Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 114, 1497 (2013)	31-Aug-2013

Q(β^-)=1105 *19*; S(n)=7278 *24*; S(p)=1.066×10^4 *3*; Q(α)=−2.18×10^3 *3* 2017Wa10
S(2n)=12612 *24*; S(2p)=1.988×10^4 *3* 2017Wa10
Additional information 1.

^{152}Nd Levels

Calculations:
Ground state properties: 1996La03.
Hartree-Fock parameters: 1989Ku17.
Levels, transition probabilities: 1995Zh26, 1995Zu02, 1994Se15.
Microscopic structure of 0$^+$ states: 1995Sh38.
Octupole degree of freedom: 1992Eg01.

Cross Reference (XREF) Flags

A ^{152}Pr β^- decay
B ^{252}Cf SF decay
C ^{150}Nd(t,p)
D ^{248}Cm SF decay

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[b]	0$^+$	11.4 min *2*	ABCD	%β^-=100 T$_{1/2}$: weighted average of 11.6 min *7* (1990Sh24), 11.4 min *2* (1971Da19), and 11.3 min *4* (1969Wa25).
72.40[b] *5*	2$^+$	4.18 ns *23*	ABCD	J$^\pi$: E2 γ to g.s.
236.54[b] *8*	4$^+$	316 ps *15*	ABCD	J$^\pi$: stretched E2 to 2$^+$ level. g.s. rotational band.
484.03[b] *13*	6$^+$	53 ps *10*	AB D	J$^\pi$: stretched E2 to 4$^+$ level. g.s. rotational band.
806.2[b] *5*	8$^+$[@]		B D	
868 *20*			C	
1139[c] *15*	0$^+$		C	J$^\pi$: L=0 in (t,p).
1148.76[d] *13*	(1$^-$)		A	J$^\pi$: γ's to 0$^+$ g.s. and 2$^+$ level. Band structure.
1196.2[b] *8*	10$^+$[@]		B D	
1239.03[d] *14*	(3$^-$)		AB	J$^\pi$: γ's to 2$^+$ and 4$^+$ levels. Band structure.
1251.03[c] *10*	(2$^+$)		A C	J$^\pi$: L=(2) in (t,p); γ's to 2$^+$ and 4$^+$ levels. Band structure.
1406.29[d] *23*	(5$^-$)		AB	J$^\pi$: γ's to 4$^+$ and 6$^+$ levels. Band structure.
1474.63[c] *22*	(4$^+$)		A	J$^\pi$: γ's to 4$^+$ and 6$^+$ levels. Band structure.
1542.08[e] *7*	(2$^-$)	132 ps *12*	AB	J$^\pi$: γ's to 0$^+$ and (3$^-$). B(EL)(W.u.) values for the g.s. transition are consistent only with mult(1542γ)=M2 or E3. Values for J=1 and for J$^\pi$=2$^+$ are unreasonably small, and values for higher multipoles exceed RUL. $\gamma\gamma(\theta)$ results are consistent with J=1, 2, or 3. The 393γ to (1$^-$) is mainly M1. The 1542 level is suggested as the bandhead of a K$^\pi$=2$^-$ band (see 1988Ka14).
1600.37[e] *10*	(3$^-$)	12 ps *7*	AB	J$^\pi$: γ's to 2$^+$ and 4$^+$. Band structure.
1648.7[b] *13*	12$^+$[@]	2.1[a] ps	B D	
1651.8 *5*			B	J$^\pi$: γ to 6$^+$.
1672.2 *5*	2$^+$,3,4$^+$		A	J$^\pi$: γ's to 2$^+$ and 4$^+$.
1683.03[e] *11*	(4$^-$)	64 ps *56*	AB	J$^\pi$: γ's to (2$^-$) and 4$^+$. Band structure.

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Adopted Levels, Gammas (continued)

^{152}Nd Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
1772.7 *5*	(4+,5)		ABc	Jπ: log *ft*=7.1 from (4+). γ to 6+.
1783.5[e] *5*	(5−)		ABc	Jπ: γ's to 4+ and 6+. Band structure.
1827.08[f] *9*	(3+)	42 ps *6*	AB	Jπ: E1 γ's to (2−) and (3−). γ to (4−).
1886.63 *19*	(3−,4−)		A	Jπ: γ's to (2−) and (5−).
1893.89 *23*	(3,4+)		A	Jπ: γ's to 2+ and 4+. log *ft*=6.2 from (4+).
1897.97[f] *12*	(4+)	30 ps *10*	AB	Jπ: E1 γ to (3−). γ to (5−). Band structure.
1904.7[e] *4*	(6−)		B	Jπ: γ's to (4−) and 6+. Band structure.
1951.1 *5*	(3−,4,5)		A	Jπ: γ's to 4+, (4−), and (5−).
1957.6 *8*			A	Jπ: γ to 4+.
1987.6 *8*	(5−,6−)		B	Jπ: γ to (4−). γ from (7−).
1990.9 *5*	(4+,5−)		A	Jπ: γ's to (3−) and 6+.
2038.4 *4*			B	Jπ: γ to 6+. γ from (7−).
2039.6 *6*			A	Jπ: γ to (3−,4−).
2159.0[b] *14*	14+[@]	1.2[a] ps	B D	
2177.84 *23*	(3−,4+)		A C	Jπ: γ's to 3(−), 4(−), and 4+. Seen in (t,p) so probably natural parity.
2202.7[e] *5*	(8−)		B	Jπ: γ to (6−). Band structure.
2222.1 *8*	(6+,7,8+)		B	Jπ: γ's to 6+ and 8+.
2243.2[g] *4*	(7−)	63 ns *7*	B	Jπ: γ's to 6+, 8+, and (6−). BCS-Nilsson calculations suggest 7− with configuration π5/2−[532]⊗π9/2+[404]. $T_{1/2}$: From 2010Ye10 in ^{252}Cf SF decay.
2256.6 *4*	(3,4,5)		A	Jπ: γ's to 4+ and (4−).
2390.8[g] *6*	(8−)[&]		B	
2421.1 *7*	(3,4−)		A	Jπ: log *ft*=6.2 from (4+). γ to 2(−).
2497 *20*			C	
2559.7[g] *8*	(9−)[&]		B	
2572.1[g] *7*	(10−)		B	
2572.2[e] *11*	(10−)		B	Jπ: γ to (8−). Band structure.
2574.0 *7*	(3,4,5)		A	Jπ: log *ft*=6.0 from (4+). γ to 4+.
2581.2 *7*	(3,4+)		A	Jπ: log *ft*=6.1 from (4+). γ to 2+.
2612.8 *9*	(3,4,5)		A	Jπ: log *ft*=6.4 from (4+). γ to 4+.
2629.9 *12*			A	Jπ: γ to 4+.
2702.3 *8*			A	Jπ: γ to (3−,4−).
2709.0 *14*			A	Jπ: γ to 4+.
2722.6 *14*			A	Jπ: γ to 4+.
2723.3[b] *15*	16+[@]	0.7[a] ps	B D	
2745.9[g] *10*	(10−)[&]		B	
2854 *20*			C	
2986.1 *14*			A	Jπ: γ to 4+.
3005.1[e] *13*	(12−)		B	Jπ: γ to (10−). Band structure.
3103.6 *15*			A	Jπ: γ to 4+.
3146.6 *15*			A	Jπ: γ to 4+.
3338.2[b] *15*	18+[@]		B	
3351 *20*			C	
4001.0?[b] *15*	20+[@]		B	

[†] From a least-squares fit to the Eγ data, except for those levels from (t,p) and quoted with uncertainties of 15 keV or 20 keV.

[‡] The band structure arguments, as proposed by 1988Ka14 and 1992He13 in ^{152}Pr β^- decay, are supported by γ decay patterns, Alaga predictions, and comparison with such bands in other deformed nuclei. The g.s. band is from ^{252}Cf and ^{248}Cm SF decays based on multiple γγ coincidence work. log *ft* from (4+) for the levels above 2613 seen in β^- decay suggest Jπ=(3,4,5); however, the branches are weak.

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Adopted Levels, Gammas (continued)

^{152}Nd Levels (continued)

From ^{152}Pr β^- decay, except where noted otherwise.
@ Member of the g.s. rotational band.
& Member of possible $K^\pi=7^-$ band with bandhead at 2243.
a From ^{248}Cm SF decay.
b Band(A): $K^\pi=0^+$ g.s. band.
c Band(B): $K^\pi=0^+$ band.
d Band(C): $K^\pi=0^-$ band.
e Band(D): $K^\pi=2^-$ band.
f Band(E): $K^\pi=3^+$ band.
g Band(F): $K^\pi=7^-$ band.

Adopted Levels, Gammas (continued)

γ(^{152}Nd)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
72.40	2+	72.41 *5*		0.0	0+	E2		7.16	α(K)=2.81 *4*; α(L)=3.39 *5*; α(M)=0.775 *12*; α(N+..)=0.188 *3* α(N)=0.1671 *24*; α(O)=0.0212 *3*; α(P)=0.0001194 *17* B(E2)(W.u.)=173 *10* Mult.: from γγ(θ) (^{152}Pr β$^-$ decay) and K/L (^{252}Cf SF decay).
236.54	4+	164.11 *6*		72.40	2+	E2		0.384	B(E2)(W.u.)=226 *11* α(K)=0.270 *4*; α(L)=0.0892 *13*; α(M)=0.0200 *3*; α(N+..)=0.00494 *7* α(N)=0.00435 *7*; α(O)=0.000582 *9*; α(P)=1.313×10^{-5} *19*
484.03	6+	247.43 *11*		236.54	4+	E2		0.0969	B(E2)(W.u.)=218 *+51−35* α(K)=0.0747 *11*; α(L)=0.01743 *25*; α(M)=0.00385 *6*; α(N+..)=0.000963 *14* α(N)=0.000843 *12*; α(O)=0.0001167 *17*; α(P)=3.96×10^{-6} *6*
806.2	8+	322.2		484.03	6+	[E2]		0.0420	α(K)=0.0335 *5*; α(L)=0.00665 *10*; α(M)=0.001453 *21*; α(N+..)=0.000367 *6* α(N)=0.000320 *5*; α(O)=4.53×10^{-5} *7*; α(P)=1.86×10^{-6} *3*
1148.76	(1−)	1076.2 *3*	100	72.40	2+				
		1148.6 *3*	66 *8*	0.0	0+				
1196.2	10+	389.9		806.2	8+				
1239.03	(3−)	1002.4 *3*	71 *3*	236.54	4+				
		1166.5 *3*	100 *3*	72.40	2+				
1251.03	(2+)	1014.1 *3*	100 *4*	236.54	4+				
		1178.4 *4*	75 *4*	72.40	2+				
		1250.9 *7*	21 *3*	0.0	0+				
1406.29	(5−)	922.2 *3*	59 *18*	484.03	6+				
		1169.7 *4*	100	236.54	4+				
1474.63	(4+)	235.5 *4*	100 *29*	1239.03	(3−)				
		990.4 *5*	74 *17*	484.03	6+				
		1238.0 *4*	83 *6*	236.54	4+				
1542.08	(2−)	290.91 *9*	5.6 *12*	1251.03	(2+)	[E1]		0.01466	α(K)=0.01255 *18*; α(L)=0.001672 *24*; α(M)=0.000352 *5*; α(N+..)=9.08×10^{-5} *13* α(N)=7.84×10^{-5} *11*; α(O)=1.169×10^{-5} *17*; α(P)=7.05×10^{-7} *10* B(E1)(W.u.)=3.3×10^{-6} *8* δ: δ(Q/D)=+0.8 *7*.
		303.0 *2*	5.0 *6*	1239.03	(3−)	[M1(+E2)]	−0.1 *2*	0.0664 *15*	B(M1)(W.u.)<0.00027; B(E2)(W.u.)<0.92 α(K)=0.0566 *15*; α(L)=0.00772 *12*; α(M)=0.00163 *3*; α(N+..)=0.000425 *7* α(N)=0.000366 *6*; α(O)=5.57×10^{-5} *8*; α(P)=3.63×10^{-6} *12*
		393.25 *14*	9.9 *13*	1148.76	(1−)	[M1(+E2)]	−0.6 *6*	0.031 *4*	B(M1)(W.u.)<0.00027; B(E2)(W.u.)<0.92 α(K)=0.026 *4*; α(L)=0.00375 *17*; α(M)=0.00080 *3*; α(N+..)=0.000207 *10* α(N)=0.000178 *8*; α(O)=2.68×10^{-5} *16*; α(P)=1.6×10^{-6} *3*

$^{152}_{60}Nd_{92}$-4

Adopted Levels, Gammas (continued)

γ(^{152}Nd) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ @	E_f	J_f^π	Mult. #	α †	Comments
1542.08	(2$^-$)	1469.71 *5*	100 *3*	72.40	2$^+$	[E1]	6.59×10^{-4}	α(K)=0.000406 *6*; α(L)=5.07×10^{-5} *7*; α(M)=1.062×10^{-5} *15*; α(N+..)=0.000193 *3* α(N)=2.38×10^{-6} *4*; α(O)=3.62×10^{-7} *5*; α(P)=2.41×10^{-8} *4*; α(IPF)=0.000190 *3* B(E1)(W.u.)=4.6×10^{-7} *5* δ: δ(Q/D)≈0.
		1541.9 *5*	1.2 *4*	0.0	0$^+$	[M2]	0.00285	B(M2)(W.u.)=0.009 *4* α(K)=0.00240 *4*; α(L)=0.000321 *5*; α(M)=6.80×10^{-5} *10*; α(N+..)=5.47×10^{-5} *8* α(N)=1.524×10^{-5} *22*; α(O)=2.33×10^{-6} *4*; α(P)=1.545×10^{-7} *22*; α(IPF)=3.69×10^{-5} *6*
1600.37	(3$^-$)	125.6 *6*	1.1 *6*	1474.63	(4$^+$)	[E1]	0.139 *3*	B(E1)(W.u.)=9×10^{-5} *+14−6* α(K)=0.1180 *23*; α(L)=0.0165 *4*; α(M)=0.00349 *7*; α(N+..)=0.000888 *18* α(N)=0.000770 *15*; α(O)=0.0001120 *22*; α(P)=6.07×10^{-6} *12*
		349.8 *2*	3.6 *6*	1251.03	(2$^+$)	[E1]	0.00922	B(E1)(W.u.)=1.3×10^{-5} *+20−6* α(K)=0.00790 *12*; α(L)=0.001044 *15*; α(M)=0.000220 *3*; α(N+..)=5.67×10^{-5} *8* α(N)=4.90×10^{-5} *7*; α(O)=7.33×10^{-6} *11*; α(P)=4.50×10^{-7} *7*
		361.4 *4*	4.1 *6*	1239.03	(3$^-$)	[M1,E2]	0.036 *7*	B(M1)(W.u.)<0.0036; B(E2)(W.u.)<15 α(K)=0.030 *6*; α(L)=0.00466 *19*; α(M)=0.00100 *3*; α(N+..)=0.000257 *11* α(N)=0.000222 *8*; α(O)=3.28×10^{-5} *22*; α(P)=1.8×10^{-6} *5*
		1363.8 *3*	100 *4*	236.54	4$^+$	[E1]	6.49×10^{-4}	α(K)=0.000461 *7*; α(L)=5.77×10^{-5} *8*; α(M)=1.210×10^{-5} *17*; α(N+..)=0.0001185 *17* α(N)=2.71×10^{-6} *4*; α(O)=4.12×10^{-7} *6*; α(P)=2.74×10^{-8} *4*; α(IPF)=0.0001154 *17* B(E1)(W.u.)=6×10^{-6} *+10−3* δ: δ(Q/D)=0.0 *1* from γγ(θ).
		1528.1 *4*	10.2 *14*	72.40	2$^+$	[E1]	6.73×10^{-4}	B(E1)(W.u.)=5×10^{-7} *+8−2* α(K)=0.000380 *6*; α(L)=4.74×10^{-5} *7*; α(M)=9.93×10^{-6} *14*; α(N+..)=0.000235 *4* α(N)=2.22×10^{-6} *4*; α(O)=3.39×10^{-7} *5*; α(P)=2.26×10^{-8} *4*; α(IPF)=0.000233 *4*
1648.7	12$^+$	452.5		1196.2	10$^+$	[E2]	0.01548	B(E2)(W.u.)=290 α(K)=0.01273 *18*; α(L)=0.00216 *3*; α(M)=0.000467 *7*; α(N+..)=0.0001190 *17* α(N)=0.0001033 *15*; α(O)=1.498×10^{-5} *21*; α(P)=7.39×10^{-7} *11*
1651.8		1167.8 *8*		484.03	6$^+$			
1672.2	2$^+$,3,4$^+$	1435.7 *6*	44 *6*	236.54	4$^+$			
		1599.7 *6*	100	72.40	2$^+$			
1683.03	(4$^-$)	83.0 *4*	11 *6*	1600.37	(3$^-$)	[M1,E2]	3.4 *10*	α(K)=2.03 *5*; α(L)=1.0 *8*; α(M)=0.24 *18*; α(N+..)=0.06 *5* α(N)=0.05 *4*; α(O)=0.007 *5*; α(P)=0.000109 *24*
		141.1 *3*	12.9 *24*	1542.08	(2$^-$)	[E2]	0.646 *11*	B(E2)(W.u.)=2.7×10^2 *+185−15*

$^{152}_{60}Nd_{92}$-5

Adopted Levels, Gammas (continued)

γ(^{152}Nd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
								α(K)=0.430 *7*; α(L)=0.168 *3*; α(M)=0.0378 *7*; α(N+..)=0.00933 *16* α(N)=0.00822 *14*; α(O)=0.001087 *18*; α(P)=2.03×10^{-5} *3*
1683.03	(4$^-$)	1446.4 *3*	100 *4*	236.54	4$^+$	[E1]	6.56×10^{-4}	B(E1)(W.u.)=7×10^{-7} *+51−4* α(K)=0.000417 *6*; α(L)=5.21×10^{-5} *8*; α(M)=1.092×10^{-5} *16*; α(N+..)=0.0001759 *25* α(N)=2.44×10^{-6} *4*; α(O)=3.72×10^{-7} *6*; α(P)=2.47×10^{-8} *4*; α(IPF)=0.0001730 *25*
1772.7	(4$^+$,5)	1288.7 *4*		484.03	6$^+$			
1783.5	(5$^-$)	376.8		1406.29	(5$^-$)			
		1298.0		484.03	6$^+$			
		1547.6 *6*		236.54	4$^+$			
1827.08	(3$^+$)	144.1 *1*	1.8 *4*	1683.03	(4$^-$)	[E1]	0.0954	B(E1)(W.u.)=2.4×10^{-5} *7* α(K)=0.0812 *12*; α(L)=0.01124 *16*; α(M)=0.00237 *4*; α(N+..)=0.000605 *9* α(N)=0.000524 *8*; α(O)=7.67×10^{-5} *11*; α(P)=4.25×10^{-6} *6*
		226.76 *8*	22.9 *12*	1600.37	(3$^-$)	E1	0.0281	B(E1)(W.u.)=8.0×10^{-5} *12* α(K)=0.0240 *4*; α(L)=0.00323 *5*; α(M)=0.000682 *10*; α(N+..)=0.0001751 *25* α(N)=0.0001514 *22*; α(O)=2.24×10^{-5} *4*; α(P)=1.319×10^{-6} *19*
		284.95 *7*	100.0 *6*	1542.08	(2$^-$)	E1	0.01546	α(K)=0.01323 *19*; α(L)=0.001765 *25*; α(M)=0.000372 *6*; α(N+..)=9.58×10^{-5} *14* α(N)=8.27×10^{-5} *12*; α(O)=1.233×10^{-5} *18*; α(P)=7.42×10^{-7} *11* B(E1)(W.u.)=0.00018 *3* δ: −0.1 *5* from γγ(θ).
		587.9 *6*	1.35 *25*	1239.03	(3$^-$)	[E1]	0.00274	B(E1)(W.u.)=2.7×10^{-7} *7* α(K)=0.00236 *4*; α(L)=0.000305 *5*; α(M)=6.41×10^{-5} *9*; α(N+..)=1.661×10^{-5} *24* α(N)=1.431×10^{-5} *21*; α(O)=2.16×10^{-6} *3*; α(P)=1.378×10^{-7} *20*
		1590.8 *4*	2.6 *4*	236.54	4$^+$	[M1,E2]	0.00114 *15*	α(K)=0.00088 *13*; α(L)=0.000114 *16*; α(M)=2.4×10^{-5} *4*; α(N+..)=0.000119 *5* α(N)=5.4×10^{-6} *8*; α(O)=8.2×10^{-7} *12*; α(P)=5.4×10^{-8} *9*; α(IPF)=0.000113 *4*
		1754.5 *3*	8.3 *10*	72.40	2$^+$	[M1,E2]	0.00102 *11*	α(K)=0.00072 *9*; α(L)=9.2×10^{-5} *11*; α(M)=1.95×10^{-5} *24*; α(N+..)=0.000189 *8* α(N)=4.4×10^{-6} *6*; α(O)=6.6×10^{-7} *9*; α(P)=4.4×10^{-8} *6*; α(IPF)=0.000184 *7*
1886.63	(3$^-$,4$^-$)	203.4 *3*	35 *9*	1683.03	(4$^-$)			
		286.3 *6*	24 *6*	1600.37	(3$^-$)			
		344.7 *3*	62 *6*	1542.08	(2$^-$)			
		480.2 *7*	26 *9*	1406.29	(5$^-$)			
		1650.2 *4*	100 *6*	236.54	4$^+$			
1893.89	(3,4$^+$)	293.7 *6*	11 *3*	1600.37	(3$^-$)			

Adopted Levels, Gammas (continued)

γ(^{152}Nd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
1893.89	(3,4$^+$)	419.0 *4*	36 *14*	1474.63	(4$^+$)			
		642.9 *4*	60 *6*	1251.03	(2$^+$)			
		1657.6 *6*	12 *3*	236.54	4$^+$			
		1821.5 *5*	100 *28*	72.40	2$^+$			
1897.97	(4$^+$)	214.94 *13*	52 *3*	1683.03	(4$^-$)	[E1]	0.0324	B(E1)(W.u.)=0.00023 *+12−6* α(K)=0.0276 *4*; α(L)=0.00374 *6*; α(M)=0.000788 *12*; α(N+..)=0.000202 *3* α(N)=0.0001748 *25*; α(O)=2.59×10^{-5} *4*; α(P)=1.511×10^{-6} *22*
		297.60 *9*	100 *10*	1600.37	(3$^-$)	E1	0.01383	B(E1)(W.u.)=0.00017 *+9−4* α(K)=0.01184 *17*; α(L)=0.001577 *23*; α(M)=0.000332 *5*; α(N+..)=8.56×10^{-5} *12* α(N)=7.39×10^{-5} *11*; α(O)=1.103×10^{-5} *16*; α(P)=6.67×10^{-7} *10*
		491.5 *7*	2.6 *13*	1406.29	(5$^-$)	[E1]	0.00410	B(E1)(W.u.)=9.9×10^{-7} *+51−24* α(K)=0.00352 *5*; α(L)=0.000458 *7*; α(M)=9.64×10^{-5} *14*; α(N+..)=2.49×10^{-5} *4* α(N)=2.15×10^{-5} *3*; α(O)=3.24×10^{-6} *5*; α(P)=2.04×10^{-7} *3*
		1661.5 *4*	20 *3*	236.54	4$^+$	[M1,E2]	0.00108 *13*	α(K)=0.00080 *11*; α(L)=0.000104 *14*; α(M)=2.2×10^{-5} *3*; α(N+..)=0.000148 *6* α(N)=4.9×10^{-6} *7*; α(O)=7.5×10^{-7} *10*; α(P)=5.0×10^{-8} *8*; α(IPF)=0.000142 *6*
1904.7	(6$^-$)	222.0 *5*	100 *16*	1683.03	(4$^-$)			
		1420.5 *5*	82 *7*	484.03	6$^+$			
1951.1	(3$^-$,4,5)	268.3 *7*	20 *6*	1683.03	(4$^-$)			
		544.9 *7*	17 *6*	1406.29	(5$^-$)			
		1714.2 *7*	100 *6*	236.54	4$^+$			
1957.6		1721.0 *8*		236.54	4$^+$			
1987.6	(5$^-$,6$^-$)	304		1683.03	(4$^-$)			
1990.9	(4$^+$,5$^-$)	391.2 *7*	30 *4*	1600.37	(3$^-$)			
		1506.5 *5*	100	484.03	6$^+$			
2038.4		386.5 *5*		1651.8				
		1554.3 *5*		484.03	6$^+$			
2039.6		153.0 *5*		1886.63	(3$^-$,4$^-$)			
2159.0	14$^+$	510.3 *5*		1648.7	12$^+$	[E2]	0.01114	B(E2)(W.u.)=280 α(K)=0.00924 *14*; α(L)=0.001500 *22*; α(M)=0.000323 *5*; α(N+..)=8.26×10^{-5} *12* α(N)=7.16×10^{-5} *11*; α(O)=1.045×10^{-5} *15*; α(P)=5.42×10^{-7} *8*
2177.84	(3$^-$,4$^+$)	279.9 *4*	74 *8*	1897.97	(4$^+$)			
		350.8 *4*	100 *8*	1827.08	(3$^+$)			
		494.8 *6*	37 *8*	1683.03	(4$^-$)			
		577.5 *5*	48 *8*	1600.37	(3$^-$)			
		1941.1 *6*	33 *8*	236.54	4$^+$			
2202.7	(8$^-$)	298.1 *5*	100 *18*	1904.7	(6$^-$)			
		1396.5 *5*	59 *6*	806.2	8$^+$			

$^{152}_{60}Nd_{92}$-7

Adopted Levels, Gammas (continued)

γ(^{152}Nd) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[@]	E_f	J_f^π	Mult.[#]	α[†]	Comments
2222.1	(6$^+$,7,8$^+$)	1416		806.2	8$^+$			
		1738		484.03	6$^+$			
2243.2	(7$^-$)	204.8 *5*	50 *23*	2038.4		[D,E2]	0.12 *7*	
		255		1987.6	(5$^-$,6$^-$)			
		338.6 *5*	91 *9*	1904.7	(6$^-$)	[M1,E2][&]	0.043 *7*	α(K)=0.036 *7*; α(L)=0.00567 *11*; α(M)=0.001218 *19*; α(N+..)=0.000313 *6* α(N)=0.000271 *5*; α(O)=3.98×10^{-5} *18*; α(P)=2.2×10^{-6} *6*
		1437.0 *5*	100 *5*	806.2	8$^+$	[E1][&]	6.54×10^{-4}	α(K)=0.000421 *6*; α(L)=5.27×10^{-5} *8*; α(M)=1.104×10^{-5} *16*; α(N+..)=0.0001690 *24* α(N)=2.47×10^{-6} *4*; α(O)=3.76×10^{-7} *6*; α(P)=2.50×10^{-8} *4*; α(IPF)=0.0001662 *24*
		1759.1 *5*	55 *9*	484.03	6$^+$	[E1][&]	7.55×10^{-4}	α(K)=0.000301 *5*; α(L)=3.74×10^{-5} *6*; α(M)=7.84×10^{-6} *11*; α(N+..)=0.000408 *6* α(N)=1.754×10^{-6} *25*; α(O)=2.67×10^{-7} *4*; α(P)=1.79×10^{-8} *3*; α(IPF)=0.000406 *6*
2256.6	(3,4,5)	358.6 *6*	100 *11*	1897.97	(4$^+$)			
		573.5 *6*	26 *11*	1683.03	(4$^-$)			
		2020.1 *8*	47 *11*	236.54	4$^+$			
2390.8	(8$^-$)	147.6 *5*		2243.2	(7$^-$)			
2421.1	(3,4$^-$)	879.0 *7*		1542.08	(2$^-$)			
2559.7	(9$^-$)	168.9 *5*		2390.8	(8$^-$)			
2572.1	(10$^-$)	369.4 *5*	100 *13*	2202.7	(8$^-$)			
		1375.9 *5*	22 *5*	1196.2	10$^+$			
2572.2	(10$^-$)	369.5		2202.7	(8$^-$)			
2574.0	(3,4,5)	2337.4 *7*		236.54	4$^+$			
2581.2	(3,4$^+$)	2344.3 *8*	100	236.54	4$^+$			
		2509.5 *13*	23 *4*	72.40	2$^+$			
2612.8	(3,4,5)	2376.2 *9*		236.54	4$^+$			
2629.9		2393.3 *12*		236.54	4$^+$			
2702.3		815.7 *7*		1886.63	(3$^-$,4$^-$)			
2709.0		2472.4 *14*		236.54	4$^+$			
2722.6		2486.0 *14*		236.54	4$^+$			
2723.3	16$^+$	564.3 *5*		2159.0	14$^+$	[E2]	0.00855	B(E2)(W.u.)=290 α(K)=0.00713 *11*; α(L)=0.001120 *16*; α(M)=0.000240 *4*; α(N+..)=6.16×10^{-5} *9* α(N)=5.34×10^{-5} *8*; α(O)=7.84×10^{-6} *12*; α(P)=4.22×10^{-7} *6*
2745.9	(10$^-$)	186.2 *5*		2559.7	(9$^-$)			
2986.1		2749.5 *14*		236.54	4$^+$			
3005.1	(12$^-$)	432.9 *5*		2572.2	(10$^-$)			
3103.6		2867.0 *15*		236.54	4$^+$			
3146.6		2910.0 *15*		236.54	4$^+$			

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Adopted Levels, Gammas (continued)

$\gamma(^{152}Nd)$ (continued)

E_i(level)	J_i^π	E_γ ‡	E_f	J_f^π
3338.2	18^+	614.9 *5*	2723.3	16^+
4001.0?	20^+	662.4[a] *5*	3338.2	18^+

† Additional information 2.
‡ Energies with uncertainties are from ^{152}Pr β^- decay. Other Eγ are from ^{252}Cf SF decay.
# From β^- decay. Values shown in square brackets have been deduced from the level scheme.
@ Relative branching ratios from each level. Data are from β^- decay and ^{252}Cf SF decay.
& If one assumes negligible branching for the 255γ and for a possible 20-keV transition to the 2222.6 level, then B(M1)(W.u.)<3.6×10^{-6}, B(E2)(W.u.)<0.016 for the 338.6γ, and B(E1)(W.u.)=5.0×10^{-10} and 1.6×10^{-10} for the 1427.0γ and 1759.1γ, respectively.
[a] Placement of transition in the level scheme is uncertain.

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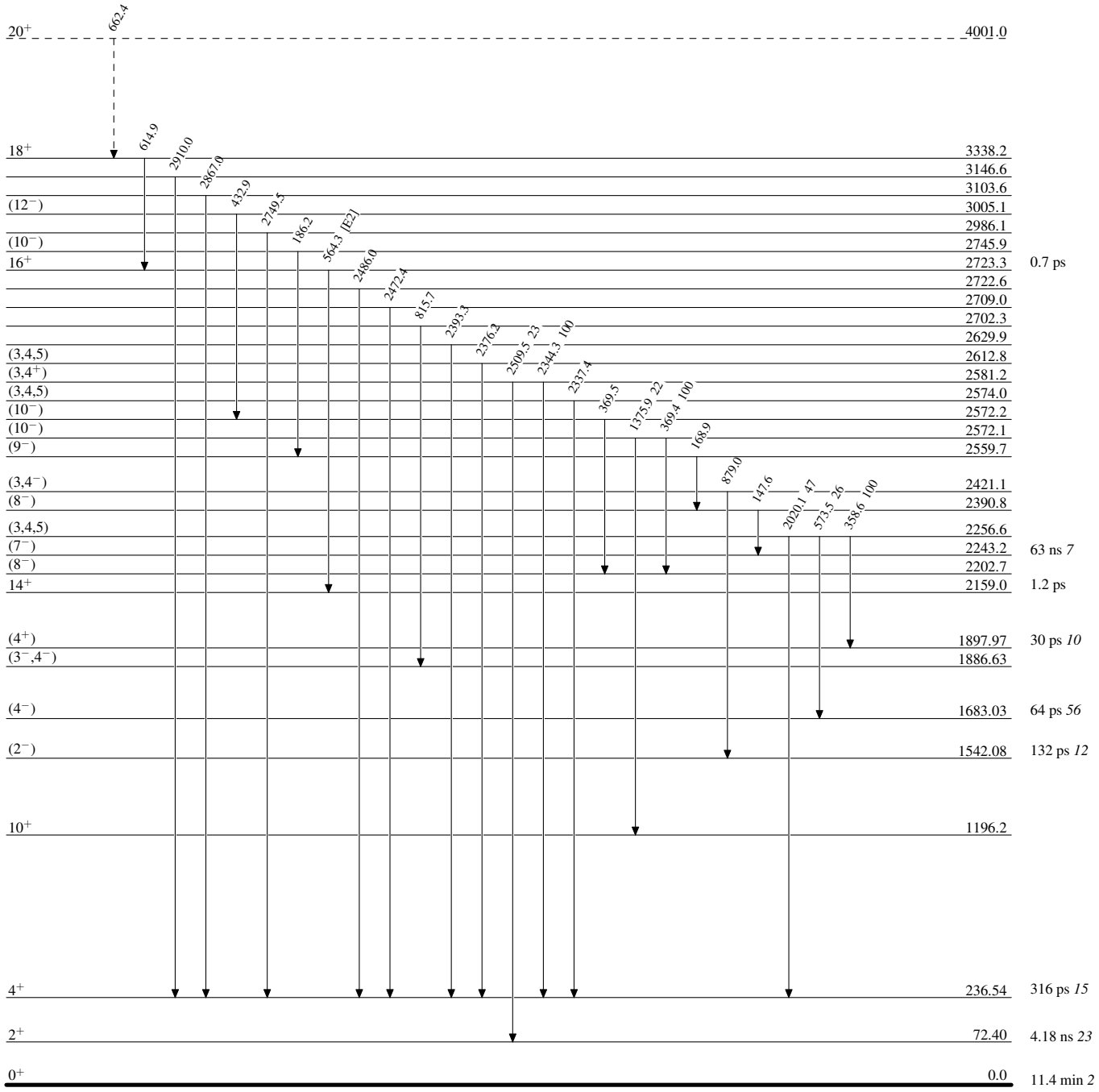
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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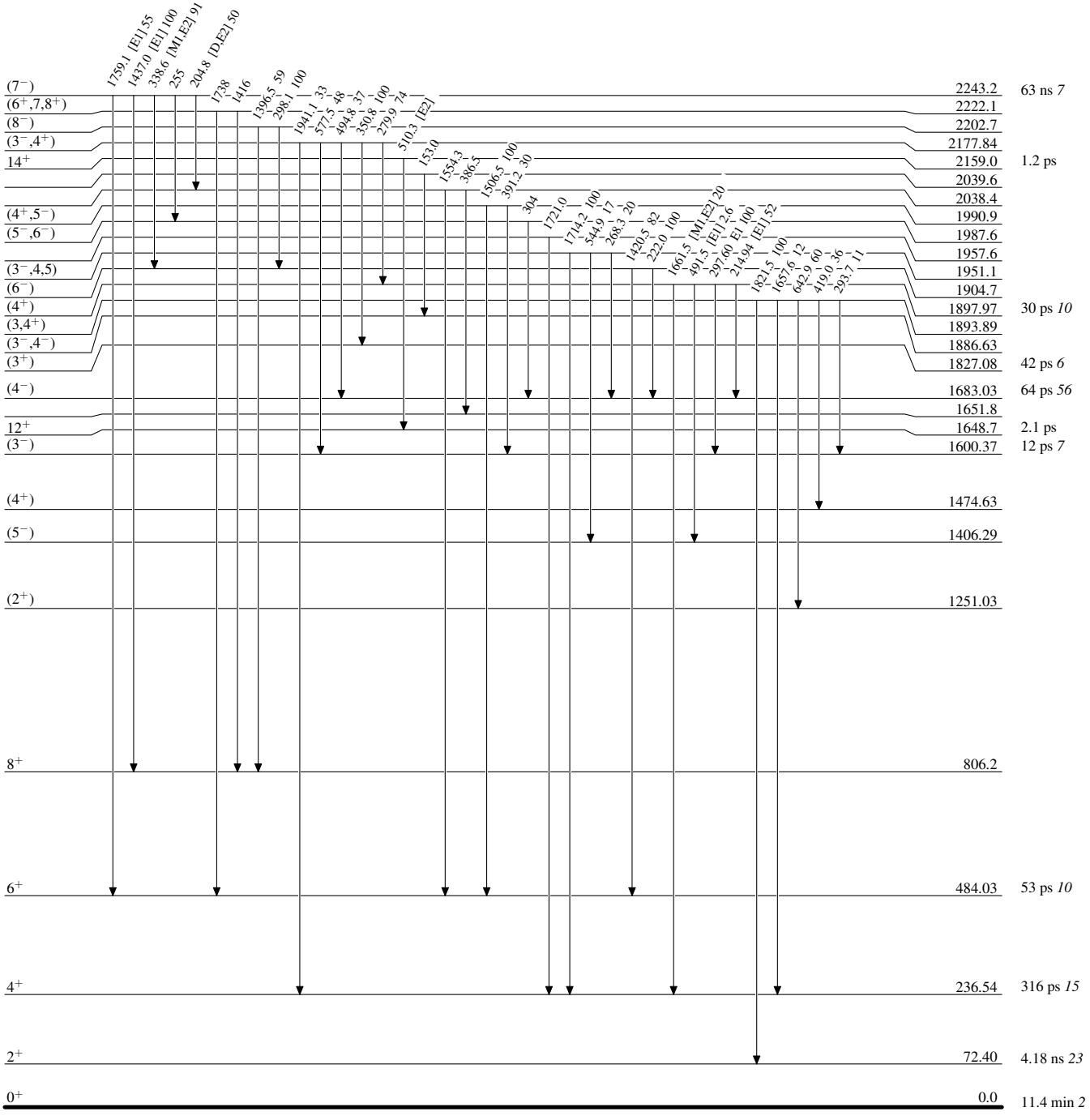
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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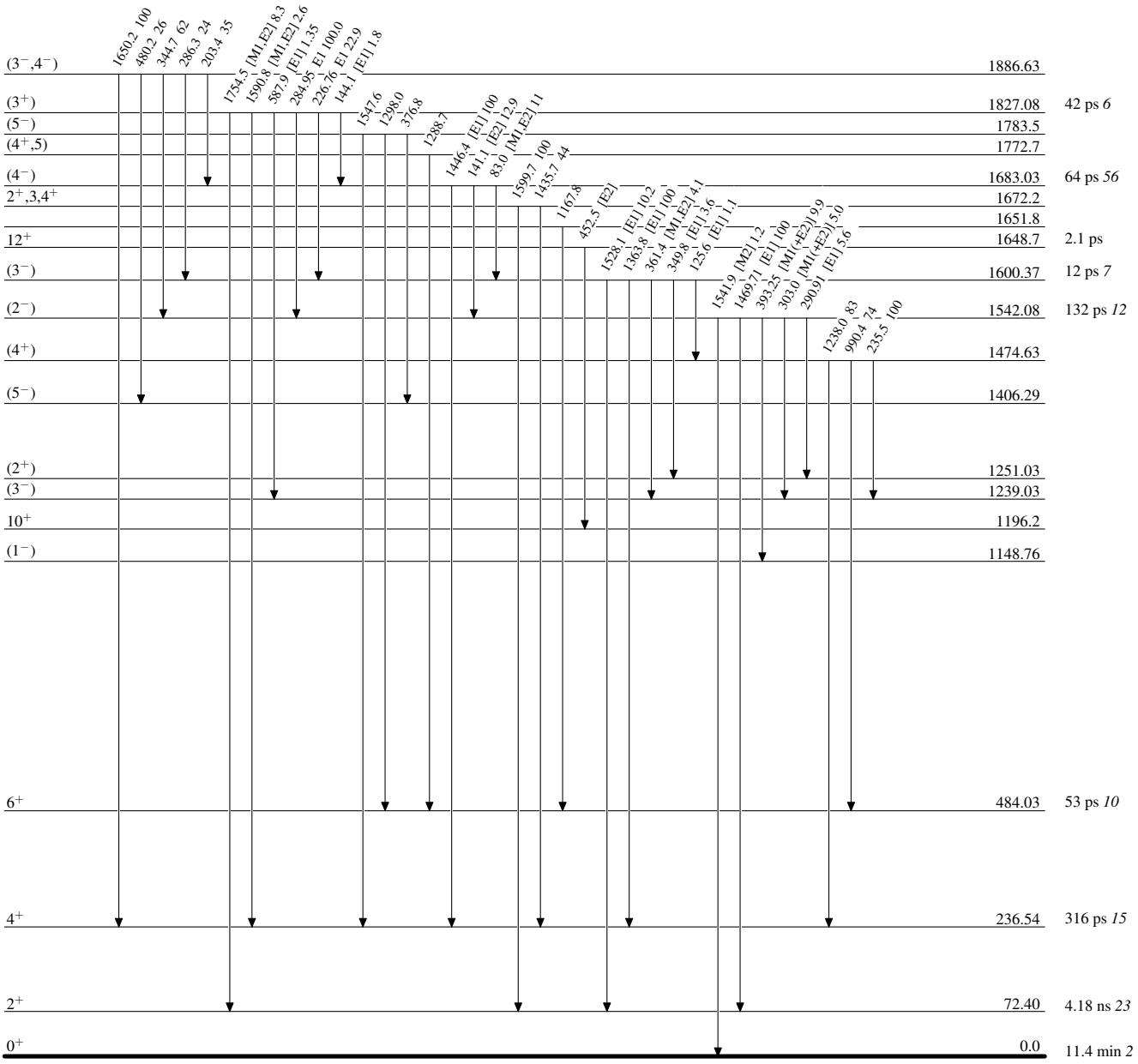
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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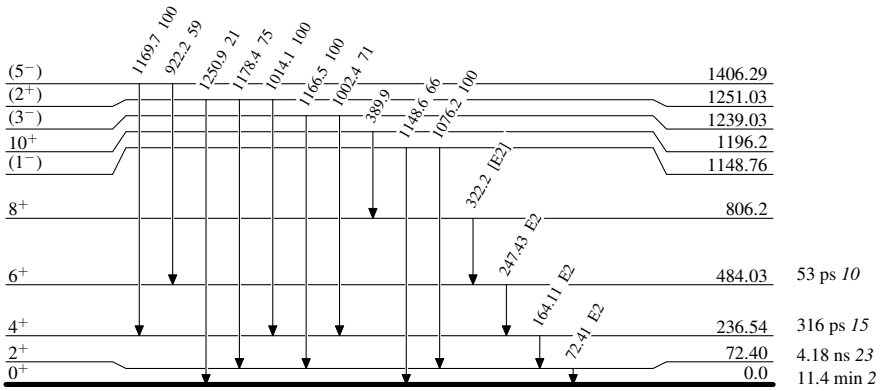
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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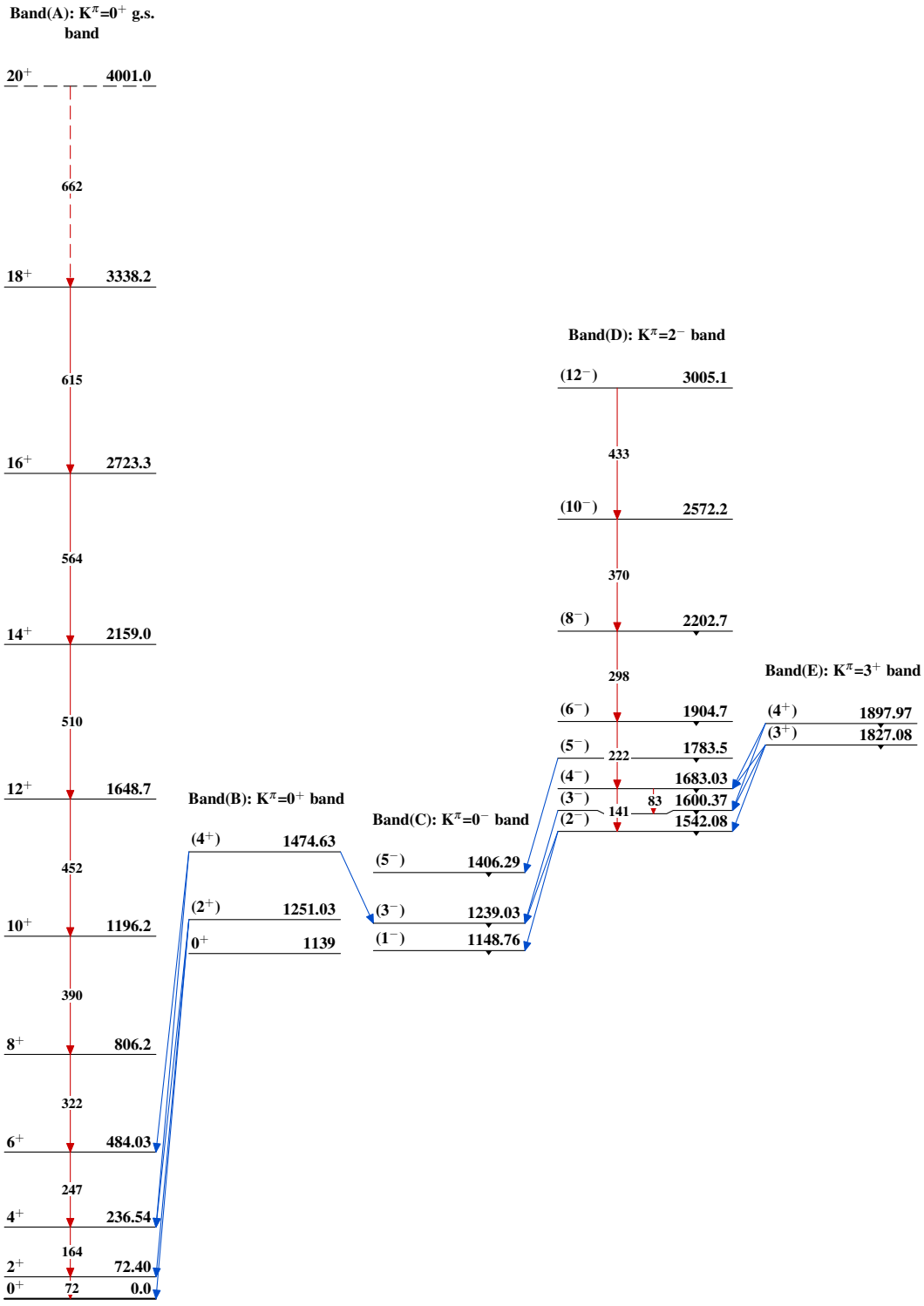
Adopted Levels, Gammas



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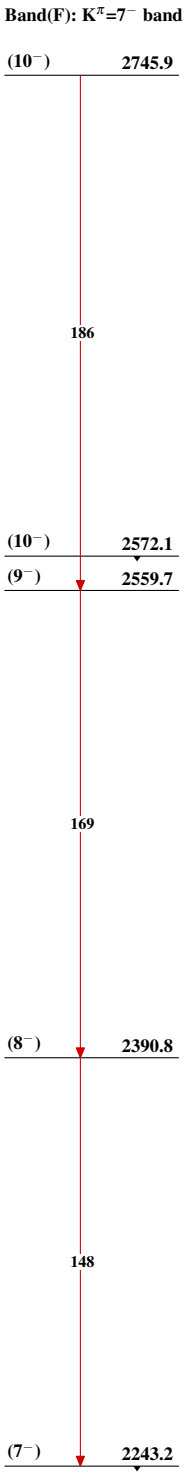
Adopted Levels, Gammas (continued)



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