Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 108,2173 (2007)	1-Oct-2006

Q(β^-)=−2717 *9*; S(n)=7481.53 *16*; S(p)=7.17×10^3 *6*; Q(α)=−790.1 *11* 2012Wa38
Note: Current evaluation has used the following Q record −2701 9 *7481.54 167130* 50 2003Au03.
Additional information 1.
Other reactions:
^{128}Te(^{14}n,4np), measured excitation function (2005Un01).
^{128}Te(^{12}C,3n), measured production σ, excitation function (2003Sh21).
^{134}Ba(α,nγ), E=10-30 MeV. Measured isomeric σ ratios (1996Ka03).
^{134}Ba(α,nγ), E=15-31 MeV. Measured isomeric σ ratios (1995TuZZ).
^{136}Ce(n,γ), E=thermal. Measured isomeric σ ratios (2001Ga57).
^{136}Ce(n,γ), E=25 MeV. Measured capture σ (1996Ka03).
^{138}Ce(n,2n), E=14.7 MeV. Measured σ (1997Ko44).
^{138}Ce(γ,n), E=25 MeV (2001Ga57); E=25, 30 MeV (1999Pa53); E≤25 MeV (1996Be32); E=25 MeV (1995ToZV); E=15-30 MeV (1994PaZY); E=15-25 MeV (1994BaZY). Measured isomer σ ratios. Other: 1996Ga43.

^{137}Ce Levels

Cross Reference (XREF) Flags

A	^{137}Ce IT decay (34.4 h)	E	^{136}Ce(n,γ) E=thermal	I	^{138}Ba(α,5nγ) E=70 MeV
B	^{137}Pr ε decay	F	^{136}Ce(n,γ) E=66 eV res	J	^{124}Sn(^{18}O,5nγ) E=70 MeV
C	^{136}Ce(n,γ): E≈2 keV	G	^{136}Ce(n,γ) E=136 eV res		
D	^{136}Ce(n,γ): E≈24 keV	H	^{137}Ba(^{3}He,3nγ) E=27 MeV		

E(level)[a]	J$^\pi$[&]	T$_{1/2}$	XREF	Comments
0.0	3/2$^+$	9.0 h *3*	ABCDEFGHIJ	%ε+%β^+=100 μ=0.96 *4* (1991Mu06) T$_{1/2}$: from 1958Da13. J$^\pi$: atomic beam (1976Fu06), μ. μ from $\gamma(\theta$,H,t) (1991Mu06). Other: 0.91 *15* (1989Ra17).
160.36 *6*	(1/2)$^+$	0.79 ns *14*	BCDE	T$_{1/2}$: from ^{137}Pr ε decay (1973Bu17). J$^\pi$: 160.3γ to g.s. is M1, direct ε feeding from ^{137}Pr (J^π=5/2$^+$), syst. for N=79 nuclei, primary γ ray from 1/2$^+$ in (n,γ) E=th.
254.29 *5*	11/2$^-$	34.4 h *3*	A HIJ	%IT=99.21 *4*; %ε+%β^+=0.79 *4* μ=1.01 *4* %IT: Deduced by evaluators from γ-ray data in 1975He20. μ: From $\gamma(\theta$,H,t) 1991Mu06. Other: 0.70 *3* (1966Bl17,1989Ra17). T$_{1/2}$: from 1958Da13. J$^\pi$: atomic beam (1973In04), M4 to 3/2$^+$.
433.97 *8*	(3/2)$^+$[#]		B DE HI	J$^\pi$: 434γ is ΔJ=(0), M1+E2.
514.03 *8*	(3/2)$^+$[#]		B DE	J$^\pi$: 353γ and 514γ are M1,E2; syst for N=79 nuclei.
763.29 *7*	(5/2,3/2)$^+$[#]		B DE	J$^\pi$: 329γ to (3/2)$^+$ level is M1; direct ε feeding from ^{137}Pr (J^π=5/2$^+$).
825.78 *8*	(1/2,3/2)[‡]		DE G	J$^\pi$: γ rays to 3/2$^+$ and (1/2)$^+$ levels.
836.69 *8*	(5/2)$^+$		B E	J$^\pi$: M1 γ ray to 3/2$^+$ level; not seen in γ-ray decay of 1/2$^+$ neutron resonances.
866.68 *8*	(5/2,3/2)[#]		B DE	
927.7 *3*	15/2$^-$[@]		HI	J$^\pi$: E2 γ ray to 11/2$^-$.
1104.87 *13*	3/2[†]		B DE	
1144.34 *21*	13/2$^-$		H J	J$^\pi$: γ ray to 11/2$^-$ is ΔJ=1, M1+E2; no γ ray to levels with spin

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Adopted Levels, Gammas (continued)

^{137}Ce Levels (continued)

E(level)[a]	Jπ[&]	XREF	Comments
			<11/2.
1147.2 *4*		H	
1179.59 *10*	(5/2+)[#]	B E H	Jπ: ΔJ=0,1. log *ft* from 5/2+, not observed in γ-ray decay of 1/2+ n-capture states; γ ray to (1/2)+.
1259.48 *20*		B E	
1271.37 *17*	3/2[†]	BCDEFG	
1288.8 *3*		B	
1337.4 *4*		H	
1435.39 *10*		B E	
1476.67 *17*	(5/2+,3/2+)[#]	B DE	
1570.12 *25*		B	
1577.2 *2*	(1/2)[‡]	CDE	
1602.74 *13*	3/2[†]	DEF	
1643.0 *3*	(1/2)[‡]	CD F	
1687.1 *20*	(1/2)[‡]	D F	
1693.35 *20*		B	
1715.2 *8*	(1/2)[‡]	DE	
1728.1 *4*	(1/2)[‡]	CD FG	
1800.51 *12*		B	
1887.77 *15*	3/2[†]	B EF	
1909.0 *5*	(1/2)[‡]	D F	
1925.29 *13*	(3/2,5/2)+	B	Jπ: 1089γ M1,E2 to (5/2)+.
1933.57 *10*	3/2+[†]	B F	Jπ: 1097γ M1 to (5/2)+.
1951.69 *14*	3/2[†]	B EF	
1980.4 *6*	15/2−	H J	Jπ: 836γ (M1+E2) to 13/2−, 1726γ E2 to 11/2−.
2039.3 *4*	19/2−[@]	F HIJ	Jπ: E2 γ ray to 15/2−.
2040.6 *8*	(1/2)[‡]	D G	
2061.1 *3*	(1/2)[‡]	C FG	
2113.63 *13*		B	
2133.66 *13*	3/2(+)[†]	BC EF	
2142.7 *5*	(1/2)[‡]	EF	
2152.9 *3*		B	
2191.2 *4*	19/2−[@]	HIJ	Jπ: E2 γ ray to 15/2−.
2197.7 *5*		J	
2206.7 *4*	(5/2+,3/2+)[#]	D	
2275.20 *17*	3/2(+)[†]	B EFG	
2293.5 *7*	(1/2)[‡]	EF	
2304.81 *23*	3/2(+)[†]	B D F	
2308.9 *6*		I	
2336.2 *6*	(21/2)[@]	HI	
2347.4 *3*		B	
2437.1 *7*	(17/2−)	J	Jπ: 1509γ (M1+E2) to 15/2−.
2454.1 *3*	(1/2)[‡]	DEF	
2466.2 *8*		J	
2480.0 *4*		B I	
2490.3 *6*	21/2−[@]	H J	Jπ: γ rays to 19/2− are ΔJ=1, M1.
2538.8 *9*		J	
2561.6 *8*	(19/2+)	J	Jπ: 370γ (E1) to 19/2−.

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Adopted Levels, Gammas (continued)

^{137}Ce Levels (continued)

E(level)[a]	J$^{\pi}$[&]	XREF	Comments
2565.5 *6*	(1/2)[‡]	DEFG	
2586.8 *7*		I	
2703.1 *6*		I	
2767.7 *9*	(1/2)[‡]	F	
2812.2 *8*	(23/2)$^{-}$	HIJ	J$^{\pi}$: 322γ M1+E2 to 21/2^{-}.
			J.
2888.1 *6*		I	
2928.2[b] *7*	(19/2^{+})	J	J$^{\pi}$: 367γ M1+E2 to (19/+).
2972.6 *7*	($^{-}$)	IJ	π=(+) in 2000Zh39 is not consistent with 482γ M1+E2 to 21/2^{-}.
3067.3[b] *6*	(21/2^{+})	J	J$^{\pi}$: 505γ M1+E2 to (19/2^{+}), 1027γ (E1) to (19/2^{-}).
3128.7 *8*		J	
3225.4[b] *5*	(23/2)[@]	HIJ	
3303.9 *10*	(25/2^{-})	J	J$^{\pi}$: 492γ (M1+E2) to (23/2^{-}).
3404.9 *8*	(23/2^{+})	J	J$^{\pi}$: 337γ M1+E2 to (21/2^{+}).
3416.1[b] *6*	(25/2)[@]	HIJ	
3684.4 *8*		J	
3694.4 *14*		J	
3703.3[b] *7*	(27/2)[@]	IJ	
3725.0 *13*	(25/2^{+})	J	J$^{\pi}$: 320γ (M1+E2) to (23/2^{+}).
3744.2 *10*		J	
3763.6 *10*		J	
3890.7 *17*		J	
3936.1 *8*	25/2^{-}	J	J$^{\pi}$: 1446γ E2 to 21/2^{-}.
3985.9 *8*		J	
4115.1[b] *11*	(29/2)	J	
4173.6 *7*		I	
4255.7[c] *9*	(31/2)[@]	IJ	
4339.7 *8*		I	
4585.9 *8*		I	
4668.3 *19*		J	
4704.5[b] *12*	(31/2)	J	
4732.4[c] *10*	(33/2^{+})[@]	IJ	
5305.1[c] *11*	(35/2^{+})	J	
5379.9[d] *12*	(33/2)	J	J$^{\pi}$: 1124γ (E1) to (31/2).
5546.0[d] *12*	(35/2^{-})	J	J$^{\pi}$: 814γ (E1) to (33/2).
5851.6[d] *13*	(37/2^{-})	J	J$^{\pi}$: 306γ M1+E2 to (35/2^{-}).
6110.9[c] *12*		J	
6322.0[d] *16*	(39/2^{-})	J	J$^{\pi}$: 470γ M1+E2 to (37/2^{-}).
6459.9[c] *13*		J	
6930.1[d] *19*		J	
7661.2[d] *22*		J	

[†] From dipole γ rays that deexcite 1/2^{+} neutron resonances, ΔJ=1 or 0, ε decay via 5/2^{+} parent, shell model.
[‡] From dipole γ rays that deexcite 1/2^{+} neutron resonances, not observed in ε decay via 5/2^{+} parent.
[#] From ε decay via 5/2^{+} parent, observed dipole γ rays that deexcite E(n)≈24 keV resonances, which include states with J^{π}=3/2^{-},1/2.
[@] From $\gamma(\theta)$ in (α,5nγ) and systematics in (HI,xnγ).
[&] J^{π} values, which are based upon primary transitions in (n,γ), are from 1981KoZW.
[a] Deduced by evaluators from a least-squares fit to adopted γ-ray energies.

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Adopted Levels, Gammas (continued)

^{137}Ce Levels (continued)

[b] Band(A): Level sequence based on $J^{\pi}=19/2^{(+)}$.
[c] Band(B): Level sequence based on $J^{\pi}=31/2^{(+)}$.
[d] Band(C): Level sequence based on $J^{\pi}=33/2^{(-)}$.

Adopted Levels, Gammas (continued)

$\gamma(^{137}Ce)$

Eγ, Iγ are from ^{137}Pr ε decay, from (n,γ), or from (^{18}O,5nγ). There are some discrepancies between ε-decay and (n,γ) data. For example, the branching ratio I(402γ)/I(836γ)=3.6/100 in ε decay but 10.9/100 in (n,γ). Also it is not clear why 745γ from 1180 level was not seen in (n,γ) in spite of being the strongest transition from this level.
Additional information 2.

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^{\ddagger}$	Comments
160.36	(1/2)$^+$	160.32 *9*	100	0.0	3/2$^+$	M1	0.313	α(K)=0.267 *4*; α(L)=0.0363 *6*; α(M)=0.00759 *11*; α(N+..)=0.00198 *3* α(N)=0.001684 *24*; α(O)=0.000273 *4*; α(P)=2.06×10^{-5} *3* B(M1)(W.u.)=0.0052 *10*
254.29	11/2$^-$	254.29 *5*	100	0.0	3/2$^+$	M4	7.93	α(K)=5.45 *8*; α(L)=1.92 *3*; α(M)=0.445 *7*; α(N+..)=0.1142 *16* α(N)=0.0985 *14*; α(O)=0.01496 *21*; α(P)=0.000734 *11* B(M4)(W.u.)=2.28 *7* Additional information 3.
433.97	(3/2)$^+$	273.6 *5*	3.4 *7*	160.36	(1/2)$^+$			
		433.9 *2*	100 *9*	0.0	3/2$^+$	M1+E2	0.019 *4*	α(K)=0.016 *3*; α(L)=0.00234 *17*; α(M)=0.00049 *3*; α(N+..)=0.000127 *10* α(N)=0.000109 *8*; α(O)=1.73×10^{-5} *16*; α(P)=1.2×10^{-6} *3*
514.03	(3/2)$^+$	353.7 *2*	54 *5*	160.36	(1/2)$^+$	M1,E2	0.033 *5*	α(K)=0.028 *5*; α(L)=0.00426 *6*; α(M)=0.000900 *17*; α(N+..)=0.000232 *4* α(N)=0.000198 *3*; α(O)=3.13×10^{-5} *9*; α(P)=2.0×10^{-6} *5*
		514.0 *2*	100 *10*	0.0	3/2$^+$	M1,E2	0.0123 *23*	α(K)=0.0104 *21*; α(L)=0.00146 *17*; α(M)=0.00031 *4*; α(N+..)=8.0×10^{-5} *9* α(N)=6.8×10^{-5} *8*; α(O)=1.09×10^{-5} *14*; α(P)=7.7×10^{-7} *18*
763.29	(5/2,3/2)$^+$	251.6 *2*	7.1 *21*	514.03	(3/2)$^+$			
		329.0 *2*	57 *10*	433.97	(3/2)$^+$	M1	0.0452	α(K)=0.0387 *6*; α(L)=0.00515 *8*; α(M)=0.001075 *16*; α(N+..)=0.000280 *4* α(N)=0.000239 *4*; α(O)=3.87×10^{-5} *6*; α(P)=2.96×10^{-6} *5*
		602.6 *1*	100 *8*	160.36	(1/2)$^+$			
		763.2 *1*	61 *3*	0.0	3/2$^+$			
825.78	(1/2,3/2)	665.5[#] *1*		160.36	(1/2)$^+$			
		825.7[#] *1*		0.0	3/2$^+$			
836.69	(5/2)$^+$	402.4 *2*	3.6 *4*	433.97	(3/2)$^+$	M1,E2	0.023 *4*	α(K)=0.020 *4*; α(L)=0.00291 *14*; α(M)=0.000613 *24*; α(N+..)=0.000158 *8* α(N)=0.000135 *6*; α(O)=2.15×10^{-5} *15*; α(P)=1.4×10^{-6} *4*
		676.4 *4*	0.7 *4*	160.36	(1/2)$^+$			
		836.7 *1*	100 *10*	0.0	3/2$^+$	M1	0.00443	α(K)=0.00381 *6*; α(L)=0.000490 *7*; α(M)=0.0001021 *15*; α(N+..)=2.66×10^{-5} *4* α(N)=2.27×10^{-5} *4*; α(O)=3.69×10^{-6} *6*; α(P)=2.87×10^{-7} *4*
866.68	(5/2,3/2)	706.4 *2*	18 *3*	160.36	(1/2)$^+$			
		866.5 *1*	100 *4*	0.0	3/2$^+$			
927.7	15/2$^-$	673.3 *3*	100	254.29	11/2$^-$	E2	0.00499	α(K)=0.00422 *6*; α(L)=0.000610 *9*; α(M)=0.0001283 *18*; α(N+..)=3.31×10^{-5} *5* α(N)=2.83×10^{-5} *4*; α(O)=4.49×10^{-6} *7*; α(P)=3.02×10^{-7} *5*
1104.87	3/2	590.3 *2*	59 *5*	514.03	(3/2)$^+$			

$^{137}_{58}Ce_{79}$-5

Adopted Levels, Gammas (continued)

γ(^{137}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α‡	Comments
1104.87	3/2	671.2 *3*	37 *5*	433.97	$(3/2)^+$			
		944.6 *6*	10 *5*	160.36	$(1/2)^+$			
		1105.2 *2*	100 *10*	0.0	$3/2^+$			
1144.34	$13/2^-$	890.1 *2*	100	254.29	$11/2^-$	M1+E2	0.0032 *7*	α(K)=0.0028 *6*; α(L)=0.00036 *6*; α(M)=7.6×10^{-5} *13*; α(N+..)=2.0×10^{-5} *4* α(N)=1.7×10^{-5} *3*; α(O)=2.7×10^{-6} *5*; α(P)=2.0×10^{-7} *5*
1147.2		713.2 *4*	100	433.97	$(3/2)^+$	D		
1179.59	$(5/2^+)$	416.3 *4*	43 *5*	763.29	$(5/2,3/2)^+$			
		665.2 *2*	62 *5*	514.03	$(3/2)^+$			
		745.4 *2*	100 *5*	433.97	$(3/2)^+$			
		1019.2 *2*	23 *4*	160.36	$(1/2)^+$			
		1180.0 *2*	43 *6*	0.0	$3/2^+$			
1259.48		825.6 *2*	100 *9*	433.97	$(3/2)^+$			
		1258.9 *5*	22 *9*	0.0	$3/2^+$			
1271.37	3/2	1110.9 *2*	100 *2*	160.36	$(1/2)^+$			
		1271.6 *3*	18.6 *19*	0.0	$3/2^+$			
1288.8		1128.6 *3*	100 *21*	160.36	$(1/2)^+$			
		1288.2 *5*	32 *11*	0.0	$3/2^+$			
1337.4		903.4 *4*	100	433.97	$(3/2)^+$	D+Q		
1435.39		921.2 *1*	100 *6*	514.03	$(3/2)^+$			
		1001.6 *1*	68 *5*	433.97	$(3/2)^+$			
		1435.2[@] *5*	12 *2*	0.0	$3/2^+$			
1476.67	$(5/2^+,3/2^+)$	609.9 *4*	48 *8*	866.68	(5/2,3/2)			
		713.3 *2*	100 *8*	763.29	$(5/2,3/2)^+$			
		963.2 *5*	8 *1*	514.03	$(3/2)^+$			
		1476.7 *5*	24 *4*	0.0	$3/2^+$			
1570.12		734.2[@] *4*	31 *8*	836.69	$(5/2)^+$			
		1056.7 *3*	100 *15*	514.03	$(3/2)^+$			
		1569.0 *4*	31 *8*	0.0	$3/2^+$			
1602.74	3/2	1088.7 *1*	100	514.03	$(3/2)^+$			
1693.35		856.4 *3*	61 *15*	836.69	$(5/2)^+$			
		1260.1 *5*	31 *15*	433.97	$(3/2)^+$			
		1533.0 *4*	23 *8*	160.36	$(1/2)^+$			
		1693.3 *4*	100 *15*	0.0	$3/2^+$			
1800.51		695.3 *5*	8 *3*	1104.87	3/2			
		933.5 *2*	38 *4*	866.68	(5/2,3/2)			
		1286.5 *2*	28 *3*	514.03	$(3/2)^+$			
		1366.2 *5*	8 *3*	433.97	$(3/2)^+$			
		1800.9 *2*	100 *8*	0.0	$3/2^+$			
1887.77	3/2	1125.0 *6*	77 *14*	763.29	$(5/2,3/2)^+$			
		1372.8 *6*	17 *6*	514.03	$(3/2)^+$			

$^{137}_{58}Ce_{79}$-6

Adopted Levels, Gammas (continued)

γ(^{137}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[‡]	Comments
1887.77	3/2	1453.3 *3*	66 *9*	433.97	$(3/2)^+$			
		1727.6 *2*	43 *9*	160.36	$(1/2)^+$			
		1887.9 *3*	100 *20*	0.0	$3/2^+$			
1925.29	$(3/2,5/2)^+$	1088.6 *1*	100 *5*	836.69	$(5/2)^+$	M1,E2	0.0020 *4*	α(K)=0.0018 *3*; α(L)=0.00023 *4*; α(M)=4.7×10^{-5} *8*; α(N+..)=1.23×10^{-5} *20* α(N)=1.05×10^{-5} *17*; α(O)=1.7×10^{-6} *3*; α(P)=1.30×10^{-7} *25*
		1764.8 *7*	3.2 *11*	160.36	$(1/2)^+$			
1933.57	$3/2^+$	753.9 *5*	9.8 *22*	1179.59	$(5/2^+)$			
		1066.8 *3*	6.5 *22*	866.68	(5/2,3/2)			
		1096.9 *1*	100 *7*	836.69	$(5/2)^+$	M1	0.00235	α(K)=0.00202 *3*; α(L)=0.000258 *4*; α(M)=5.37×10^{-5} *8*; α(N+..)=1.402×10^{-5} *20* α(N)=1.192×10^{-5} *17*; α(O)=1.94×10^{-6} *3*; α(P)=1.517×10^{-7} *22*
		1170.7 *2*	29 *3*	763.29	$(5/2,3/2)^+$			
		1418.9 *2*	37 *2*	514.03	$(3/2)^+$			
		1774.3[@] *8*	3.3 *21*	160.36	$(1/2)^+$			
		1934.5 *5*	9.8 *22*	0.0	$3/2^+$			
1951.69	3/2	1437.3 *2*	100 *7*	514.03	$(3/2)^+$			
		1517.5 *2*	25 *4*	433.97	$(3/2)^+$			
		1792.6 *4*	10 *3*	160.36	$(1/2)^+$			
		1952.6 *4*	12 *4*	0.0	$3/2^+$			
1980.4	$15/2^-$	836.1[†]	100	1144.34	$13/2^-$	(M1+E2)	0.0037 *8*	α(K)=0.0032 *7*; α(L)=0.00042 *7*; α(M)=8.8×10^{-5} *15*; α(N+..)=2.3×10^{-5} *4* α(N)=2.0×10^{-5} *4*; α(O)=3.2×10^{-6} *6*; α(P)=2.4×10^{-7} *6*
		1052.6[†]	52	927.7	$15/2^-$	(M1+E2)	0.0022 *4*	α(K)=0.0019 *4*; α(L)=0.00025 *4*; α(M)=5.1×10^{-5} *8*; α(N+..)=1.33×10^{-5} *22* α(N)=1.13×10^{-5} *19*; α(O)=1.8×10^{-6} *3*; α(P)=1.4×10^{-7} *3*
		1726.2[†]	59	254.29	$11/2^-$	E2	8.44×10^{-4}	α(K)=0.000584 *9*; α(L)=7.40×10^{-5} *11*; α(M)=1.537×10^{-5} *22*; α(N+..)=0.0001708 *24* α(N)=3.41×10^{-6} *5*; α(O)=5.53×10^{-7} *8*; α(P)=4.25×10^{-8} *6*; α(IPF)=0.0001668 *24*
2039.3	$19/2^-$	1111.5 *3*	100	927.7	$15/2^-$	E2	1.61×10^{-3}	α(K)=0.001382 *20*; α(L)=0.000183 *3*; α(M)=3.81×10^{-5} *6*; α(N+..)=1.046×10^{-5} *15* α(N)=8.44×10^{-6} *12*; α(O)=1.361×10^{-6} *19*; α(P)=1.004×10^{-7} *14*; α(IPF)=5.61×10^{-7} *10*
2113.63		1246.5 *3*	43 *7*	866.68	(5/2,3/2)			
		1276.8 *2*	96 *11*	836.69	$(5/2)^+$			
		1350.2 *6*	25 *7*	763.29	$(5/2,3/2)^+$			
		1679.8 *2*	82 *11*	433.97	$(3/2)^+$			

$^{137}_{58}Ce_{79}$-7

Adopted Levels, Gammas (continued)

γ(^{137}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[‡]	Comments
2113.63		2114.4 *4*	100 *19*	0.0	$3/2^+$			
2133.66	$3/2^{(+)}$	699.4 *5*	10 *5*	1435.39				
		953.6 *3*	17.2 *17*	1179.59	$(5/2^+)$			
		1028.9[@] *5*	8.6 *17*	1104.87	3/2			
		1619.3 *2*	57 *9*	514.03	$(3/2)^+$			
		1699.8 *2*	100 *10*	433.97	$(3/2)^+$			
		1974.2[@] *6*	5.2 *17*	160.36	$(1/2)^+$			
		2134.5 *4*	40 *9*	0.0	$3/2^+$			
2152.9		973.5 *6*	35 *12*	1179.59	$(5/2^+)$			
		1639.0 *6*	100 *12*	514.03	$(3/2)^+$			
		1718.4 *7*	24 *12*	433.97	$(3/2)^+$			
		1992.2 *7*	12 *6*	160.36	$(1/2)^+$			
		2153.0 *5*	65 *18*	0.0	$3/2^+$			
2191.2	$19/2^-$	1263.4 *3*	100	927.7	$15/2^-$	E2	1.26×10^{-3}	α(K)=0.001066 *15*; α(L)=0.0001389 *20*; α(M)=2.89×10^{-5} *4*; α(N+..)=2.24×10^{-5} *4* α(N)=6.41×10^{-6} *9*; α(O)=1.035×10^{-6} *15*; α(P)=7.75×10^{-8} *11*; α(IPF)=1.493×10^{-5} *22*
2197.7		1054.6[†]	100	1144.34	$13/2^-$			
2275.20	$3/2^{(+)}$	1511.9 *3*	100 *22*	763.29	$(5/2,3/2)^+$			
		1841.1 *2*	33 *17*	433.97	$(3/2)^+$			
		2115.4 *5*	72 *22*	160.36	$(1/2)^+$			
		2275.5 *8*	39 *11*	0.0	$3/2^+$			
2304.81	$3/2^{(+)}$	1200.0 *5*	67 *22*	1104.87	3/2			
		1467.6 *4*	22 *22*	836.69	$(5/2)^+$			
		1871.1 *4*	100 *22*	433.97	$(3/2)^+$			
		2145.4 *7*	44 *22*	160.36	$(1/2)^+$			
		2304.4 *7*	56 *22*	0.0	$3/2^+$			
2308.9		270.1 *5*	100	2039.3	$19/2^-$			
2336.2	(21/2)	138.9 *3*	100	2197.7		D		
2347.4		1833.6 *5*	50 *25*	514.03	$(3/2)^+$			
		1912.9 *6*	100 *33*	433.97	$(3/2)^+$			
		2186.9 *9*	25 *8*	160.36	$(1/2)^+$			
		2347.6 *6*	75 *25*	0.0	$3/2^+$			
2437.1	$(17/2^-)$	456.7	100	1980.4	$15/2^-$			
		1509.3		927.7	$15/2^-$	(M1+E2)	0.00109 *14*	α(K)=0.00087 *12*; α(L)=0.000110 *14*; α(M)=2.3×10^{-5} *3*; α(N+..)=8.75×10^{-5} *21* α(N)=5.1×10^{-6} *7*; α(O)=8.3×10^{-7} *11*; α(P)=6.4×10^{-8} *10*; α(IPF)=8.15×10^{-5} *15*
2466.2		267.9[†]		2197.7				

Adopted Levels, Gammas (continued)

γ(^{137}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α‡	Comments
2466.2		486†	100	1980.4	15/2⁻			
2480.0		1300.4 *6*	33 *17*	1179.59	(5/2⁺)			
		1612.9 *10*	100 *33*	866.68	(5/2,3/2)			
		1966.7 *8*	100 *33*	514.03	(3/2)⁺			
		2320.3 *8*	50 *17*	160.36	(1/2)⁺			
		2479.2 *6*	50 *17*	0.0	3/2⁺			
2490.3	21/2⁻	298.4†	29	2191.2	19/2⁻	M1+E2	0.054 *5*	α(K)=0.045 *6*; α(L)=0.0072 *6*; α(M)=0.00153 *14*; α(N+..)=0.00039 *3* α(N)=0.00034 *3*; α(O)=5.25×10^{-5} *25*; α(P)=3.2×10^{-6} *6*
		450.0†	100	2039.3	19/2⁻	M1+E2	0.017 *3*	α(K)=0.015 *3*; α(L)=0.00211 *18*; α(M)=0.00044 *4*; α(N+..)=0.000115 *10* α(N)=9.8×10^{-5} *8*; α(O)=1.57×10^{-5} *16*; α(P)=1.08×10^{-6} *25*
2538.8		48.6†	100	2490.3	21/2⁻			
2561.6	(19/2⁺)	370.4†	100	2191.2	19/2⁻	(E1)	0.00733	α(K)=0.00630 *9*; α(L)=0.000815 *12*; α(M)=0.0001694 *24*; α(N+..)=4.38×10^{-5} *7* α(N)=3.74×10^{-5} *6*; α(O)=6.00×10^{-6} *9*; α(P)=4.33×10^{-7} *6*
2586.8		278.3 *5*	100	2308.9		D		
2703.1		505.4 *3*	100	2197.7		D		
2812.2	(23/2)⁻	322.3†	100	2490.3	21/2⁻	M1+E2	0.043 *5*	α(K)=0.036 *5*; α(L)=0.00565 *23*; α(M)=0.00120 *7*; α(N+..)=0.000307 *13* α(N)=0.000263 *12*; α(O)=4.14×10^{-5} *8*; α(P)=2.6×10^{-6} *6*
		772.3†		2039.3	19/2⁻			
2888.1		301.8 *5*	100	2586.8				
2928.2	(19/2⁺)	366.8†	52	2561.6	(19/2⁺)	M1+E2	0.030 *4*	α(K)=0.025 *4*; α(L)=0.00382 *8*; α(M)=0.000807 *12*; α(N+..)=0.000208 *5* α(N)=0.000178 *3*; α(O)=2.81×10^{-5} *11*; α(P)=1.8×10^{-6} *4*
		461.5†	100	2466.2				
		491.2†		2437.1	(17/2⁻)			
2972.6	(⁻)	482.0†	100	2490.3	21/2⁻	M1+E2	0.014 *3*	α(K)=0.0123 *24*; α(L)=0.00175 *18*; α(M)=0.00037 *4*; α(N+..)=9.5×10^{-5} *10* α(N)=8.1×10^{-5} *8*; α(O)=1.29×10^{-5} *15*; α(P)=9.0×10^{-7} *21*
3067.3	(21/2⁺)	138.7†	35	2928.2	(19/2⁺)			
		505.5†	35	2561.6	(19/2⁺)	M1+E2	0.0128 *24*	α(K)=0.0109 *22*; α(L)=0.00153 *17*; α(M)=0.00032 *4*; α(N+..)=8.3×10^{-5} *10* α(N)=7.1×10^{-5} *8*; α(O)=1.14×10^{-5} *15*; α(P)=8.0×10^{-7} *19*
		875.9†	29	2191.2	19/2⁻	(E1)	1.09×10^{-3}	α(K)=0.000941 *14*; α(L)=0.0001178 *17*; α(M)=2.44×10^{-5} *4*; α(N+..)=6.35×10^{-6} *9* α(N)=5.41×10^{-6} *8*; α(O)=8.76×10^{-7} *13*; α(P)=6.68×10^{-8} *10*

$^{137}_{58}Ce_{79}$-9

Adopted Levels, Gammas (continued)

γ(^{137}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α‡	Comments
3067.3	(21/2$^+$)	1027.5†	100	2039.3	19/2$^-$	(E1)	8.03×10^{-4}	α(K)=0.000694 *10*; α(L)=8.64×10^{-5} *12*; α(M)=1.79×10^{-5} *3*; α(N+..)=4.66×10^{-6} *7* α(N)=3.96×10^{-6} *6*; α(O)=6.43×10^{-7} *9*; α(P)=4.93×10^{-8} *7*
3128.7		937.2†	100	2191.2	19/2$^-$			
3225.4	(23/2)	96.4†	4.3	3128.7				
		157†	60.0	3067.3	(21/2$^+$)			
		337.7 *5*	42 *21*	2888.1		D		
		522.2 *3*	22 *6*	2703.1		Q		
		686.6†	23.4	2538.8		Q		
		734.9 *3*	100 *10*	2490.3	21/2$^-$	D		
		889.5 *3*	61 *18*	2336.2	(21/2)	D		
		1027.6 *3*	7 *7*	2197.7				
3303.9	(25/2$^-$)	491.6†	100	2812.2	(23/2)$^-$	(M1+E2)	0.0138 *25*	α(K)=0.0117 *23*; α(L)=0.00165 *17*; α(M)=0.00035 *4*; α(N+..)=9.0×10^{-5} *10* α(N)=7.7×10^{-5} *8*; α(O)=1.23×10^{-5} *15*; α(P)=8.6×10^{-7} *20*
3404.9	(23/2$^+$)	276.2†	16	3128.7				
		337.5†	100	3067.3	(21/2$^+$)	M1+E2	0.038 *5*	α(K)=0.032 *5*; α(L)=0.00491 *12*; α(M)=0.00104 *4*; α(N+..)=0.000267 *6* α(N)=0.000229 *7*; α(O)=3.60×10^{-5} *6*; α(P)=2.3×10^{-6} *5*
3416.1	(25/2)	190.8† *3*	100 *10*	3225.4	(23/2)	D		
		443.5† *3*	10 *2*	2972.6	(−)	D		
3684.4		279.3†	100	3404.9	(23/2$^+$)			
		459.1†		3225.4	(23/2)			
3694.4		390.5†	100	3303.9	(25/2$^-$)			
3703.3	(27/2)	287.2 *3*	100	3416.1	(25/2)	D		
3725.0	(25/2$^+$)	320.1†	100	3404.9	(23/2$^+$)	(M1+E2)	0.044 *5*	α(K)=0.037 *5*; α(L)=0.0058 *3*; α(M)=0.00122 *7*; α(N+..)=0.000314 *14* α(N)=0.000269 *13*; α(O)=4.23×10^{-5} *9*; α(P)=2.7×10^{-6} *6*
3744.2		1253.9†	100	2490.3	21/2$^-$			
3763.6		1273.3†	100	2490.3	21/2$^-$			
3890.7		165.7†	100	3725.0	(25/2$^+$)			
3936.1	25/2$^-$	172.6†		3763.6				
		192.0†		3744.2				
		1445.9†	100	2490.3	21/2$^-$	E2	1.01×10^{-3}	α(K)=0.000817 *12*; α(L)=0.0001051 *15*; α(M)=2.19×10^{-5} *3*; α(N+..)=6.52×10^{-5} *10*

$^{137}_{58}Ce_{79}$-10

Adopted Levels, Gammas (continued)

γ(^{137}Ce) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[‡]	Comments
								α(K)=0.000817 *12*; α(L)=0.0001051 *15*; α(M)=2.19×10^{-5} *3*; α(N+..)=6.52×10^{-5} *10* α(N)=4.84×10^{-6} *7*; α(O)=7.85×10^{-7} *11*; α(P)=5.94×10^{-8} *9*; α(IPF)=5.95×10^{-5} *9*
3985.9		49.8[†]		3936.1	25/2$^-$			
		301.4[†]	100	3684.4		M1+E2	0.052 *5*	α(K)=0.044 *6*; α(L)=0.0070 *5*; α(M)=0.00148 *13*; α(N+..)=0.00038 *3* α(N)=0.000325 *25*; α(O)=5.09×10^{-5} *22*; α(P)=3.1×10^{-6} *6*
		681.8[†]	11	3303.9	(25/2$^-$)			
4115.1	(29/2)	411.7[†]	100	3703.3	(27/2)	M1+E2	0.022 *4*	α(K)=0.019 *4*; α(L)=0.00272 *15*; α(M)=0.00057 *3*; α(N+..)=0.000148 *9* α(N)=0.000127 *7*; α(O)=2.01×10^{-5} *15*; α(P)=1.4×10^{-6} *3*
4173.6		470.3 *3*	100	3703.3	(27/2)	D		
4255.7	(31/2)	269.7[†]	50	3985.9		E2	0.0684	α(K)=0.0543 *8*; α(L)=0.01112 *16*; α(M)=0.00240 *4*; α(N+..)=0.000605 *9* α(N)=0.000522 *8*; α(O)=7.89×10^{-5} *11*; α(P)=3.52×10^{-6} *5*
		552.5[†]	100	3703.3	(27/2)	E2	0.00825	α(K)=0.00692 *10*; α(L)=0.001053 *15*; α(M)=0.000222 *4*; α(N+..)=5.71×10^{-5} *8* α(N)=4.89×10^{-5} *7*; α(O)=7.71×10^{-6} *11*; α(P)=4.90×10^{-7} *7*
4339.7		166.1 *3*	100	4173.6				
4585.9		412.3 *3*	100	4173.6		D		
4668.3		777.6[†]	100	3890.7				
4704.5	(31/2)	589.4[†]	100	4115.1	(29/2)	(M1+E2)	0.0087 *17*	α(K)=0.0074 *15*; α(L)=0.00102 *14*; α(M)=0.00021 *3*; α(N+..)=5.5×10^{-5} *8* α(N)=4.7×10^{-5} *7*; α(O)=7.6×10^{-6} *12*; α(P)=5.4×10^{-7} *13*
4732.4	(33/2$^+$)	476.7[†] *3*	100	4255.7	(31/2)	D		
5305.1	(35/2$^+$)	572.8[†]	100	4732.4	(33/2$^+$)	M1+E2	0.0093 *18*	α(K)=0.0079 *16*; α(L)=0.00110 *15*; α(M)=0.00023 *3*; α(N+..)=6.0×10^{-5} *8* α(N)=5.1×10^{-5} *7*; α(O)=8.1×10^{-6} *12*; α(P)=5.8×10^{-7} *14*
		600.6[†]		4704.5	(31/2)			
5379.9	(33/2)	1124.1[†]	100	4255.7	(31/2)	(E1)	6.86×10^{-4}	α(K)=0.000588 *9*; α(L)=7.30×10^{-5} *11*; α(M)=1.511×10^{-5} *22*; α(N+..)=9.28×10^{-6} *13* α(N)=3.35×10^{-6} *5*; α(O)=5.44×10^{-7} *8*; α(P)=4.19×10^{-8} *6*; α(IPF)=5.34×10^{-6} *8*
5546.0	(35/2$^-$)	166.0[†]	35	5379.9	(33/2)			
		813.7[†]	100	4732.4	(33/2$^+$)	(E1)	1.26×10^{-3}	α(K)=0.001089 *16*; α(L)=0.0001366 *20*; α(M)=2.83×10^{-5} *4*; α(N+..)=7.36×10^{-6} *11* α(N)=6.27×10^{-6} *9*; α(O)=1.016×10^{-6} *15*; α(P)=7.71×10^{-8} *11*
5851.6	(37/2$^-$)	305.6[†]	100	5546.0	(35/2$^-$)	M1+E2	0.050 *5*	α(K)=0.042 *5*; α(L)=0.0067 *5*; α(M)=0.00141 *11*; α(N+..)=0.000363 *23* α(N)=0.000311 *22*; α(O)=4.88×10^{-5} *19*; α(P)=3.0×10^{-6} *6*

$^{137}_{58}Ce_{79}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{137}Ce)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[‡]	Comments
5851.6	(37/2$^-$)	546.5[†]	23	5305.1	(35/2$^+$)			
6110.9		805.8[†]	100	5305.1	(35/2$^+$)			
		1378.6[†]		4732.4	(33/2$^+$)			
6322.0	(39/2$^-$)	470.4[†]	100	5851.6	(37/2$^-$)	M1+E2	0.015 *3*	α(K)=0.0131 *25*; α(L)=0.00187 *18*; α(M)=0.00039 *4*; α(N+..)=0.000102 *10* α(N)=8.7×10^{-5} *8*; α(O)=1.38×10^{-5} *15*; α(P)=9.6×10^{-7} *22*
6459.9		349.0[†]	100	6110.9		M1+E2	0.035 *5*	α(K)=0.029 *5*; α(L)=0.00443 *7*; α(M)=0.000937 *22*; α(N+..)=0.000241 *4* α(N)=0.000206 *4*; α(O)=3.26×10^{-5} *8*; α(P)=2.1×10^{-6} *5*
		1154.8[†]		5305.1	(35/2$^+$)			
6930.1		608.1[†]	100	6322.0	(39/2$^-$)			
7661.2		731.1[†]	100	6930.1				

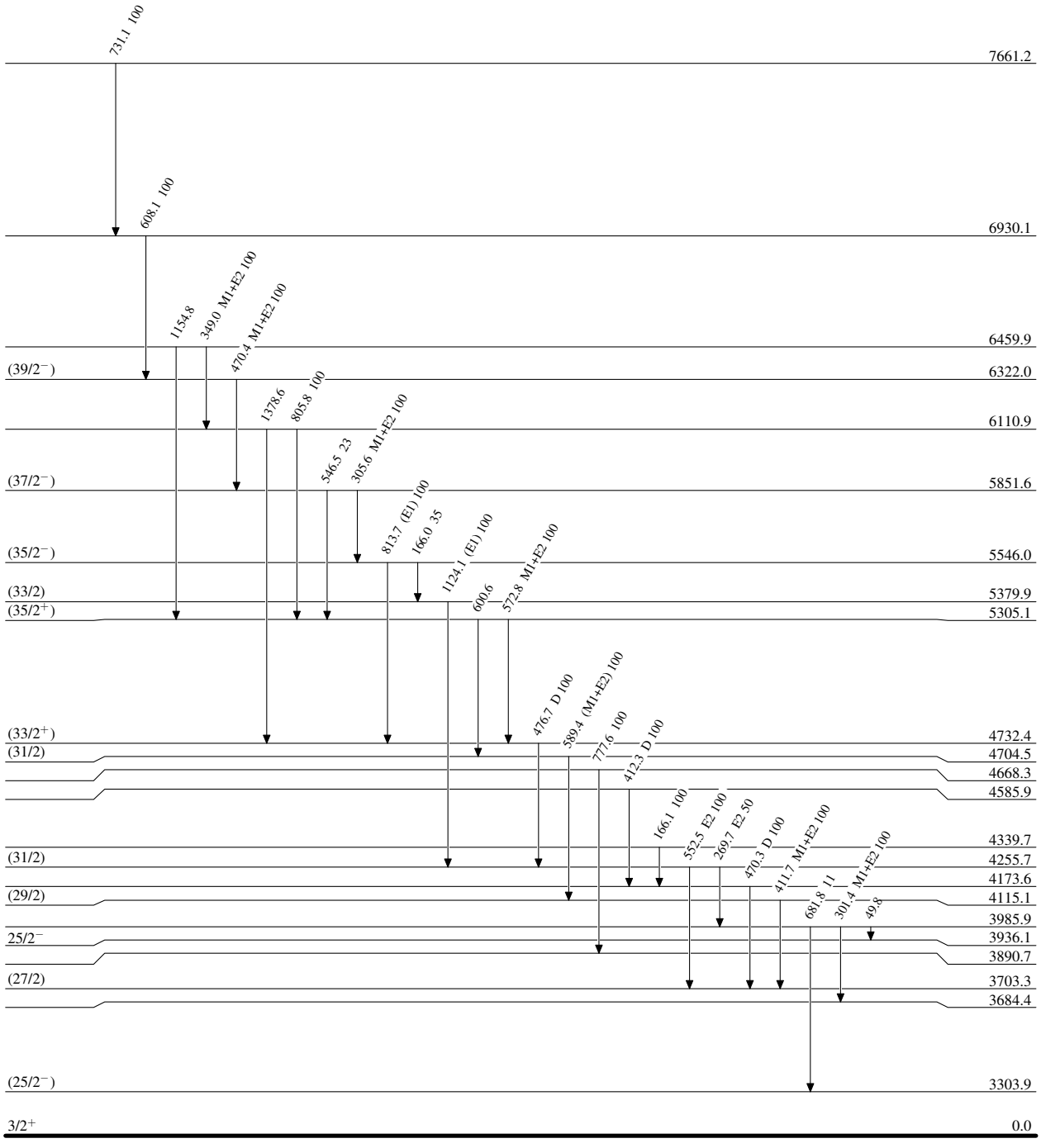
[†] From ^{124}Sn(^{18}O,5nγ).
[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[#] Multiply placed.
[@] Placement of transition in the level scheme is uncertain.

$^{137}_{58}Ce_{79}$-12

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

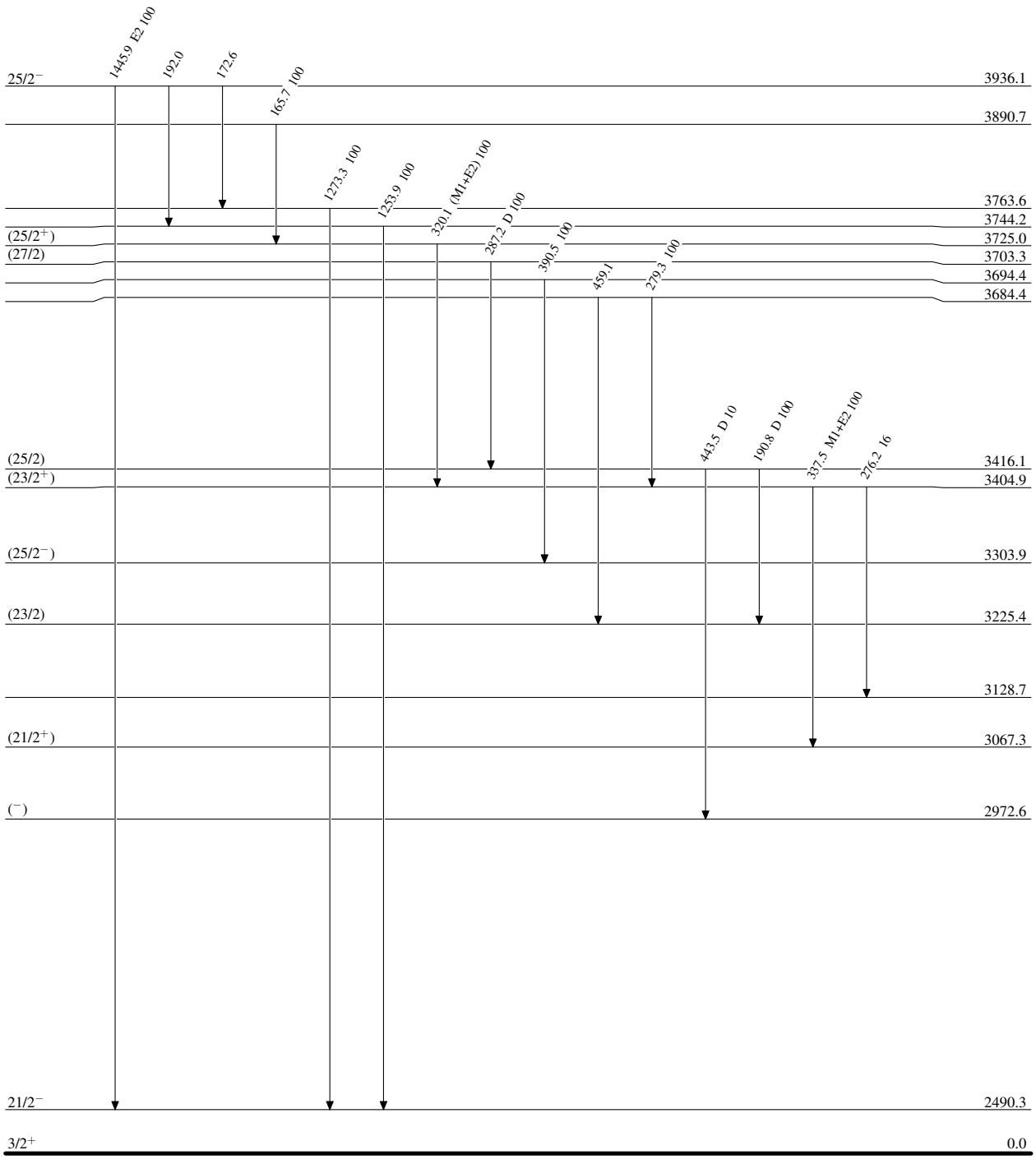


$^{137}_{58}Ce_{79}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

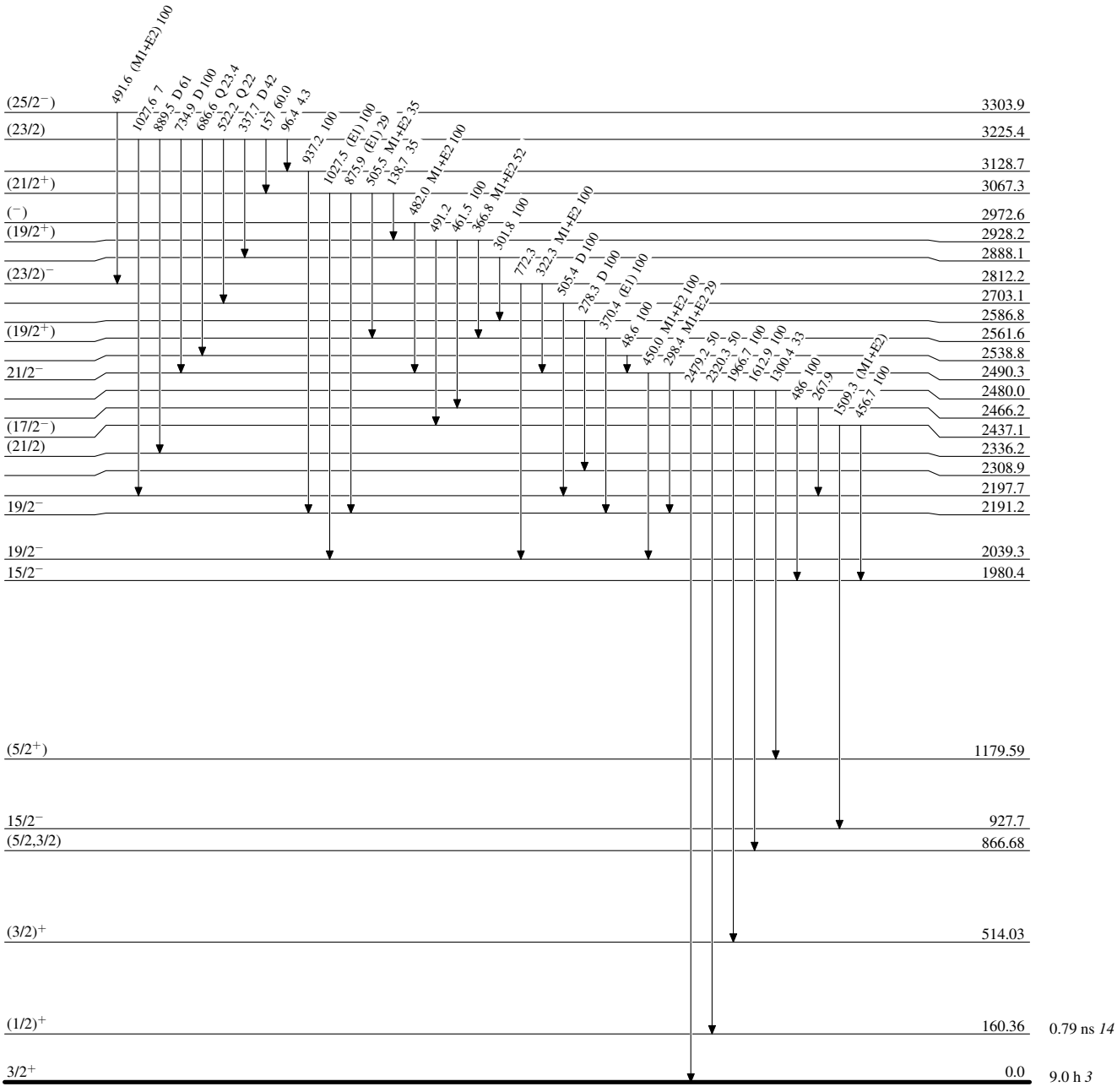


$^{137}_{58}Ce_{79}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{137}_{58}Ce_{79}$

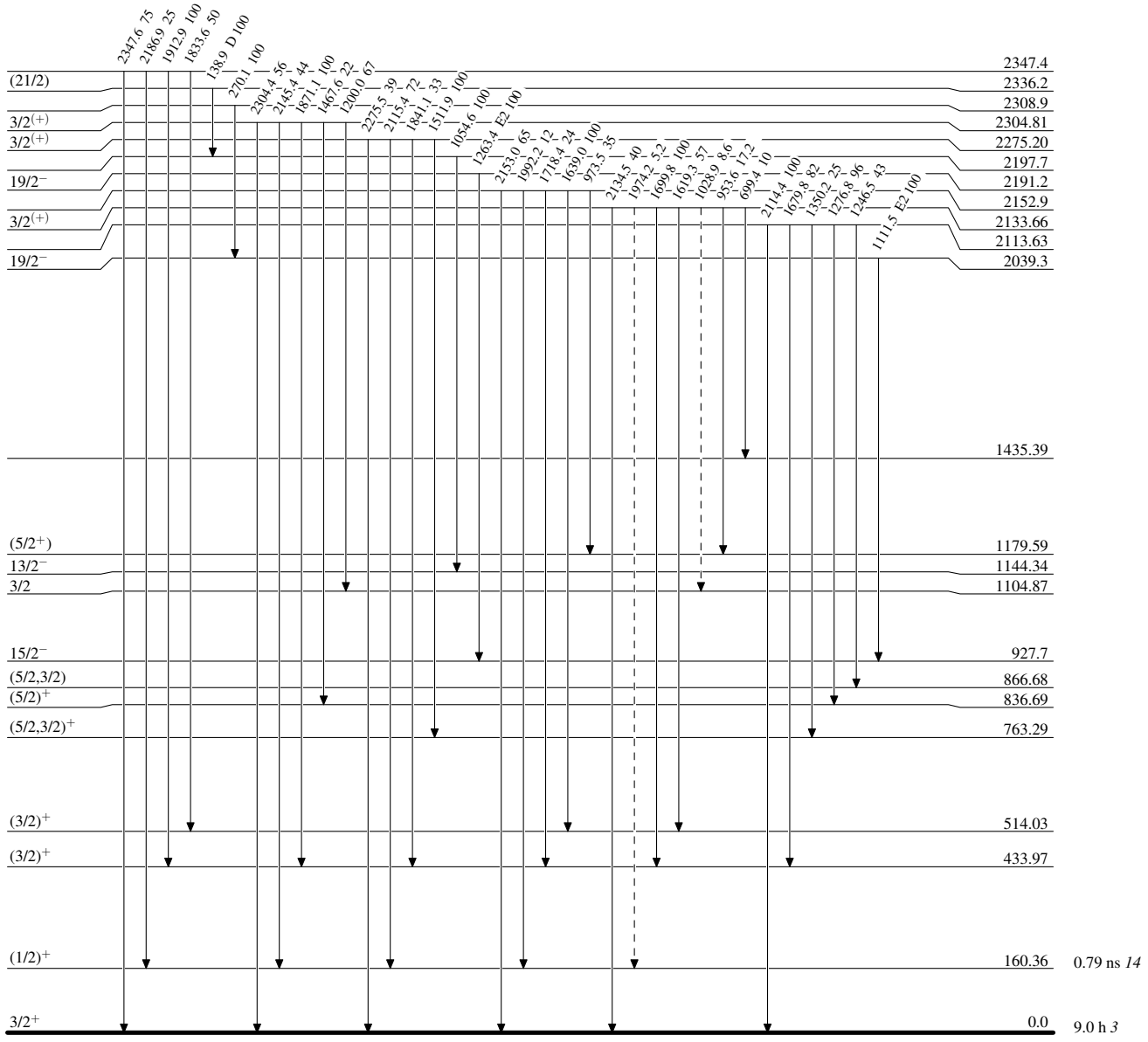
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



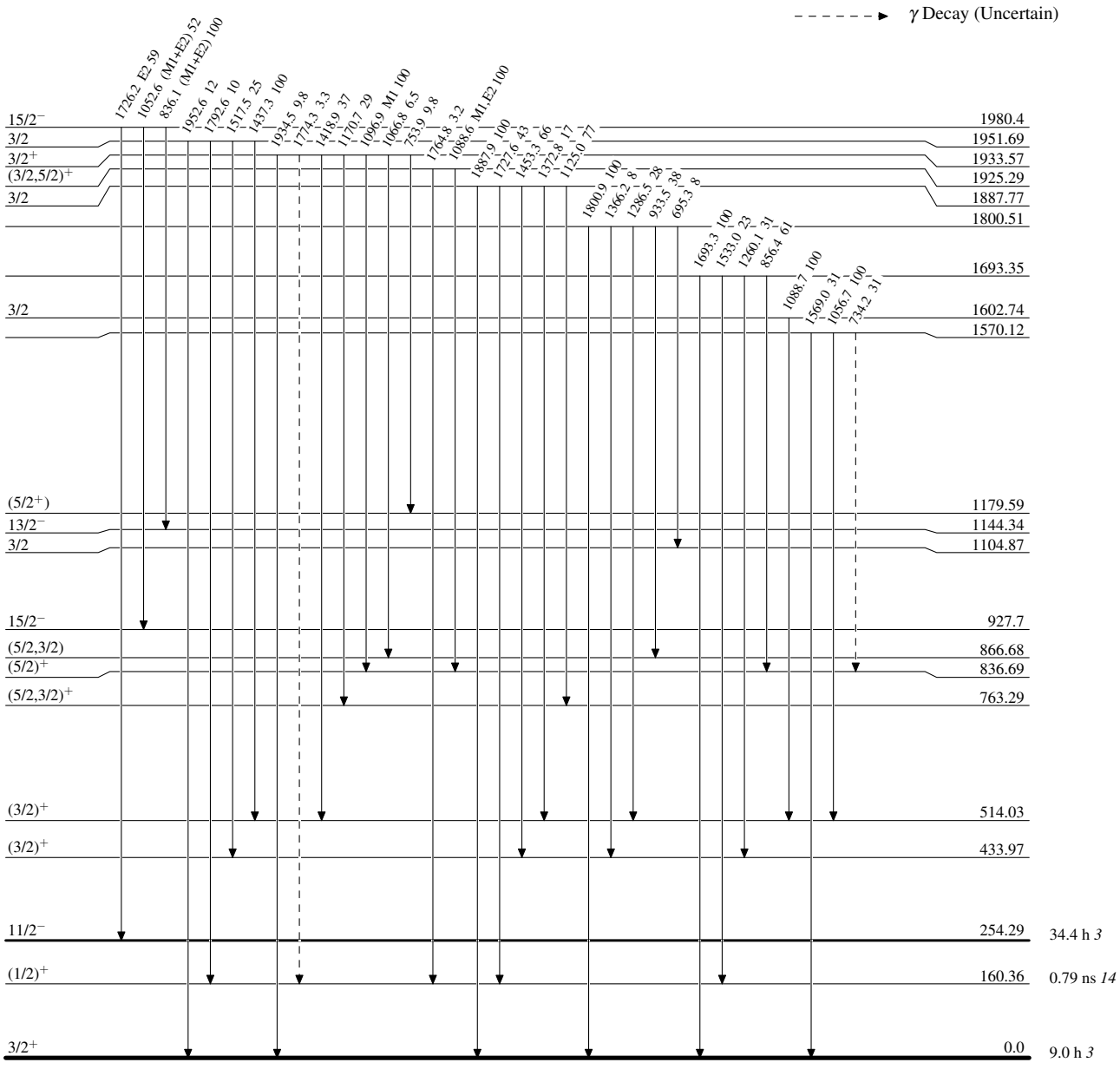
$^{137}_{58}Ce_{79}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{137}_{58}Ce_{79}$

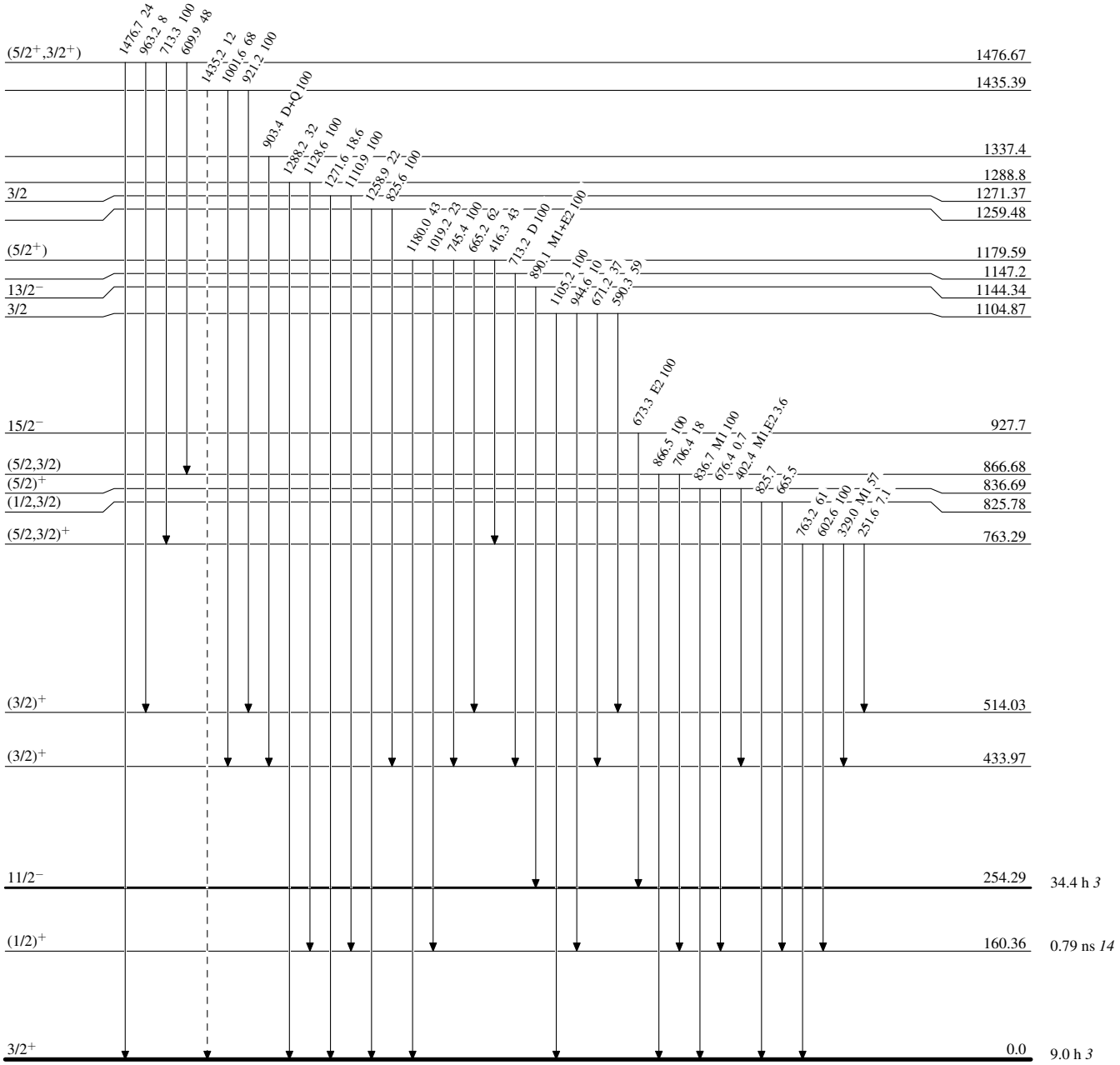
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

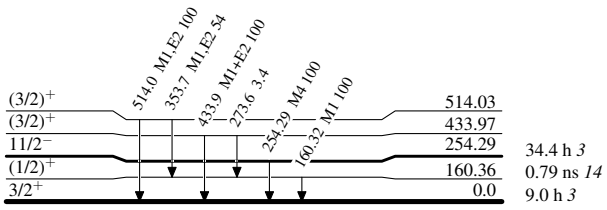


$^{137}_{58}Ce_{79}$

Adopted Levels, Gammas

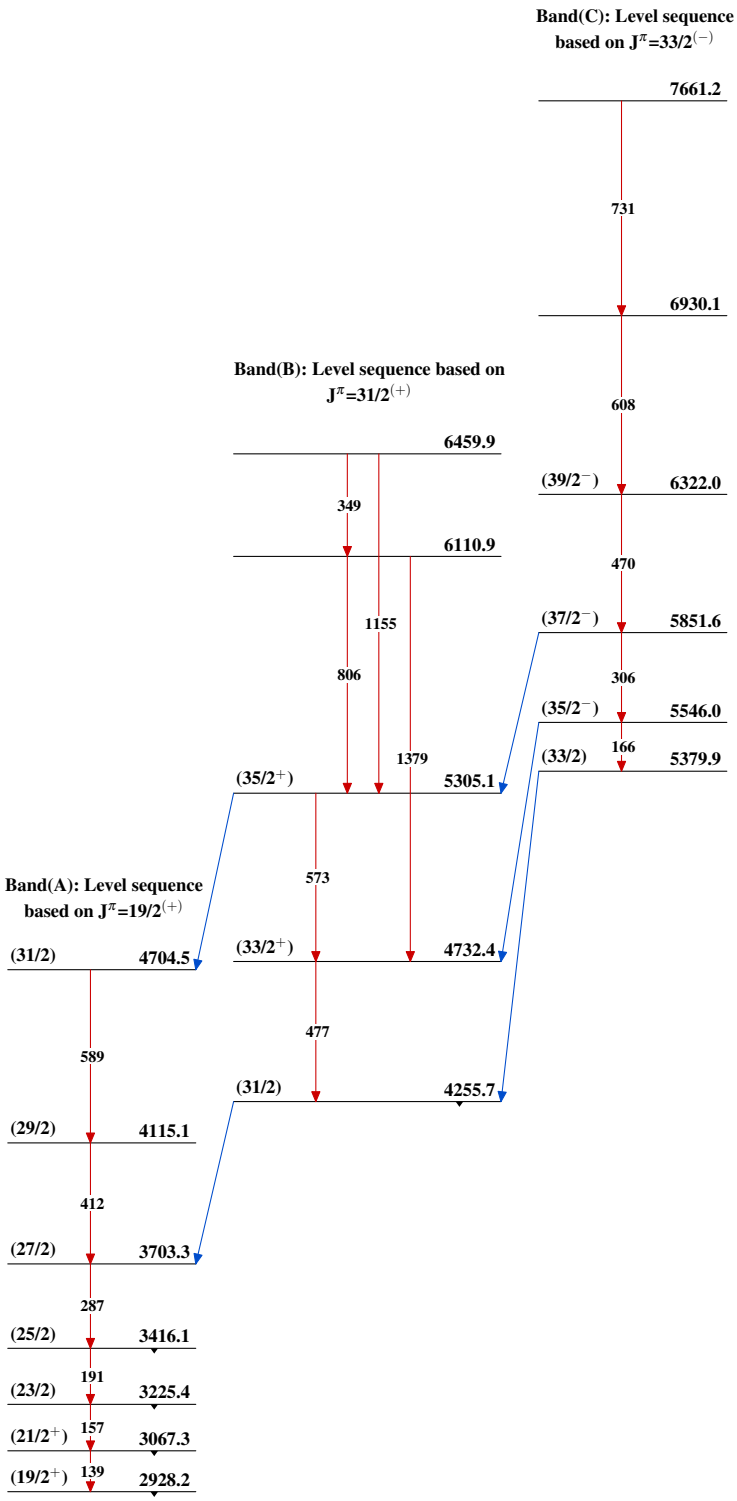
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{137}_{58}Ce_{79}$

Adopted Levels, Gammas



$^{137}_{58}Ce_{79}$