		2025.5 *10*	55 *3*	641.282	2+	M1+(E2)	+1.3 *3*	0.000850 *19*	B(M1)(W.u.)=0.006 *3*; B(E2)(W.u.)=1.3 *7* α(K)=0.000465 *13*; α(L)=5.84×10^{-5} *16*; α(M)=1.21×10^{-5} *4*; α(N+..)=0.000314 *5* α(N)=2.69×10^{-6} *8*; α(O)=4.37×10^{-7} *12*; α(P)=3.41×10^{-8} *10*;

$^{142}_{58}Ce_{84}$-11

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(IPF)=0.000311 *5* δ: from β^- decay; +1.02 to +2.54 (1982Mi01), +0.60 *5* (1975Ba15), see also 1977CoZO.
2667.0	1^+	2666.8 *9*	100 *6*	0.0	0^+	M1		0.000989 *14*	B(M1)(W.u.)=0.012 *6* α(K)=0.000290 *4*; α(L)=3.61×10^{-5} *5*; α(M)=7.49×10^{-6} *11*; α(N+..)=0.000656 *10* α(N)=1.662×10^{-6} *24*; α(O)=2.71×10^{-7} *4*; α(P)=2.14×10^{-8} *3*; α(IPF)=0.000654 *10*
2680.50	$(2,3,4)^+$	2039.2 *2*	100.0	641.282	2^+	M1(+E2)	0.06 *+14−9*	0.000918 *14*	B(M1)(W.u.)=0.017 *17* α(K)=0.000509 *8*; α(L)=6.38×10^{-5} *10*; α(M)=1.325×10^{-5} *20*; α(N+..)=0.000332 α(N)=2.94×10^{-6} *5*; α(O)=4.80×10^{-7} *8*; α(P)=3.78×10^{-8} *6*; α(IPF)=0.000329 *5*
2697.03	2^+	105.9 *3*	5.3	2591.0					
		332.1 *4*	2 *2*	2364.91	2^+				
		514.7 *4*	5 *2*	2181.95	3^+				
		692.4 *6*	3.5	2004.89	2^+				
		1044.1 *1*	100.0	1652.91	3^-				
		1160.8 *1*	65.85	1536.33	2^+	M1+E2	−0.19 *17*	0.00204 *6*	B(M1)(W.u.)=0.04 *4*; B(E2)(W.u.)=0.7 *+13−7* α(K)=0.00176 *5*; α(L)=0.000224 *6*; α(M)=4.66×10^{-5} *12*; α(N+..)=1.47×10^{-5} *4* α(N)=1.04×10^{-5} *3*; α(O)=1.69×10^{-6} *5*; α(P)=1.32×10^{-7} *4*; α(IPF)=2.54×10^{-6} *4*
		2055.8 *2*	78.05	641.282	2^+	M1+E2	−1.2 *+7−19*	0.00085 *5*	B(M1)(W.u.)=0.004 *4*; B(E2)(W.u.)=0.8 *7* α(K)=0.00045 *3*; α(L)=5.7×10^{-5} *4*; α(M)=1.18×10^{-5} *8*; α(N+..)=0.000330 *9* α(N)=2.63×10^{-6} *18*; α(O)=4.3×10^{-7} *3*; α(P)=3.3×10^{-8} *3*; α(IPF)=0.000327 *9*
2698.58	4^+	1479.2 *1*	100.0	1219.37	4^+	M1+E2	1.3 *+18−3*	0.00108 *8*	B(M1)(W.u.)=0.03 *+6−3*; B(E2)(W.u.)=15 *+16−15* α(K)=0.00087 *7*; α(L)=0.000111 *9*; α(M)=2.32×10^{-5} *18*; α(N+..)=7.68×10^{-5} *14* α(N)=5.1×10^{-6} *4*; α(O)=8.3×10^{-7} *7*; α(P)=6.4×10^{-8} *6*; α(IPF)=7.08×10^{-5} *11*
2715.14	3^+	1178.8 *1*	40.00	1536.33	2^+	M1+E2	−0.8 *+4−4*	0.00177 *15*	B(M1)(W.u.)=0.014 *+16−14*; B(E2)(W.u.)=4 *+5−4* α(K)=0.00152 *13*; α(L)=0.000196 *15*; α(M)=4.1×10^{-5} *3*; α(N+..)=1.46×10^{-5} *8* α(N)=9.0×10^{-6} *7*; α(O)=1.47×10^{-6} *12*; α(P)=1.13×10^{-7} *10*; α(IPF)=3.94×10^{-6} *6*
		1495.8 *1*	100.0	1219.37	4^+	M1+E2	0.37 *7*	0.001206 *21*	B(M1)(W.u.)=0.02 *+3−2*; B(E2)(W.u.)=0.9 *+10−9* α(K)=0.000973 *17*; α(L)=0.0001233 *21*; α(M)=2.56×10^{-5} *5*;

$^{142}_{58}Ce_{84}$-12

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(N+..)=8.40×10^{-5}
									α(N)=5.69×10^{-6} *10*; α(O)=9.27×10^{-7} *16*; α(P)=7.25×10^{-8} *13*; α(IPF)=7.73×10^{-5} *11*
2715.14	3$^+$	2073.7 *2*	60.00	641.282	2$^+$	M1(+E2)	−0.03 *6*	0.000916 *13*	B(M1)(W.u.)=0.006 *6*
									α(K)=0.000491 *7*; α(L)=6.16×10^{-5} *9*; α(M)=1.278×10^{-5} *18*; α(N+..)=0.000350 *5*
									α(N)=2.84×10^{-6} *4*; α(O)=4.63×10^{-7} *7*; α(P)=3.65×10^{-8} *6*; α(IPF)=0.000347 *5*
2725.78	5$^+$	982.7 *1*	47.06	1743.05	6$^+$	M1(+E2)	−0.13 *+19−14*	0.00302 *7*	B(M1)(W.u.)=0.15 *8*
									α(K)=0.00260 *6*; α(L)=0.000333 *7*; α(M)=6.92×10^{-5} *14*; α(N+..)=1.81×10^{-5} *4*
									α(N)=1.54×10^{-5} *3*; α(O)=2.50×10^{-6} *6*; α(P)=1.95×10^{-7} *5*
		1506.4 *2*	100.0	1219.37	4$^+$	M1+E2	0.09 *+4−3*	0.001223 *18*	B(M1)(W.u.)=0.09 *5*; B(E2)(W.u.)=0.18 *18*
									α(K)=0.000984 *14*; α(L)=0.0001245 *18*; α(M)=2.59×10^{-5} *4*; α(N+..)=8.81×10^{-5}
									α(N)=5.74×10^{-6} *9*; α(O)=9.36×10^{-7} *14*; α(P)=7.34×10^{-8} *11*; α(IPF)=8.13×10^{-5} *12*
2727.89	2$^{(-)}$	1074.9 *1*	23.40	1652.91	3$^-$	M1+E2	−2.0 *+7−9*	0.00188 *13*	B(M1)(W.u.)=0.0014 *+18−14*; B(E2)(W.u.)=3 *+4−3*
									α(K)=0.00161 *12*; α(L)=0.000212 *13*; α(M)=4.4×10^{-5} *3*; α(N+..)=1.15×10^{-5} *8*
									α(N)=9.8×10^{-6} *6*; α(O)=1.58×10^{-6} *10*; α(P)=1.18×10^{-7} *9*
		1191.6 *1*	100.0	1536.33	2$^+$	D+Q	−0.43 *10*		
		2086.6 *1*	89.36	641.282	2$^+$				
2734.77	(3,2)$^+$	622.7& *1*	61.54	2111.87	4$^+$	(M1+E2)	0.19 *25*	0.0089 *4*	B(M1)(W.u.)<0.062; B(E2)(W.u.)<11
									α(K)=0.0077 *4*; α(L)=0.00100 *4*; α(M)=0.000208 *8*; α(N+..)=5.43×10^{-5} *20*
									α(N)=4.62×10^{-5} *17*; α(O)=7.5×10^{-6} *3*; α(P)=5.8×10^{-7} *3*
		1081.9 *1*	35.90	1652.91	3$^-$	(M1+E2)	−0.09 *+12−20*	0.00242 *6*	B(M1)(W.u.)<0.0066; B(E2)(W.u.)<0.095
									α(K)=0.00208 *6*; α(L)=0.000266 *7*; α(M)=5.53×10^{-5} *13*; α(N+..)=1.44×10^{-5} *4*
									α(N)=1.23×10^{-5} *3*; α(O)=2.00×10^{-6} *5*; α(P)=1.56×10^{-7} *5*
		1515.4 *2*	100.0	1219.37	4$^+$	M1+E2	−0.29 *+23−18*	0.00119 *4*	B(M1)(W.u.)<0.0068; B(E2)(W.u.)<0.32
									α(K)=0.00096 *3*; α(L)=0.000121 *4*; α(M)=2.51×10^{-5} *7*; α(N+..)=9.10×10^{-5} *14*
									α(N)=5.58×10^{-6} *16*; α(O)=9.1×10^{-7} *3*; α(P)=7.12×10^{-8} *22*; α(IPF)=8.45×10^{-5} *12*
		2093.3 *2*	61.54	641.282	2$^+$	M1+E2	5.2 *+5−22*	0.000815 *14*	B(M1)(W.u.)<6.5×10^{-5}; B(E2)(W.u.)<0.20
									α(K)=0.000412 *8*; α(L)=5.16×10^{-5} *10*; α(M)=1.070×10^{-5} *20*; α(N+..)=0.000341

$^{142}_{58}Ce_{84}$-13

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(N)=2.37×10^{-6} *5*; α(O)=3.86×10^{-7} *7*; α(P)=3.00×10^{-8} *6*; α(IPF)=0.000338 *5*
2741.97	(2,3)$^+$	1089.0 *1*	28.21	1652.91	3$^-$				
		1205.7 *5*	4.6	1536.33	2$^+$				
		2100.9 *2*	100.0	641.282	2$^+$	M1+E2	−0.32 *14*	0.000905 *16*	B(M1)(W.u.)=0.021 *8*; B(E2)(W.u.)=0.3 *3* α(K)=0.000471 *9*; α(L)=5.91×10^{-5} *11*; α(M)=1.225×10^{-5} *23*; α(N+..)=0.000362 α(N)=2.72×10^{-6} *6*; α(O)=4.44×10^{-7} *9*; α(P)=3.49×10^{-8} *7*; α(IPF)=0.000359 *6*
2767.86	(1,2,3)$^+$	1115.0 *1*	27.87	1652.91	3$^-$				
		1231.5 *1*	36.07	1536.33	2$^+$	M1+E2	0.47 *+3−19*	0.00172 *6*	B(M1)(W.u.)=0.039 *13*; B(E2)(W.u.)=3.3 *12* α(K)=0.00147 *5*; α(L)=0.000188 *6*; α(M)=3.91×10^{-5} *13*; α(N+..)=2.03×10^{-5} *4* α(N)=8.7×10^{-6} *3*; α(O)=1.41×10^{-6} *5*; α(P)=1.10×10^{-7} *4*; α(IPF)=1.008×10^{-5} *15*
		2126.5 *2*	100.0	641.282	2$^+$	M1+E2	−0.19 *8*	0.000910 *14*	B(M1)(W.u.)=0.025 *8*; B(E2)(W.u.)=0.11 *10* α(K)=0.000463 *7*; α(L)=5.80×10^{-5} *9*; α(M)=1.204×10^{-5} *18*; α(N+..)=0.000377 *6* α(N)=2.67×10^{-6} *4*; α(O)=4.36×10^{-7} *7*; α(P)=3.43×10^{-8} *6*; α(IPF)=0.000374 *6* Mult.: from γγ(θ) (1982Mi01,1990La04).
2773.92	(3)$^+$	661.5[&] *1*	30.77	2111.87	4$^+$	(M1+E2)	0.19 *25*	0.0077 *4*	B(M1)(W.u.)<0.019; B(E2)(W.u.)<2.9 α(K)=0.0066 *3*; α(L)=0.00086 *4*; α(M)=0.000179 *7*; α(N+..)=4.68×10^{-5} *18* α(N)=3.98×10^{-5} *15*; α(O)=6.47×10^{-6} *25*; α(P)=5.0×10^{-7} *3*
		1237.6 *1*	28.85	1536.33	2$^+$	M1+E2	0.40 *+23−18*	0.00172 *8*	B(M1)(W.u.)<0.0025; B(E2)(W.u.)<0.26 α(K)=0.00148 *7*; α(L)=0.000188 *8*; α(M)=3.91×10^{-5} *16*; α(N+..)=2.12×10^{-5} *5* α(N)=8.7×10^{-6} *4*; α(O)=1.41×10^{-6} *6*; α(P)=1.10×10^{-7} *6*; α(IPF)=1.094×10^{-5} *16*
		1553.8 *2*	32.69	1219.37	4$^+$	M1+E2	−0.9 *+5−10*	0.00106 *9*	B(M1)(W.u.)<0.0012; B(E2)(W.u.)<0.25 α(K)=0.00083 *7*; α(L)=0.000105 *9*; α(M)=2.18×10^{-5} *18*; α(N+..)=0.0001038 *20* α(N)=4.8×10^{-6} *4*; α(O)=7.9×10^{-7} *7*; α(P)=6.1×10^{-8} *6*; α(IPF)=9.81×10^{-5} *17*
		2133.3 *2*	100.0	641.282	2$^+$	M1+E2	0.19 *+3−7*	0.000910 *13*	B(M1)(W.u.)<0.0017; B(E2)(W.u.)<0.0100 α(K)=0.000460 *7*; α(L)=5.77×10^{-5} *9*; α(M)=1.196×10^{-5} *18*; α(N+..)=0.000380 *6* α(N)=2.66×10^{-6} *4*; α(O)=4.33×10^{-7} *7*; α(P)=3.41×10^{-8} *5*; α(IPF)=0.000377 *6*

$^{142}_{58}Ce_{84}$-14

Adopted Levels, Gammas (continued)

$\gamma(^{142}Ce)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
2784.78	(3,4,5)	1565.4 *2*	100.0	1219.37	4^+				
2792.9		2152.0 *8*	100.0	641.282	2^+				
2800.78	$1^{(+)}$	1264.4 *1*	58.93	1536.33	2^+	M1		0.001710 *24*	B(M1)(W.u.)=0.36 *8* α(K)=0.001461 *21*; α(L)=0.000186 *3*; α(M)=3.86×10^{-5} *6*; α(N+..)=2.51×10^{-5} *4* α(N)=8.57×10^{-6} *12*; α(O)=1.397×10^{-6} *20*; α(P)=1.093×10^{-7} *16*; α(IPF)=1.504×10^{-5} *22*
		2160.0 *2*	19.64	641.282	2^+	M1		0.000913 *13*	B(M1)(W.u.)=0.122 *25* α(K)=0.000450 *7*; α(L)=5.64×10^{-5} *8*; α(M)=1.170×10^{-5} *17*; α(N+..)=0.000395 *6* α(N)=2.60×10^{-6} *4*; α(O)=4.24×10^{-7} *6*; α(P)=3.34×10^{-8} *5*; α(IPF)=0.000392 *6* I_γ: 19 *2* from (γ,γ'). See comment on this gamma in (n,n′g) dataset.
		2800.4 *2*	100	0.0	0^+	M1		0.001023 *15*	B(M1)(W.u.)=0.0110 *22* α(K)=0.000262 *4*; α(L)=3.26×10^{-5} *5*; α(M)=6.76×10^{-6} *10*; α(N+..)=0.000721 *11* α(N)=1.502×10^{-6} *21*; α(O)=2.45×10^{-7} *4*; α(P)=1.94×10^{-8} *3*; α(IPF)=0.000720 *10*
2806.42	3^+	1270.2 *1*	97.62	1536.33	2^+	M1+E2	−0.16 *+8−11*	0.00168 *3*	B(M1)(W.u.)=0.04 *3*; B(E2)(W.u.)=0.4 *+5−4* α(K)=0.00144 *3*; α(L)=0.000183 *4*; α(M)=3.80×10^{-5} *7*; α(N+..)=2.59×10^{-5} *4* α(N)=8.43×10^{-6} *15*; α(O)=1.374×10^{-6} *25*; α(P)=1.074×10^{-7} *21*; α(IPF)=1.599×10^{-5} *23*
		1586.9 *2*	40.48	1219.37	4^+	M1(+E2)	0.3 *+5−3*	0.00111 *8*	B(M1)(W.u.)=0.009 *7* α(K)=0.00086 *7*; α(L)=0.000109 *8*; α(M)=2.27×10^{-5} *16*; α(N+..)=0.0001181 *22* α(N)=5.0×10^{-6} *4*; α(O)=8.2×10^{-7} *6*; α(P)=6.4×10^{-8} *5*; α(IPF)=0.0001122 *19*
		2164.8 *2*	100.0	641.282	2^+	M1+E2	0.43 *+8−4*	0.000899 *14*	B(M1)(W.u.)=0.008 *6*; B(E2)(W.u.)=0.18 *14* α(K)=0.000438 *7*; α(L)=5.49×10^{-5} *9*; α(M)=1.139×10^{-5} *18*; α(N+..)=0.000394 *6* α(N)=2.53×10^{-6} *4*; α(O)=4.12×10^{-7} *7*; α(P)=3.24×10^{-8} *6*; α(IPF)=0.000391 *6*
2842.56	$(2,3)^+$	838.0 *2*	<1.149	2004.89	2^+				
		1623.0 *2*	13.79	1219.37	4^+				
		2201.1 *2*	100.0	641.282	2^+	M1+E2	−0.26 *+4−15*	0.000909 *15*	B(M1)(W.u.)=0.045 *12*; B(E2)(W.u.)=0.36 *15* α(K)=0.000429 *8*; α(L)=5.37×10^{-5} *10*; α(M)=1.114×10^{-5} *20*; α(N+..)=0.000415

$^{142}_{58}Ce_{84}$-15

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(N)=2.47×10^{-6} *5*; α(O)=4.04×10^{-7} *8*; α(P)=3.18×10^{-8} *6*; α(IPF)=0.000412 *6*
2853.34	2$^+$	1634.2 *2*	<0.4688	1219.37	4$^+$				
		2212.3 *2*	100.0	641.282	2$^+$	M1+E2	−0.5 *+15−3*	0.00090 *3*	B(M1)(W.u.)=0.014 *+18−14*; B(E2)(W.u.)=0.4 *+20−4* α(K)=0.000416 *19*; α(L)=5.21×10^{-5} *23*; α(M)=1.08×10^{-5} *5*; α(N+..)=0.000417 *10* α(N)=2.40×10^{-6} *11*; α(O)=3.91×10^{-7} *18*; α(P)=3.08×10^{-8} *15*; α(IPF)=0.000414 *10*
		2852.8 *2*	56.25	0.0	0$^+$	E2@		0.000966 *14*	B(E2)(W.u.)=0.32 *18* α(K)=0.000236 *4*; α(L)=2.92×10^{-5} *4*; α(M)=6.05×10^{-6} *9*; α(N+..)=0.000695 *10* α(N)=1.344×10^{-6} *19*; α(O)=2.19×10^{-7} *3*; α(P)=1.717×10^{-8} *24*; α(IPF)=0.000693 *10*
2857.6	(8$^+$)	647.0		2210.60	6$^+$				
		1114.4		1743.05	6$^+$				
2859.75	4	1206.7 *1*	100.0	1652.91	3$^-$				
		1640.9 *2*	28.21	1219.37	4$^+$				
2868.97	(4)$^+$	1216.1 *1*	100.0	1652.91	3$^-$				
		1649.4 *2*	89.74	1219.37	4$^+$	M1+E2	−0.4 *+3−4*	0.00105 *6*	B(M1)(W.u.)<0.0039; B(E2)(W.u.)<0.25 α(K)=0.00078 *5*; α(L)=9.9×10^{-5} *6*; α(M)=2.06×10^{-5} *12*; α(N+..)=0.000144 *3* α(N)=4.6×10^{-6} *3*; α(O)=7.4×10^{-7} *5*; α(P)=5.8×10^{-8} *4*; α(IPF)=0.0001384 *23*
		2228.3& *2*	66.67	641.282	2$^+$				
2887.74	3$^+$	1668.4 *2*	28.21	1219.37	4$^+$	M1+E2	1.1 *+17−6*	0.00095 *7*	B(M1)(W.u.)=0.012 *+20−12*; B(E2)(W.u.)=3 *+5−3* α(K)=0.00070 *6*; α(L)=8.8×10^{-5} *8*; α(M)=1.83×10^{-5} *15*; α(N+..)=0.000149 *3* α(N)=4.1×10^{-6} *4*; α(O)=6.6×10^{-7} *6*; α(P)=5.1×10^{-8} *5*; α(IPF)=0.000145 *3*
		2246.4 *2*	100.0	641.282	2$^+$	M1+E2	0.9 *+12−3*	0.00088 *4*	B(M1)(W.u.)=0.02 *+3−2*; B(E2)(W.u.)=2 *+3−2* α(K)=0.000390 *21*; α(L)=4.9×10^{-5} *3*; α(M)=1.01×10^{-5} *6*; α(N+..)=0.000428 *12* α(N)=2.25×10^{-6} *13*; α(O)=3.66×10^{-7} *21*; α(P)=2.87×10^{-8} *18*; α(IPF)=0.000426 *12*
2935.14	(2,3,4)	1398.8 *2*		1536.33	2$^+$				
		2292.7 *2*	100.0	641.282	2$^+$				
2956.39	3$^+$	1737.1 *2*	51.52	1219.37	4$^+$	M1(+E2)	0.06 *+7−9*	0.001013 *15*	B(M1)(W.u.)=0.08 *4* α(K)=0.000720 *11*; α(L)=9.07×10^{-5} *13*; α(M)=1.88×10^{-5} *3*; α(N+..)=0.000184 *3* α(N)=4.18×10^{-6} *6*; α(O)=6.82×10^{-7} *10*; α(P)=5.36×10^{-8} *8*; α(IPF)=0.000179 *3*

$^{142}_{58}Ce_{84}$-16

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
2956.39	3^+	2315.0 *2*	100.0	641.282	2^+	M1+E2	−0.6 *+23−9*	0.00090 *5*	B(M1)(W.u.)=0.05 *+11−5*; B(E2)(W.u.)=2 *+12−2* α(K)=0.000376 *24*; α(L)=4.7×10^{-5} *3*; α(M)=9.8×10^{-6} *7*; α(N+..)=0.000468 *16* α(N)=2.17×10^{-6} *14*; α(O)=3.53×10^{-7} *23*; α(P)=2.78×10^{-8} *20*; α(IPF)=0.000465 *16*
2994.0	$9^{(-)}$	369.6		2624.4	8^+	D			
		401.5		2592.5	(7^-)				
2999.02	1^+	2358.3 *2*	100.0	641.282	2^+	E2+M1		0.00089 *5*	α(K)=0.000352 *23*; α(L)=4.4×10^{-5} *3*; α(M)=9.1×10^{-6} *6*; α(N+..)=0.000482 *17* α(N)=2.02×10^{-6} *14*; α(O)=3.30×10^{-7} *23*; α(P)=2.59×10^{-8} *19*; α(IPF)=0.000480 *17* Mult.: from β^- decay. I_γ: 60.6 from (γ,γ′).
		2998.4 *2*	51.52	0.0	0^+				
3009.90		2368.6 *2*	100.0	641.282	2^+				
3011.93	1	3011.9 *2*	100.0	0.0	0^+				
3042.29		1822.9 *2*	100.0	1219.37	4^+	M1+E2	−0.37 *10*	0.000953 *17*	B(M1)(W.u.)=0.010 *+19−10*; B(E2)(W.u.)=0.2 *+5−2* α(K)=0.000634 *12*; α(L)=7.98×10^{-5} *15*; α(M)=1.66×10^{-5} *3*; α(N+..)=0.000223 *4* α(N)=3.68×10^{-6} *7*; α(O)=6.00×10^{-7} *11*; α(P)=4.70×10^{-8} *9*; α(IPF)=0.000219 *4*
		2401.0 *2*	85.19	641.282	2^+				
3051.79	$(3)^+$	864.6[&] *2*		2187.54	1^-				
		1398.8[&] *1*	100.0	1652.91	3^-				
		1832.6 *2*	33.33	1219.37	4^+	M1+E2	<−0.6	0.000948 *24*	B(E2)(W.u.)<0.053 α(K)=0.000625 *18*; α(L)=7.87×10^{-5} *23*; α(M)=1.63×10^{-5} *5*; α(N+..)=0.000228 *4* α(N)=3.63×10^{-6} *11*; α(O)=5.91×10^{-7} *18*; α(P)=4.64×10^{-8} *15*; α(IPF)=0.000223 *4*
		2410.3 *2*	17.39	641.282	2^+	M1(+E2)	0.09 *14*	0.000935 *14*	B(M1)(W.u.)<0.00027; B(E2)(W.u.)<0.00087 α(K)=0.000357 *6*; α(L)=4.46×10^{-5} *7*; α(M)=9.25×10^{-6} *14*; α(N+..)=0.000524 *8* α(N)=2.05×10^{-6} *3*; α(O)=3.35×10^{-7} *5*; α(P)=2.64×10^{-8} *4*; α(IPF)=0.000522 *8*
3060.98	$^+$	1525.5 *2*	58.73	1536.33	2^+	M1(+E2)	−0.09 *+15−14*	0.001198 *20*	B(M1)(W.u.)=0.019 *+24−19* α(K)=0.000957 *17*; α(L)=0.0001211 *21*; α(M)=2.51×10^{-5} *5*; α(N+..)=9.49×10^{-5} α(N)=5.58×10^{-6} *10*; α(O)=9.10×10^{-7} *16*; α(P)=7.14×10^{-8} *13*; α(IPF)=8.84×10^{-5} *13* I_γ: branching ratio in β^- decay and (n,n′γ) do not agree.
		2419.8 *2*	100.0	641.282	2^+	M1+E2	−0.26 *17*	0.000932 *15*	B(M1)(W.u.)=0.008 *+10−8*; B(E2)(W.u.)=0.05 *+9−5*

$^{142}_{58}Ce_{84}$-17

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
									α(K)=0.000352 *7*; α(L)=4.40×10^{-5} *8*; α(M)=9.12×10^{-6} *16*; α(N+..)=0.000527 *8* α(N)=2.02×10^{-6} *4*; α(O)=3.30×10^{-7} *6*; α(P)=2.60×10^{-8} *5*; α(IPF)=0.000525 *8*
3060.98	+	3060.7 *1*	50	0.0	0$^+$				
3089.70	(2,3)$^+$	978.1& *2*	38.89	2111.87	4$^+$				
		2448.4 *2*	100.0	641.282	2$^+$	M1+E2	−0.8 *+3−4*	0.000912 *20*	B(M1)(W.u.)=0.011 *7*; B(E2)(W.u.)=0.7 *5* α(K)=0.000331 *9*; α(L)=4.13×10^{-5} *12*; α(M)=8.57×10^{-6} *24*; α(N+..)=0.000531 *1* α(N)=1.90×10^{-6} *6*; α(O)=3.10×10^{-7} *9*; α(P)=2.44×10^{-8} *8*; α(IPF)=0.000528 *11*
3101.87		2460.3 *10*	100 *10*	641.282	2$^+$				
		3101.5 *12*	30.00	0.0	0$^+$				
3106.04	3$^+$	1887.5 *2*	23.46	1219.37	4$^+$	M1+E2	2.5 *+6−23*	0.00083 *12*	B(M1)(W.u.)=0.0016 *11*; B(E2)(W.u.)=1.7 *9* α(K)=0.00051 *9*; α(L)=6.4×10^{-5} *11*; α(M)=1.33×10^{-5} *23*; α(N+..)=0.000245 *11* α(N)=3.0×10^{-6} *5*; α(O)=4.8×10^{-7} *9*; α(P)=3.7×10^{-8} *8*; α(IPF)=0.000242 *11*
		2463.9 *2*	100.0	641.282	2$^+$	M1+E2	−2.0 *+5−4*	0.000884 *15*	B(M1)(W.u.)=0.005 *3*; B(E2)(W.u.)=1.7 *9* α(K)=0.000313 *6*; α(L)=3.89×10^{-5} *8*; α(M)=8.07×10^{-6} *16*; α(N+..)=0.000524 *9* α(N)=1.79×10^{-6} *4*; α(O)=2.92×10^{-7} *6*; α(P)=2.28×10^{-8} *5*; α(IPF)=0.000522 *9*
3109.79		1890.3 *2*	100.0	1219.37	4$^+$				
		2468.6 *2*	42.86	641.282	2$^+$				
3122.4		1091.2 *8*	50.00	2031.01	0$^+$				
		1117.7 *5*	<25.00	2004.89	2$^+$				
		3121.9 *13*	100.0	0.0	0$^+$				
3125.71	(1,2,3)	2484.4 *2*	100.0	641.282	2$^+$				
3144.57	3$^+$	1608.4 *2*	100.0	1536.33	2$^+$	M1+E2	−2.0 *+20−6*	0.00094 *18*	α(K)=0.00070 *15*; α(L)=9.0×10^{-5} *19*; α(M)=1.9×10^{-5} *4*; α(N+..)=0.000123 *5* α(N)=4.1×10^{-6} *9*; α(O)=6.7×10^{-7} *14*; α(P)=5.2×10^{-8} *12*; α(IPF)=0.000118 *4*
		2503.1 *2*	96.08	641.282	2$^+$	M1+E2	−0.8 *+3−4*	0.000923 *20*	α(K)=0.000317 *8*; α(L)=3.96×10^{-5} *11*; α(M)=8.20×10^{-6} *22*; α(N+..)=0.000558 *1* α(N)=1.82×10^{-6} *5*; α(O)=2.97×10^{-7} *8*; α(P)=2.33×10^{-8} *7*; α(IPF)=0.000556 *11*
3153.76	2$^+$	361.1 *3*	33	2792.9					I_γ: branching ratios from β^- decay. They do not agree with (n,n′γ).
		1618.2 *7*	100	1536.33	2$^+$				I_γ: branching ratios from β^- decay. They do not agree with (n,n′γ).

$^{142}_{58}Ce_{84}$-18

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[‡]	δ	α[†]	Comments
3153.76	2+	2512.4 *2*	33	641.282	2+	M1+E2	0.7 *+9−5*	0.00093 *4*	B(M1)(W.u.)=0.0012 *+20−12*; B(E2)(W.u.)=0.05 *+12−5* α(K)=0.000317 *14*; α(L)=3.95×10^{-5} *18*; α(M)=8.2×10^{-6} *4*; α(N+..)=0.000565 *17* α(N)=1.82×10^{-6} *8*; α(O)=2.97×10^{-7} *14*; α(P)=2.33×10^{-8} *12*; α(IPF)=0.000563 *17* I_γ: branching ratios from β^- decay. They do not agree with (n,n′γ).
		3153.6 *2*	67	0.0	0+	E2[@]		0.001053 *15*	B(E2)(W.u.)=0.11 *+15−11* α(K)=0.000199 *3*; α(L)=2.45×10^{-5} *4*; α(M)=5.08×10^{-6} *8*; α(N+..)=0.000824 *12* α(N)=1.127×10^{-6} *16*; α(O)=1.84×10^{-7} *3*; α(P)=1.444×10^{-8} *21*; α(IPF)=0.000823 *12* I_γ: branching ratios from β^- decay. They do not agree with (n,n′γ).
3155.36		1619.1 *2*	100.0	1536.33	2+				
		1935.9 *2*	100.0	1219.37	4+				
3164.7		1628.5 *7*	<50.00	1536.33	2+				
		2523.3 *9*	<50.00	641.282	2+				
		3164.7 *13*	100.0	0.0	0+				
3180.37	1	439.0 *5*	13	2741.97	(2,3)+				I_γ: branching ratios from β^- decay.
		453.7 *5*	25	2725.78	5+				I_γ: branching ratios from β^- decay.
		1644.3 *7*	63	1536.33	2+				I_γ: branching ratios from β^- decay.
		2539.4 *3*	100	641.282	2+				I_γ: branching ratios from β^- decay.
		3180.2 *2*	75	0.0	0+				I_γ: branching ratios from β^- decay.
3208.95	3+	1990.2 *2*	19.05	1219.37	4+				
		2567.0 *2*	100.0	641.282	2+	M1+E2	−0.32 *+4−8*	0.000959 *14*	B(M1)(W.u.)=0.023 *22*; B(E2)(W.u.)=0.21 *21* α(K)=0.000311 *5*; α(L)=3.87×10^{-5} *6*; α(M)=8.03×10^{-6} *12*; α(N+..)=0.000602 *9* α(N)=1.78×10^{-6} *3*; α(O)=2.91×10^{-7} *5*; α(P)=2.30×10^{-8} *4*; α(IPF)=0.000599 *9*
3218.21		2576.9 *2*	100.0	641.282	2+				
3228.64	(5−)	1575.72 *9*		1652.91	3−				
3300.74		1764.4 *2*	100	1536.33	2+				
3304.5	2+	1768.2 *7*	33 *7*	1536.33	2+				
		2663.1 *10*	100 *14*	641.282	2+	Q+(D)	>+1.1		
3313.78	1	546.0 *2*	<5.000	2767.86	(1,2,3)+				
		646.2 *7*	15 *10*	2667.0	1+				
		2672.6 *10*	21 *3*	641.282	2+				I_γ: From (γ,γ′).
		3313.8 *12*	100 *5*	0.0	0+				
3380.5	(9+)	522.9	100.0	2857.6	(8+)				
3400.9	1	3400.9	100	0.0	0+				

$^{142}_{58}Ce_{84}$-19

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[‡]	δ
3420.15	1⁻,2⁻	318.0 *3*	2.5 *25*	3101.87			
		878.2 *4*	10.00	2543.21	2⁺		
		1233.1 *6*	100.0 *25*	2187.54	1⁻	D+Q	
3423.61		681.2 *6*	14 *15*	2741.97	(2,3)⁺		
		1058.4 *4*	28.57	2364.91	2⁺		
		1242.0 *4*	71.43	2181.95	3⁺		
		1393.0 *8*	42.86	2031.01	0⁺		
		1770.8 *7*	57 *15*	1652.91	3⁻		
		1887.3 *8*	4.×10^1 *3*	1536.33	2⁺		
		2782.2 *10*	100.0	641.282	2⁺		
3459.91		793.1 *4*	6 *7*	2667.0	1⁺		
		1061.5 *4*	0.000	2398.42	1⁺		
		1455.1 *5*	12.50	2004.89	2⁺		
		1923.3 *7*	25 *7*	1536.33	2⁺		
		2818.5 *11*	100 *7*	641.282	2⁺		
		3459.3 *13*	31.25	0.0	0⁺		
3470.31		677.0 *6*	17 *17*	2792.9			
		1072.2 *8*	33 *17*	2398.42	1⁺		
		1104.8 *8*	16.67	2364.91	2⁺		
		1283.2 *5*	<16.67	2187.54	1⁻		
		1288.5 *4*	<16.67	2181.95	3⁺		
		1933.6 *7*	50.00	1536.33	2⁺		
		2828.8 *11*	100.0	641.282	2⁺		
		3470.0 *13*	33.33	0.0	0⁺		
3515.1	1	2873.8	100	641.282	2⁺		
		3515.1	90.9	0.0	0⁺		
3536.3	(10⁺)	155.8		3380.5	(9⁺)		
		678.7		2857.6	(8⁺)		
3612.5	2⁺	915.6 *5*	1.5 *16*	2697.03	2⁺		
		1069.4 *5*	3.0 *16*	2543.21	2⁺		
		1214.0 *5*	1.5 *16*	2398.42	1⁺		
		2076.1 *9*	26 *3*	1536.33	2⁺	D+Q	−0.7 *3*
		2971.0 *12*	100 *5*	641.282	2⁺		
		3612.1 *14*	28.8 *16*	0.0	0⁺		
3633.37	1	173.5 *3*	10 *5*	3459.91			
		531.6 *2*	14.29	3101.87			
		1089.9 *7*	14.29	2543.21	2⁺		
		1445.5 *5*	14.29	2187.54	1⁻		
		2096.6 *9*	5 *5*	1536.33	2⁺		
		2991.6 *11*	9.524	641.282	2⁺		
		3632.7 *13*	100 *5*	0.0	0⁺		
3643.5	1	3643.4	100	0.0	0⁺		

$^{142}_{58}Ce_{84}$-20

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ	α†	Comments
3648.6		1461.2 *5*	100 *5*	2187.54	1^-				
		2111.9 *8*	<5.000	1536.33	2^+				
		3006.8 *12*	10.00	641.282	2^+				
3675.8	1^+	1494.1 *7*	27.27	2181.95	3^+				
		2139.3 *8*	100 *19*	1536.33	2^+	D+Q	−0.56 *10*		
		3034.3 *14*	100 *9*	641.282	2^+				
3688.9		946.9 *4*	22.22	2741.97	$(2,3)^+$				
		3047.4 *14*	100.0	641.282	2^+				
3703.9		1112.9 *5*	10 *10*	2591.0					
		1516.3 *6*	90 *10*	2187.54	1^-				
		2050.9 *8*	100 *20*	1652.91	3^-				
		3062.4 *13*	20.00	641.282	2^+				
3717.81	1^+	297.9 *3*	9 *9*	3420.15	$1^-,2^-$				
		989.8 *5*	18.18	2727.89	$2^{(-)}$				
		1020.8 *4*	<9.091	2697.03	2^+				
		1352.6 *5*	18.18	2364.91	2^+				
		2180.9 *9*	100 *19*	1536.33	2^+	D+Q	−1.2 *+3−5*		
		3075.9 *12*	36.36	641.282	2^+				
3719.6	1	1176.4 *4*	50.00	2543.21	2^+				
		1688.6 *8*	83.33	2031.01	0^+				
		3719.1 *13*	100.0	0.0	0^+				
3745.8	1	3745.7	100	0.0	0^+				
3776.7	1	3776.6	100	0.0	0^+				
3832.6	$11^{(-)}$	838.7	100	2994.0	$9^{(-)}$	E2		0.00297 *5*	α(K)=0.00253 *4*; α(L)=0.000350 *5*; α(M)=7.32×10^{-5} *11*; α(N+..)=1.90×10^{-5} *3* α(N)=1.618×10^{-5} *23*; α(O)=2.59×10^{-6} *4*; α(P)=1.83×10^{-7} *3*
3851.1		1846.2 *8*	20 *20*	2004.89	2^+				
		3210.2 *12*	40.00	641.282	2^+				
		3850.4 *13*	100.0	0.0	0^+				
3884.2		570.6 *5*	25 *25*	3313.78	1				
		2347.4 *9*	25 *25*	1536.33	2^+				
		3242.4 *12*	100.0	641.282	2^+				
3906.3	(11^+)	370.0		3536.3	(10^+)				
		525.8		3380.5	(9^+)				
3914.4		1121.2 *6*	33.33	2792.9					
		2378.6 *9*	100.0	1536.33	2^+				
		3273.2 *14*	100.0	641.282	2^+				
3975.94		1280.1 *4*	<33.33	2697.03	2^+				
		1793.8 *7*	<33.33	2181.95	3^+				
		1961.5 *9*	100.0	2014.5					
		3334.2 *12*	66.67	641.282	2^+				

$^{142}_{58}Ce_{84}$-21

Adopted Levels, Gammas (continued)

γ(^{142}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.‡	δ
3975.94		3975.6 *2*	<33.33	0.0	0^+		
4043.5	2^+	339.5 *4*	10 *5*	3703.9			
		1500.3 *6*	10.00	2543.21	2^+		
		2038.7 *8*	100 *5*	2004.89	2^+	D+Q	−0.99 *20*
		3401.9 *12*	35.00	641.282	2^+		
4045.6		341.7 *4*	100	3703.9			
		1348.7 *5*	<100	2697.03	2^+		
		4045.2		0.0	0^+		
4048.4		216		3832.6	$11^{(-)}$		
4356.7	(12^+)	450.3	100.0	3906.3	(11^+)		
4605.2	(13^-)	248.4		4356.7	(12^+)		
		557		4048.4			
		772.4	100.0	3832.6	$11^{(-)}$		
4717.2		884.6	100.0	3832.6	$11^{(-)}$		
4896.2	(14^-)	178.9		4717.2			
		290.9		4605.2	(13^-)		
5173.4	(15^-)	277.1		4896.2	(14^-)		
		568.4		4605.2	(13^-)		
5514.6	(16^-)	341		5173.4	(15^-)		
		618.4		4896.2	(14^-)		
5877.2	(17^-)	362.5		5514.6	(16^-)		
		703.9		5173.4	(15^-)		
6528.1		1013.5	100.0	5514.6	(16^-)		
6879.9		1002.7	100.0	5877.2	(17^-)		

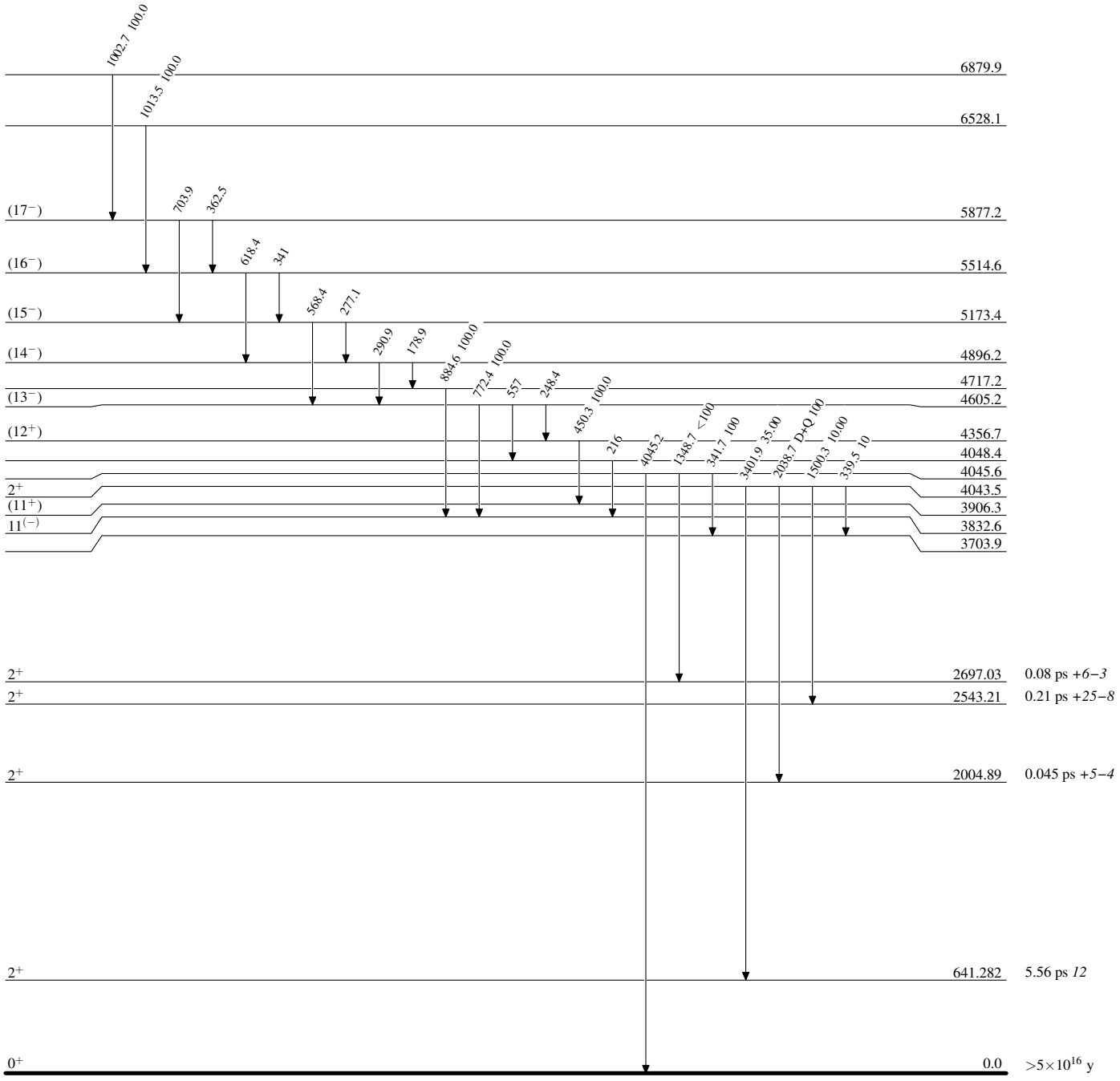
† Additional information 1.
‡ From γγ(θ) in ^{142}La β^- decay or γ(θ) in (n,n′γ) and assumption that usually M2 cannot compete with E1. Pure quadrupole transitions are taken to be E2 while significantly admixed D+Q transitions are assumed to be M1+E2.
# From γ(θ), supported by γ(linear pol) results (1992Al11).
@ From γ(θ) (1992Al11).
& Placement of transition in the level scheme is uncertain.

$^{142}_{58}Ce_{84}$-22

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

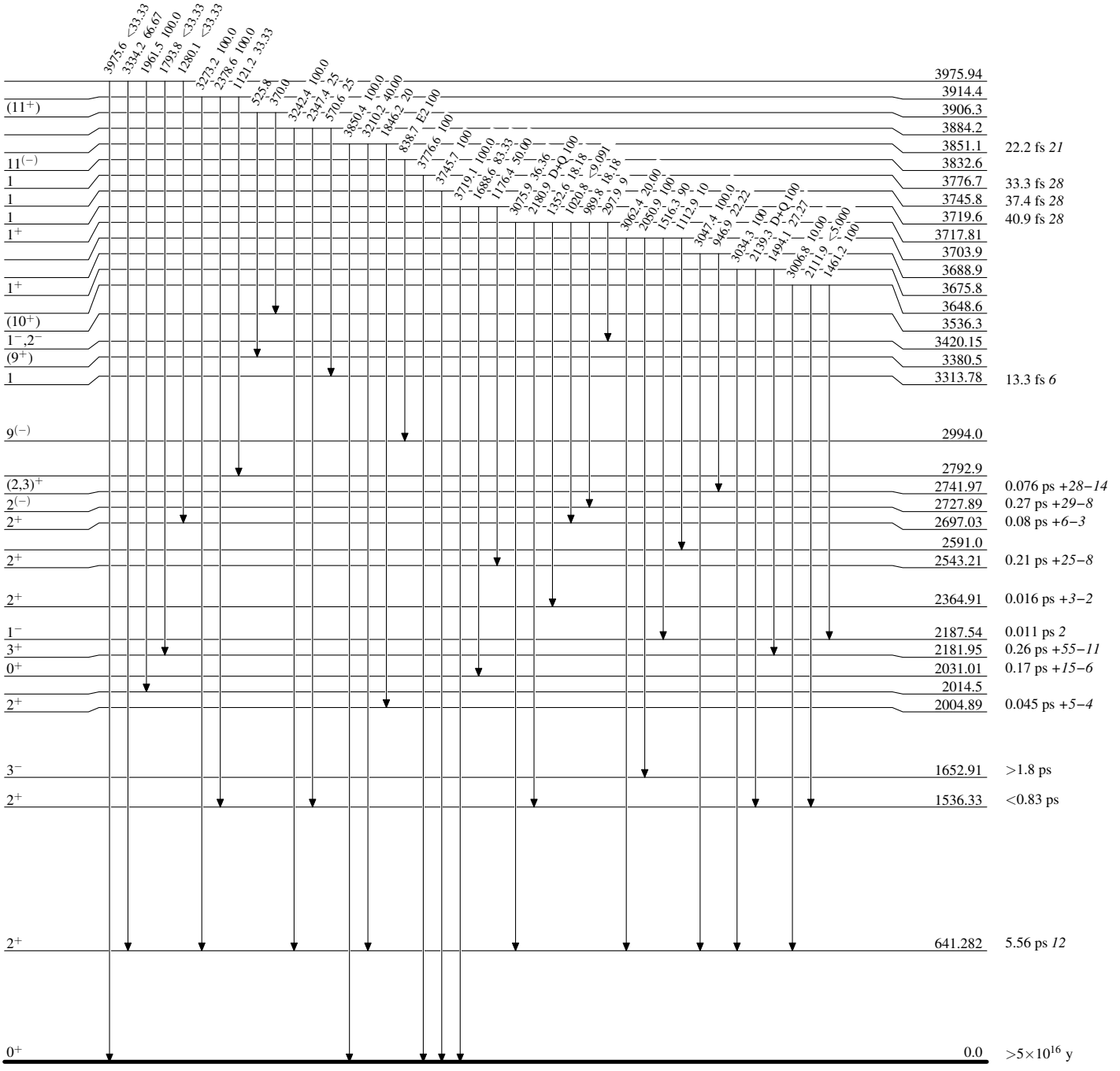


$^{142}_{58}Ce_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

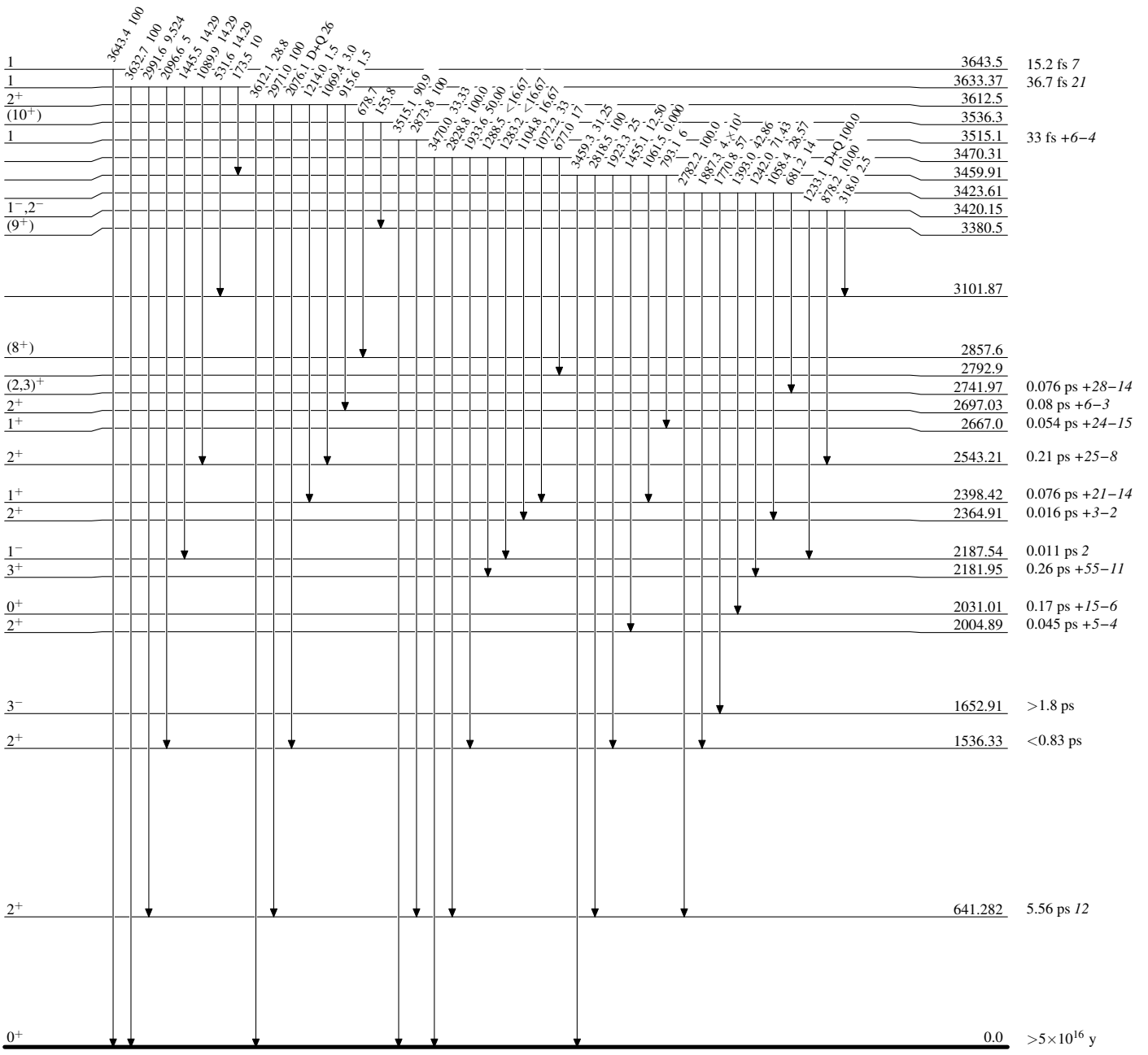


$^{142}_{58}Ce_{84}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{142}_{58}Ce_{84}$

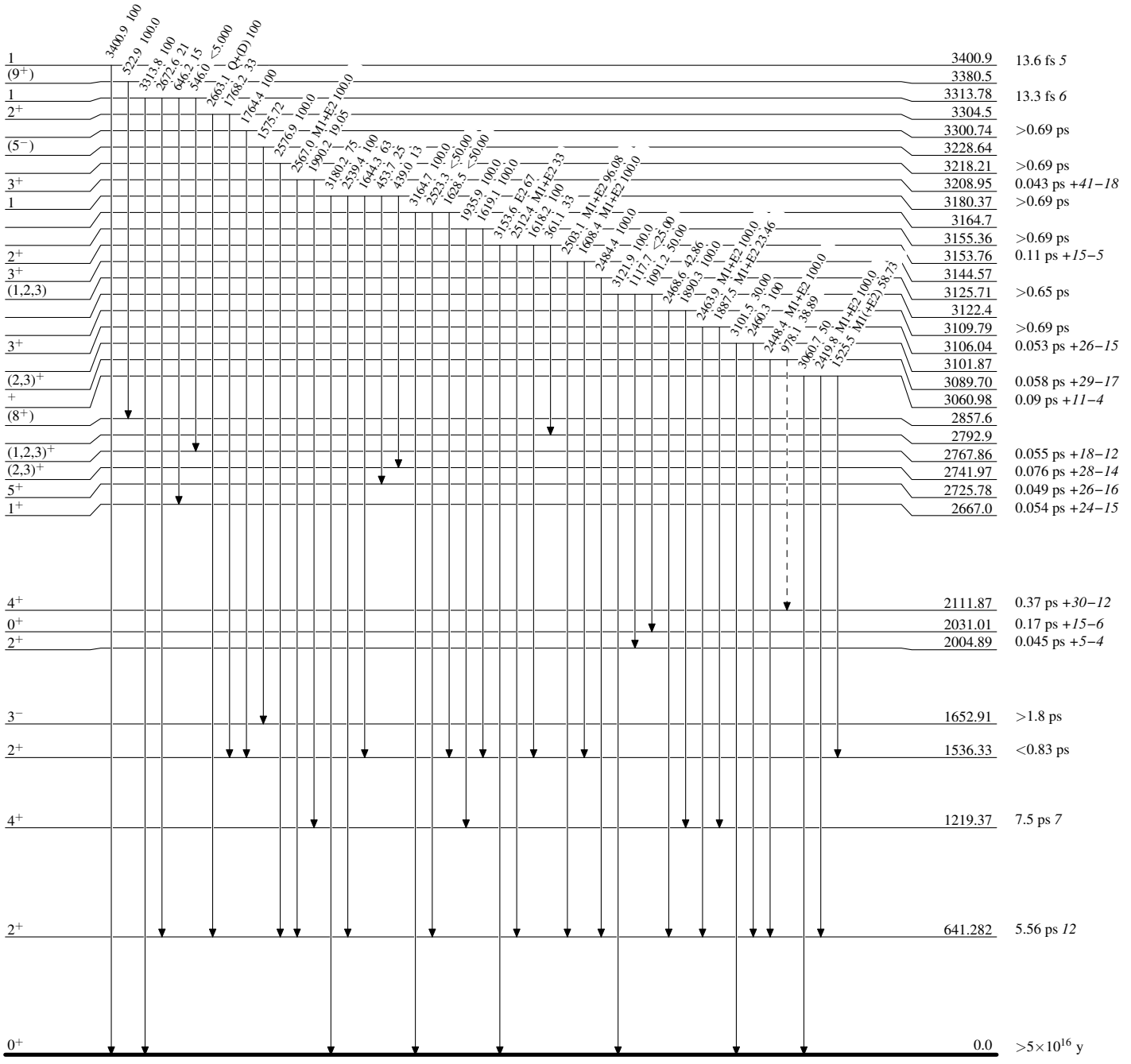
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



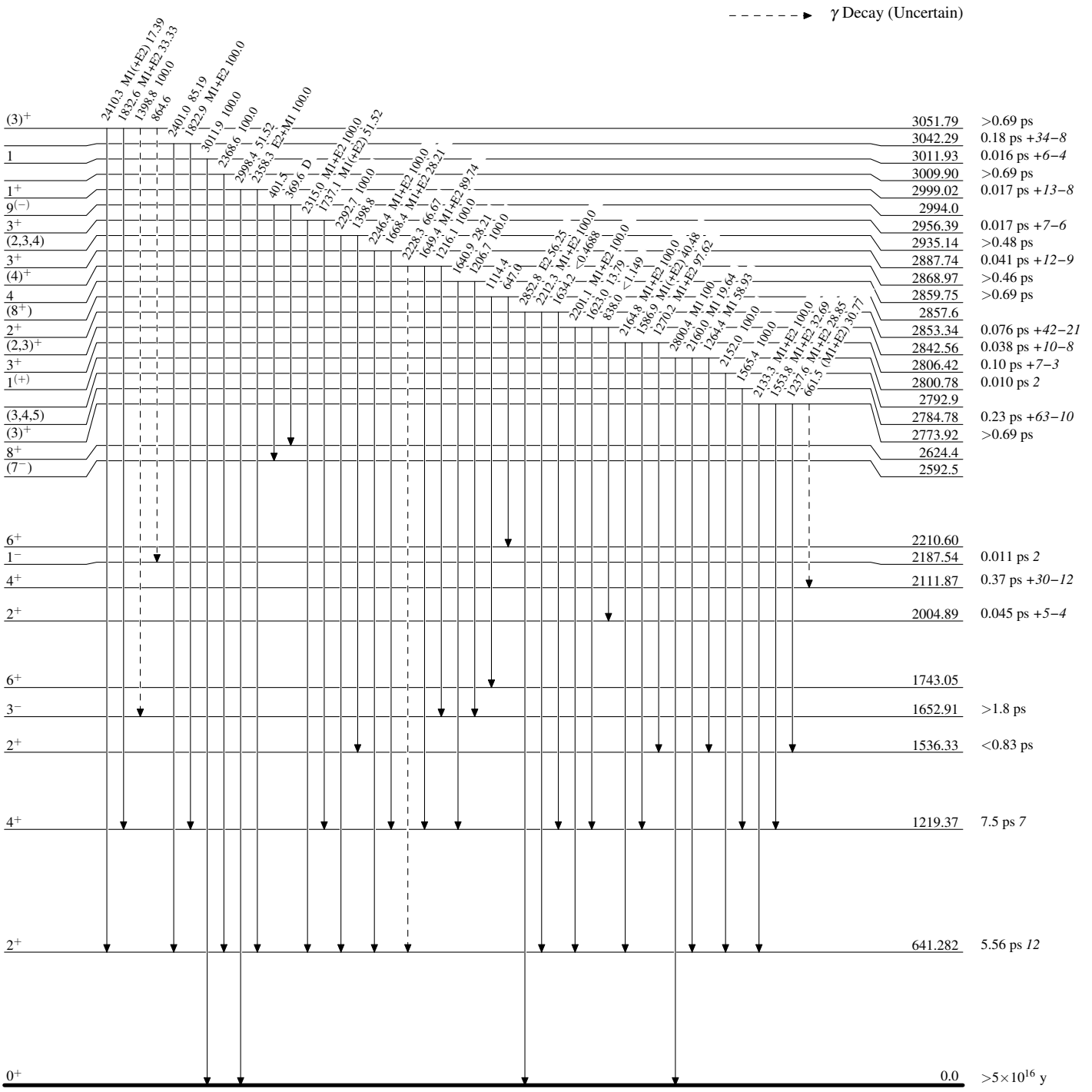
$^{142}_{58}Ce_{84}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{142}_{58}Ce_{84}$

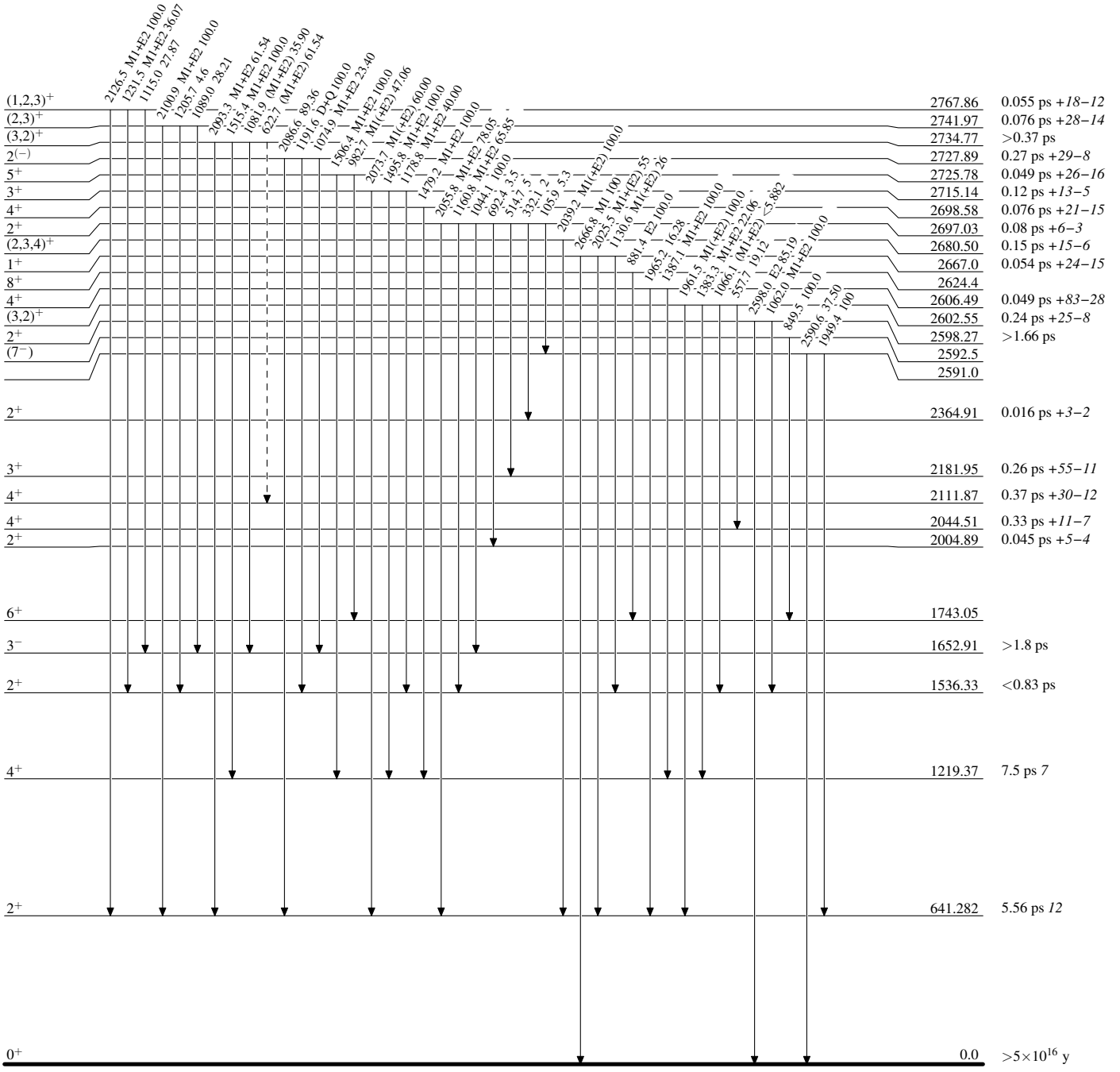
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{142}_{58}Ce_{84}$

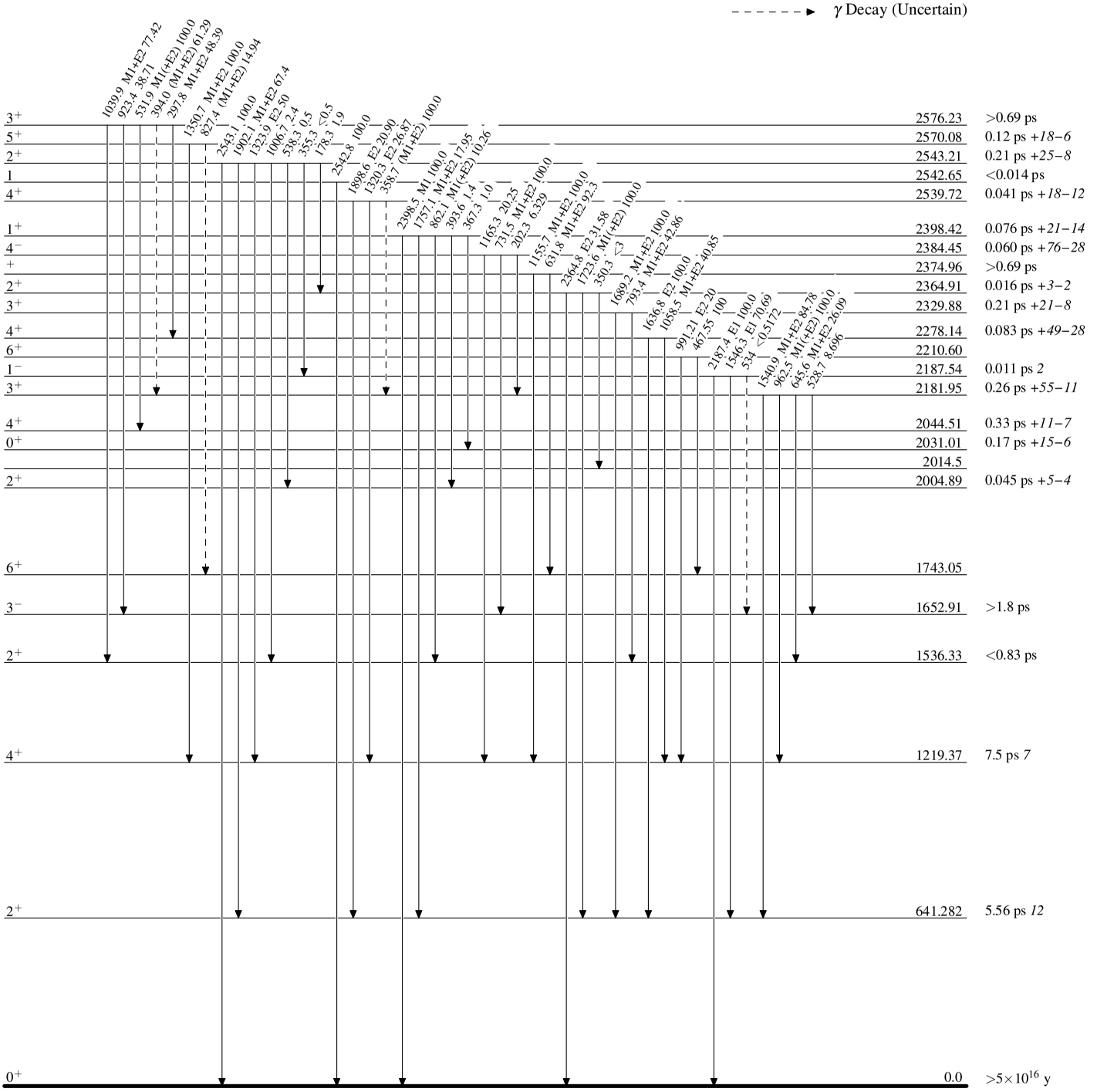
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{142}_{58}Ce_{84}$

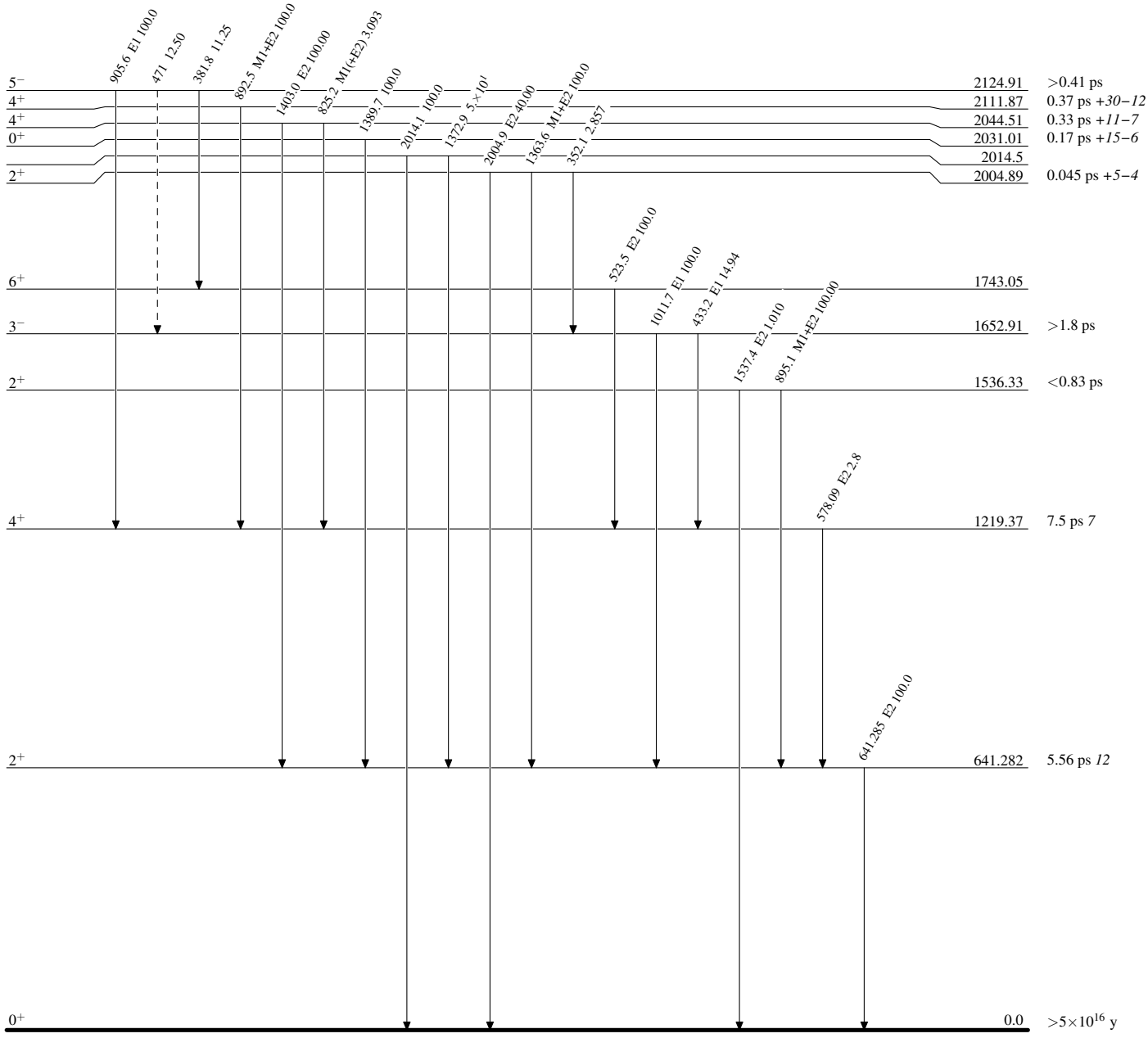
Adopted Levels, Gammas

Legend

Level Scheme (continued)

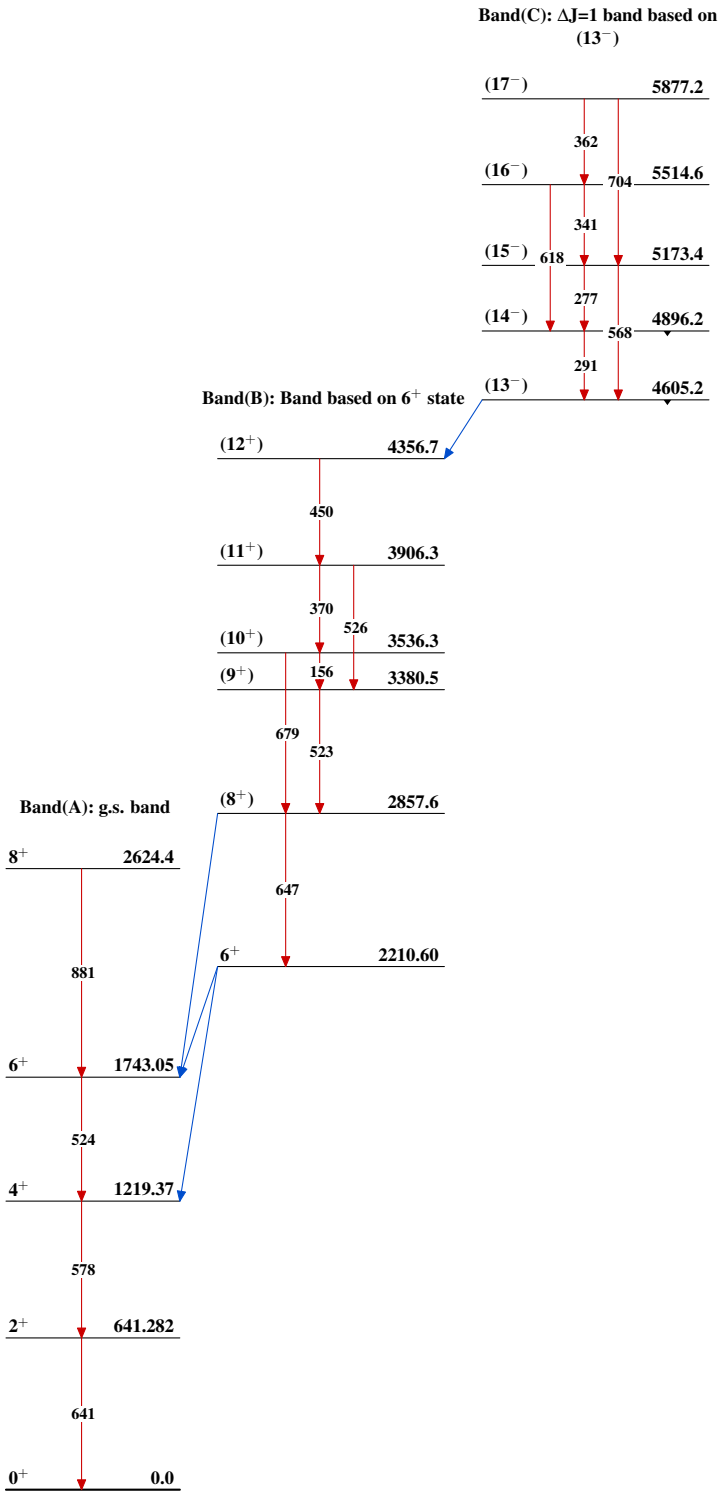
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{142}_{58}Ce_{84}$

Adopted Levels, Gammas



$^{142}_{58}Ce_{84}$