Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni	NDS 114, 435 (2013)	1-Apr-2013

Q(β^-)=−11340 (syst) *196*; S(n)=1.216×10^4 *3*; S(p)=3474 *21*; Q(α)=2299 *18* 2017Wa10
Q(ε)=4115 *14*; S(2n)=22495 *3*; S(2p)=4550 *21*; Q(εp)=2576 *19* 2017Wa10
Additional information 1.
Two isomers are observed in the reaction ^{144}Sm(^{12}C,6nγ) at E=120 MeV which are assigned to ^{150}Ho and/or ^{150}Er (1982Mo19).

^{150}Er Levels

Cross Reference (XREF) Flags

A	^{150}Tm ε decay	D	(HI,xnγ)
B	^{151}Yb εp decay	E	(HI,xnγ): 13-93 ns delayed
C	^{154}Yb α decay	F	(HI,xnγ): 2.55 μs delayed

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0†	0+	18.5 s *7*	ABCDEF	%ε+%β^+=100 T$_{1/2}$: from 1981NoZY. Other: 20 s *2* (1982No08).
1578.33† *23*	2+		AB F	J$^\pi$: (E2) γ to 0+, systematics of first excited state in N=82.
1785.89‡ *23*	3−		AB F	J$^\pi$: (E3) γ to 0+ and (E1) γ to 2+, systematics of first 3− state in N=82.
2260.4‡ *3*	5−		AB F	J$^\pi$: E2 γ to 3−.
2293.9† *3*	4+		AB	J$^\pi$: E2 γ to 2+ and γ to 3−.
2620.8† *3*	6+		AB F	J$^\pi$: E1 γ to 5−.
2632.8‡ *3*	7−		A F	J$^\pi$: (E2) γ to 5−, E1 γ from 8+.
2733.3† *4*	8+	≈20 ns	A F	T$_{1/2}$: from (HI,xnγ): 2.55 μs delayed. J$^\pi$: E2 γ from 10+.
2796.5† *5*	10+	2.55 μs *10*	DEF	J$^\pi$: from systematics and model calculations for (π,h11/2,n)10+ isomers in neighboring proton-rich nuclei (1981La26). J$^\pi$,T$_{1/2}$: from (HI,xnγ): 2.55−μs delayed.
2854.6 *4*	(6−)		A	J$^\pi$: M1 γ to 5−.
2995.1 *4*	(5−)		A	
3187.0 *5*	(4−)		A	
3774.2 *5*	(5−)		A	
4000.3 *5*	(11−)		DE	J$^\pi$: by analogy with ^{148}Dy, assumed to be the 11− member of a 10+ coupled to 3− multiplet.
4242.9 *5*	(12+)		DE	
4437.8 *5*	(5−)		A	
4490.3 *5*	(13−)		DE	
4884.2 *5*	(15−)		DE	
4927.0 *5*	(14+)		DE	
5221.8 *5*	(16+)		DE	
6358.9 *5*			DE	
6927.9 *6*			DE	
7152.9 *6*			DE	
7332.5 *6*			DE	
7371.9 *6*		15 ns *4*	DE	T$_{1/2}$: from (HI,xnγ).
7936.6 *6*			DE	
8482.9 *6*			DE	
9148.5 *6*			DE	
9508.6 *7*		43 ns *3*	DE	T$_{1/2}$: from (HI,xnγ).

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Adopted Levels, Gammas (continued)

^{150}Er Levels (continued)

† Band(A): Ground state positive parity cascade.
‡ Band(B): Negative parity cascade.

$\gamma(^{150}Er)$

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.	α†	Comments
1578.33	2^+	1578.3 *3*	100	0	0^+	(E2)		E_γ: from Tm ε decay.
1785.89	3^-	207.6 *2*	100 *7*	1578.33	2^+	(E1)	0.0472	α(K)=0.0397 *6*; α(L)=0.00587 *9*; α(M)=0.001296 *19*; α(N)=0.000299 *5*; α(O)=4.15×10^{-5} *6* α(P)=1.97×10^{-6} *3*; α(N+..)=0.000342 *5* E_γ,I_γ: from (HI,xnγ): 2.55 μs delayed.
		1785.9 *3*	5.9 *20*	0	0^+	(E3)		E_γ,I_γ: from (HI,xnγ): 2.55 μs delayed.
2260.4	5^-	474.5 *2*	100	1785.89	3^-	E2	0.0188	α(K)=0.01491 *21*; α(L)=0.00305 *5*; α(M)=0.000698 *10*; α(N)=0.0001609 *23* α(O)=2.17×10^{-5} *3*; α(P)=8.21×10^{-7} *12*; α(N+..)=0.000183 *3* E_γ: weighted average of 474.4 *3* (^{150}Tm ε decay), 474.5 *2* ((HI,xnγ): 2.55 μs delayed).
2293.9	4^+	508.3 *5*	1.0×10^2 *5*	1785.89	3^-			E_γ,I_γ: from ^{150}Tm ε decay.
		715.4 *3*	72 *10*	1578.33	2^+	E2	0.00692	α(K)=0.00569 *8*; α(L)=0.000961 *14*; α(M)=0.000216 *3*; α(N)=5.01×10^{-5} *7*; α(O)=6.97×10^{-6} *10* α(P)=3.22×10^{-7} *5*; α(N+..)=5.73×10^{-5} *8* E_γ: observed only in ^{151}Yb εp decay.
2620.8	6^+	360.40 *14*	100	2260.4	5^-	E1	0.01187	α(K)exp=0.010 *7* α(K)=0.01004 *15*; α(L)=0.001432 *21*; α(M)=0.000315 *5*; α(N)=7.30×10^{-5} *11* α(O)=1.032×10^{-5} *15*; α(P)=5.26×10^{-7} *8*; α(N+..)=8.39×10^{-5} *12* E_γ: weighted average of 360.4 *2* (^{150}Tm ε decay), 360.4 *2* ((HI,xnγ): 2.55 μs delayed).
2632.8	7^-	372.4 *2*	100	2260.4	5^-	E2	0.0366	α(K)=0.0279 *4*; α(L)=0.00667 *10*; α(M)=0.001544 *22*; α(N)=0.000355 *5*; α(O)=4.66×10^{-5} *7* α(P)=1.492×10^{-6} *21*; α(N+..)=0.000403 *6* E_γ: weighted average of 372.4 *2* (^{150}Tm ε decay), 372.4 *2* ((HI,xnγ): 2.55 μs delayed).
2733.3	8^+	100.52 *9*	49 *9*	2632.8	7^-	E1	0.321 *6*	α(K)=0.267 *5*; α(L)=0.0425 *7*; α(M)=0.00943 *16*; α(N)=0.00216 *4*; α(O)=0.000289 *5* α(P)=1.202×10^{-5} *19*; α(N+..)=0.00246 *4* E_γ: weighted average of 100.7 *3* (^{150}Tm ε decay), 100.5 *1* ((HI,xnγ): 2.55 μs delayed).
		112.6 *3*	100 *11*	2620.8	6^+	[E2]	1.89 *4*	α(K)=0.804 *13*; α(L)=0.831 *16*; α(M)=0.201 *4*; α(N)=0.0456 *9*; α(O)=0.00539 *10* α(P)=3.36×10^{-5} *6*; α(N+..)=0.0511 *10* E_γ: observed only in (HI,xnγ): 2.55 μs delayed.
2796.5	10^+	63.2 *3*	100	2733.3	8^+	E2	18.3 *5*	α(K)=2.05 *3*; α(L)=12.5 *4*; α(M)=3.04 *9*; α(N)=0.685 *19*; α(O)=0.0792 *22* α(P)=0.0001209 *21*; α(N+..)=0.765 *21* B(E2)(W.u.)=0.24 *3*
2854.6	(6^-)	594.2 *2*	100	2260.4	5^-	M1	0.0225	α(K)=0.0190 *3*; α(L)=0.00273 *4*; α(M)=0.000602 *9*; α(N)=0.0001405 *20*;

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Adopted Levels, Gammas (continued)

$\gamma(^{150}Er)$ (continued)

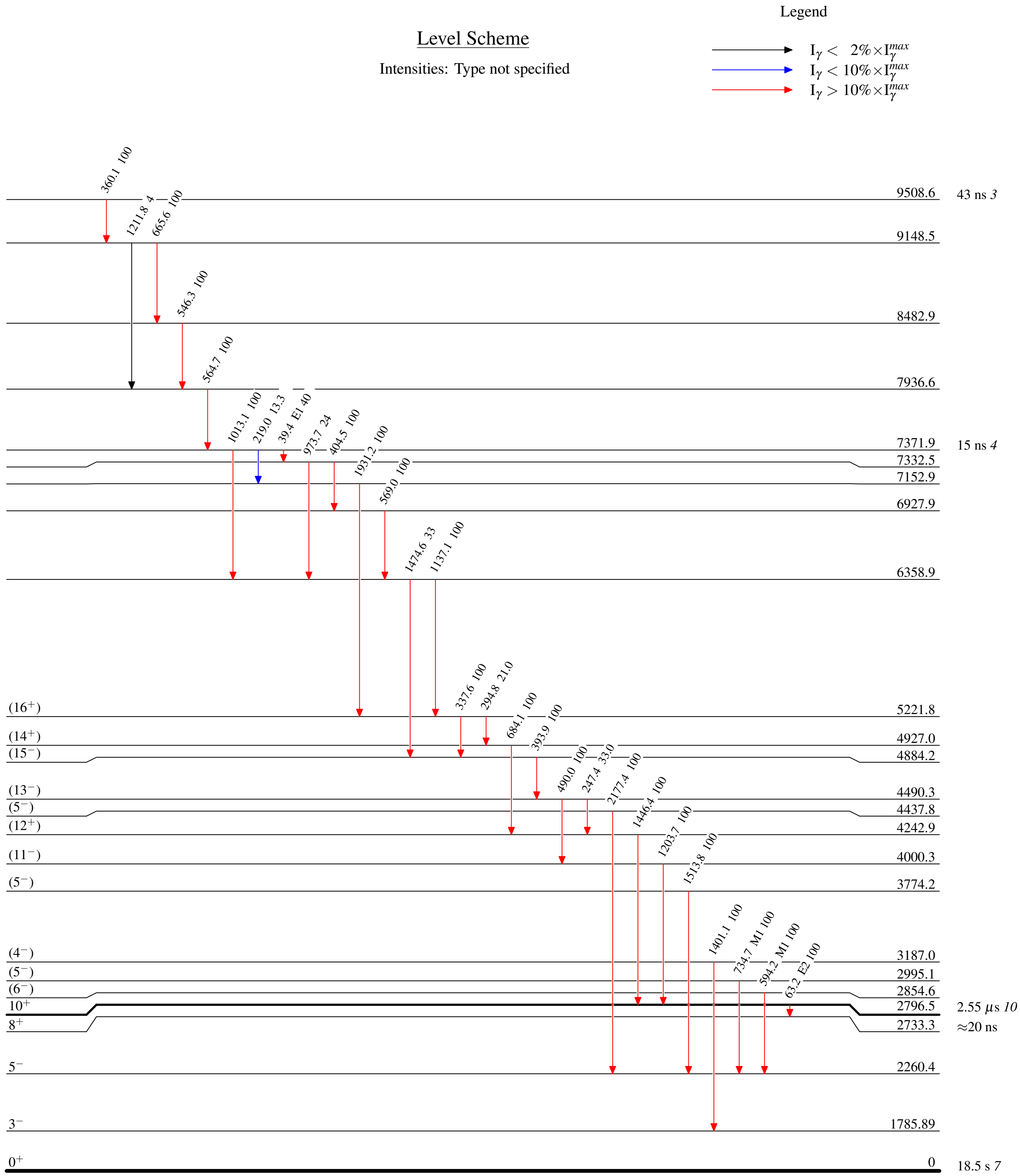
E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.	α†	Comments
								α(O)=2.04×10^{-5} *3* α(P)=1.143×10^{-6} *16*; α(N+..)=0.0001620 *23*
2995.1	(5$^-$)	734.7 *2*	100	2260.4	5$^-$	M1	0.01318	α(K)=0.01114 *16*; α(L)=0.001590 *23*; α(M)=0.000351 *5*; α(N)=8.18×10^{-5} *12* α(O)=1.188×10^{-5} *17*; α(P)=6.69×10^{-7} *10*; α(N+..)=9.44×10^{-5} *14*
3187.0	(4$^-$)	1401.1 *5*	100	1785.89	3$^-$			
3774.2	(5$^-$)	1513.8 *4*	100	2260.4	5$^-$			
4000.3	(11$^-$)	1203.7 *1*	100	2796.5	10$^+$			
4242.9	(12$^+$)	1446.4 *2*	100	2796.5	10$^+$			
4437.8	(5$^-$)	2177.4 *4*	100	2260.4	5$^-$			
4490.3	(13$^-$)	247.4 *2*	33.0 *23*	4242.9	(12$^+$)			
		490.0 *1*	100 *6*	4000.3	(11$^-$)			
4884.2	(15$^-$)	393.9 *1*	100	4490.3	(13$^-$)			
4927.0	(14$^+$)	684.1 *2*	100	4242.9	(12$^+$)			
5221.8	(16$^+$)	294.8 *2*	21.0 *25*	4927.0	(14$^+$)			
		337.6 *2*	100 *5*	4884.2	(15$^-$)			
6358.9		1137.1 *2*	100 *8*	5221.8	(16$^+$)			
		1474.6 *4*	33 *6*	4884.2	(15$^-$)			
6927.9		569.0 *2*	100	6358.9				
7152.9		1931.2 *4*	100	5221.8	(16$^+$)			
7332.5		404.5 *2*	100 *12*	6927.9				
		973.7 *4*	24 *12*	6358.9				
7371.9		39.4 *4*	40 *8*	7332.5		E1	0.742 *24*	α(L)=0.579 *19*; α(M)=0.130 *5*; α(N)=0.0291 *10*; α(O)=0.00356 *11*; α(P)=0.000113 *4* α(N+..)=0.0328 *11* B(E1)(W.u.)=5.7×10^{-5}
		219.0 *2*	13.3 *17*	7152.9				
		1013.1 *3*	100 *7*	6358.9				
7936.6		564.7 *2*	100	7371.9				
8482.9		546.3 *2*	100	7936.6				
9148.5		665.6 *2*	100 *8*	8482.9				
		1211.8 *4*	4 *4*	7936.6				
9508.6		360.1 *2*	100	9148.5				

† 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

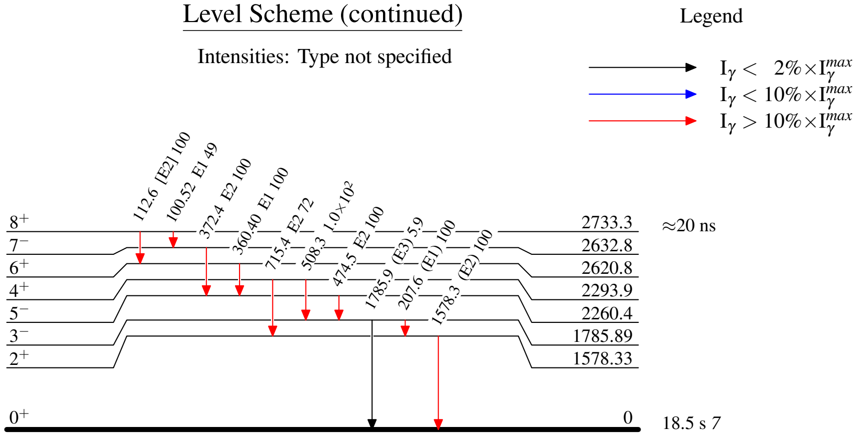


$^{150}_{68}Er_{82}$

Adopted Levels, Gammas

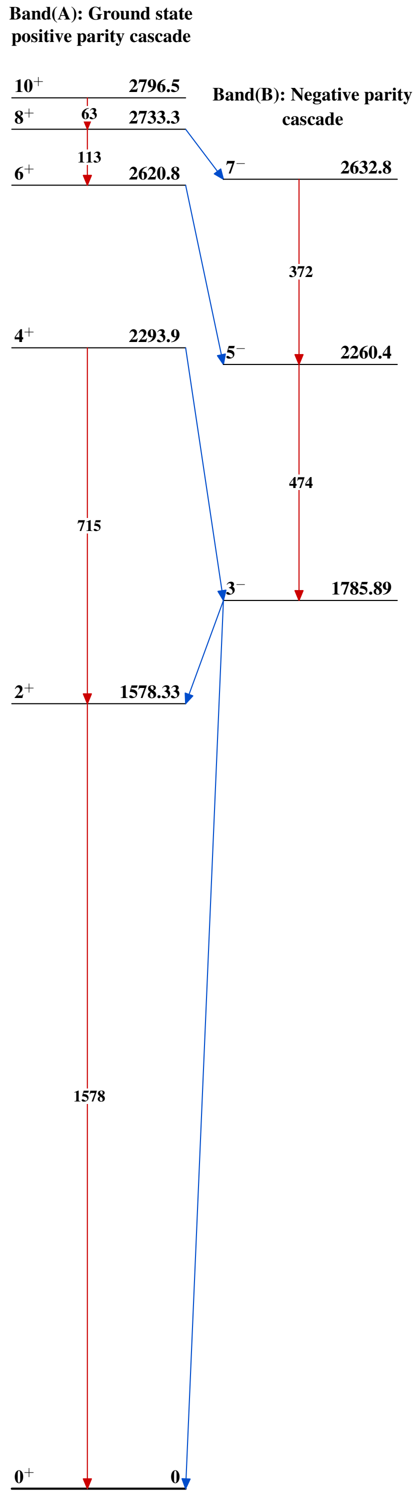
Level Scheme (continued)

Intensities: Type not specified



$^{150}_{68}Er_{82}$

Adopted Levels, Gammas



$^{150}_{68}Er_{82}$

Adopted Levels, Gammas

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

$Q(\beta^-)=-8.78\times10^3$ *5*; S(n)=10305 *19*; S(p)=4167 *12*; $Q(\alpha)=4934.3$ *16* 2017Wa10
$Q(\varepsilon)=3104$ *10*; S(2n)=18812 *19*; S(2p)=5769 *12*; $Q(\varepsilon p)=963$ *9* 2017Wa10
Additional information 1.
Calculations:
Gamow-Teller β^+ decay: 1988Ku20, 1988Su16.
g.s. properties: 1996La03.

^{152}Er Levels

The level scheme is that proposed by 1992Ku13 from (HI,xnγ) and agrees, in general, with those proposed by earlier investigators.

Cross Reference (XREF) Flags

A	^{152}Tm ε decay (8.0 s)	D	^{156}Yb α decay
B	^{152}Tm ε decay (5.2 s)	E	(HI,xnγ)
C	^{153}Yb β^+p decay		

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
0.0[@]	0^+	10.3 s *1*	ABCDE	$\%\varepsilon+\%\beta^+=10$ *4*; $\%\alpha=90$ *4* $T_{1/2}$ from 1982Bo04. Others: 10 s *1* (1982To14), 9.8 s *3* (1981HoZM,1970To16), 10.1 s *2* (1977Ha48). $\%\alpha$: From 1987To02. $<r^2>^{1/2}$=5.07 fm 3 (2004An14).
808.3[@] *1*	2^+		ABC E	J^{π}: E2 γ to 0^+. Predicted B(E2)↑=0.59 *10* (1989Ra16, best fit global syst). this corresponds to $T_{1/2}$=1.39 ps *+29−20*.
1480.9[@] *2*	4^+		ABC E	
1524.2 *3*	(3^-)		A	J^{π}: based on syst for N=84 nuclei.
1715.4 *2*	(2^+)		A	J^{π}: based on syst for N=84 nuclei.
1903.4[@] *2*	6^+		B E	
2183.3 *2*	8^+	1.8 ns *3*	B E	$\mu=-0.56$ *64* (2005St24,1984AdZZ) Configuration=$(\nu,f_{7/2})(\nu,h_{9/2})$.
2947.6 *3*	10^+		E	Configuration=$(p,h_{11/2})^{+2}$.
≈3730?			A	E(level): possible multiplet with $J^{\pi}=1^-,2^-,3^-$; deduced from ^{152}Tm ε decay (8.0 s).
3735.0[&] *3*	12^+		E	
4289.2[&] *3*	14^+		E	
4519.3[&] *3*	16^+	1.2 ns *3*	E	$\mu=+4.6$ *21* (2005St24,1984AdZZ)
4536.1 *4*	$(15)^+$		E	
4685.0 *4*	16^+	4.6 ns *14*	E	
5080.4 *3*	18^+		E	Configuration=$(\pi,h_{11/2})^{+2}_{10+}(\nu,f_{7/2})(\nu,h_{9/2})$.
5414.8 *4*			E	
5459.9 *4*	$(17)^-$		E	
5635.3 *4*	$(18)^-$		E	
5810.9 *4*	$(19)^-$		E	
5966.7 *4*			E	
6036.8 *4*	$(19)^-$		E	
6176.4 *4*	$(20)^-$		E	
6407.4 *4*			E	

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Adopted Levels, Gammas (continued)

^{152}Er Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF
6477.4 *5*	(20⁻)	E	8691.0 *7*			E
6486.9 *4*	(21)⁻	E	8863.4 *5*			E
6555.0 *4*	(21)⁻	E	9679.8 *7*			E
6734.3 *11*		E	9711.8 *5*	28⁺	35 ns *4*	E
6756.8?		E	9725.3 *7*			E
6837.6 *4*	(22⁻)	E	10083.2 *7*			E
7011.8 *4*	(22)⁻	E	10306.5 *6*			E
7118.8 *4*	(23)⁻	E	10394.3 *6*			E
7448.7 *4*	(24)⁻	E	10548.3 *6*			E
8113.0 *5*		E	11121.4 *6*			E
8233.3 *4*	(26)⁻	E	11400.0 *7*			E
8350.3 *5*		E	12121.4 *7*			E
8489.8 *6*		E	13029.7 *7*			E
8514.7 *7*	(25)	E	13386.9 *9*		11 ns *1*	E
8527.9 *5*	(27)	E	14944.6 *12*			E
8659.9 *6*	(26)⁻	E				

† From a least-squares fit to the Eγ data, and rounded off by the evaluator to one decimal digit.
‡ From (HI,xnγ), unless otherwise noted. Assignments in (HI,xnγ) are based on angular correlation and conversion coefficient measurements.
# From (HI,xnγ), unless otherwise noted.
@ Band(A): Band − α Configuration=$(\nu,f_{7/2})^{+2}$.
& Band(B): Band − β Configuration=$(\pi,h_{11/2})^{+2}_{10+}(\nu,f_{7/2})^{+2}$.

$\gamma(^{152}$Er)

E_i(level)	J^{π}_i	E_γ[‡]	I_γ[‡]	E_f	J^{π}_f	Mult.[#]	α[†]	Comments
808.3	2⁺	808.2[&] *1*		0.0	0⁺	E2	0.00528	α(K)=0.00437 *7*; α(L)=0.000708 *10*; α(M)=0.0001586 *23*; α(N+..)=4.22×10^{-5} *6* α(N)=3.68×10^{-5} *6*; α(O)=5.16×10^{-6} *8*; α(P)=2.48×10^{-7} *4*
1480.9	4⁺	672.6[&] *1*		808.3	2⁺	E2	0.00797	α(K)=0.00652 *10*; α(L)=0.001129 *16*; α(M)=0.000254 *4*; α(N+..)=6.74×10^{-5} *10* α(N)=5.89×10^{-5} *9*; α(O)=8.16×10^{-6} *12*; α(P)=3.68×10^{-7} *6*
1524.2	(3⁻)	715.9[a] *2*		808.3	2⁺	[E1]	0.00261	α(K)=0.00222 *4*; α(L)=0.000305 *5*; α(M)=6.69×10^{-5} *10*; α(N+..)=1.79×10^{-5} *3* α(N)=1.554×10^{-5} *22*; α(O)=2.23×10^{-6} *4*; α(P)=1.208×10^{-7} *17*
1715.4	(2⁺)	906.8[a] *2*	100[a] *17*	808.3	2⁺			
		1716.0[a] *3*	33[a] *10*	0.0	0⁺			
1903.4	6⁺	422.5[&] *1*		1480.9	4⁺	E2	0.0257	α(K)=0.0200 *3*; α(L)=0.00440 *7*; α(M)=0.001011 *15*; α(N+..)=0.000265 *4* α(N)=0.000233 *4*; α(O)=3.10×10^{-5} *5*; α(P)=1.089×10^{-6} *16*
2183.3	8⁺	279.9[&] *1*		1903.4	6⁺	E2	0.0854	α(K)=0.0615 *9*; α(L)=0.0185 *3*; α(M)=0.00433 *6*; α(N+..)=0.001121 *16* α(N)=0.000991 *14*; α(O)=0.0001264 *18*; α(P)=3.12×10^{-6} *5* B(E2)(W.u.)=3.5 *6*

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Adopted Levels, Gammas (continued)

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

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.#	δ@	α†	Comments
2947.6	10+	764.3 *1*		2183.3	8+	E2		0.00597	α(K)=0.00492 *7*; α(L)=0.000813 *12*; α(M)=0.000182 *3*; α(N+..)=4.84×10^{-5} *7* α(N)=4.23×10^{-5} *6*; α(O)=5.91×10^{-6} *9*; α(P)=2.79×10^{-7} *4*
3735.0	12+	787.4 *1*		2947.6	10+	E2		0.00558	α(K)=0.00461 *7*; α(L)=0.000755 *11*; α(M)=0.0001692 *24*; α(N+..)=4.50×10^{-5} *7* α(N)=3.92×10^{-5} *6*; α(O)=5.49×10^{-6} *8*; α(P)=2.62×10^{-7} *4*
4289.2	14+	554.2 *1*		3735.0	12+	E2		0.01267	α(K)=0.01020 *15*; α(L)=0.00192 *3*; α(M)=0.000437 *7*; α(N+..)=0.0001152 *17* α(N)=0.0001008 *15*; α(O)=1.377×10^{-5} *20*; α(P)=5.69×10^{-7} *8*
4519.3	16+	230.1 *1*		4289.2	14+	E2		0.1586	α(K)=0.1078 *16*; α(L)=0.0392 *6*; α(M)=0.00927 *14*; α(N+..)=0.00239 *4* α(N)=0.00212 *4*; α(O)=0.000265 *4*; α(P)=5.25×10^{-6} *8* B(E2)(W.u.)=13 *4*
4536.1	(15)+	247.0 *3*		4289.2	14+	M1		0.225	α(K)=0.189 *3*; α(L)=0.0280 *5*; α(M)=0.00620 *10*; α(N+..)=0.00167 *3* α(N)=0.001445 *24*; α(O)=0.000209 *4*; α(P)=1.159×10^{-5} *19*
4685.0	16+	149.1 *3*	36 *4*	4536.1	(15)+	M1		0.911 *18*	α(K)=0.765 *15*; α(L)=0.1141 *23*; α(M)=0.0253 *5*; α(N+..)=0.00680 *14* α(N)=0.00590 *12*; α(O)=0.000854 *17*; α(P)=4.71×10^{-5} *10* B(M1)(W.u.)=0.00025 *9*
		165.8 *3*	22 *2*	4519.3	16+	M1+E2	2.0	0.515 *11*	α(K)=0.336 *7*; α(L)=0.137 *3*; α(M)=0.0327 *8*; α(N+..)=0.00839 *19* α(N)=0.00744 *17*; α(O)=0.000924 *21*; α(P)=1.70×10^{-5} *3* B(M1)(W.u.)=2.2×10^{-5}; B(E2)(W.u.)=1.7
		395.3	100 *10*	4289.2	14+	E2		0.0309	α(K)=0.0238 *4*; α(L)=0.00546 *9*; α(M)=0.001259 *21*; α(N+..)=0.000329 *6* α(N)=0.000290 *5*; α(O)=3.83×10^{-5} *7*; α(P)=1.283×10^{-6} *20* B(E2)(W.u.)=0.13 *5* E_γ: Doublet.
5080.4	18+	395.9	12.2 *12*	4685.0	16+	E2		0.0307	α(K)=0.0237 *4*; α(L)=0.00543 *9*; α(M)=0.001253 *21*; α(N+..)=0.000327 *6* α(N)=0.000288 *5*; α(O)=3.81×10^{-5} *7*; α(P)=1.278×10^{-6} *20* E_γ: Doublet.
		561.1 *1*	100 *5*	4519.3	16+	E2		0.01229	α(K)=0.00990 *14*; α(L)=0.00186 *3*; α(M)=0.000421 *6*; α(N+..)=0.0001111 *16* α(N)=9.73×10^{-5} *14*; α(O)=1.330×10^{-5} *19*; α(P)=5.53×10^{-7} *8*
5414.8		334.3 *3*		5080.4	18+				
5459.9	(17)−	774.9 *2*	49 *5*	4685.0	16+	E1		0.00223	α(K)=0.00190 *3*; α(L)=0.000259 *4*; α(M)=5.69×10^{-5} *8*; α(N+..)=1.521×10^{-5} *22*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ‡	I_γ‡	E_f	J_f^π	Mult.#	δ@	α†	Comments
									α(N)=1.321×10^{-5} *19*; α(O)=1.90×10^{-6} *3*; α(P)=1.034×10^{-7} *15*
5459.9	(17)$^-$	940.7 *2*	100 *5*	4519.3	16$^+$	E1		1.53×10^{-3}	α(K)=0.001308 *19*; α(L)=0.0001769 *25*; α(M)=3.88×10^{-5} *6*; α(N+..)=1.038×10^{-5} *15* α(N)=9.01×10^{-6} *13*; α(O)=1.298×10^{-6} *19*; α(P)=7.16×10^{-8} *10*
5635.3	(18)$^-$	175.5 *2*		5459.9	(17)$^-$	M1+E2	+0.2	0.570 *10*	α(K)=0.475 *8*; α(L)=0.0739 *12*; α(M)=0.0165 *3*; α(N+..)=0.00441 *8* α(N)=0.00383 *7*; α(O)=0.000549 *9*; α(P)=2.91×10^{-5} *5*
5810.9	(19)$^-$	176.3 *3*	15.6 *16*	5635.3	(18)$^-$	M1		0.570 *11*	α(K)=0.479 *9*; α(L)=0.0712 *13*; α(M)=0.0158 *3*; α(N+..)=0.00424 *8* α(N)=0.00368 *7*; α(O)=0.000533 *10*; α(P)=2.94×10^{-5} *6*
		730.4 *2*	100 *5*	5080.4	18$^+$	E1		0.00251	α(K)=0.00214 *3*; α(L)=0.000293 *5*; α(M)=6.42×10^{-5} *9*; α(N+..)=1.716×10^{-5} *25* α(N)=1.490×10^{-5} *21*; α(O)=2.14×10^{-6} *3*; α(P)=1.161×10^{-7} *17*
5966.7		331.3 *3*		5635.3	(18)$^-$				
6036.8	(19)$^-$	226.2 *3*	55 *6*	5810.9	(19)$^-$	M1+E2	1.0	0.227	α(K)=0.177 *3*; α(L)=0.0388 *7*; α(M)=0.00891 *16*; α(N+..)=0.00234 *5* α(N)=0.00205 *4*; α(O)=0.000275 *5*; α(P)=1.012×10^{-5} *17*
		401.4 *2*	100 *10*	5635.3	(18)$^-$	M1		0.0616	α(K)=0.0519 *8*; α(L)=0.00756 *11*; α(M)=0.001673 *25*; α(N+..)=0.000450 *7* α(N)=0.000390 *6*; α(O)=5.66×10^{-5} *9*; α(P)=3.15×10^{-6} *5*
		577.0 *3*	50 *5*	5459.9	(17)$^-$	E2		0.01148	α(K)=0.00927 *14*; α(L)=0.001714 *25*; α(M)=0.000389 *6*; α(N+..)=0.0001026 *15* α(N)=8.98×10^{-5} *13*; α(O)=1.230×10^{-5} *18*; α(P)=5.19×10^{-7} *8*
6176.4	(20)$^-$	140.4 *4*	4 *2*	6036.8	(19)$^-$	M1		1.080 *24*	α(K)=0.906 *20*; α(L)=0.135 *3*; α(M)=0.0300 *7*; α(N+..)=0.00807 *18* α(N)=0.00700 *15*; α(O)=0.001012 *22*; α(P)=5.58×10^{-5} *12*
		209.6 *3*	30 *3*	5966.7					
		365.5 *2*	100 *5*	5810.9	(19)$^-$	M1+E2	+4.0	0.0409	α(K)=0.0315 *5*; α(L)=0.00725 *11*; α(M)=0.00167 *3*; α(N+..)=0.000438 *7* α(N)=0.000385 *6*; α(O)=5.09×10^{-5} *8*; α(P)=1.709×10^{-6} *25*

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Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[†]	Comments
6407.4		596.4 *3*		5810.9	(19)⁻				
6477.4	(20⁻)	1395.3		5080.4	18⁺	(M2)		0.00650	α(K)=0.00545 *8*; α(L)=0.000804 *12*; α(M)=0.000178 *3*; α(N+..)=6.37×10⁻⁵ *9* α(N)=4.16×10⁻⁵ *6*; α(O)=6.04×10⁻⁶ *9*; α(P)=3.38×10⁻⁷ *5*; α(IPF)=1.58×10⁻⁵ *3* E_γ: Doublet.
6486.9	(21)⁻	310.7 *2*		6176.4	(20)⁻	M1		0.1213	α(K)=0.1021 *16*; α(L)=0.01499 *23*; α(M)=0.00332 *5*; α(N+..)=0.000892 *14* α(N)=0.000774 *12*; α(O)=0.0001121 *17*; α(P)=6.23×10⁻⁶ *10*
6555.0	(21)⁻	68.6 *3*	6 *2*	6486.9	(21)⁻	M1		8.4 *3*	α(K)=7.03 *24*; α(L)=1.06 *4*; α(M)=0.236 *8*; α(N+..)=0.0635 *22* α(N)=0.0551 *19*; α(O)=0.0080 *3*; α(P)=0.000437 *15*
		147.5 *4*	1.8 *6*	6407.4					
		378.7 *3*	29 *3*	6176.4	(20)⁻	M1		0.0718	α(K)=0.0605 *9*; α(L)=0.00882 *13*; α(M)=0.00195 *3*; α(N+..)=0.000525 *8* α(N)=0.000455 *7*; α(O)=6.60×10⁻⁵ *10*; α(P)=3.68×10⁻⁶ *6*
		518.1 *2*	100 *5*	6036.8	(19)⁻	E2		0.01501	α(K)=0.01200 *17*; α(L)=0.00234 *4*; α(M)=0.000533 *8*; α(N+..)=0.0001403 *20* α(N)=0.0001230 *18*; α(O)=1.669×10⁻⁵ *24*; α(P)=6.66×10⁻⁷ *10*
		744.2 *2*	38 *4*	5810.9	(19)⁻	E2		0.00633	α(K)=0.00521 *8*; α(L)=0.000869 *13*; α(M)=0.000195 *3*; α(N+..)=5.18×10⁻⁵ *8* α(N)=4.52×10⁻⁵ *7*; α(O)=6.31×10⁻⁶ *9*; α(P)=2.95×10⁻⁷ *5*
6734.3		256.9		6477.4	(20⁻)				E_γ: Doublet.
6756.8?		278.9[b]		6477.4	(20⁻)				E_γ: Multiplet.
6837.6	(22⁻)	661.3 *3*		6176.4	(20)⁻	(E2)		0.00829	α(K)=0.00677 *10*; α(L)=0.001180 *17*; α(M)=0.000266 *4*; α(N+..)=7.05×10⁻⁵ *10* α(N)=6.16×10⁻⁵ *9*; α(O)=8.53×10⁻⁶ *13*; α(P)=3.82×10⁻⁷ *6*
7011.8	(22)⁻	456.9 *3*	100 *10*	6555.0	(21)⁻	M1		0.0440	α(K)=0.0371 *6*; α(L)=0.00538 *8*; α(M)=0.001190 *18*; α(N+..)=0.000320 *5* α(N)=0.000277 *4*; α(O)=4.02×10⁻⁵ *6*; α(P)=2.25×10⁻⁶ *4*
		524.8 *3*	71 *7*	6486.9	(21)⁻	M1+E2	+1.0	0.0227	α(K)=0.0188 *3*; α(L)=0.00300 *5*; α(M)=0.000671 *10*; α(N+..)=0.000179 *3* α(N)=0.0001558 *23*; α(O)=2.21×10⁻⁵ *4*; α(P)=1.108×10⁻⁶ *16*
		534.3 *3*	59 *6*	6477.4	(20⁻)	E2		0.01388	α(K)=0.01113 *16*; α(L)=0.00214 *4*; α(M)=0.000486 *7*; α(N+..)=0.0001281 *19* α(N)=0.0001122 *17*; α(O)=1.527×10⁻⁵ *23*; α(P)=6.19×10⁻⁷ *9*
		1596.5 *7*	20 *7*	5414.8					

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Adopted Levels, Gammas (continued)

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

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.#	δ@	α†	Comments
7118.8	(23)⁻	281.3 *3*	12.0 *12*	6837.6	(22⁻)	M1		0.1584 *25*	α(K)=0.1333 *21*; α(L)=0.0196 *3*; α(M)=0.00434 *7*; α(N+..)=0.001168 *19* α(N)=0.001013 *16*; α(O)=0.0001467 *23*; α(P)=8.14×10⁻⁶ *13*
		563.8 *1*	100 *5*	6555.0	(21)⁻	E2		0.01215	α(K)=0.00979 *14*; α(L)=0.00183 *3*; α(M)=0.000415 *6*; α(N+..)=0.0001096 *16* α(N)=9.60×10⁻⁵ *14*; α(O)=1.312×10⁻⁵ *19*; α(P)=5.47×10⁻⁷ *8*
		631.8 *2*	29 *3*	6486.9	(21)⁻	E2		0.00923	α(K)=0.00751 *11*; α(L)=0.001334 *19*; α(M)=0.000301 *5*; α(N+..)=7.97×10⁻⁵ *12* α(N)=6.97×10⁻⁵ *10*; α(O)=9.62×10⁻⁶ *14*; α(P)=4.23×10⁻⁷ *6*
7448.7	(24)⁻	329.9 *1*	100 *5*	7118.8	(23)⁻	(M1)		0.1034	α(K)=0.0871 *13*; α(L)=0.01275 *19*; α(M)=0.00282 *4*; α(N+..)=0.000759 *11* α(N)=0.000658 *10*; α(O)=9.54×10⁻⁵ *14*; α(P)=5.30×10⁻⁶ *8*
		436.7 *3*	20.6 *21*	7011.8	(22)⁻	E2		0.0235	α(K)=0.0184 *3*; α(L)=0.00395 *6*; α(M)=0.000907 *14*; α(N+..)=0.000238 *4* α(N)=0.000209 *4*; α(O)=2.79×10⁻⁵ *5*; α(P)=1.003×10⁻⁶ *15*
8113.0		664.4 *3*		7448.7	(24)⁻				
8233.3	(26)⁻	120.4 *3*	6 *2*	8113.0					
		784.6 *2*	100 *10*	7448.7	(24)⁻	E2		0.00563	α(K)=0.00465 *7*; α(L)=0.000762 *11*; α(M)=0.0001707 *24*; α(N+..)=4.54×10⁻⁵ *7* α(N)=3.96×10⁻⁵ *6*; α(O)=5.54×10⁻⁶ *8*; α(P)=2.64×10⁻⁷ *4*
8350.3		901.6 *3*		7448.7	(24)⁻				
8489.8		256.5		8233.3	(26)⁻				E_γ: Doublet.
8514.7	(25)	1066.5 *7*		7448.7	(24)⁻	D			
		1394.9		7118.8	(23)⁻	Q			E_γ: Doublet.
8527.9	(27)	177.4 *4*	4 *2*	8350.3					
		294.6 *2*	100 *5*	8233.3	(26)⁻				
8659.9	(26)⁻	1211.2 *6*		7448.7	(24)⁻	E2		0.00229	α(K)=0.00192 *3*; α(L)=0.000283 *4*; α(M)=6.26×10⁻⁵ *9*; α(N+..)=2.31×10⁻⁵ *4* α(N)=1.455×10⁻⁵ *21*; α(O)=2.08×10⁻⁶ *3*; α(P)=1.096×10⁻⁷ *16*; α(IPF)=6.33×10⁻⁶ *12*
8691.0		1242.6 *7*		7448.7	(24)⁻				
8863.4		335.5 *3*	100 *10*	8527.9	(27)				
		373.6 *3*	90 *9*	8489.8					
9679.8		1152.6 *7*		8527.9	(27)				
9711.8	28⁺	848.3 *3*	40 *4*	8863.4					
		1021.0 *7*	11 *3*	8691.0					
		1051.9 *6*	100 *10*	8659.9	(26)⁻	M2+E3	−1.5	0.00864 *13*	α(K)=0.00711 *10*; α(L)=0.001190 *17*; α(M)=0.000268 *4*; α(N+..)=7.15×10⁻⁵ *10* α(N)=6.23×10⁻⁵ *9*; α(O)=8.82×10⁻⁶ *13*; α(P)=4.40×10⁻⁷ *7*

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Adopted Levels, Gammas (continued)

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

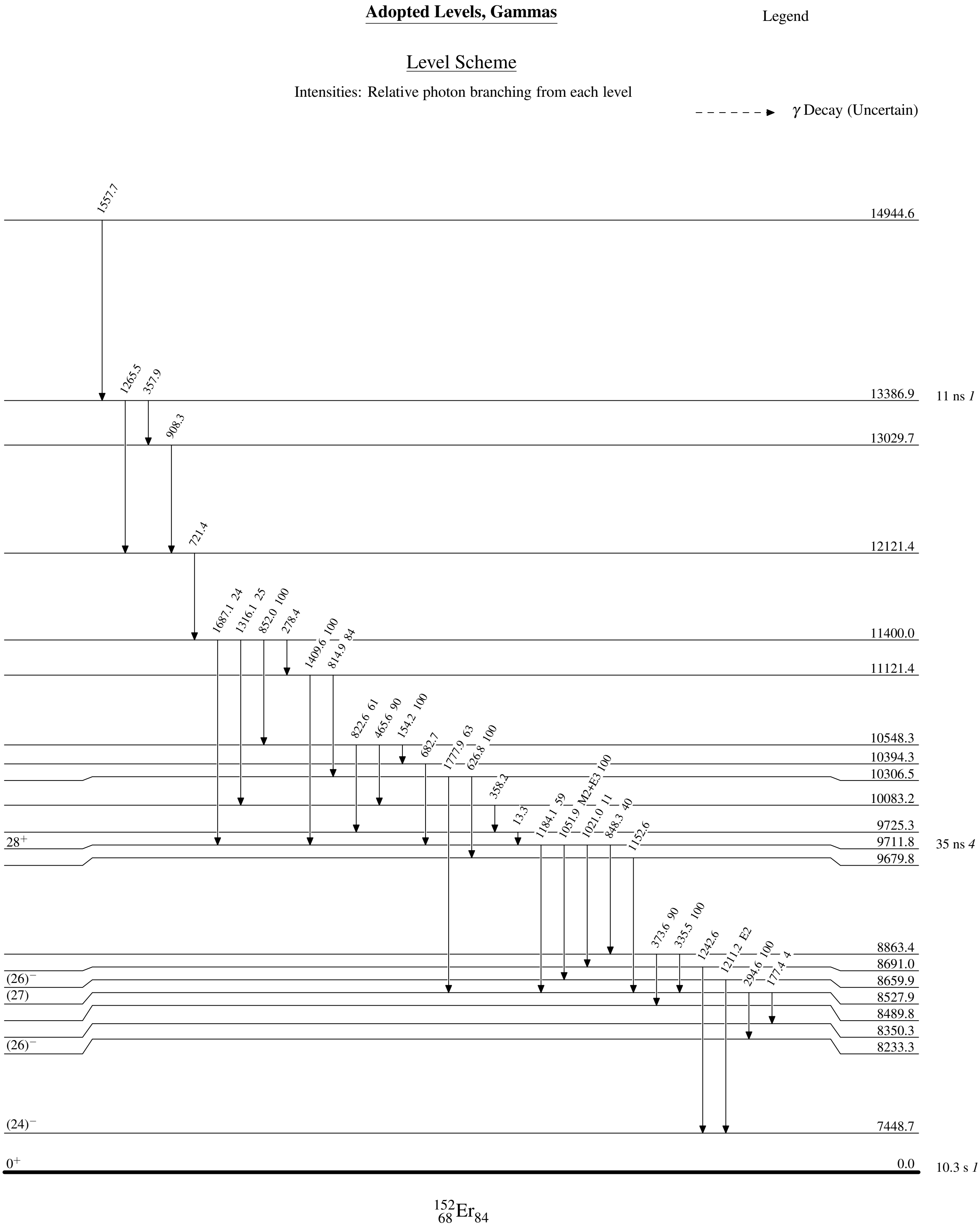
E_i(level)	J_i^π	E_γ‡	I_γ‡	E_f	J_f^π	Comments
9711.8	28^+	1184.1 *6*	59 *6*	8527.9	(27)	
9725.3		(13.3)		9711.8	28^+	E_γ: Not observed. $E\gamma$ taken from level scheme.
10083.2		358.2 *3*		9725.3		
10306.5		626.8 *3*	100 *30*	9679.8		
		1777.9 *7*	63 *20*	8527.9	(27)	
10394.3		682.7 *3*		9711.8	28^+	
10548.3		154.2 *3*	100 *10*	10394.3		Mult.: $\Delta J=1$ (HI,xnγ).
		465.6 *3*	90 *9*	10083.2		
		822.6 *3*	61 *6*	9725.3		
11121.4		814.9 *3*	84 *8*	10306.5		
		1409.6 *7*	100 *10*	9711.8	28^+	
11400.0		278.4		11121.4		E_γ: Multiplet.
		852.0 *3*	100 *10*	10548.3		Mult.: $\Delta J=2$ (HI,xnγ).
		1316.1 *7*	25 *3*	10083.2		
		1687.1 *7*	24 *3*	9711.8	28^+	
12121.4		721.4 *2*		11400.0		Mult.: $\Delta J=2$ (HI,xnγ).
13029.7		908.3 *3*		12121.4		
13386.9		357.9		13029.7		E_γ: Doublet.
		1265.5 *6*		12121.4		Mult.: $\Delta J=3$ (HI,xnγ).
14944.6		1557.7 *8*		13386.9		

† Additional information 2.
‡ From (HI,xnγ), unless otherwise noted.
# From (HI,xnγ), based on angular correlation and conversion coefficient measurements, unless otherwise noted.
@ From $\gamma\gamma(\theta)$ in (HI,xnγ).
& From ^{152}Tm ε decay (5.2 s).
[a] From ^{152}Tm ε decay (8.0 s).
[b] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

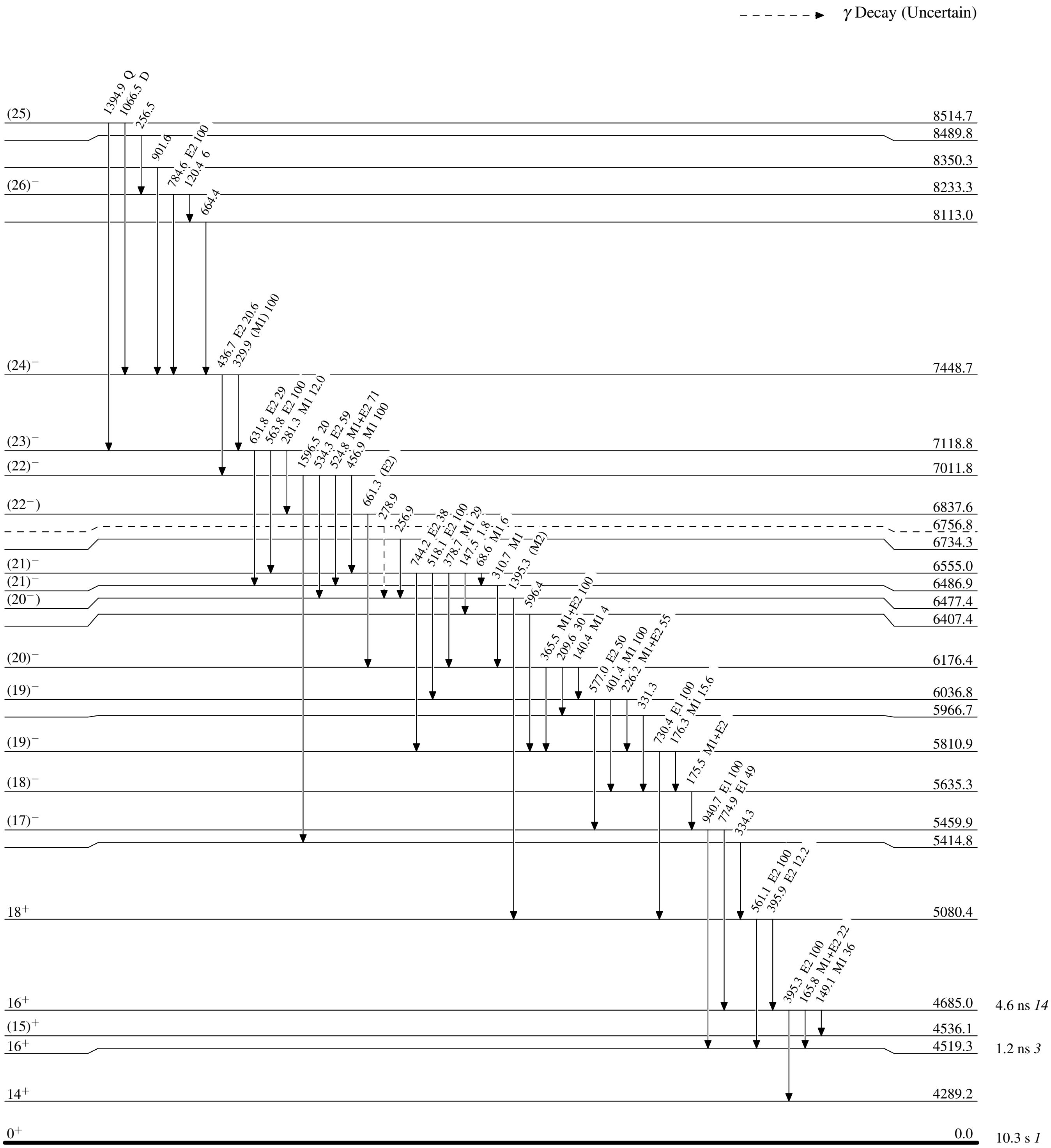


Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

Legend

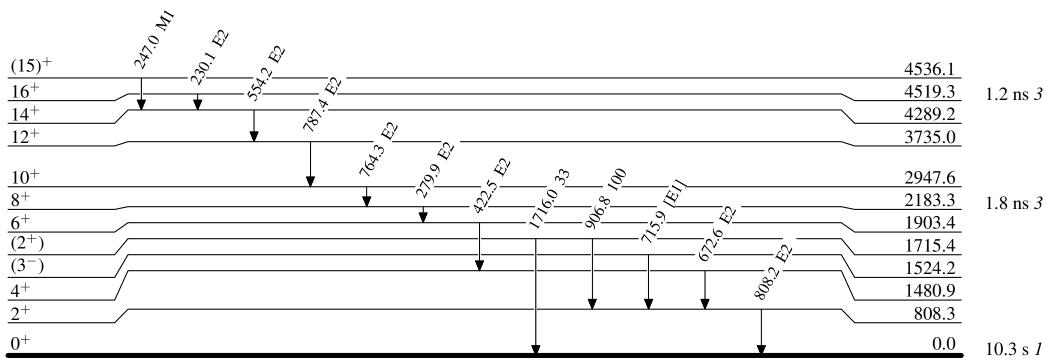


$^{152}_{68}Er_{84}$

Adopted Levels, Gammas

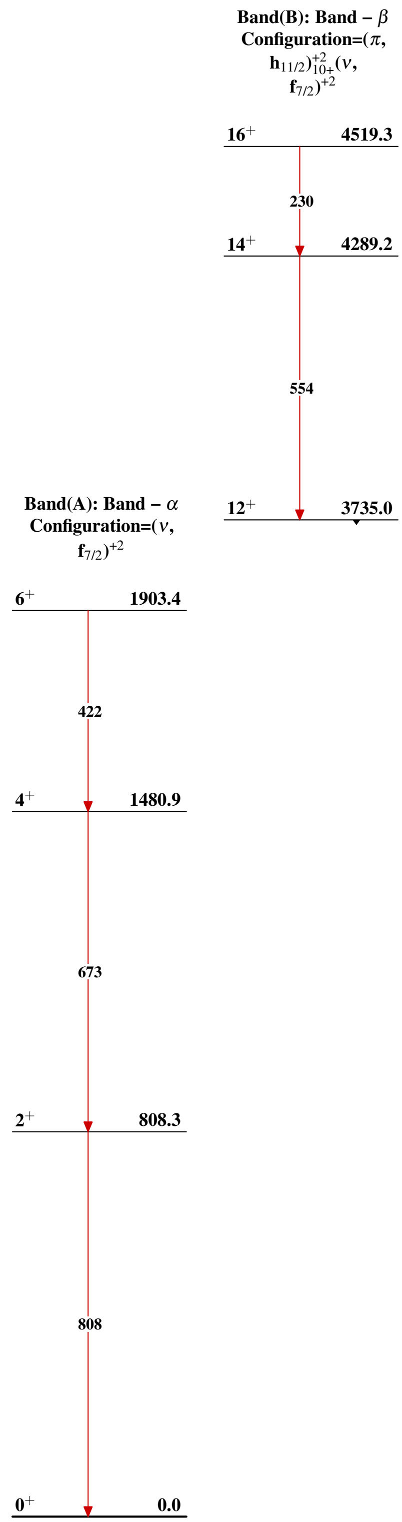
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{152}_{68}Er_{84}$

Adopted Levels, Gammas



$^{152}_{68}Er_{84}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 113, 2537 (2012)	1-Mar-2012

Q(β^-)=−7.38×10^3 *3*; S(n)=1.007×10^4 *3*; S(p)=5.46×10^3 *3*; Q(α)=3.48×10^3 *3* 2017Wa10
Q(ε)=1.27×10^3 *6*; S(2n)=1.775×10^4 *3*; S(2p)=8.40×10^3 *3* 2017Wa10
Additional information 1.
Additional information 2.
In addition to the 3450 α transition, 1992KaZP and 1995KaZS report a weak α branch, with Eα=3.03 MeV *7*, from ^{156}Er. These authors report I$_\alpha$=5×10^{-6} *2* % per decay for this branch.

^{156}Er Levels

Model calculations related to level energies and B(E2) include 1976Fl15 and those related to yrast levels and backbending include 1977PlZX or 1977Pl05, 1978De02, 1985Ra31, and 1989Hs02. Results of model calculations of some properties of both the positive- and negative-parity bands are given in the study by 1980Zo02. See also the model-based discussions in 2009Pa17 and 2011Re06.

Cross Reference (XREF) Flags

A	^{114}Cd(^{48}Ca,6nγ):2
B	^{114}Cd(^{48}Ca,6nγ):1
C	^{156}Tm ε decay (83.8 s)
D	(HI,xnγ)

E(level)[†]	J$^\pi$[@]	T$_{1/2}$[#]	XREF	Comments
0[&]	0$^+$	19.5 min *10*	ABCD	%ε+%β^+≈100; %α=17×10^{-6} *4* T$_{1/2}$: From 1975Al26, γ(t). Others: <15 min (1965Gr34), <12 min (1965Zh02) and <4 min (1966La11). These upper limits (see, e.g., 1965Zh02) come from an inability to observe a clear ingrowth of β^+ activity from ^{156}Ho in the decay of samples containing both Er and Ho. %α: From the sum of %α=12×10^{-6} *3* for a 3450 α transition (1996ByZY) and %α=5×10^{-6} *2* for a 3.30-MeV α transition (1992KaZP,1995KaZS). 2002KaZR report I$_\alpha$=1.0×10^{-6} per decay for the 3450 α. Δ<r^2>(156-154)=0.26 and Δ<r^2>(158-156)=0.29 fm^2 (1987NeZW, obtained from graph by evaluator). From an evaluation of data on nuclear rms charge radii, 2004An14 report <r^2>$^{1/2}$=5.134 fm *32*.
344.53[&] *6*	2$^+$	34.0 ps *9*	ABCD	μ≈0.80 J$^\pi$: E2 γ to 0$^+$ g.s. μ: From perturbed $\gamma\gamma(\theta)$ for recoiling nuclei in hyperfine magnetic fields (1970No01, in (HI,xnγ)). This is the value given in the evaluation by 1989Ra17.
797.39[&] *8*	4$^+$	5.0 ps *3*	ABCD	J$^\pi$: E2 γ to 2$^+$ level and expected band structure.
930.07[b] *16*	0$^+$		A C	J$^\pi$: E0 transition to the 0$^+$ g.s.
930.48[d] *7*	2$^+$		A C	J$^\pi$: E2 transition to the g.s.
1220.74[b] *9*	2$^+$		A C	J$^\pi$: E0 component in the transition to the 2$^+$ member of the g.s. band.
1243.01 *19*			C	J$^\pi$: γ's to 2$^+$ levels indicate J$^\pi$=0$^+$,1,2,3, or 4$^+$.
1303.54[i] *11*	3$^-$		BC	J$^\pi$: E1 γ to 2$^+$ level and assumed band structure.
1304.8? *4*			C	
1340.86[&] *16*	6$^+$	1.9 ps *3*	ABCD	J$^\pi$: Stretched E2 to 4$^+$ and expected band structure.
1351.33[e] *9*	3$^+$		A C	J$^\pi$: E2 γ to 2$^+$, γ to 4$^+$, and expected band structure. Additional information 3.
1381.9? *4*			C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{156}Er Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[#]	XREF	Comments
1406.15[d] *10*	4^+		A C	XREF: A(1404.7). J^{π}: γ's to 2^+ and 4^+ levels and expected band structure.
1476			D	J^{π}: Assigned as 5^- by 1985AzZY (HI,xnγ), but this assignment is not adopted by the evaluator. (See the comment in the (HI,xnγ) data set.).
1517.90[i] *18*	(1^-)		C	E(level): Assigned by the evaluator as a member of this band based on the systematics of octupole-related states in the adjacent N=88 nuclides (see, e.g., 1980Zo02, ^{156}Tm ε decay). J^{π}: γ's to 0^+ and 2^+ levels and assumed band structure.
1546.68[b] *11*	4^+		A C	XREF: A(1545.4). J^{π}: E0 component in the transition to the 4^+ member of the g.s. band.
1570.75[g] *15*	2^+		C	J^{π}: E0 component in the transition to the 2^+ member of the γ-vibrational band.
1611.77[i] *20*	5^-		ABC	XREF: A(1610.8). J^{π}: γ to 4^+ level and expected band structure.
1630.52[n] *13*	2^-		BC	J^{π}: γ's only to 2^+ levels and assumed band structure.
1663.41 *16*			C	J^{π}: Previously tentatively assigned as the 5^+ member of the γ-vibrational band, but a subsequent high-spin study (2011Re06) places this band member elsewhere in the level scheme. See the comment in the ^{156}Tm ε Decay data set.
1710.54 *21*			C	J^{π}: γ to 2^+ level suggests J^{π} from 0^+ through 4^+.
1814.48[n] *21*	4^-		BC	J^{π}: γ to 4^+ level and assumed band structure.
1835.2[e] *7*	5^+		A C	XREF: C(1836.1?).
1860.8[g] *6*	(3^+)		C	J^{π}: From expected band structure and γ to 2^+ level.
1885.9[d]	6^+		A	J^{π}: γ's to 4^+ and 6^+ levels and expected band structure.
1909.56 *19*	2^+,3,4^+		C	J^{π}: γ's to 2^+ and 4^+ levels. See the comment on this level in the ε-Decay data set.
1959.2[&] *3*	8^+	2.5 ps *6*	AB D	XREF: A(1957.6)D(1960.1). J^{π}: Stretched E2 to 6^+ and expected band structure. $\gamma(\theta)$ establishes the spin sequence 9→8 for the 531.2 γ populating this level from the 2491.4, 9^- level.
1969.6[b]	6^+		A	J^{π}: γ's to 4^+ and 6^+ levels and expected band structure.
2014.52 *18*			C	Additional information 4.
2029.3[i] *3*	7^-		AB D	XREF: A(2028.1)D(2031.0). J^{π}: E1 γ to 6^+ level, γ to 5^- level and proposed band structure.
2169.8 *3*			C	Additional information 5.
2204.3[n] *4*	6^-		B D	XREF: D(2206.1). J^{π}: E2 γ to 4^-, γ's to 5^- and 6^+ levels and expected band structure.
2249.83 *22*			C	Additional information 6.
2368.6[e]	(7^+)		A	J^{π}: γ's to 5^+ and 6^+ levels and expected band structure.
2377.0[d]	8^+		A	J^{π}: γ's to 6^+ levels and expected band structure.
2480.7[b]	8^+		A	J^{π}: γ's to 6^+ and 8^+ levels and expected band structure.
2489.9[j] *4*	9^-	8 ps *5*	AB D	XREF: A(2488.1)D(2491.4). J^{π}: $\gamma(\theta)$, in (HI,xnγ), establishes the spin sequence 9→8 for the 530.6 γ deexciting this level.
2601.2[n] *4*	8^-		B D	XREF: D(2603.1). J^{π}: γ's to 6^- and 7^-, probable nonstretched dipole to 8^+, and expected band structure.
2633.1[&] *4*	10^+	1.4 ps *3*	AB D	XREF: A(2631.9)D(2634.7). J^{π}: Stretched E2 to 8^+ and expected band structure. In (HI,xnγ), $\gamma(\theta)$ establishes the spin sequence 11→10 for the 290.7 γ populating this level from the 2925.4, 11^- level.
2760.9[h]	(8^+)		A	J^{π}: γ's to 7^- and (7^+) levels and proposed band structure.
2903.3[o] *5*	10^-		B D	XREF: D(2905.2). J^{π}: γ's to 8^- and 9^-, nonstretched dipole to 10^+, and expected band structure.
2923.6[j] *4*	11^-	8.2 ps *7*	B D	XREF: D(2925.4). J^{π}: $\gamma(\theta)$ establishes the spin sequence 11→10 for the 290.4 γ deexciting this level.

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Adopted Levels, Gammas (continued)

^{156}Er Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[#]	XREF	Comments
2943.2[d]	10^+		A	J^{π}: γ to 8^+ and expected band structure.
2961.3[e]	(9^+)		A	J^{π}: γ to (7^+) level and expected band structure.
2998.1[h]	10^+		A	J^{π}: γ's to 8^+, 9^- and 10^+ levels and proposed band structure.
3042.4[b]	10^+		A	J^{π}: γ to 8^+ level and expected band structure.
3081.5[l] *5*	11^-		B D	XREF: D(3082.6). J^{π}: γ's to 9^- and 10^+ levels. Proposed initial band member.
3314.6[a] *5*	12^+	1.5 ps *7*	AB D	XREF: A(3312.8)D(3317.2). J^{π}: Stretched E2 to 10^+ level and expected band structure.
3384.1[o] *5*	12^-		B D	XREF: D(3386.5). J^{π}: E2 γ to 10^- level, γ to 11^- level and expected band structure.
3432.3[j] *6*	13^-	3.3 ps *6*	B D	XREF: D(3434.4). J^{π}: Stretched E2 to 11^- level, E1 to 12^+, and expected band structure.
3439.5[&] *6*	12^+		B D	XREF: D(3441.7). J^{π}: γ to 10^+ level and expected band structure.
3493.7[h]	12^+		A	J^{π}: γ to 10^+ level and expected band structure.
3588.5[d]	12^+		A	J^{π}: γ to 10^+ and expected band structure.
3599.3[e]	(11^+)		A	J^{π}: γ to (9^+) and expected band structure.
3627.7[f]	12^+		A	J^{π}: γ to 10^+ level and proposed band structure.
3651.3[b]	12^+		A	J^{π}: γ to 10^+ level and expected band structure.
3673.6[l] *5*	13^-		B D	XREF: D(3675.1). J^{π}: γ's to 11^- and 12^- levels and expected band structure.
3836.7[a] *5*	14^+	1.6 ps *4*	AB D	XREF: A(3834.6)D(3839.8). J^{π}: Stretched E2 to 12^+ level and expected band structure.
3953.9[o] *5*	14^-		B D	XREF: D(3956.8). J^{π}: E2 γ to 12^- level, γ to 13^- level and expected band structure.
4035.1[j] *5*	15^-	2.0 ps *12*	B D	XREF: D(4038.4). J^{π}: Stretched E2 to 13^- level and expected band structure.
4087.6[h] *16*	14^+		A	J^{π}: γ to 12^+ level and expected band structure.
4185.3[f]	14^+		A	J^{π}: γ's to 12^+ levels and proposed band structure.
4247.5[b]	14^+		A	J^{π}: γ to 12^+ level and expected band structure.
4269.8[e]	(13^+)		A	J^{π}: γ to (11^+) and expected band structure.
4280.7[d]	14^+		A	J^{π}: γ to 12^+ and expected band structure.
4309.9[l] *6*	15^-		B D	XREF: D(4312.3). J^{π}: γ's to 13^- and 14^- levels and expected band structure.
4380.4[a] *6*	16^+		AB D	XREF: A(4378.8)D(4384.9). J^{π}: γ to 14^+ level and expected band structure.
4593.1[o] *6*	16^-		B D	XREF: D(4596.6). J^{π}: E2 γ to 14^- level, γ to 15^- level and expected band structure.
4711.5[j] *5*	17^-	1.6 ps *6*	B D	XREF: D(4715.0). J^{π}: γ to 15^- level and expected band structure.
4764.0[h]	16^+		A	J^{π}: γ to 14^+ level and expected band structure.
4782.4[f] *6*	16^+		AB D	XREF: A(4780.3)D(4786.1). J^{π}: γ to 14^+ level, (D) γ to 15^- level and expected band structure.
4812.9[b]	16^+		A	J^{π}: γ to 14^+ level and expected band structure.
4967.4[e]	(15^+)		A	J^{π}: γ to (13^+) and expected band structure.
5000.7[l] *6*	17^-		B D	XREF: D(5004.3). J^{π}: γ's to 15^- and 16^- levels and expected band structure.
5006.6[a] *6*	18^+	1.2 ps *6*	AB D	XREF: A(5003.8)D(5010.5). J^{π}: γ to 16^+ and expected band structure.
5297.3[o] *6*	18^-		B D	XREF: D(5301.0).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{156}Er Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[#]	XREF	Comments
				J^{π}: γ's to 16^- and 17^- levels and expected band structure.
5338.3[f] 6	18^+		AB D	XREF: A(5335.9)D(5342.2). J^{π}: E2 γ to 16^+ and expected band structure.
5370.4[b]	18^+		A	J^{π}: γ to 16^+ level and expected band structure.
5495.7[j] 6	19^-	2.2 ps 8	B D	XREF: D(5499.8). J^{π}: γ to 17^- level and expected band structure.
5537.1[h]	18^+		A	J^{π}: γ to 16^+ level and expected band structure.
5674.5[k] 6	19^-		B D	XREF: D(5678.8). J^{π}: γ's to 17^- levels, 18^- level and proposed band structure.
5716.7[a] 7	20^+	0.8 ps 6	AB D	XREF: A(5713.8)B(5715.7)D(5721.5). J^{π}: E2 γ to 18^+ level and expected band structure.
5787.8[l] 6	19^-		B D	XREF: D(5791.8). J^{π}: γ's to 17^- and 18^- levels and expected band structure.
5931.2[f] 6	20^+		AB D	XREF: A(5927.8)D(5935.4).
6056.9[b]	20^+		A	J^{π}: γ to 18^+ level and expected band structure.
6058.4[o] 6	20^-		B D	XREF: D(6062.3). J^{π}: γ's to 18^- and 19^- levels and expected band structure.
6261.2[k] 6	21^-		B D	XREF: D(6265.6). J^{π}: γ's to 19^- levels, 20^- level and expected band structure.
6295.4	(20^+)		A	J^{π}: γ to (18^+) level.
6356.4[j] 6	21^-		B D	XREF: D(6361.1). J^{π}: γ's to 19^- levels and expected band structure.
6410.9[h]	(20^+)		A	J^{π}: γ to 18^+ level and expected band structure.
6437.1[m] 7	21^-		B D	XREF: D(6441.1). J^{π}: γ's to 19^-, 20^- and 21^- levels and expected band structure.
6489.3[a] 8	22^+		AB D	XREF: A(6485.8)D(6494.5). J^{π}: E2 γ to 20^+ level and expected band structure.
6663.0[f] 7	22^+		AB D	XREF: A(6658.8)D(6667.5). J^{π}: E2 γ to 20^+ level and expected band structure.
6740.7[p] 7	22^-		B D	XREF: D(6744.9). J^{π}: γ's to 21^- and 20^- levels and expected band structure.
6822.9[b]	(22^+)		A	J^{π}: γ to 20^+ level and expected band structure.
6867.5[k] 7	23^-		B D	XREF: D(6872.3). J^{π}: γ to 21^- level and expected band structure.
7053.9[m] 7	23^-		B D	XREF: D(7058.7). J^{π}: γ's to 21^- and 23^- levels and expected band structure.
7109.7[j] 7	23^-		B D	XREF: D(7115.2). J^{π}: γ's to 22^- and 21^- levels and expected band structure.
7315.9[a] 9	24^+		AB D	XREF: A(7312.8)D(7322.3). J^{π}: E2 γ to 22^+ level and expected band structure.
7414.7[p] 7	24^-		B D	XREF: D(7420.1). J^{π}: γ's to 22^-, stretched dipole to 23^-, and expected band structure.
7444.1[f] 8	24^+		AB D	XREF: A(7438.8)B(7443.0)D(7448.6). J^{π}: γ to 22^+ level and expected band structure.
7492.5 8	(24^+)		B D	XREF: D(7497.1). J^{π}: γ to 22^+ level.
7600.8[k] 8	25^-		B D	XREF: D(7607.5). J^{π}: γ to 23^- level and expected band structure.
7649.4[m] 7	25^-		B D	XREF: D(7655.2). J^{π}: γ's to 23^- and 24^- levels and expected band structure.
7979.9 8			B D	XREF: D(7984.9).
8082.2[a] 8	26^+		AB D	XREF: A(8079)D(8087.7).

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Adopted Levels, Gammas (continued)

^{156}Er Levels (continued)

E(level)[†]	J^{π}[@]	XREF	Comments
			J^{π}: E2 γ to 24$^+$ level and expected band structure.
8101.3[p] *8*	26$^-$	B D	XREF: D(8106.8). J^{π}: γ to 24$^-$ level and expected band structure.
8210.9[f] *8*	26$^+$	AB D	XREF: A(8206)D(8215.6). J^{π}: γ to 24$^+$ level and expected band structure.
8289.3[k] *10*	27$^-$	B D	XREF: D(8297.3). J^{π}: γ to 25$^-$ level and expected band structure.
8325.0 *10*		B D	XREF: D(8331).
8393.9[m] *8*	27$^-$	B D	XREF: D(8400.3). J^{π}: E2 γ to 25$^-$ level, γ's to 25$^-$ and 26$^-$ levels, and expected band structure.
8848.8[c] *8*	28$^+$	B D	XREF: D(8854.5). J^{π}: γ's to 26$^+$ levels.
8867.1[p] *9*	28$^-$	B D	XREF: D(8873.0). J^{π}: γ to 26$^-$ level and expected band structure.
8902.5 *9*		B D	XREF: D(8908.6). J^{π}: From (HI,xnγ), J^{π}=(28$^+$). 2009Pa17 do not list a J^{π} value for this state.
8965.0[a] *9*	28$^+$	B D	XREF: D(8971.9). J^{π}: E2 γ to 26$^+$ level and expected band structure.
9068.2[f] *9*	28$^+$	B D	XREF: D(9073.8). J^{π}: γ to 26$^+$ level and expected band structure.
9197.7[k] *12*	29$^-$	B D	XREF: D(9204.9). J^{π}: γ to 27$^-$ level and expected band structure.
9288.3[m] *8*	29$^-$	B D	XREF: D(9295.0). J^{π}: γ's to 27$^-$ and 28$^-$ level, fed by E1 γ from 30$^+$, and expected band structure.
9647.9[c] *8*	30$^+$	B D	XREF: D(9654.2). J^{π}: E1 γ to 29$^-$ level and E2 γ to 28$^+$ level and proposed band structure.
9693.5[p] *9*	30$^-$	B D	XREF: D(9700.4). J^{π}: γ to 28$^-$ level and expected band structure.
9864[a]	30$^+$	D	XREF: D(9871). E(level): Level not reported by 2009Pa17. These authors do not report levels in this band above 28$^+$. J^{π}: γ to 28$^+$ level and expected band structure.
10106.1[k] *13*	31$^-$	B D	XREF: D(10115.9). J^{π}: γ to 29$^-$ level and expected band structure.
10182.3[m] *9*	31$^-$	B D	XREF: D(10189.9). J^{π}: γ to 29$^-$ and 30$^-$ levels and expected band structure.
10414.6[c] *18*	32$^+$	B D	XREF: D(10421.1).
10532.2[p] *10*	32$^-$	B D	XREF: D(10539.5). J^{π}: γ to 30$^-$ level and expected band structure.
10926.5[m] *10*	33$^-$	B D	XREF: D(10934.8). J^{π}: E2 γ to 31$^-$ level and expected band structure.
11097.0[c] *11*	34$^+$	B D	XREF: D(11103.6). J^{π}: γ to 32$^+$ level and proposed band structure.
11187.1[k] *15*	33$^-$	B	J^{π}: γ to 31$^-$ and expected band structure.
11333.1 *11*	(34$^+$)	B D	XREF: D(11338.8). J^{π}: γ to 32$^+$ level.
11453.2[p] *11*	34$^-$	B D	XREF: D(11460.5). J^{π}: γ to 32$^-$ level and expected band structure.
11577.6 *11*	34$^-$	B D	XREF: D(11586.3). J^{π}: γ to 32$^-$ level, γ from 36$^-$ level.
11817.1 *12*	35$^+$	B D	XREF: D(11824.2). J^{π}: M1+E2 γ to 34$^+$ level. Fed by M1+E2 γ from 36$^+$.
11974.6[m] *12*	(35$^-$)	B	J^{π}: γ to 33$^-$ level.

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Adopted Levels, Gammas (continued)

^{156}Er Levels (continued)

E(level)[†]	J^{π}[@]	XREF	Comments
11976	(36^+)	D	XREF: D(11983). J^{π}: γ to 34^+ level.
12035.4[c] *12*	36^+	B D	XREF: D(12043.0). J^{π}: E2 γ to 34^+ level and proposed band structure.
12139.6 *11*	(35^-)	B	J^{π}: γ from 36^- level, γ to 33^- level.
12423.1[p] *11*	36^-	B D	XREF: D(12431.2). J^{π}: γ's to 34^- levels and expected band structure.
12668.2	(38^+)	D	XREF: D(12676.1). E(level): From the energy of the 36^+ level and the listed Eγ value. E(level)=12676.1 is listed in (HI,xnγ). J^{π}: γ to (36^+) level.
13058.2[p] *13*	38^-	B D	XREF: D(13066.3). J^{π}: γ to 36^- level and expected band structure.
13202.5[c] *13*	38^+	B D	XREF: D(13211.3). J^{π}: E2 γ to 36^+ level and proposed band structure.
13402.3 *13*	38^+	B	J^{π}: E2 γ to 36^+.
13867.0[c] *14*	40^+	B D	XREF: D(13876.5). J^{π}: E2 γ to 38^+ level and proposed band structure.
14034.3 *13*	(40^+)	B D	XREF: D(14044.0). J^{π}: γ's to 38^+ levels.
14421.6[c] *14*	42^+	B D	XREF: D(14431.9). J^{π}: E2 γ to 40^+ level and proposed band structure. Band termination point. Above this level, the states are presumed (2009Pa17) to include excitations of the ^{146}Gd core. J^{π}: State represents the full alignment of the ten valence nucleons outside the ^{146}Gd core. Configuration is $(\pi\ h^4_{11/2}\ {}_{16+})\otimes[(i^2_{13/2}\ {}_{12+})(\nu\ f_{7/2},h_{9/2})^4_{14+})]_{26+}$.
15478.7[‡] *15*	(43^-)	B D	XREF: D(15489.4). J^{π}: (E1) γ to 42^+ level. (43^+) proposed in (HI,xnγ).
15764[‡] *2*	$(44)^+$	B	J^{π}: E2 γ to 42^+ level.
15814[‡] *2*	$(44)^+$	B	J^{π}: E2 γ to 42^+ level.
15986[‡] *2*		B	
16043[‡] *2*	$(44)^+$	B	J^{π}: E2 γ to 42^+ level.
16375[‡] *2*		B	
16583[‡] *2*	$(44)^+$	B	J^{π}: E2 γ to 42^+ level.

[†] From the ^{156}Tm ε decay and heavy-ion data, where they are determined by least-squares fits to the γ energies.

[‡] Level is expected to involve excitations from the ^{146}Gd core.

[#] Unless otherwise noted, the values are from the (HI,xnγ) studies and were obtained using the Doppler-shift recoil-distance technique.

[@] For the levels seen only in the high-spin studies, the values are from the multipolarities of the γ transitions, where known, the γ branching of the levels, and the assumption of generally increasing spin with increasing excitation energy.

[&] Band(A): $K^{\pi}=0^+$ g.s. band. Band crossed by an aligned ($i_{13/2}$) two-quasineutron (AB) éxcitation near hω=0.30 MeV (above J=10).

[a] Band(a): Aligned $i_{13/2}$ two-quasineutron (AB) band.

[b] Band(B): First excited $K^{\pi}=0^+$ band.

[c] Band(C): Band based on a 28^+ level. Proposed extension of Bands(B) and (E), both of which experience band crossings near $\hbar\omega$=0.39 MeV ($J^{\pi}\approx28^+$). Above $\hbar\omega\approx$0.4 MeV, band seems noncollective in nature. Possible weakly deformed oblate triaxial terminating band (2009Pa17).

[d] Band(D): γ-vibrational band, α=0 branch.

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Adopted Levels, Gammas (continued)

^{156}Er Levels (continued)

[e] Band(d): γ-vibrational band, α=1 branch.
[f] Band(E): Band based on 12^{+}. Band possibly results from the coupling of the aligned $i_{13/2}$ two-quasineutron (AB) band and the γ-vibrational band. The evaluator has assumed that this band is the same as the “positive-parity, even-spin band” proposed in the (HI,xnγ) study.
[g] Band(F): K$^{\pi}$=2^{+} band. Possible two-phonon $\beta\gamma$ vibration.
[h] Band(G): Band based on an 8^{+} level. Possible aligned $((\nu\ h_{9/2})(\nu\ f_{7/2}))_{2+}$ configuration.
[i] Band(H): Odd-spin negative-parity band. Probable octupole-based excitation. Undergoes a backbend near hω=0.2 MeV (J>7).
[j] Band(h): Probable -π prolate two-neutron quasiparticle band. Associated with the band crossing of Band(h).
[k] Band(I): Odd-spin negative parity band based on 19^{-}. Band associated with Bands(H) and (h).
[l] Band(J): Odd-spin negative-parity band based on 11^{-}.
[m] Band(j): Band associated with Band(J).
[n] Band(K): Even-spin negative-parity band. Probable octupole-based excitation. Undergoes a backbend near hω=0.2 MeV (J>8).
[o] Band(k): Probable -π prolate two-neutron quasiparticle band. Associated with the band crossing of Band(K).
[p] Band(L): Probable extension of Band(K).

$\gamma(^{156}Er)$

The unplaced γ's observed in the ^{156}Tm ε decay are not included here.

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
344.53	2^+	344.55 *7*	100	0	0^+	E2	0.0457	B(E2)(W.u.)=65.7 *18* Mult.: From $\gamma(\theta)$ in (HI,xnγ), mult=Q. RUL eliminates M2. This transition is the basis for normalizing the γ and ce intensities to obtain α(K)exp values for the other transitions in both the ^{156}Tm ε Decay and the (HI,xnγ) studies.
797.39	4^+	452.85 *7*	100	344.53	2^+	E2	0.0213	B(E2)(W.u.)=117 *7*
930.07	0^+	≈585.9[#]	100	344.53	2^+			E_γ,I_γ: The major part of this γ depopulates the 930.48, 2^+ level.
		930		0	0^+	E0		Mult.: Unresolved ce lines interpreted as including an E0 component.
930.48	2^+	585.93[#] *8*	≤100	344.53	2^+	E2	0.01106	E_γ,I_γ: a minor part of this γ depopulates the 930.07, 0^+ level.
		930.42 *9*	35	0	0^+	E2	0.00390	Mult.: Unresolved lines interpreted as including an E2 component.
1220.74	2^+	290.68 *14*	13 *2*	930.07	0^+			
		423.40 *17*	15 *2*	797.39	4^+			
		876.20 *14*	77 *6*	344.53	2^+	E0+E2(+M1)	0.043 *12*	α: Computed from α(K)exp and theoretical α/α(K) ratios.
		1220.83 *17*	100 *9*	0	0^+			
1243.01		312.4 *4*	20 *7*	930.48	2^+			
		898.5[#] *2*	≤100	344.53	2^+			
1303.54	3^-	959.00 *9*	100	344.53	2^+	E1	0.00148	
1304.8?		507.4[a] *4*	100	797.39	4^+			
1340.86	6^+	543.50 *15*	100	797.39	4^+	E2	0.01331	B(E2)(W.u.)=124 *20*
1351.33	3^+	420.78 *9*	50 *8*	930.48	2^+	E2	0.0260	
		553.98 *13*	29 *3*	797.39	4^+			
		1006.86 *16*	100 *8*	344.53	2^+			
1381.9?		451.5[a] *4*	100	930.48	2^+			
1406.15	4^+	475.63 *11*	62 *5*	930.48	2^+			
		608.84 *13*	100 *8*	797.39	4^+			
		1061.3 *4*	59 *18*	344.53	2^+			
1517.90	(1^-)	1173.34 *19*	≈23	344.53	2^+			
		1518.0 *4*	100 *23*	0	0^+			
1546.68	4^+	326.00 *10*	27 *4*	1220.74	2^+			
		749.0 *2*	58 *13*	797.39	4^+	E0+M1+E2	0.044 *19*	α: Computed from α(K)exp and theoretical α/α(K) ratios.
		1202.2 *2*	100 *14*	344.53	2^+			
1570.75	2^+	350.0 *5*	14 *6*	1220.74	2^+			
		640.44 *18*	41 *6*	930.48	2^+	E0+M1+E2	0.11 *3*	α: Computed from α(K)exp and theoretical α/α(K) ratios.
		773.0 *3*	16 *4*	797.39	4^+			
		1226.1 *3*	100 *10*	344.53	2^+			
1611.77	5^-	814.3 *2*	100	797.39	4^+			
1630.52	2^-	699.9 *2*	47 *5*	930.48	2^+			
		1286.05 *14*	100 *13*	344.53	2^+			

$^{156}_{68}Er_{88}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{156}Er)$ (continued)

E_i(level)	J^{π}_i	E_γ	I_γ	E_f	J^{π}_f	Mult.†	δ	α‡	Comments
1663.41		866.02 *14*	100	797.39	4^+				
1710.54		1366.0 *2*	100	344.53	2^+				
1814.48	4^-	1017.1 *2*	100	797.39	4^+				
1835.2	5^+	483.7		1351.33	3^+				E_γ: From the heavy-ion study of 2011Re06. $E\gamma$=484.85 *15* is reported in ^{156}Tm ε Decay, but the evaluator has chosen the listed value for purposes of internal consistency.
		1038.0		797.39	4^+				
1860.8	(3^+)	1516.3 *6*	100	344.53	2^+				
1885.9	6^+	479.7		1406.15	4^+				
		544.7		1340.86	6^+				
		1088.4		797.39	4^+				
1909.56	$2^+,3,4^+$	557.9 *4*	21 *11*	1351.33	3^+				
		1565.1 *2*	100 *16*	344.53	2^+				
1959.2	8^+	618.3 *3*	100	1340.86	6^+	E2		0.00972	B(E2)(W.u.)=50 *12*
1969.6	6^+	422.9		1546.68	4^+				
		628.6		1340.86	6^+				
		1172.1		797.39	4^+				
2014.52		1084.4 *3*	16 *5*	930.07	0^+				E_γ: 1975Ag02 provide no information on whether this γ goes to the 0^+ or the 2^+ level at 930 keV.
		1670.0 *2*	100 *12*	344.53	2^+				
2029.3	7^-	417.3 *6*	16.7 *17*	1611.77	5^-				
		688.6 *3*	100 *8*	1340.86	6^+	E1			
2169.8		1825.3 *3*	100	344.53	2^+				
2204.3	6^-	390.0 *6*	<45	1814.48	4^-	E2			
		592.1 *6*	<45	1611.77	5^-				
		863.5 *6*	100 *9*	1340.86	6^+				
2249.83		898.5# *2*	100	1351.33	3^+				
2368.6	(7^+)	533.5		1835.2	5^+				
		1027.8		1340.86	6^+				
2377.0	8^+	490.6		1885.9	6^+				
		1036.3		1340.86	6^+				
2480.7	8^+	510.9		1969.6	6^+				
		521.8		1959.2	8^+				
		1139.7		1340.86	6^+				
2489.9	9^-	460.8 *6*	23 *2*	2029.3	7^-	E2		0.0204	B(E2)(W.u.)=13 *8*
		530.6 *3*	100 *6*	1959.2	8^+	E1(+M2)	<0.16	0.0060 *11*	B(E1)(W.u.)=0.00016 *10*; B(M2)(W.u.)<1.0×10^2 B(E1)(W.u.) value computed for %M2=0. Mult.,δ: From α(K)exp<0.0061 in (HI,xnγ).
2601.2	8^-	396.7 *6*	100 *10*	2204.3	6^-				
		572.0 *6*	<48	2029.3	7^-				
		641.7 *6*	<48	1959.2	8^+	(D)			
2633.1	10^+	674.1 *3*	100	1959.2	8^+	E2		0.00793	B(E2)(W.u.)=58 *13*
2760.9	(8^+)	392.4		2368.6	(7^+)				

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Adopted Levels, Gammas (continued)

$\gamma(^{156}Er)$ (continued)

E_i(level)	J^{π}_i	E_γ	I_γ	E_f	J^{π}_f	Mult.†	δ	α‡	Comments
2760.9	(8^+)	731.4		2029.3	7^-				
2903.3	10^-	270.4 *6*	41 *4*	2633.1	10^+	E1			Mult.: ΔJ=0 transition.
		301.8 *6*	74 *7*	2601.2	8^-	E2			
		413.7 *6*	100 *10*	2489.9	9^-				
2923.6	11^-	290.4 *3*	58 *3*	2633.1	10^+	E1(+M2)	≤0.055	0.0210 *10*	B(E1)(W.u.)=0.00042 *5*; B(M2)(W.u.)<76 B(E1)(W.u.) value computed for %M2=0. Mult.,δ: From α(K)exp=0.020 *7* and $\gamma(\theta)$ in (HI,xnγ).
		433.6 *3*	100 *6*	2489.9	9^-	E2		0.0240	B(E2)(W.u.)=56 *7*
2943.2	10^+	565.8	100	2377.0	8^+				
2961.3	(9^+)	592.7	100	2368.6	(7^+)				
2998.1	10^+	237.2		2760.9	(8^+)				
		364.6		2633.1	10^+				Transition may be a mixed E2/M1 transition with a large negative mixing ratio (2011Re06).
		508.6		2489.9	9^-				
3042.4	10^+	561.7	100	2480.7	8^+				
3081.5	11^-	447.9 *6*	79 *7*	2633.1	10^+				
		591.6@ *6*	100@ *11*	2489.9	9^-				
3314.6	12^+	681.8 *3*	100	2633.1	10^+	E2		0.00773	B(E2)(W.u.)=51 *24*
3384.1	12^-	460.9 *6*	16 *2*	2923.6	11^-				
		480.9 *6*	100 *10*	2903.3	10^-	E2			
3432.3	13^-	118.3 *6*	<2.4	3314.6	12^+	E1		0.208 *4*	B(E1)(W.u.)<0.0010
		508.4 *3*	100 *5*	2923.6	11^-	E2		0.01575	B(E2)(W.u.)=98 *20*
3439.5	12^+	806.8 *6*	100	2633.1	10^+				
3493.7	12^+	495.6	100	2998.1	10^+				
3588.5	12^+	645.2	100	2943.2	10^+				
3599.3	(11^+)	638.0	100	2961.3	(9^+)				
3627.7	12^+	684.3	100	2943.2	10^+				
3651.3	12^+	608.9	100	3042.4	10^+				
3673.6	13^-	289.8 *6*	<36	3384.1	12^-				
		591.6@ *6*	100@ *11*	3081.5	11^-				
3836.7	14^+	397.5 *6*	7.3 *7*	3439.5	12^+				
		522.2 *3*	100	3314.6	12^+	E2		0.01472	B(E2)(W.u.)=1.7×10^2 *5*
3953.9	14^-	522.0 *6*	<8	3432.3	13^-				
		569.8 *3*	100 *8*	3384.1	12^-	E2			
4035.1	15^-	602.5 *3*	100	3432.3	13^-	E2		0.01034	B(E2)(W.u.)=7.E+1 *5*
4087.6	14^+	593.9	100	3493.7	12^+				
4185.3	14^+	557.3		3627.7	12^+				
		870.4		3314.6	12^+				
4247.5	14^+	596.2	100	3651.3	12^+				
4269.8	(13^+)	670.5	100	3599.3	(11^+)				
4280.7	14^+	692.1	100	3588.5	12^+				
4309.9	15^-	356.3 *6*	<30	3953.9	14^-				
		636.2 *6*	100 *9*	3673.6	13^-				

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$\gamma(^{156}Er)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.†	α‡	Comments
4380.4	16^+	543.8 *3*	100	3836.7	14^+			
4593.1	16^-	557.3 *6*	<11	4035.1	15^-			
		639.4 *6*	100 *10*	3953.9	14^-	E2		
4711.5	17^-	676.4 *3*	100	4035.1	15^-	[E2]	0.00787	B(E2)(W.u.)=50 *19*
4764.0	16^+	676.4	100	4087.6	14^+			
4782.4	16^+	501.6		4280.7	14^+			E_γ: From 2011Re06 only. γ not reported in the other high-spin studies.
		596.7		4185.3	14^+			E_γ: From 2011Re06 only. γ not reported in the other high-spin studies.
		747.0 *6*	100 *10*	4035.1	15^-	(D)		
		946.4 *6*	<20	3836.7	14^+			
4812.9	16^+	565.4	100	4247.5	14^+			
4967.4	(15^+)	697.6	100	4269.8	(13^+)			
5000.7	17^-	407.8 *6*	<37	4593.1	16^-			
		691.0 *6*	100 *11*	4309.9	15^-			
		965.3 *6*	<37	4035.1	15^-			
5006.6	18^+	626.3 *3*	100	4380.4	16^+	[E2]	0.00942	B(E2)(W.u.)=1.0×10^2 *5*
5297.3	18^-	585.9 *6*	<15	4711.5	17^-			
		703.7 *6*	100 *10*	4593.1	16^-			
5338.3	18^+	556.0 *6*	100 *10*	4782.4	16^+	E2		
		626.9 *6*	19.8 *23*	4711.5	17^-	(D)		
		957.9 *6*	<12	4380.4	16^+			
5370.4	18^+	557.5	100	4812.9	16^+			
5495.7	19^-	783.9 *3*	100	4711.5	17^-	[E2]	0.00564	B(E2)(W.u.)=17 *7*
5537.1	18^+	773.1	100	4764.0	16^+			
5674.5	19^-	376.6 *6*	<91	5297.3	18^-			
		673.6 *6*	<91	5000.7	17^-			
		964.0 *6*	100 *9*	4711.5	17^-			
5716.7	20^+	710.2 *3*	100	5006.6	18^+	E2	0.00704	B(E2)(W.u.)=8.E+1 *6*
5787.8	19^-	490.8 *6*	<30	5297.3	18^-			
		787.5 *6*	100 *9*	5000.7	17^-			
		1076.2 *6*	<30	4711.5	17^-			
5931.2	20^+	435.1 *6*	<12	5495.7	19^-			
		593.0 *6*	100 *10*	5338.3	18^+			
		924.8 *6*	<12	5006.6	18^+			
6056.9	20^+	686.5	100	5370.4	18^+			
6058.4	20^-	562.9 *6*	<24	5495.7	19^-			
		760.8 *6*	100 *10*	5297.3	18^-			
6261.2	21^-	202.5 *6*	<48	6058.4	20^-			
		587.1 *6*	<48	5674.5	19^-			
		765.5 *6*	100 *14*	5495.7	19^-			
6295.4	(20^+)	758.3	100	5537.1	18^+			
6356.4	21^-	681.6 *6*	<30	5674.5	19^-			
		859.7 *6*	100 *9*	5495.7	19^-			
6410.9	(20^+)	873.8	100	5537.1	18^+			

Adopted Levels, Gammas (continued)

$\gamma(^{156}\mathrm{Er})$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†]	Comments
6437.1	21^-	176.1 *6*	<29	6261.2	21^-		
		378.5 *6*	<29	6058.4	20^-		
		649.8 *6*	100 *11*	5787.8	19^-		
6489.3	22^+	772.9 *6*	100	5716.7	20^+	E2	
6663.0	22^+	306.7 *6*	<11	6356.4	21^-		
		731.7 *6*	100 *10*	5931.2	20^+	E2	
6740.7	22^-	384.5 *6*	<33	6356.4	21^-		
		479.6 *6*	<33	6261.2	21^-		
		682.9 *6*	100 *10*	6058.4	20^-		
6822.9	(22^+)	766.0	100	6056.9	20^+		
6867.5	23^-	605.9 *6*	100	6261.2	21^-		
7053.9	23^-	186.0 *6*	<19	6867.5	23^-		
		617.4 *6*	100 *10*	6437.1	21^-		
		793.0[&] *6*	<19[&]	6261.2	21^-		
7109.7	23^-	369.8 *6*		6740.7	22^-		
		752.0 *6*		6356.4	21^-		
7315.9	24^+	826.9 *6*	100	6489.3	22^+	E2	
7414.7	24^-	547.2 *6*	<16	6867.5	23^-	(D)	
		673.9 *6*	100 *10*	6740.7	22^-		
7444.1	24^+	780.9 *6*	100	6663.0	22^+		
7492.5	(24^+)	1003.1 *6*	100	6489.3	22^+		
7600.8	25^-	733.3 *6*	100	6867.5	23^-		
7649.4	25^-	234.6 *6*	<20	7414.7	24^-		
		539.2 *6*	<20	7109.7	23^-		
		595.8 *6*	100 *10*	7053.9	23^-		
		783[a]		6867.5	23^-		E_γ: From (HI,xnγ). γ not reported in the high-spin study (2009Pa17).
7979.9		487.1 *6*		7492.5	(24^+)		
		536.1 *6*		7444.1	24^+		
8082.2	26^+	589.9 *6*	<22	7492.5	(24^+)		
		766.7[&] *6*	100[&] *11*	7315.9	24^+	E2	
8101.3	26^-	686.8 *6*	100	7414.7	24^-		
8210.9	26^+	766.5 *6*	100	7444.1	24^+		
8289.3	27^-	688.5 *6*	100	7600.8	25^-		
8325.0		345 *1*		7979.9			
8393.9	27^-	292.4 *6*	<13	8101.3	26^-		
		744.2[@] *6*	100[@] *10*	7649.4	25^-	E2	Note: γ is doubly placed.
		793.0[&] *6*	14[&] *1*	7600.8	25^-		
8848.8	28^+	637.4 *6*	<36	8210.9	26^+		
		766.7[&] *6*	100[&] *11*	8082.2	26^+		
8867.1	28^-	766.0 *6*	100	8101.3	26^-		
8902.5		577.5 *6*		8325.0			
		821.0		8082.2	26^+		E_γ: From (HI,xnγ). 2009Pa17 do not report this γ.

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γ(^{156}Er) (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†]	Comments
8965.0	28+	882.9 6	100	8082.2	26+	E2	
9068.2	28+	857.4 6	100	8210.9	26+		
9197.7	29−	908.4[@] 6	100[@]	8289.3	27−		
9288.3	29−	421.5 6	<14	8867.1	28−		
		894.0[@] 6	100[@] 10	8393.9	27−		
9647.9	30+	359.5 6	<45	9288.3	29−	E1	
		579.8 6	50 5	9068.2	28+		
		683.0 6	<45	8965.0	28+		
		745.7 6	<45	8902.5			
		798.9 6	100 9	8848.8	28+	E2	
9693.5	30−	826.4 6	100	8867.1	28−		
9864	30+	899		8965.0	28+		
10106.1	31−	908.4[@] 6	100[@]	9197.7	29−		
10182.3	31−	488.8 6	<14	9693.5	30−		
		894.0[@] 6	100[@] 10	9288.3	29−		
10414.6	32+	548[a]		9864	30+		E_γ: From (HI,xnγ). γ not reported by 2009Pa17.
		766.7[&] 6	100[&]	9647.9	30+		
10532.2	32−	838.8 6	100	9693.5	30−		
10926.5	33−	744.2[@] 6	100[@]	10182.3	31−	E2	Note: γ is doubly placed.
11097.0	34+	682.4 6	100	10414.6	32+		
11187.1	33−	1081.0 6	100	10106.1	31−		
11333.1	(34+)	918.4 6	100	10414.6	32+		
11453.2	34−	920.9 6	100	10532.2	32−		
11577.6	34−	651.1 6		10926.5	33−		
		1045.5 6		10532.2	32−		
11817.1	35+	720.1 6	100	11097.0	34+	M1+E2	
11974.6	(35−)	1048.1 6	100	10926.5	33−		
11976	(36+)	879	100	11097.0	34+		
12035.4	36+	218.3 6	65 6	11817.1	35+	M1+E2	
		702.2 6	<29	11333.1	(34+)		
		938.4 6	100 9	11097.0	34+	E2	
12139.6	(35−)	1212.9 6	100	10926.5	33−		
12423.1	36−	283.4 6		12139.6	(35−)		
		845.7 6		11577.6	34−		
		969.8 6		11453.2	34−		
12668.2	(38+)	632.8	100	12035.4	36+		
13058.2	38−	635.1 6	100	12423.1	36−		
13202.5	38+	1167.1 6	100	12035.4	36+	E2	
13402.3	38+	1367.0 6	100	12035.4	36+	E2	
13867.0	40+	664.4 6	100	13202.5	38+	E2	
14034.3	(40+)	632.0 6		13402.3	38+		E_γ: From 2009Pa17. γ not reported in (HI,xnγ).
		831.9 6		13202.5	38+		E_γ: In (HI,xnγ), a 1368.0 γ is placed from a 14044.0 level, assumed to be the same as the

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Adopted Levels, Gammas (continued)

γ(^{156}Er) (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†]	Comments
							14033.2 level here. However, 2009Pa17 report a 1367.0 γ, which they place from a level at 13401.3.
14421.6	42^+	387.4 *6*	<48	14034.3	(40^+)		
		554.4 *6*	100 *10*	13867.0	40^+	E2	
15478.7	(43^-)	1057.1 *6*	100	14421.6	42^+	(E1)	
15764	$(44)^+$	1342 *1*	100	14421.6	42^+	E2	
15814	$(44)^+$	1392 *1*	100	14421.6	42^+	E2	
15986		507 *1*	100	15478.7	(43^-)		
16043	$(44)^+$	1621 *1*	100	14421.6	42^+	E2	
16375		611 *1*	100	15764	$(44)^+$		
16583	$(44)^+$	2161 *1*	100	14421.6	42^+	E2	

[†] From ^{156}Tm ε decay, based on α(K)exp measurements (1975Ag02,1980Zo02) and from heavy-ion-induced reaction studies, based on $\gamma(\theta)$ measurements (1973Be43,1976Su05,2009Pa17,2011Re06) and α(K)exp measurements (1974Go14).

[‡] 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.

[@] Multiply placed with undivided intensity.

[&] Multiply placed with intensity suitably divided.

[a] Placement of transition in the level scheme is uncertain.

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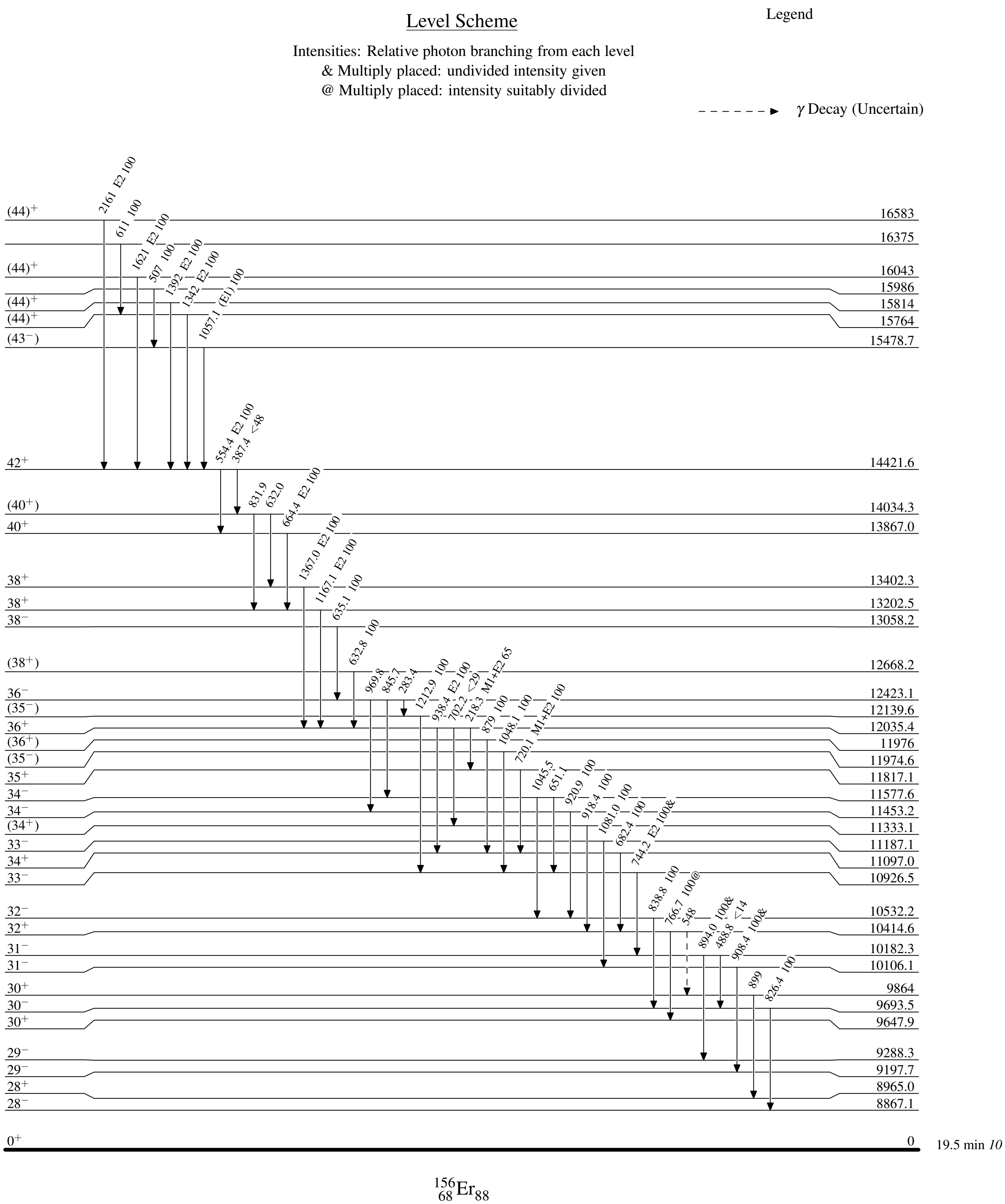
Adopted Levels, Gammas

Level Scheme

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



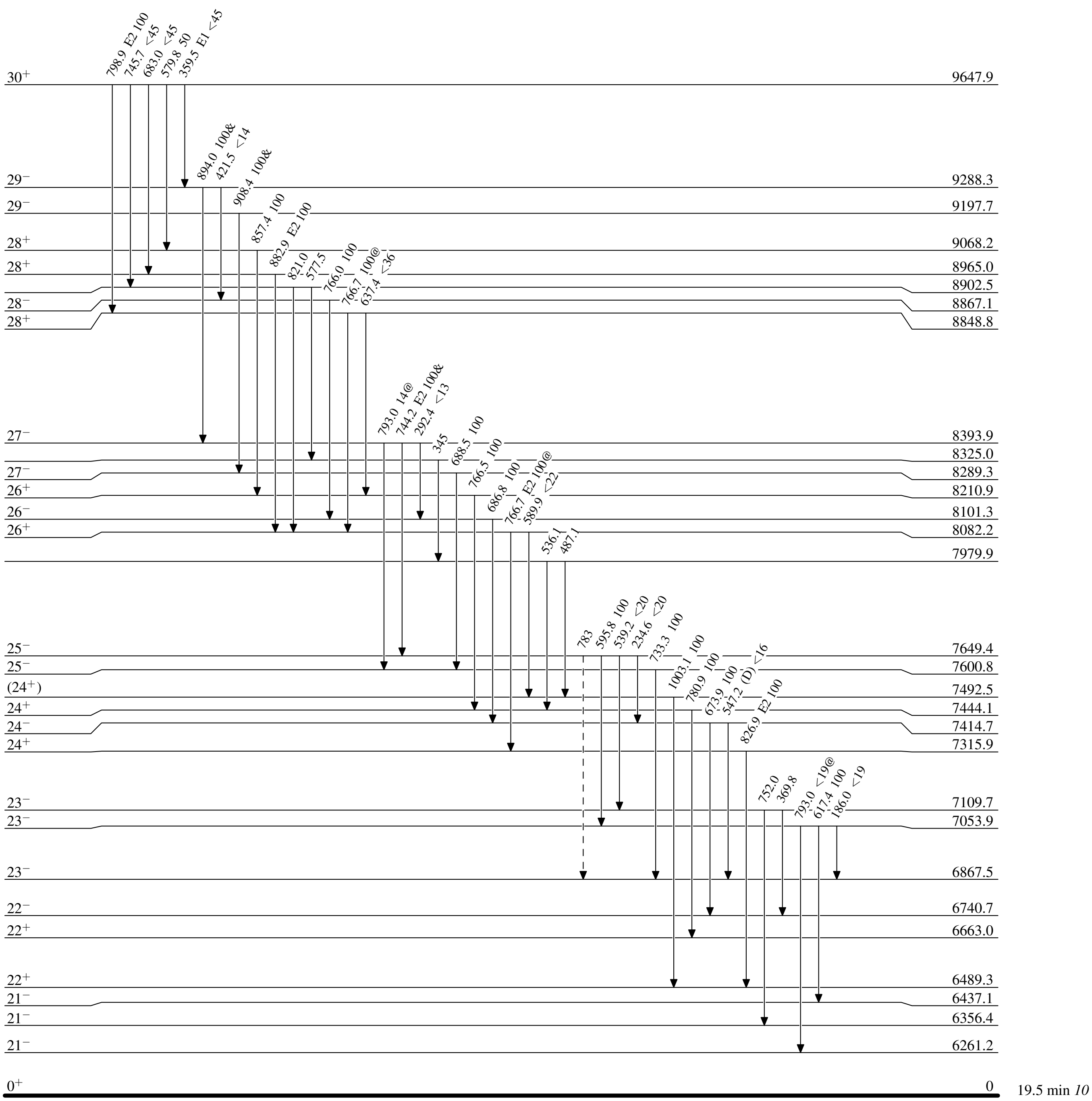
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)



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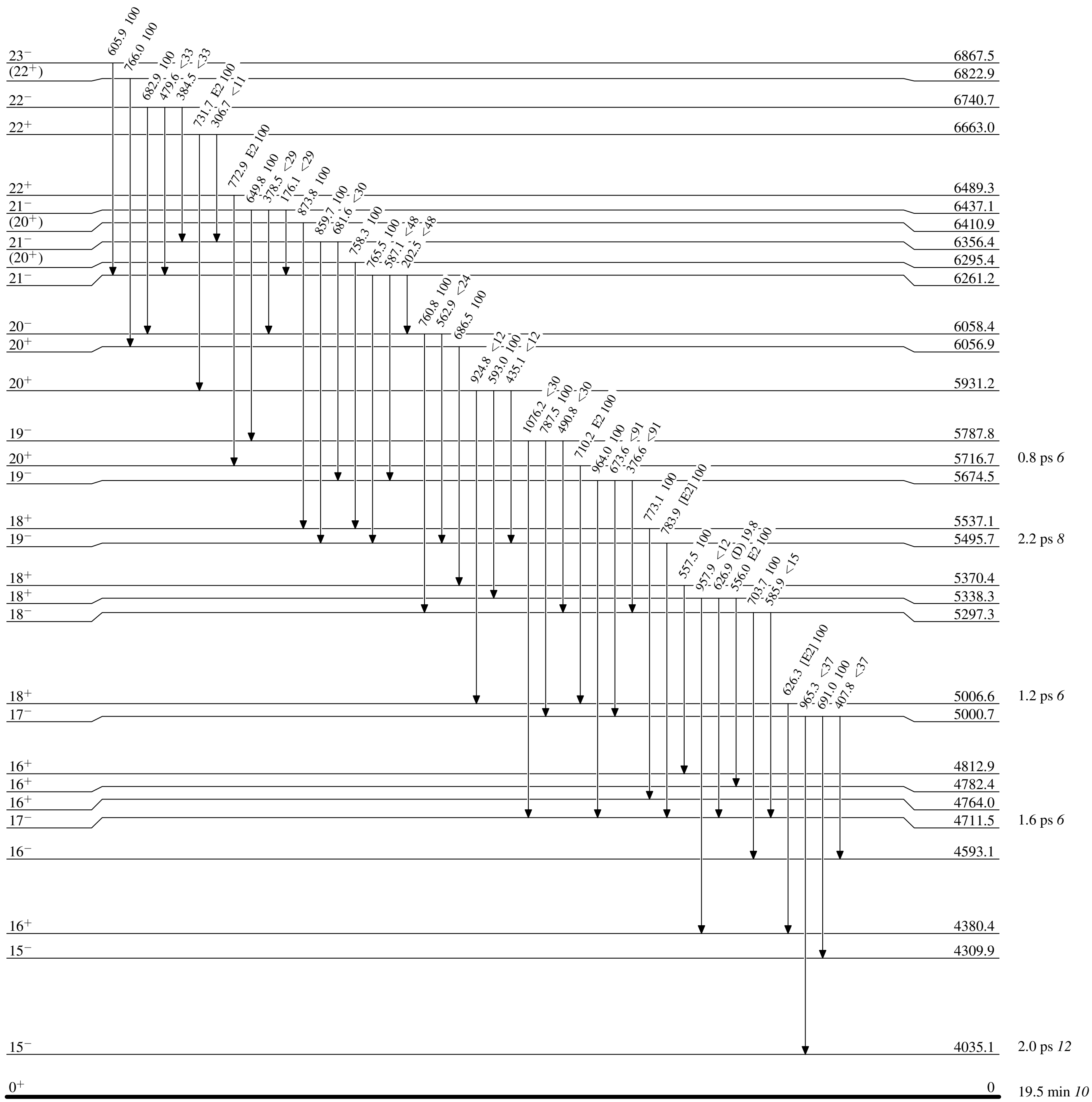
Adopted Levels, Gammas

Level Scheme (continued)

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



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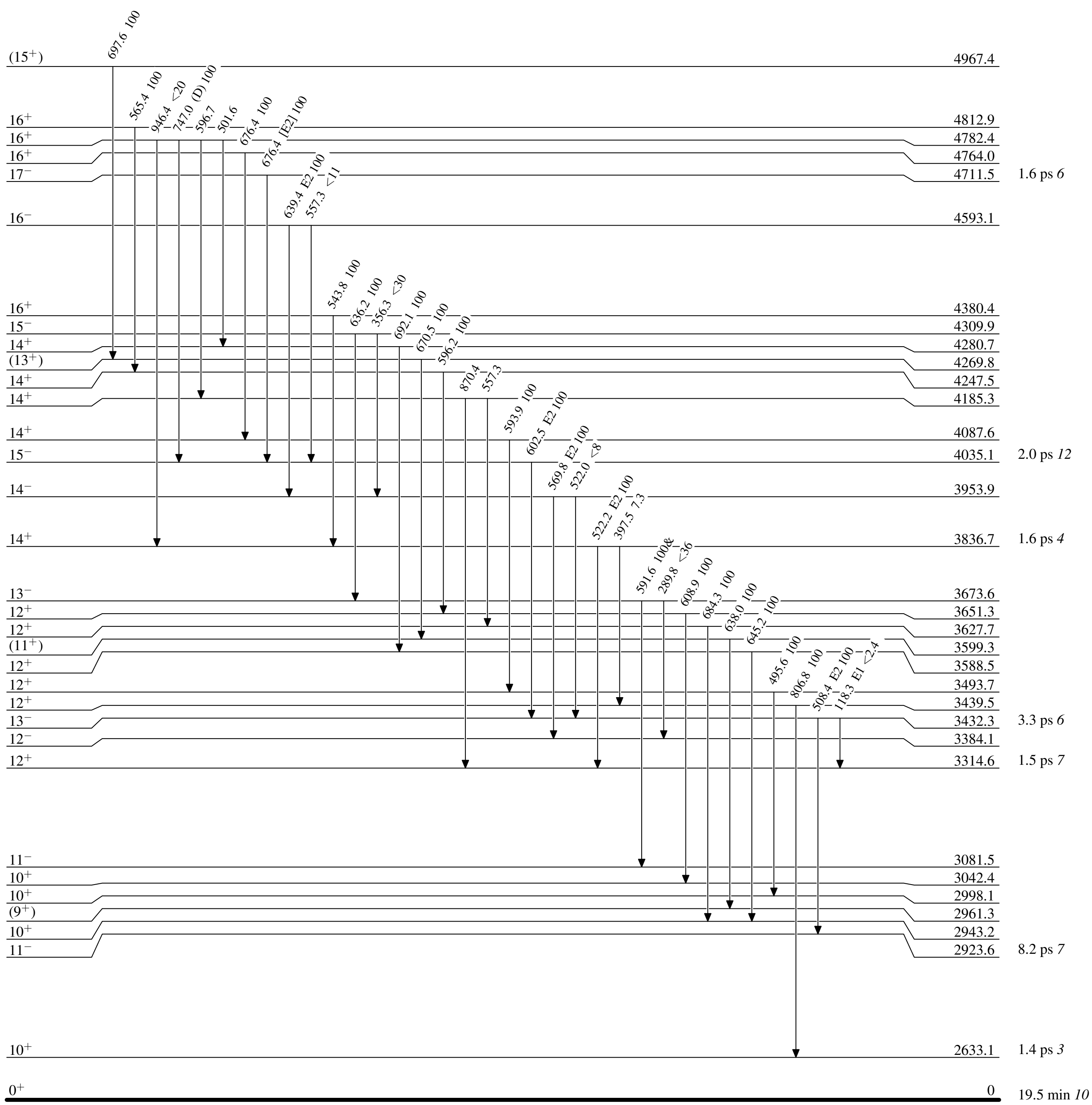
Adopted Levels, Gammas

Level Scheme (continued)

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

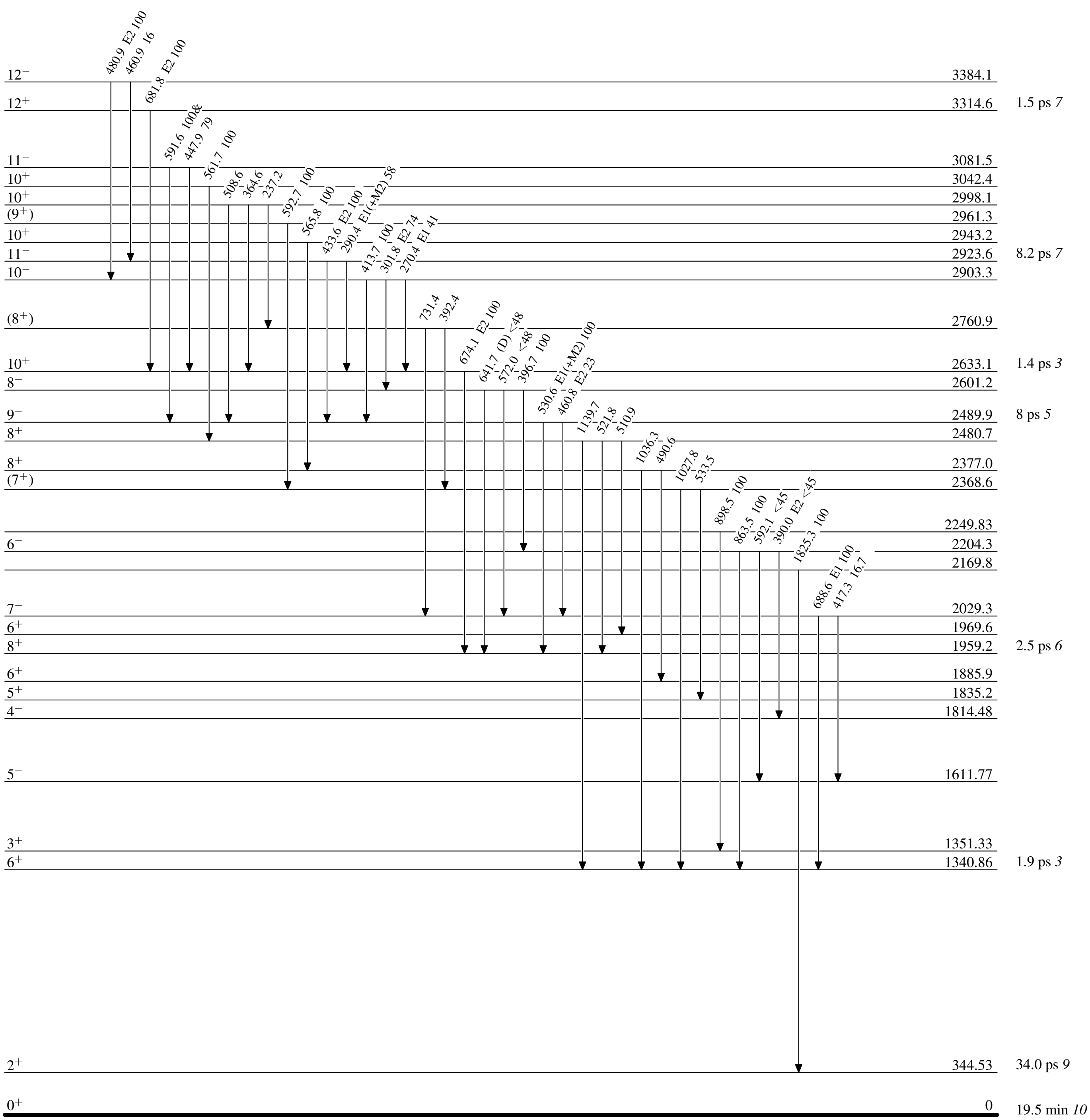


$^{156}_{68}Er_{88}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{156}_{68}Er_{88}$

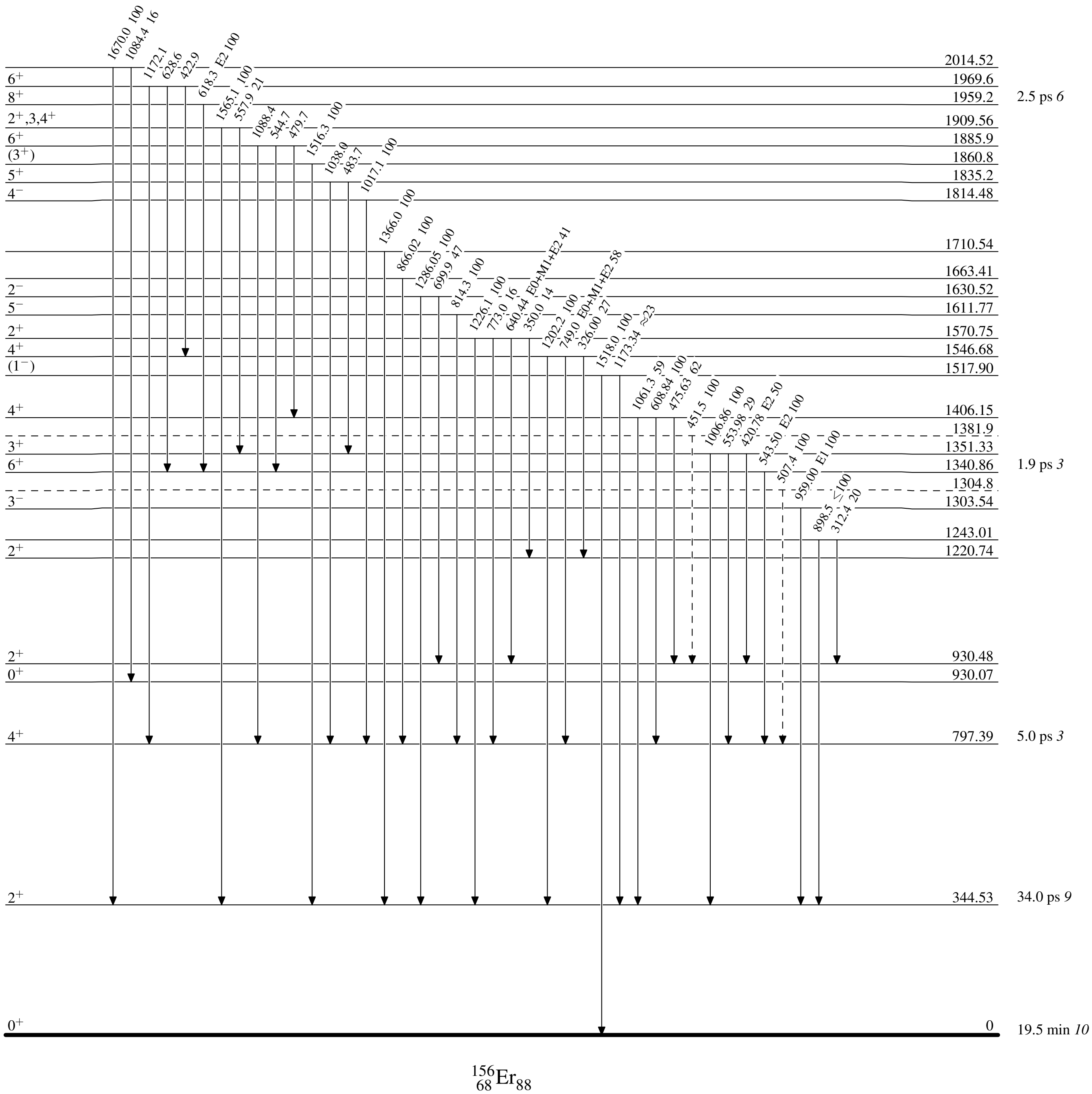
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

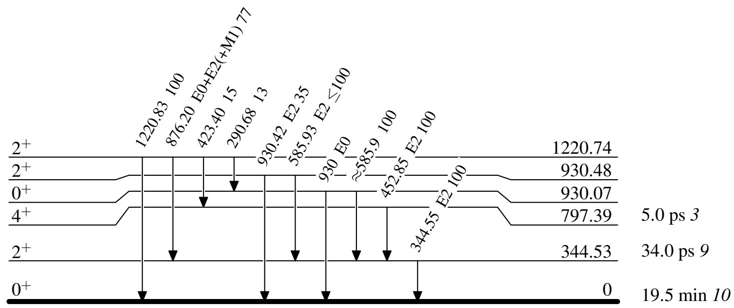
γ Decay (Uncertain)



Adopted Levels, Gammas

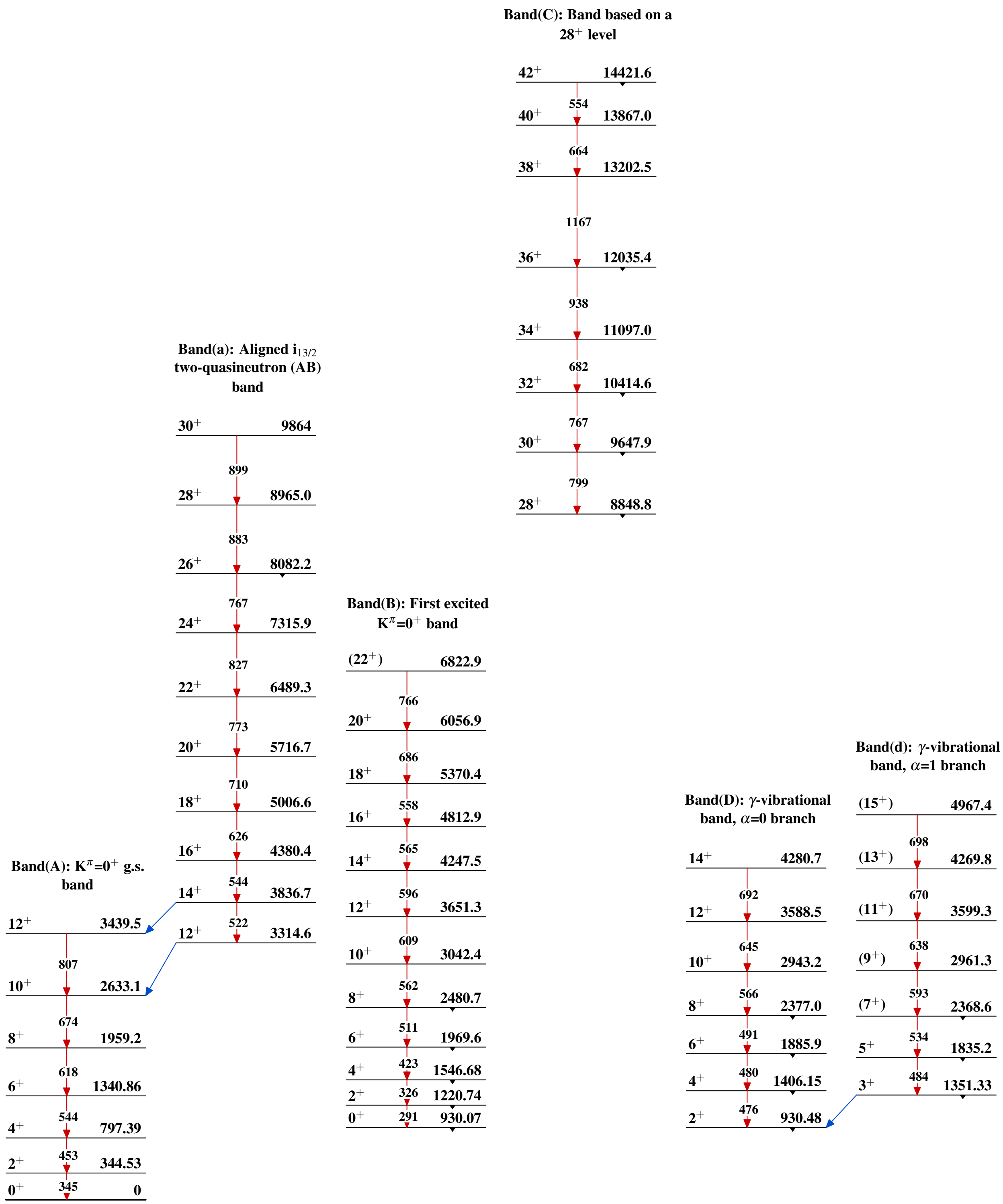
Level Scheme (continued)

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



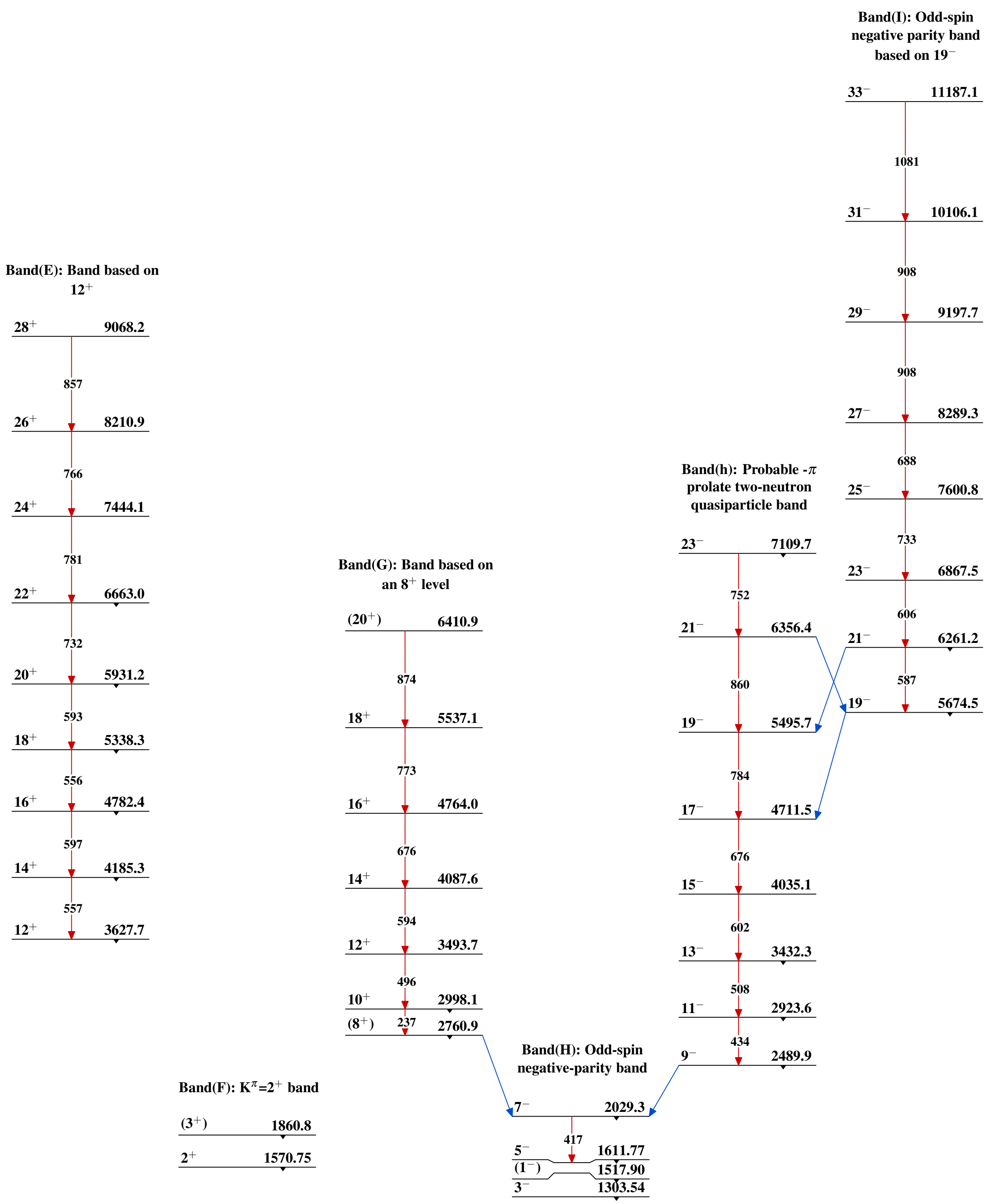
$^{156}_{68}Er_{88}$

Adopted Levels, Gammas



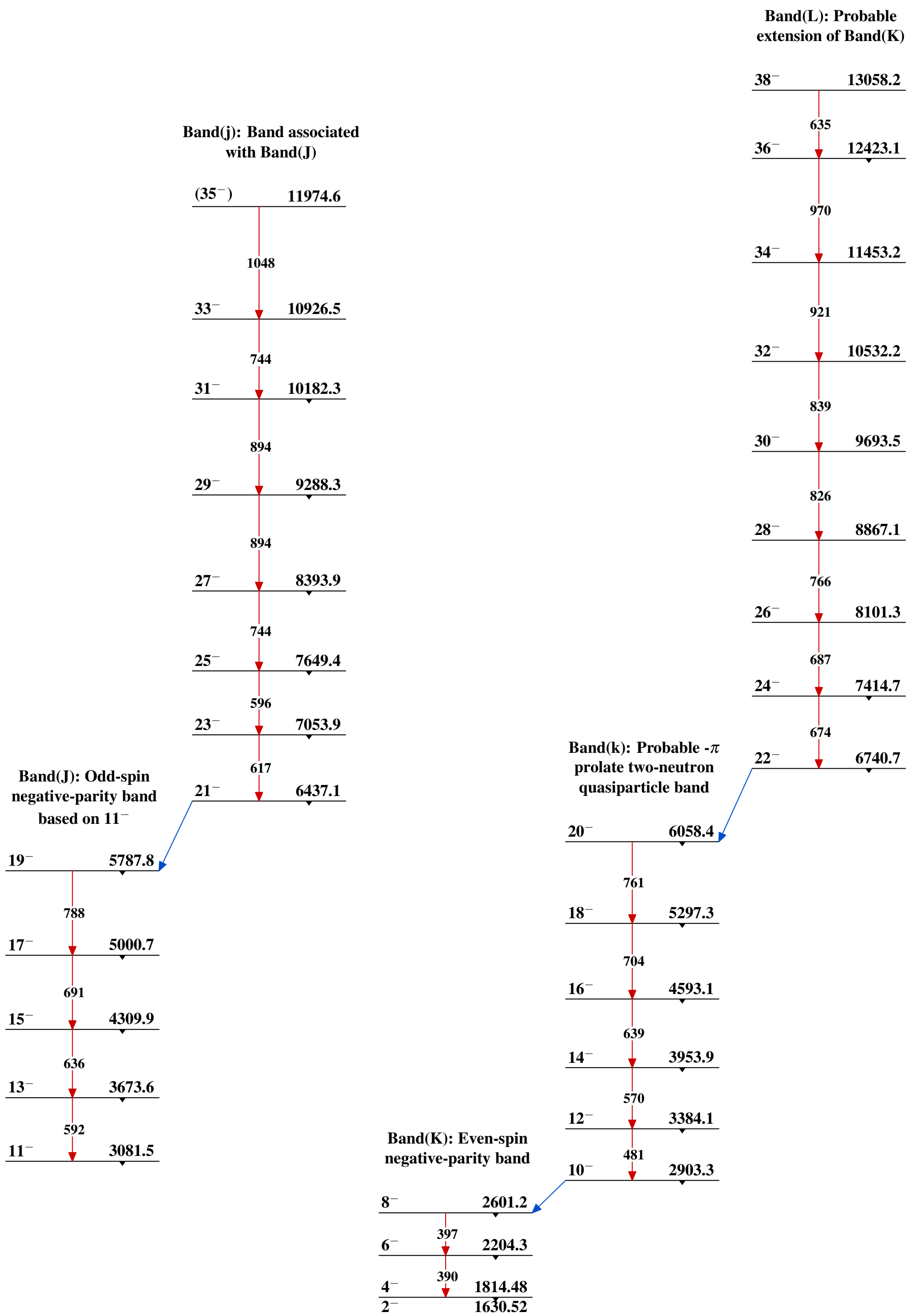
$^{156}_{68}Er_{88}$

Adopted Levels, Gammas (continued)



$^{156}_{68}Er_{88}$

Adopted Levels, Gammas (continued)



$^{156}_{68}Er_{88}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017

Q(β^-)=-6.60×10^3 *3*; S(n)=9.96×10^3 *4*; S(p)=5.76×10^3 *3*; Q(α)=2.67×10^3 *3* 2017Wa10
Q(ε)=8.8×10^2 *4*; S(2n)=1.723×10^4 *4*; S(2p)=9.35×10^3 *3* 2017Wa10
Additional information 1.
Additional information 2.

^{158}Er Levels

Additional information 3.

The K^π=0^+ β-vibrational band and the 3rd positive-parity, signature=0 band in (HI,xnγ) dataset share levels 6^+, 8^+, and 10^+ having same excitation energies and decay patterns. The first band has lower 0^+, 2^+, and 4^+ levels also assigned to this band in ^{158}Tm ε decay dataset and continues with higher 12^+ to 18^+ levels, while the second band terminates at 10^+ level. The evaluator adopted the common 6^+, 8^+, and 10^+ levels for the K^π=0^+ β-vibrational band (found by the most recent work, 2013DiZZ) and marked as tentative the three levels and their decay transitions for the 3rd positive-parity, signature=0 band (presuming that the authors of 2013DiZZ considered the previous assignments).

Cross Reference (XREF) Flags

A	^{158}Tm ε decay
B	(HI,xnγ)
C	^{114}Cd(^{48}Ca,4nγ):SD

E(level)†	J$^\pi$	T$_{1/2}$‡	XREF	Comments
0.0#	0^+	2.29 h *6*	AB	%ε=100 Evaluated RMS charge radius: <r^2>$^{1/2}$=5.1761 fm *312* (2013An02); other: <r^2>=26.78 fm^2 *24* (1993Ba55 and 1991Ho27, both from references cited therein). T$_{1/2}$: Weighted average of 150 min *10* (1961Bo24), 2.25 h *10* (1965St08), 2.4 h *2* (1968Ab14), 2.27 h *18* (1975Ru02,1974RuZX), 2.24 h *10* (1982Vy06, also given as 2.24 h *12* by 1977KaYG); other: 2.4 h (1960Dn01).
192.15# *3*	2^+	257 ps *18*	AB	μ=0.72 *11* J$^\pi$: From E2 γ to 0^+ level. μ: From 2014StZZ compilation and based on data of 1970No01; also given as ≈ 0.72 in 1989Ra17 evaluation based on the same data.
527.22# *4*	4^+	13.5 ps *4*	AB	J$^\pi$: From E2 γ to 2^+ level and expected band structure.
806.38e *6*	0^+		AB	J$^\pi$: From E0 γ to 0^+ level.
820.12c *4*	2^+		AB	J$^\pi$: From E2 γ to 0^+ level.
970.34# *5*	6^+	2.59 ps *8*	AB	J$^\pi$: From E2 γ to 4^+ level and expected band structure.
989.08e *5*	2^+		AB	J$^\pi$: From E2 γ to 0^+ level.
1043.39b *5*	3^+		AB	J$^\pi$: From E2 γ to 2^+ level, M1,E2 γ to 4^+, and assumed band structure.
1183.78c *6*	4^+		AB	J$^\pi$: From E2 γ's to 2^+ and expected band structure.
1210.56 *10*	+		A	J$^\pi$: From E2,M1 γ to 2^+ level.
1257.28e *7*	4^+		AB	J$^\pi$: From E0 γ to 4^+ level.
1304.94 *17*	2^+,3,4^+		A	J$^\pi$: From γ's to 2^+ and 4^+ levels.
1341.93 *6*	3^-		A	J$^\pi$: From E1 γ's to 2^+ and 4^+ levels.
1386.9? *5*	0^+		A	J$^\pi$: From E0 γ to 0^+ level.
1417.55 *6*	2^+		A	J$^\pi$: From E0 γ to 2^+ level.
1418.25 *7*	(1^-)		A	J$^\pi$: From (E1) γ to 2^+ level and γ to 0^+.
1426.79 *25*	2^+,3,4^+		A	J$^\pi$: From γ's to 2^+ and 4^+ levels.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{158}Er Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[‡]	XREF	Comments
1438.22[b] *10*	5^+		AB	J^π: From M1 γ to 4^+ level and expected band structure.
1489.45 *7*	$2^+,3^+$		A	J^π: From M1 γ to 2^+ level and γ to 4^+ level.
1493.47[#] *6*	8^+	0.94 ps *3*	B	J^π: From E2 γ to 6^+ level and expected band structure.
1526.27 *6*	$(2,3)^-$		A	J^π: From E1 γ to 2^+ level and γ's to 0^+ and 4^+; assignment requires M2 to 4^+ or E3 to 0^+.
1570.21 *7*	(2^+)		A	J^π: From γ's to 0^+ and 4^+ levels.
1589.02?[c] *15*	(6^+)		B	J^π: From expected band structure and (E2) γ's to 4^+ and 6^+.
1589.5[e] *6*	6^+		B	J^π: From expected band structure and E2 γ's to 4^+.
1614.45 *9*	(2^-)		A	J^π: From (E1) γ to 3^+ level and γ to 0^+.
1630.22? *20*	$(1,2^+)$		A	J^π: From γ's to 0^+ and 2^+ levels.
1640.84 *11*	(2^+)		A	J^π: From γ's to 0^+ and 4^+ levels.
1674.01 *8*	$(2^+,3)$		A	J^π: From γ's to (1^-), 2^+, and 4^+ levels.
1686.97 *14*	$(1,2^+)$		A	J^π: From γ's to 0^+ and 2^+ levels.
1697.94 *12*	$(1^-,2,3)$		A	J^π: From γ's to 2^+, $(3)^-$, and $(2)^-$ levels.
1700.12 *11*			A	
1742.57 *8*	(2,3,4)		A	J^π: From γ's to 2^+ and 4^+ levels.
1769.60 *13*			A	
1809.07 *20*	$(2^+,3,4^+)$		A	J^π: From γ's to 2^+ and 4^+ levels.
1834.64 *13*			A	
1853.00 *17*	$(7^-,8^+)$		B	J^π: From γ's to 6^+ and 9^- levels.
1913.14[b] *18*	(7^+)		B	J^π: From expected band structure, (E2) γ to 5^+, and (M1,E2) γ to 6^+.
1977.45? *18*	$(1,2^+)$		A	J^π: From γ to 0^+.
2018.68?[c] *17*	(8^+)		B	J^π: From expected band structure and (E2) γ to 6^+ level.
2019.1[e] *7*	8^+		B	J^π: From expected band structure and E2 γ to 6^+ level.
2029.25 *11*			A	
2059.68 *12*	$(1,2^+)$		A	J^π: From γ to 0^+ level.
2072.53[#] *7*	10^+	0.68 ps *9*	B	μ=6.0 *4* J^π: From E2 γ to 8^+ level and expected band structure. μ: From g-factor=0.58 *33* estimated by evaluator from 2001St09.
2143.59? *17*	$(1,2^+)$		A	J^π: From γ to 0^+ level.
2228.80 *11*	$(2^+,3^+)$		A	J^π: From (E1) γ to $(2)^-$ level and γ to 4^+.
2272.97[d] *16*	9^-		B	J^π: From E1 γ to 8^+ level and expected band structure.
2305.15? *14*	$(2^+,3,4^+)$		A	J^π: From γ's to 2^+ and 4^+ levels.
2333.48[a] *15*	8^-		B	J^π: From E1 γ to 8^+ level and expected band structure.
2368.33? *20*	$(1,2^+)$		A	J^π: From γ's to 0^+ and 2^+ levels.
2389.6? *3*	$(1,2^+)$		A	J^π: From γ's to 0^+ and 2^+ levels.
2431.57[&] *15*	9^-		B	J^π: From E1 γ to 8^+ level and expected band structure.
2487.38?[c] *23*	(10^+)		B	J^π: From expected band structure and (E2) γ to (8^+).
2488.0[e] *7*	10^+		B	J^π: From expected band structure and E2 γ to 8^+.
2569.96[a] *16*	10^-	56 ps *5*	B	J^π: From E1 γ to 10^+ level, E2 γ to 8^-, and expected band structure.
2673.63? *16*	$(1,2^+)$		A	J^π: From γ's to 0^+ and 2^+ levels.
2680.79[#] *8*	12^+	0.51 ps *6*	B	J^π: From E2 γ to 10^+ level and expected band structure.
2731.27[&] *15*	11^-	12.4 ps *+9−11*	B	J^π: From E1 γ to 10^+ level and expected band structure.
2760.68[d] *17*	11^-		B	J^π: From E1 γ to 10^+ level and expected band structure.
2881.47[@] *14*	12^+		B	J^π: From E2 γ to 10^+ level and expected band structure.
2954.66[a] *19*	12^-	7.7 ps *+1−5*	B	J^π: From E2 γ to 10^- level and expected band structure.
3017.70? *16*	$(1,2^+)$		A	J^π: From γ's to 0^+ and 2^+ levels.
3109.3[e] *7*	12^+		B	J^π: From expected band structure and E2 γ to 10^+.
3154.80[&] *17*	13^-	4.7 ps *3*	B	J^π: From E1 γ to 12^+ level and expected band structure.
3190.51[@] *10*	14^+	2.9 ps *3*	B	μ=0.3 *30* J^π: From E2 γ to 12^+ level and expected band structure. μ: From g-factor=0.02 *20* estimated by evaluator from plot of 2001St09.

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Adopted Levels, Gammas (continued)

^{158}Er Levels (continued)

E(level)[†]	J$^{\pi}$	$T_{1/2}$[‡]	XREF	Comments
3304.5[d] *3*	(13$^-$)		B	J$^{\pi}$: From (E1) γ to 12$^+$ level and expected band structure.
3374.29[#] *20*	14$^+$		B	J$^{\pi}$: From E2 γ's to 12$^+$ levels and expected band structure.
3474.8[a] *3*	14$^-$		B	J$^{\pi}$: From E2 γ to 12$^-$ level and expected band structure.
3663.26[@] *11*	16$^+$	2.32 ps *14*	B	μ=1.6 *16* J$^{\pi}$: From E2 γ to 14$^+$ level and expected band structure. μ: From g-factor=0.10 *10* estimated by evaluator from 2001St09.
3668.2[e] *7*	14$^+$		B	J$^{\pi}$: From E2 γ to 12$^+$ level and expected band structure.
3695.40[&] *20*	15$^-$	1.1 ps *+2−3*	B	J$^{\pi}$: From E2 γ to 13$^-$ level and expected band structure.
3906.5[d] *5*	(15$^-$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (13$^-$).
4026.1[#] *3*	(16$^+$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (14$^+$).
4103.7[a] *4*	(16$^-$)	0.83 ps *+21−28*	B	J$^{\pi}$: From expected band structure and (E2) γ to (14$^-$).
4229.54[@] *12*	18$^+$	0.95 ps *6*	B	μ=0.9 *18* J$^{\pi}$: From E2 γ to 16$^+$ level and expected band structure. μ: From g-factor=0.04 *10* (2001St09).
4272.4[e] *7*	16$^+$		B	J$^{\pi}$: From expected band structure and E2 γ to 14$^+$.
4329.5[&] *3*	(17$^-$)	0.97 ps *+14−21*	B	J$^{\pi}$: From expected band structure and (E2) γ to 15$^-$.
4679.5[#] *4*	(18$^+$)		B	J$^{\pi}$: From expected band structure and γ to (16$^+$).
4812.8[a] *4*	(18$^-$)	0.89 ps *+12−17*	B	J$^{\pi}$: From expected band structure and (E2) γ to (16$^-$).
4888.43[@] *13*	20$^+$	0.55 ps *8*	B	J$^{\pi}$: From E2 γ to 18$^+$ level and expected band structure.
4948.9[e] *9*	18$^+$		B	J$^{\pi}$: From E2 γ to 16$^+$ level and expected band structure.
5021.8[&] *4*	(19$^-$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (17$^-$).
5327.4[#] *4*	(20$^+$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (18$^+$).
5538.2[a] *5*	(20$^-$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (18$^-$).
5628.85[@] *17*	22$^+$	0.24 ps *+21−12*	B	J$^{\pi}$: From E2 γ to 20$^+$ level and expected band structure.
5739.3[&] *4*	(21$^-$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (19$^-$).
6026.8[#] *5*	(22$^+$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (20$^+$).
6219.7[a] *6*	(22$^-$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (20$^-$).
6434.6[@] *5*	24$^+$		B	J$^{\pi}$: From E2 γ to 22$^+$ level and expected band structure.
6475.8[&] *5*	(23$^-$)		B	J$^{\pi}$: From expected band structure and (E2) γ to (21$^-$).
7000[a][j]	(24$^-$)		B	
7249.2[&]	(25$^-$)		B	J$^{\pi}$: From expected band structure and γ to (23$^-$).
7280.2[@] *5*	26$^+$		B	J$^{\pi}$: From E2 γ to 24$^+$ level and expected band structure.
7800[a][j]	(26$^-$)		B	
8069.8[&]	(27$^-$)		B	J$^{\pi}$: From expected band structure and γ to (25$^-$).
8138.6[@] *6*	28$^+$		B	J$^{\pi}$: From E2 γ to 26$^+$ level and expected band structure.
8602[a]	(28$^-$)		B	J$^{\pi}$: From proposed band structure.
8933.6[&]	(29$^-$)		B	J$^{\pi}$: From expected band structure and γ to (27$^-$).
9014.2[@] *7*	30$^+$		B	J$^{\pi}$: From E2 γ to 28$^+$ level and expected band structure.
9456[a]	(30$^-$)		B	J$^{\pi}$: From proposed band structure and γ to (28$^-$).
9474[f]	(30$^+$)		B	J$^{\pi}$: From expected band structure and γ to (28$^+$).
9820.0[&]	(31$^-$)		B	J$^{\pi}$: From expected band structure and γ to (29$^-$).
9920.4[@] *8*	32$^+$		B	J$^{\pi}$: From E2 γ to 30$^+$ level and expected band structure.
10281[f]	(32$^+$)		B	J$^{\pi}$: From expected band structure and γ to (30$^+$).
10336[a]	(32$^-$)		B	J$^{\pi}$: From proposed band structure and γ to (30$^-$).
10716.8[&]	(33$^-$)		B	J$^{\pi}$: From expected band structure and γ to (31$^-$).
10879.5[@] *12*	34$^+$		B	J$^{\pi}$: From E2 γ to 32$^+$ level and expected band structure.
11216[f]	(34$^+$)		B	J$^{\pi}$: From expected band structure and γ to (32$^+$).

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Adopted Levels, Gammas (continued)

^{158}Er Levels (continued)

E(level)[†]		Jπ	XREF	Comments
11234[a]		(34⁻)	B	Jπ: From proposed band structure and γ to (32⁻).
11637.3[&]		(35⁻)	B	Jπ: From expected band structure and γ to (33⁻).
11898.6[@]	15	36⁺	B	Jπ: From E2 γ to 34⁺ level and expected band structure.
12172[a]		(36⁻)	B	Jπ: From proposed band structure and γ to (34⁻).
12232[f]		(36⁺)	B	Jπ: From expected band structure and γ to (34⁺).
12601.2[&]		(37⁻)	B	Jπ: From expected band structure and γ to (35⁻).
12957.8[@]	21	38⁺	B	Jπ: From E2 γ to 36⁺ level and expected band structure.
13157[a]		(38⁻)	B	Jπ: From proposed band structure and γ to (36⁻).
13169[f]		(38⁺)	B	Jπ: From expected band structure and γ to (36⁺).
13621.6[&]		(39⁻)	B	Jπ: From expected band structure and γ to (37⁻).
13784.8[f]		(40⁺)	B	Jπ: From expected band structure and γ to 38⁺.
14153[@]		(40⁺)	B	Jπ: From expected band structure and γ to (38⁺).
14183[a]		(40⁻)	B	Jπ: From proposed band structure and γ to (38⁻).
14694.8[&]		(41⁻)	B	Jπ: From expected band structure and γ to (39⁻).
15059[f]		(42⁺)	B	Jπ: From expected band structure and γ to (40⁺).
15194[a]		(42⁻)	B	Jπ: From proposed band structure and γ to (40⁻).
15363[@]		(42⁺)	B	Jπ: From expected band structure and γ to (40⁺).
15683.8[g]		(43⁻)	B	Jπ: From expected band structure and γ to (41⁻).
15873[&]		(43⁻)	B	Jπ: From expected band structure and γ to (41⁻).
16090[f]		(44⁺)	B	Jπ: From expected band structure and γ to (42⁺).
16357[a]		(44⁻)	B	Jπ: From proposed band structure and γ to (42⁻).
16507[@]		(44⁺)	B	Jπ: From expected band structure and γ to (42⁺).
17013[g]		(45⁻)	B	Jπ: From expected band structure and γ to (43⁻).
17061[f]		(46⁺)	B	E(level): 1994Si10 suggests that this yrast band terminates at this point and is fed by several weak γ′s, including those of 1380, 1454, 1539, 1602, and 1657 keV. Jπ: From expected band structure and γ to (44⁺).
17121[&]		(45⁻)	B	Jπ: From expected band structure and γ to (43⁻).
17367[a]		(46⁻)	B	Jπ: From proposed band structure and γ to (44⁻).
17659[@]		(46⁺)	B	Jπ: From expected band structure and γ to (44⁺).
18001[g]		(47⁻)	B	Jπ: From expected band structure and γ to (45⁻).
18131[a]		(48⁻)	B	Jπ: From proposed band structure and γ to (46⁻).
18345[&]		(47⁻)	B	Jπ: From expected band structure and γ to (45⁻).
18810[g]		(49⁻)	B	Jπ: From expected band structure and γ to (47⁻).
18869?[@]		(48⁺)	B	Jπ: From expected band structure and γ to (46⁺).
20143?[@]		(50⁺)	B	Jπ: From expected band structure and γ to (48⁺).
x		J≈(23)	C	Jπ: ≈65 for the highest level.
724.3+x[h]	5	J+2	C	
1490.9+x[h]	7	J+4	C	
2293.2+x[h]	9	J+6	C	
3134.9+x[h]	10	J+8	C	
4009.9+x[h]	12	J+10	C	
4911.4+x[h]	13	J+12	C	
5844.0+x[h]	14	J+14	C	
6816.7+x[h]	15	J+16	C	
7834.3+x[h]	15	J+18	C	
8898.6+x[h]	16	J+20	C	
10008.7+x[h]	17	J+22	C	

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Adopted Levels, Gammas (continued)

^{158}Er Levels (continued)

E(level)[†]	J$^\pi$	XREF	E(level)[†]	J$^\pi$	XREF	E(level)[†]	J$^\pi$	XREF
11165.0+x[h] *18*	J+24	C	22413+x[h] *3*	J+40	C	6386.0+y[i] *25*	J1+12	C
12369.9+x[h] *18*	J+26	C	24115+x[h] *3*	J+42	C	7598+y[i] *3*	J1+14	C
13625.8+x[h] *19*	J+28	C	y	J1	C	8858+y[i] *3*	J1+16	C
14936.1+x[h] *20*	J+30	C	959.0+y[i] *10*	J1+2	C	10167+y[i] *3*	J1+18	C
16305.1+x[h] *20*	J+32	C	1966.0+y[i] *15*	J1+4	C	11527+y[i] *4*	J1+20	C
17735.3+x[h] *21*	J+34	C	3012.0+y[i] *18*	J1+6	C	12943+y[i] *4*	J1+22	C
19226.3+x[h] *23*	J+36	C	4095.0+y[i] *20*	J1+8	C			
20788.3+x[h] *25*	J+38	C	5219.0+y[i] *23*	J1+10	C			

† From least-squares fit to γ energies.
‡ Unless noted otherwise, from (HI,xnγ) dataset by recoil-distance and Doppler-shift methods.
\# Band(A): K^π=0$^+$ ground-state band.
@ Band(B): S band, positive-parity, signature=0.
& Band(C): Negative-parity, signature=1 band.
a Band(D): Negative-parity, signature=0 band.
b Band(E): Positive-parity, signature=1 band.
c Band(F): 3rd positive-parity, signature=0 band.
d Band(G): 2nd negative-parity, signature=1 band.
e Band(H): K^π=0$^+$ β-vibrational band. Terminology and assignment can be reconsidered in view of critique addressed by 2001Ga02 (same observation can also be applied to this band in in the particular datasets).
f Band(I): 4th positive-parity, signature=0 band.
g Band(J): 3rd negative-parity, signature=1 band.
h Band(K): Highly-deformed (triaxial) SD-1 band. Deformation parameters: ε_2=0.30-0.35, γ=20°−25°. Population intensity ≈0.01% relative to the channel leading to ^{158}Er. Probable configuration= $\pi[(g_{7/2}d_{5/2})^{-4}h^6_{11/2}h_{9/2}i_{13/2}]\otimes\nu[h^{-2}_{11/2}(N=4)^{-2}(h_{9/2}f_{7/2})^8(i_{13/2})^4]$. This structure, assigned by 2007Pa03, lies above the terminating bands.
i Band(L): Highly-deformed (triaxial) SD-2 band. Deformation parameters: ε_2=0.30-0.35, γ=20°−25°. Population intensity ≈0.003-0.005% relative to the channel leading to ^{158}Er. This structure, assigned by 2007Pa03, lies above the terminating bands.
j Estimated by evaluator to connect lower and upper portions of the band (HI dataset).

$\gamma(^{158}$Er)

Unplaced γ's are not given here; see ^{158}Tm ε decay.

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#b]	α[a]	$I_{(\gamma+ce)}$	Comments
192.15	2^+	192.13 *3*	100	0.0	0^+	E2		0.288		α(K)=0.182 *3*; α(L)=0.0813 *12*; α(M)=0.0194 *3* α(N)=0.00442 *7*; α(O)=0.000543 *8*; α(P)=8.50×10^{-6} *12* B(E2)(W.u.)=129 *9*
527.22	4^+	335.10 *3*	100	192.15	2^+	E2		0.0496		α(K)=0.0372 *6*; α(L)=0.00960 *14*; α(M)=0.00223 *4* α(N)=0.000512 *8*; α(O)=6.66×10^{-5} *10*; α(P)=1.95×10^{-6} *3* B(E2)(W.u.)=186 *6*
806.38	0^+	614.26 *6*	100 *9*	192.15	2^+	E2		0.00987		α(K)=0.00802 *12*; α(L)=0.001441 *21*; α(M)=0.000326 *5* α(N)=7.53×10^{-5} *11*; α(O)=1.037×10^{-5} *15*; α(P)=4.50×10^{-7} *7*
		806.2 *5*		0.0	0^+	E0			1.39 *21*	
820.12	2^+	628.03 *6*	100 *9*	192.15	2^+	E2(+M1)		0.014 *5*		α(K)=0.012 *5*; α(L)=0.0019 *5*; α(M)=0.00041 *11* α(N)=0.00010 *3*; α(O)=1.4×10^{-5} *4*; α(P)=7.E−7 *3*
		820.09 *7*	49 *4*	0.0	0^+	E2		0.00511		α(K)=0.00423 *6*; α(L)=0.000684 *10*; α(M)=0.0001530 *22* α(N)=3.55×10^{-5} *5*; α(O)=4.98×10^{-6} *7*; α(P)=2.40×10^{-7} *4*
970.34	6^+	443.13 *3*	100	527.22	4^+	E2		0.0226		α(K)=0.01772 *25*; α(L)=0.00377 *6*; α(M)=0.000866 *13* α(N)=0.000199 *3*; α(O)=2.67×10^{-5} *4*; α(P)=9.68×10^{-7} *14* B(E2)(W.u.)=246 *8*
989.08	2^+	182.3 *3*	2.7 *12*	806.38	0^+					
		461.93 *7*	23.2 *22*	527.22	4^+	E2		0.0202		α(K)=0.01595 *23*; α(L)=0.00331 *5*; α(M)=0.000759 *11* α(N)=0.0001749 *25*; α(O)=2.35×10^{-5} *4*; α(P)=8.76×10^{-7} *13* Mult.: Assigned E2(+M1), but J^{π}'s require E2.
		796.85 *15*	31.0 *25*	192.15	2^+	E0+E2+M1		0.113 *17*		α(K)=0.093 *15*; α(L)=0.015 α: Calculated from α_K(exp) in ε decay dataset.
		989.06 *10*	100 *8*	0.0	0^+	E2		0.00344		α(K)=0.00287 *4*; α(L)=0.000441 *7*; α(M)=9.81×10^{-5} *14* α(N)=2.28×10^{-5} *4*; α(O)=3.23×10^{-6} *5*; α(P)=1.635×10^{-7} *23*
1043.39	3^+	223.33 *6*	2.6 *3*	820.12	2^+					
		516.28 *20*	15 *4*	527.22	4^+	E2,M1		0.024 *9*		α(K)=0.020 *8*; α(L)=0.0031 *8*; α(M)=0.00070 *17* α(N)=0.00016 *4*; α(O)=2.3×10^{-5} *7*; α(P)=1.2×10^{-6} *5*
		851.19 *9*	100 *9*	192.15	2^+	E2(+M1)	≥1.2	0.0056 *10*		α(K)=0.0047 *8*; α(L)=0.00072 *10*; α(M)=0.000161 *22* α(N)=3.7×10^{-5} *5*; α(O)=5.3×10^{-6} *8*; α(P)=2.7×10^{-7} *5*
1183.78	4^+	363.75 *7*	15.6 *15*	820.12	2^+	E2		0.0391		α(K)=0.0298 *5*; α(L)=0.00723 *11*; α(M)=0.001674 *24* α(N)=0.000384 *6*; α(O)=5.04×10^{-5} *7*; α(P)=1.584×10^{-6} *23*
		656.57 *7*	100 *9*	527.22	4^+	E2(+M1)	≥1.0	0.0107 *23*		α(K)=0.0089 *20*; α(L)=0.00143 *23*; α(M)=0.00032 *5* α(N)=7.4×10^{-5} *12*; α(O)=1.05×10^{-5} *18*; α(P)=5.1×10^{-7} *13*
1210.56	$^+$	390.65 *20*	12.6 *18*	820.12	2^+					
		1018.36 *10*	100 *9*	192.15	2^+	E2,M1		0.0046 *14*		α(K)=0.0039 *12*; α(L)=0.00056 *15*; α(M)=0.00012 *4* α(N)=2.9×10^{-5} *8*; α(O)=4.1×10^{-6} *12*; α(P)=2.3×10^{-7} *8*
1257.28	4^+	268.31 *9*	12.8 *12*	989.08	2^+	E2		0.0974		α(K)=0.0694 *10*; α(L)=0.0216 *3*; α(M)=0.00509 *8* α(N)=0.001164 *17*; α(O)=0.0001478 *21*; α(P)=3.49×10^{-6} *5*

Adopted Levels, Gammas (continued)

$\gamma(^{158}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#b]	α[a]	Comments
1257.28	4^+	287.00 *20*	1.6 *4*	970.34	6^+				
		729.8 *5*		527.22	4^+	E0(+M1+E2)			
		1065.07 *8*	100 *8*	192.15	2^+	E2,M1		0.0041 *12*	α(K)=0.0035 *10*; α(L)=0.00050 *13*; α(M)=0.00011 *3* α(N)=2.6×10^{-5} *7*; α(O)=3.7×10^{-6} *10*; α(P)=2.0×10^{-7} *7*
1304.94	2^+,3,4^+	484.85 *25*	100 *17*	820.12	2^+				
		777.45 *25*	83 *25*	527.22	4^+				
		1113.4[c] *4*	100[c] *25*	192.15	2^+				
1341.93	3^-	352.30[c] *20*	0.57[c] *25*	989.08	2^+				
		814.75 *8*	15.3 *12*	527.22	4^+	E1		0.00202	α(K)=0.001722 *25*; α(L)=0.000234 *4*; α(M)=5.14×10^{-5} *8* α(N)=1.195×10^{-5} *17*; α(O)=1.718×10^{-6} *24*; α(P)=9.39×10^{-8} *14*
		1149.83 *7*	100 *8*	192.15	2^+	E1		1.07×10^{-3}	α(K)=0.000905 *13*; α(L)=0.0001213 *17*; α(M)=2.66×10^{-5} *4* α(N)=6.17×10^{-6} *9*; α(O)=8.92×10^{-7} *13*; α(P)=4.97×10^{-8} *7*; α(IPF)=7.52×10^{-6} *11*
1386.9?	0^+	580.5[d] *5*	100	806.38	0^+	E0			
1417.55	2^+	374.15 *7*	77 *7*	1043.39	3^+	E2(+M1)	>2.	0.040 *4*	α(K)=0.031 *4*; α(L)=0.0068 *3*; α(M)=0.00157 *6* α(N)=0.000361 *14*; α(O)=4.81×10^{-5} *24*; α(P)=1.71×10^{-6} *24*
		428.53 *10*	100 *10*	989.08	2^+	E2(+M1)	>1.5	0.029 *5*	α(K)=0.023 *4*; α(L)=0.0045 *4*; α(M)=0.00103 *7* α(N)=0.000239 *17*; α(O)=3.2×10^{-5} *3*; α(P)=1.30×10^{-6} *25*
		597.12 *20*	25 *5*	820.12	2^+	E0+M1,E2		0.20 *8*	α(K)=0.16 *6*; α(L)=0.03 α: Calculated from α_K(exp) in ε decay dataset.
		611.19 *8*	70 *8*	806.38	0^+	E2		0.00999	α(K)=0.00811 *12*; α(L)=0.001461 *21*; α(M)=0.000330 *5* α(N)=7.64×10^{-5} *11*; α(O)=1.051×10^{-5} *15*; α(P)=4.55×10^{-7} *7*
		890.65 *25*	72 *18*	527.22	4^+	E2		0.00428	α(K)=0.00356 *5*; α(L)=0.000561 *8*; α(M)=0.0001253 *18* α(N)=2.91×10^{-5} *4*; α(O)=4.10×10^{-6} *6*; α(P)=2.02×10^{-7} *3*
		1225.90[cd] *8*	367[c] *30*	192.15	2^+				
1418.25	(1^-)	1225.90[c] *8*	99[c] *8*	192.15	2^+	(E1)		9.78×10^{-4}	α(K)=0.000807 *12*; α(L)=0.0001080 *16*; α(M)=2.36×10^{-5} *4* α(N)=5.49×10^{-6} *8*; α(O)=7.94×10^{-7} *12*; α(P)=4.44×10^{-8} *7*; α(IPF)=3.30×10^{-5} *5*
		1418.55 *10*	100 *9*	0.0	0^+				
1426.79	2^+,3,4^+	900.0 *4*	59 *12*	527.22	4^+				

Adopted Levels, Gammas (continued)

$\gamma(^{158}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#b]	α[a]	Comments
1426.79	$2^+,3,4^+$	1234.4 *3*	100 *24*	192.15	2^+				
1438.22	5^+	395.12 *20*	75[@] *4*	1043.39	3^+	(E2)		0.0309	α(K)=0.0239 *4*; α(L)=0.00547 *8*; α(M)=0.001262 *18* α(N)=0.000290 *4*; α(O)=3.84×10^{-5} *6*; α(P)=1.286×10^{-6} *18* I_γ: Other: 17 *3* from ε decay.
		910.87 *10*	100[@] *4*	527.22	4^+	E2+M1	0.47 *+28−14*	0.0071 *7*	α(K)=0.0060 *6*; α(L)=0.00086 *8*; α(M)=0.000189 *16* α(N)=4.4×10^{-5} *4*; α(O)=6.4×10^{-6} *6*; α(P)=3.6×10^{-7} *4*
1489.45	$2^+,3^+$	278.95[d] *15*	10.1 *15*	1210.56	$^+$				
		305.82 *8*	16 *3*	1183.78	4^+				
		445.90 *20*	33 *3*	1043.39	3^+	(E2)		0.0222	α(K)=0.01744 *25*; α(L)=0.00370 *6*; α(M)=0.000849 *12* α(N)=0.000196 *3*; α(O)=2.62×10^{-5} *4*; α(P)=9.54×10^{-7} *14*
		500.40 *10*	100 *10*	989.08	2^+	M1(+E2)	<0.5	0.0330 *19*	α(K)=0.0277 *17*; α(L)=0.00408 *18*; α(M)=0.00090 *4* α(N)=0.000211 *9*; α(O)=3.04×10^{-5} *14*; α(P)=1.67×10^{-6} *11*
		669.37 *15*	55 *6*	820.12	2^+				
		961.68 *15*	38 *4*	527.22	4^+				
1493.47	8^+	523.14 *3*	100	970.34	6^+	E2		0.01465	α(K)=0.01172 *17*; α(L)=0.00227 *4*; α(M)=0.000518 *8* α(N)=0.0001195 *17*; α(O)=1.624×10^{-5} *23*; α(P)=6.51×10^{-7} *10* B(E2)(W.u.)=298 *10*
1526.27	$(2,3)^-$	482.85 *25*	2.6 *4*	1043.39	3^+				
		706.05 *10*	22.6 *21*	820.12	2^+	E1		0.00269	α(K)=0.00229 *4*; α(L)=0.000314 *5*; α(M)=6.89×10^{-5} *10* α(N)=1.599×10^{-5} *23*; α(O)=2.29×10^{-6} *4*; α(P)=1.242×10^{-7} *18*
		999.32 *10*	11.1 *17*	527.22	4^+				
		1334.03 *10*	100 *9*	192.15	2^+	(E1)		9.01×10^{-4}	α(K)=0.000696 *10*; α(L)=9.28×10^{-5} *13*; α(M)=2.03×10^{-5} *3* α(N)=4.72×10^{-6} *7*; α(O)=6.83×10^{-7} *10*; α(P)=3.83×10^{-8} *6*; α(IPF)=8.61×10^{-5} *12*
		1526.05 *15*	6.8 *9*	0.0	0^+				
1570.21	(2^+)	763.90 *15*	10.0 *15*	806.38	0^+				
		1043.05 *10*	100 *10*	527.22	4^+				
		1377.58 *15*	32 *4*	192.15	2^+				

$^{158}_{68}Er_{90}$-8

γ(^{158}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[a]	Comments
1570.21	(2$^+$)	1570.45 15	44 7	0.0	0$^+$			
1589.02?	(6$^+$)	404.8[d] 3	47[@] 4	1183.78	4$^+$	(E2)	0.0289	α(K)=0.0224 4; α(L)=0.00505 8; α(M)=0.001164 17 α(N)=0.000268 4; α(O)=3.55×10^{-5} 5; α(P)=1.210×10^{-6} 17
		618.8[d] 2	76[@] 7	970.34	6$^+$	(E2,M1)	0.015 6	α(K)=0.013 5; α(L)=0.0019 6; α(M)=0.00043 12 α(N)=0.00010 3; α(O)=1.4×10^{-5} 5; α(P)=7.E−7 3
		1061.8[d] 3	100[@] 7	527.22	4$^+$	(E2)	0.00297	α(K)=0.00249 4; α(L)=0.000376 6; α(M)=8.35×10^{-5} 12 α(N)=1.94×10^{-5} 3; α(O)=2.76×10^{-6} 4; α(P)=1.419×10^{-7} 20
1589.5	6$^+$	332.8		1257.28	4$^+$	E2		
		618.9		970.34	6$^+$			
		1062.5		527.22	4$^+$			
1614.45	(2$^-$)	430.6 3	18 7	1183.78	4$^+$			
		571.20 10	78 9	1043.39	3$^+$	(E1)	0.00418	α(K)=0.00355 5; α(L)=0.000493 7; α(M)=0.0001083 16 α(N)=2.51×10^{-5} 4; α(O)=3.59×10^{-6} 5; α(P)=1.91×10^{-7} 3
		794.00 15	100 11	820.12	2$^+$			
		1615.1 7	20 11	0.0	0$^+$			
1630.22?	(1,2$^+$)	1438.0[d] 3	100 30	192.15	2$^+$			
		1630.25[d] 25	50 13	0.0	0$^+$			
1640.84	(2$^+$)	834.40 20	38 8	806.38	0$^+$			
		1113.4[c] 4	25[c] 6	527.22	4$^+$			
		1448.80 15	100 17	192.15	2$^+$			
		1640.6 3	71 10	0.0	0$^+$			
1674.01	(2$^+$,3)	256.50 10	11.1 19	1417.55	2$^+$			
		416.88[c] 20	22[c] 4	1257.28	4$^+$			
		684.85 10	100 9	989.08	2$^+$			
		853.90 20	93 15	820.12	2$^+$			
1686.97	(1,2$^+$)	1494.80 15	100 10	192.15	2$^+$			
		1687.0 3	26 4	0.0	0$^+$			
1697.94	(1$^-$,2,3)	172.0 3	13 3	1526.27	(2,3)$^-$			
		356.10 20	12 3	1341.93	3$^-$			
		1505.65 15	100 9	192.15	2$^+$			
1700.12		1172.90 10	100	527.22	4$^+$			
1742.57	(2,3,4)	698.9 3	3.9 12	1043.39	3$^+$			
		922.50 20	11.6 16	820.12	2$^+$			
		1215.32 15	40 4	527.22	4$^+$			
		1550.50 10	100 9	192.15	2$^+$			
1769.60		352.30[c] 20	5.0[c] 21	1417.55	2$^+$			
		780.7 3	8.6 21	989.08	2$^+$			
		948.9 5	39 14	820.12	2$^+$			
		1577.20 20	100 14	192.15	2$^+$			
1809.07	(2$^+$,3,4$^+$)	1282.00 25	50 9	527.22	4$^+$			
		1616.7 3	100 25	192.15	2$^+$			

$^{158}_{68}Er_{90}$-10

$\gamma(^{158}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[a]	Comments
1834.64		416.88[c] 20	20[c] 3	1417.55	2^+			
		1307.53 15	100 15	527.22	4^+			
1853.00	$(7^-,8^+)$	882.5 2	100	970.34	6^+			
1913.14	(7^+)	474.4 3	67[@] 10	1438.22	5^+	(E2)	0.0189	α(K)=0.01492 21; α(L)=0.00305 5; α(M)=0.000698 10 α(N)=0.0001609 23; α(O)=2.17×10^{-5} 3; α(P)=8.21×10^{-7} 12
		942.8 4	100[@] 10	970.34	6^+	(E2,M1)	0.0055 17	α(K)=0.0046 15; α(L)=0.00067 18; α(M)=0.00015 4 α(N)=3.5×10^{-5} 10; α(O)=5.0×10^{-6} 14; α(P)=2.7×10^{-7} 9
1977.45?	$(1,2^+)$	1785.30[d] 20	100 22	192.15	2^+			
		1977.4[d] 4	78 17	0.0	0^+			
2018.68?	(8^+)	429.4[d] 4	20[@] 4	1589.02?	(6^+)	(E2)	0.0246	α(K)=0.0192 3; α(L)=0.00417 6; α(M)=0.000959 14 α(N)=0.000221 4; α(O)=2.94×10^{-5} 5; α(P)=1.046×10^{-6} 15
		1048.2[d] 2	100[@] 4	970.34	6^+	(E2)	0.00305	α(K)=0.00256 4; α(L)=0.000387 6; α(M)=8.60×10^{-5} 12 α(N)=2.00×10^{-5} 3; α(O)=2.84×10^{-6} 4; α(P)=1.456×10^{-7} 21
2019.1	8^+	430.0		1589.5	6^+	E2		
		1048.2		970.34	6^+			
2029.25		1502.02 10	100	527.22	4^+			
2059.68	$(1,2^+)$	1239.80[c] 20	67[c] 12	820.12	2^+			
		1253.65 25	40 17	806.38	0^+			
		1867.25 15	100 10	192.15	2^+			
2072.53	10^+	579.08 3	100	1493.47	8^+	E2	0.01138	α(K)=0.00920 13; α(L)=0.001698 24; α(M)=0.000385 6 α(N)=8.89×10^{-5} 13; α(O)=1.218×10^{-5} 17; α(P)=5.15×10^{-7} 8 B(E2)(W.u.)=2.5×10^2 4
2143.59?	$(1,2^+)$	1951.7[d] 3	65 13	192.15	2^+			
		2143.45[d] 20	100 13	0.0	0^+			
2228.80	$(2^+,3^+)$	702.40 15	100 20	1526.27	$(2,3)^-$	(E1)	0.00272	α(K)=0.00231 4; α(L)=0.000317 5; α(M)=6.96×10^{-5} 10 α(N)=1.616×10^{-5} 23; α(O)=2.32×10^{-6} 4; α(P)=1.255×10^{-7} 18
		971.6 3	26 8	1257.28	4^+			
		1239.80[c] 20	64[c] 12	989.08	2^+			
		1701.1 4	24 8	527.22	4^+			
		2036.7 3	68 12	192.15	2^+			
2272.97	9^-	779.4 2	100	1493.47	8^+	E1	0.00221	α(K)=0.00188 3; α(L)=0.000256 4; α(M)=5.62×10^{-5} 8 α(N)=1.306×10^{-5} 19; α(O)=1.88×10^{-6} 3; α(P)=1.023×10^{-7} 15
2305.15?	$(2^+,3,4^+)$	1777.87[d] 15	100 11	527.22	4^+			
		2113.2[d] 3	74 11	192.15	2^+			
2333.48	8^-	420.1 2	39.0[@] 15	1913.14	(7^+)	(E1)	0.00828	α(K)=0.00701 10; α(L)=0.000991 14; α(M)=0.000218 3 α(N)=5.06×10^{-5} 8; α(O)=7.17×10^{-6} 10; α(P)=3.72×10^{-7} 6
		480.3 4	10[@] 3	1853.00	$(7^-,8^+)$			
		840.1 2	100[@] 3	1493.47	8^+	E1	0.00190	α(K)=0.001622 23; α(L)=0.000221 3; α(M)=4.84×10^{-5} 7 α(N)=1.124×10^{-5} 16; α(O)=1.617×10^{-6} 23; α(P)=8.86×10^{-8} 13

$^{158}_{68}Er_{90}$-10

γ(^{158}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[a]	Comments
2368.33?	(1,2$^+$)	2176.25[d] *25*	100 *13*	192.15	2$^+$			
		2368.2[d] *3*	67 *11*	0.0	0$^+$			
2389.6?	(1,2$^+$)	2197.4[cd] *3*	233[c] *40*	192.15	2$^+$			
		2389.6[d] *5*	100 *77*	0.0	0$^+$			
2431.57	9$^-$	412.6 *4*	6.7[@] *13*	2019.1	8$^+$	(E1)	0.00863	α(K)=0.00731 *11*; α(L)=0.001035 *15*; α(M)=0.000228 *4* α(N)=5.28×10^{-5} *8*; α(O)=7.48×10^{-6} *11*; α(P)=3.87×10^{-7} *6*
		578.3 *3*	27[@] *3*	1853.00	(7$^-$,8$^+$)			
		938.1 *2*	100[@] *3*	1493.47	8$^+$	E1	1.54×10^{-3}	α(K)=0.001315 *19*; α(L)=0.0001778 *25*; α(M)=3.90×10^{-5} *6* α(N)=9.06×10^{-6} *13*; α(O)=1.305×10^{-6} *19*; α(P)=7.20×10^{-8} *10*
2487.38?	(10$^+$)	468.2[d] *4*	100	2018.68?	(8$^+$)	(E2)	0.0195	α(K)=0.01542 *22*; α(L)=0.00318 *5*; α(M)=0.000728 *11* α(N)=0.0001676 *24*; α(O)=2.25×10^{-5} *4*; α(P)=8.48×10^{-7} *12*
2488.0	10$^+$	469.2		2019.1	8$^+$	E2		
		994.6		1493.47	8$^+$			
2569.96	10$^-$	236.3 *2*	100.0 *18*	2333.48	8$^-$	E2	0.1458	B(E2)(W.u.)=159 *16* α(K)=0.0999 *15*; α(L)=0.0353 *5*; α(M)=0.00836 *12* α(N)=0.00191 *3*; α(O)=0.000239 *4*; α(P)=4.89×10^{-6} *7*
		297.0 *4*	9 *4*	2272.97	9$^-$	E2+M1	0.10 *4*	α(K)=0.08 *4*; α(L)=0.0159 *11*; α(M)=0.00361 *16* α(N)=0.00083 *5*; α(O)=0.000114 *13*; α(P)=4.9×10^{-6} *22*
		497.6 *2*	45.6 *18*	2072.53	10$^+$	E1(+M2)	0.00565 *8*	B(E1)(W.u.)=8.7×10^{-6} *16* δ: −0.18 *+41−12* (1984Si05) in HI dataset seems too large to be realistic in view of expected short half-life of level and Recommended Upper Limits (RUL).
2673.63?	(1,2$^+$)	1867.25[d] *15*	100 *10*	806.38	0$^+$			
		2480.5[d] *15*	48 *17*	192.15	2$^+$			
		2673[d] *2*	38 *12*	0.0	0$^+$			
2680.79	12$^+$	608.28 *4*	100	2072.53	10$^+$	E2	0.01010	α(K)=0.00820 *12*; α(L)=0.001480 *21*; α(M)=0.000335 *5* α(N)=7.74×10^{-5} *11*; α(O)=1.065×10^{-5} *15*; α(P)=4.60×10^{-7} *7* B(E2)(W.u.)=2.6×10^2 *3*
2731.27	11$^-$	243.9 *4*	4.9 *12*	2488.0	10$^+$	(E1)	0.0312	B(E1)(W.u.)=4.2×10^{-5} *11* α(K)=0.0263 *4*; α(L)=0.00384 *6*; α(M)=0.000847 *13* α(N)=0.000196 *3*; α(O)=2.73×10^{-5} *4*; α(P)=1.329×10^{-6} *20*
		299.5 *2*	100.0 *12*	2431.57	9$^-$	E2	0.0694	α(K)=0.0508 *8*; α(L)=0.01437 *21*; α(M)=0.00336 *5* α(N)=0.000770 *11*; α(O)=9.89×10^{-5} *14*; α(P)=2.61×10^{-6} *4* B(E2)(W.u.)=250 *+24−20*
		658.8 *2*	37 *4*	2072.53	10$^+$	E1	0.00310	α(K)=0.00263 *4*; α(L)=0.000363 *5*; α(M)=7.96×10^{-5} *12* α(N)=1.85×10^{-5} *3*; α(O)=2.65×10^{-6} *4*; α(P)=1.427×10^{-7} *20* B(E1)(W.u.)=1.62×10^{-5} *+24−22*
2760.68	11$^-$	487.6 *2*	25 *4*	2272.97	9$^-$	E2	0.01755	α(K)=0.01393 *20*; α(L)=0.00281 *4*; α(M)=0.000641 *9* α(N)=0.0001478 *21*; α(O)=2.00×10^{-5} *3*; α(P)=7.69×10^{-7} *11*

$^{158}_{68}$Er$_{90}$-11

γ(^{158}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#b]	α[a]	Comments
2760.68	11⁻	688.2 *2*	100 *4*	2072.53	10⁺	E1+M2	0.06 *6*	0.0030 *5*	α(K)=0.0025 *4*; α(L)=0.00035 *6*; α(M)=7.7×10^{-5} *13* α(N)=1.8×10^{-5} *3*; α(O)=2.6×10^{-6} *5*; α(P)=1.39×10^{-7} *24*
2881.47	12⁺	200.8 *4*	10.3[@] *22*	2680.79	12⁺	E2+M1		0.32 *8*	α(K)=0.25 *9*; α(L)=0.059 *10*; α(M)=0.014 *3* α(N)=0.0031 *6*; α(O)=0.00041 *5*; α(P)=1.4×10^{-5} *7*
		393.8 *3*	4.6[@] *23*	2488.0	10⁺	(E2)		0.0312	α(K)=0.0241 *4*; α(L)=0.00553 *8*; α(M)=0.001277 *19* α(N)=0.000293 *5*; α(O)=3.88×10^{-5} *6*; α(P)=1.296×10^{-6} *19*
		808.7 *2*	100[@] *3*	2072.53	10⁺	E2		0.00527	α(K)=0.00436 *7*; α(L)=0.000707 *10*; α(M)=0.0001583 *23* α(N)=3.67×10^{-5} *6*; α(O)=5.15×10^{-6} *8*; α(P)=2.47×10^{-7} *4*
2954.66	12⁻	384.7 *1*	100	2569.96	10⁻	E2		0.0333	α(K)=0.0256 *4*; α(L)=0.00598 *9*; α(M)=0.001382 *20* α(N)=0.000317 *5*; α(O)=4.19×10^{-5} *6*; α(P)=1.375×10^{-6} *20* B(E2)(W.u.)=166 *+11−2*
3017.70?	(1,2⁺)	788.5[d] *3*	83 *17*	2228.80	(2⁺,3⁺)				
		1275.38[d] *20*	100 *22*	1742.57	(2,3,4)				
		2197.4[cd] *3*	128[c] *22*	820.12	2⁺				
		2826[d] *4*	50 *28*	192.15	2⁺				
		3017[d] *4*	50 *17*	0.0	0⁺				
3109.3	12⁺	621.5		2488.0	10⁺	E2			
		1036.5		2072.53	10⁺				
3154.80	13⁻	423.5 *1*	100.0 *10*	2731.27	11⁻	E2		0.0255	B(E2)(W.u.)=143 *10* α(K)=0.0199 *3*; α(L)=0.00436 *7*; α(M)=0.001003 *14* α(N)=0.000231 *4*; α(O)=3.07×10^{-5} *5*; α(P)=1.082×10^{-6} *16*
		474.3 *3*	19.2 *19*	2680.79	12⁺	E1		0.00628	B(E1)(W.u.)=7.3×10^{-5} *9* α(K)=0.00533 *8*; α(L)=0.000748 *11*; α(M)=0.0001645 *24* α(N)=3.81×10^{-5} *6*; α(O)=5.43×10^{-6} *8*; α(P)=2.84×10^{-7} *4*
3190.51	14⁺	308.7 *2*	8.8 *7*	2881.47	12⁺	E2		0.0633	α(K)=0.0467 *7*; α(L)=0.01288 *19*; α(M)=0.00301 *5* α(N)=0.000689 *10*; α(O)=8.88×10^{-5} *13*; α(P)=2.42×10^{-6} *4* B(E2)(W.u.)=109 *15*
		509.75 *6*	100.0 *17*	2680.79	12⁺	E2		0.01565	α(K)=0.01249 *18*; α(L)=0.00246 *4*; α(M)=0.000560 *8* α(N)=0.0001292 *18*; α(O)=1.751×10^{-5} *25*; α(P)=6.92×10^{-7} *10* B(E2)(W.u.)=101 *11*
3304.5	(13⁻)	543.6 *4*	55[@] *15*	2760.68	11⁻	(E2)		0.01330	α(K)=0.01069 *15*; α(L)=0.00203 *3*; α(M)=0.000462 *7* α(N)=0.0001067 *16*; α(O)=1.455×10^{-5} *21*; α(P)=5.95×10^{-7} *9*
		623.8 *3*	100[@] *15*	2680.79	12⁺	(E1)		0.00347	α(K)=0.00295 *5*; α(L)=0.000407 *6*; α(M)=8.95×10^{-5} *13* α(N)=2.08×10^{-5} *3*; α(O)=2.97×10^{-6} *5*; α(P)=1.594×10^{-7} *23*
3374.29	14⁺	492.8 *4*	2.7 *27*	2881.47	12⁺	E2		0.01707	α(K)=0.01357 *20*; α(L)=0.00272 *4*; α(M)=0.000621 *9* α(N)=0.0001431 *21*; α(O)=1.93×10^{-5} *3*; α(P)=7.50×10^{-7} *11*
		693.5 *2*	100.0 *14*	2680.79	12⁺	E2		0.00743	α(K)=0.00609 *9*; α(L)=0.001042 *15*; α(M)=0.000235 *4* α(N)=5.43×10^{-5} *8*; α(O)=7.54×10^{-6} *11*; α(P)=3.44×10^{-7} *5*
3474.8	14⁻	520.1 *2*	100	2954.66	12⁻	E2		0.01487	α(K)=0.01189 *17*; α(L)=0.00231 *4*; α(M)=0.000527 *8* α(N)=0.0001216 *17*; α(O)=1.651×10^{-5} *24*; α(P)=6.60×10^{-7} *10*

$\gamma(^{158}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[a]	Comments
3663.26	16^+	472.75 *5*	100	3190.51	14^+	E2	0.0190	α(K)=0.01505 *21*; α(L)=0.00309 *5*; α(M)=0.000706 *10* α(N)=0.0001627 *23*; α(O)=2.19×10^{-5} *3*; α(P)=8.28×10^{-7} *12* B(E2)(W.u.)=200 *12*
3668.2	14^+	559.0		3109.3	12^+	E2		
		786.6		2881.47	12^+			
3695.40	15^-	540.6 *1*	100	3154.80	13^-	E2	0.01349	α(K)=0.01083 *16*; α(L)=0.00207 *3*; α(M)=0.000470 *7* α(N)=0.0001085 *16*; α(O)=1.478×10^{-5} *21*; α(P)=6.03×10^{-7} *9* B(E2)(W.u.)=2.2×10^2 *+6−4*
3906.5	(15^-)	602.0 *4*	100	3304.5	(13^-)	(E2)	0.01036	α(K)=0.00840 *12*; α(L)=0.001523 *22*; α(M)=0.000345 *5* α(N)=7.97×10^{-5} *12*; α(O)=1.095×10^{-5} *16*; α(P)=4.71×10^{-7} *7*
4026.1	(16^+)	651.8 *2*	100	3374.29	14^+	(E2)	0.00858	α(K)=0.00700 *10*; α(L)=0.001227 *18*; α(M)=0.000277 *4* α(N)=6.40×10^{-5} *9*; α(O)=8.86×10^{-6} *13*; α(P)=3.94×10^{-7} *6*
4103.7	(16^-)	628.9 *2*	100	3474.8	14^-	(E2)	0.00933	α(K)=0.00759 *11*; α(L)=0.001351 *19*; α(M)=0.000305 *5* α(N)=7.06×10^{-5} *10*; α(O)=9.74×10^{-6} *14*; α(P)=4.27×10^{-7} *6* B(E2)(W.u.)=1.4×10^2 *+5−4*
4229.54	18^+	566.28 *5*	100	3663.26	16^+	E2	0.01202	α(K)=0.00969 *14*; α(L)=0.00181 *3*; α(M)=0.000410 *6* α(N)=9.48×10^{-5} *14*; α(O)=1.297×10^{-5} *19*; α(P)=5.42×10^{-7} *8* B(E2)(W.u.)=199 *13*
4272.4	16^+	604.1		3668.2	14^+	E2		
		897.9		3374.29	14^+			
4329.5	(17^-)	634.1 *2*	100	3695.40	15^-	(E2)	0.00915	α(K)=0.00745 *11*; α(L)=0.001321 *19*; α(M)=0.000298 *5* α(N)=6.90×10^{-5} *10*; α(O)=9.53×10^{-6} *14*; α(P)=4.19×10^{-7} *6* B(E2)(W.u.)=111 *+24−16*
4679.5	(18^+)	653.2 *3*		4026.1	(16^+)			
		1018.0		3663.26	16^+			
4812.8	(18^-)	709.1 *2*	100	4103.7	(16^-)	(E2)	0.00706	α(K)=0.00580 *9*; α(L)=0.000984 *14*; α(M)=0.000221 *4* α(N)=5.12×10^{-5} *8*; α(O)=7.13×10^{-6} *10*; α(P)=3.28×10^{-7} *5* B(E2)(W.u.)=69 *+14−10*
4888.43	20^+	658.89 *6*	100	4229.54	18^+	E2	0.00836	α(K)=0.00683 *10*; α(L)=0.001192 *17*; α(M)=0.000269 *4* α(N)=6.22×10^{-5} *9*; α(O)=8.61×10^{-6} *12*; α(P)=3.85×10^{-7} *6* B(E2)(W.u.)=162 *24*
4948.9	18^+	676.4		4272.4	16^+	E2		
		922.5		4026.1	(16^+)			
5021.8	(19^-)	692.3 *2*	100	4329.5	(17^-)	(E2)	0.00746	α(K)=0.00611 *9*; α(L)=0.001047 *15*; α(M)=0.000236 *4* α(N)=5.45×10^{-5} *8*; α(O)=7.58×10^{-6} *11*; α(P)=3.45×10^{-7} *5*
5327.4	(20^+)	647.9 *3*		4679.5	(18^+)	(E2)	0.00870	α(K)=0.00710 *10*; α(L)=0.001247 *18*; α(M)=0.000281 *4* α(N)=6.51×10^{-5} *10*; α(O)=9.00×10^{-6} *13*; α(P)=4.00×10^{-7} *6*
		1101.2		4229.54	18^+			
5538.2	(20^-)	725.4 *2*	100	4812.8	(18^-)	(E2)	0.00671	α(K)=0.00551 *8*; α(L)=0.000928 *13*; α(M)=0.000209 *3* α(N)=4.83×10^{-5} *7*; α(O)=6.73×10^{-6} *10*; α(P)=3.12×10^{-7} *5*
5628.85	22^+	740.42 *10*	100	4888.43	20^+	E2	0.00640	α(K)=0.00527 *8*; α(L)=0.000881 *13*; α(M)=0.000198 *3* α(N)=4.58×10^{-5} *7*; α(O)=6.39×10^{-6} *9*; α(P)=2.99×10^{-7} *5* B(E2)(W.u.)=2.1×10^2 *+11−19*

$\gamma(^{158}Er)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[a]	Comments
5739.3	(21^-)	717.5 *2*	100	5021.8	(19^-)	(E2)	0.00687	α(K)=0.00565 *8*; α(L)=0.000954 *14*; α(M)=0.000215 *3* α(N)=4.97×10^{-5} *7*; α(O)=6.92×10^{-6} *10*; α(P)=3.20×10^{-7} *5*
6026.8	(22^+)	699.4 *3*		5327.4	(20^+)	(E2)	0.00729	α(K)=0.00598 *9*; α(L)=0.001019 *15*; α(M)=0.000229 *4* α(N)=5.31×10^{-5} *8*; α(O)=7.38×10^{-6} *11*; α(P)=3.38×10^{-7} *5*
		1141.4		4888.43	20^+			
6219.7	(22^-)	681.5 *3*	100	5538.2	(20^-)	(E2)	0.00773	α(K)=0.00633 *9*; α(L)=0.001091 *16*; α(M)=0.000246 *4* α(N)=5.68×10^{-5} *8*; α(O)=7.89×10^{-6} *11*; α(P)=3.57×10^{-7} *5*
6434.6	24^+	805.7 *4*	100	5628.85	22^+	E2	0.00531	α(K)=0.00439 *7*; α(L)=0.000714 *10*; α(M)=0.0001598 *23* α(N)=3.70×10^{-5} *6*; α(O)=5.20×10^{-6} *8*; α(P)=2.49×10^{-7} *4*
6475.8	(23^-)	736.5 *3*	100	5739.3	(21^-)	(E2)	0.00648	α(K)=0.00533 *8*; α(L)=0.000893 *13*; α(M)=0.000200 *3* α(N)=4.64×10^{-5} *7*; α(O)=6.48×10^{-6} *9*; α(P)=3.02×10^{-7} *5*
7000	(24^-)	780[&]	100	6219.7	(22^-)			
7249.2	(25^-)	773.4	100	6475.8	(23^-)			
7280.2	26^+	845.6 *2*	100	6434.6	24^+	E2	0.00478	α(K)=0.00397 *6*; α(L)=0.000635 *9*; α(M)=0.0001419 *20* α(N)=3.29×10^{-5} *5*; α(O)=4.63×10^{-6} *7*; α(P)=2.25×10^{-7} *4*
7800	(26^-)	800[&]	100	7000	(24^-)			
8069.8	(27^-)	820.6	100	7249.2	(25^-)			
8138.6	28^+	858.4 *3*	100	7280.2	26^+	E2	0.00463	α(K)=0.00384 *6*; α(L)=0.000613 *9*; α(M)=0.0001369 *20* α(N)=3.17×10^{-5} *5*; α(O)=4.47×10^{-6} *7*; α(P)=2.18×10^{-7} *3*
8933.6	(29^-)	863.8	100	8069.8	(27^-)			
9014.2	30^+	875.6 *4*	100	8138.6	28^+	E2	0.00444	α(K)=0.00369 *6*; α(L)=0.000584 *9*; α(M)=0.0001305 *19* α(N)=3.03×10^{-5} *5*; α(O)=4.27×10^{-6} *6*; α(P)=2.10×10^{-7} *3*
9456	(30^-)	854		8602	(28^-)			
9474	(30^+)	1336		8138.6	28^+			
9820.0	(31^-)	886.4	100	8933.6	(29^-)			
9920.4	32^+	906.2 *4*	100	9014.2	30^+	E2	0.00413	α(K)=0.00343 *5*; α(L)=0.000539 *8*; α(M)=0.0001202 *17* α(N)=2.79×10^{-5} *4*; α(O)=3.94×10^{-6} *6*; α(P)=1.95×10^{-7} *3*
10281	(32^+)	807		9474	(30^+)			
		1270		9014.2	30^+			
10336	(32^-)	880		9456	(30^-)			
10716.8	(33^-)	896.8	100	9820.0	(31^-)			
10879.5	34^+	959.1 *8*	100	9920.4	32^+	E2	0.00366	α(K)=0.00306 *5*; α(L)=0.000473 *7*; α(M)=0.0001053 *15* α(N)=2.44×10^{-5} *4*; α(O)=3.46×10^{-6} *5*; α(P)=1.740×10^{-7} *25*
11216	(34^+)	935		10281	(32^+)			
		1299		9920.4	32^+			
11234	(34^-)	898		10336	(32^-)			
11637.3	(35^-)	920.5	100	10716.8	(33^-)			
11898.6	36^+	1019.1 *9*	100	10879.5	34^+	E2	0.00323	α(K)=0.00270 *4*; α(L)=0.000412 *6*; α(M)=9.16×10^{-5} *13* α(N)=2.13×10^{-5} *3*; α(O)=3.02×10^{-6} *5*; α(P)=1.540×10^{-7} *22*
12172	(36^-)	939		11234	(34^-)			
12232	(36^+)	1016		11216	(34^+)			
		1356		10879.5	34^+			

$^{158}_{68}Er_{90}$-14

γ(^{158}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[a]	Comments
12601.2	(37⁻)	963.9	100	11637.3	(35⁻)			
12957.8	38⁺	1059.2 *15*	100	11898.6	36⁺	E2	0.00299	α(K)=0.00250 *4*; α(L)=0.000378 *6*; α(M)=8.40×10^{-5} *12* α(N)=1.95×10^{-5} *3*; α(O)=2.77×10^{-6} *4*; α(P)=1.426×10^{-7} *21*
13157	(38⁻)	985		12172	(36⁻)			
13169	(38⁺)	937		12232	(36⁺)			
		1276		11898.6	36⁺			
13621.6	(39⁻)	1020.4	100	12601.2	(37⁻)			
13784.8	(40⁺)	609		13169	(38⁺)			
		827.0		12957.8	38⁺			
14153	(40⁺)	1202	100	12957.8	38⁺			
14183	(40⁻)	1026	100	13157	(38⁻)			
14694.8	(41⁻)	1073.2	100	13621.6	(39⁻)			
15059	(42⁺)	1281	100	13784.8	(40⁺)			
15194	(42⁻)	1011	100	14183	(40⁻)			
15363	(42⁺)	1210	100	14153	(40⁺)			
15683.8	(43⁻)	985	100	14694.8	(41⁻)			
15873	(43⁻)	1176	100	14694.8	(41⁻)			
16090	(44⁺)	1031	100	15059	(42⁺)			
16357	(44⁻)	1163	100	15194	(42⁻)			
16507	(44⁺)	1143	100	15363	(42⁺)			
17013	(45⁻)	1139		15873	(43⁻)			
		1330		15683.8	(43⁻)			
17061	(46⁺)	971	100	16090	(44⁺)			
17121	(45⁻)	1248		15873	(43⁻)			
		1439		15683.8	(43⁻)			
17367	(46⁻)	1010	100	16357	(44⁻)			
17659	(46⁺)	1153	100	16507	(44⁺)			
18001	(47⁻)	939[d]		17061	(46⁺)			
		988		17013	(45⁻)			
18131	(48⁻)	764	100	17367	(46⁻)			
18345	(47⁻)	1224	100	17121	(45⁻)			
18810	(49⁻)	809	100	18001	(47⁻)			
18869?	(48⁺)	1210[d]	100	17659	(46⁺)			
20143?	(50⁺)	1274[d]	100	18869?	(48⁺)			
724.3+x	J+2	724.3 *5*		x	J≈(23)			
1490.9+x	J+4	766.6 *5*		724.3+x	J+2			
2293.2+x	J+6	802.3 *5*		1490.9+x	J+4			
3134.9+x	J+8	841.7 *5*		2293.2+x	J+6			
4009.9+x	J+10	875.0 *5*		3134.9+x	J+8			
4911.4+x	J+12	901.5 *5*		4009.9+x	J+10			
5844.0+x	J+14	932.6 *5*		4911.4+x	J+12			
6816.7+x	J+16	972.7 *5*		5844.0+x	J+14			
7834.3+x	J+18	1017.6 *5*		6816.7+x	J+16			

$^{158}_{68}Er_{90}$-15

γ(^{158}Er) (continued)

E_i(level)	J^π_i	E_γ [†]	E_f	J^π_f
8898.6+x	J+20	1064.3 *5*	7834.3+x	J+18
10008.7+x	J+22	1110.1 *5*	8898.6+x	J+20
11165.0+x	J+24	1156.3 *5*	10008.7+x	J+22
12369.9+x	J+26	1204.9 *5*	11165.0+x	J+24
13625.8+x	J+28	1255.9 *5*	12369.9+x	J+26
14936.1+x	J+30	1310.2 *5*	13625.8+x	J+28
16305.1+x	J+32	1369.0 *5*	14936.1+x	J+30
17735.3+x	J+34	1430.2 *5*	16305.1+x	J+32
19226.3+x	J+36	1491 *1*	17735.3+x	J+34
20788.3+x	J+38	1562 *1*	19226.3+x	J+36
22413+x	J+40	1625 *1*	20788.3+x	J+38
24115+x	J+42	1702 *1*	22413+x	J+40
959.0+y	J1+2	959 *1*	y	J1
1966.0+y	J1+4	1007 *1*	959.0+y	J1+2
3012.0+y	J1+6	1046 *1*	1966.0+y	J1+4
4095.0+y	J1+8	1083 *1*	3012.0+y	J1+6
5219.0+y	J1+10	1124 *1*	4095.0+y	J1+8
6386.0+y	J1+12	1167 *1*	5219.0+y	J1+10
7598+y	J1+14	1212 *1*	6386.0+y	J1+12
8858+y	J1+16	1260 *1*	7598+y	J1+14
10167+y	J1+18	1309 *1*	8858+y	J1+16
11527+y	J1+20	1360 *1*	10167+y	J1+18
12943+y	J1+22	1416 *1*	11527+y	J1+20

[†] Most of the γ rays originate in a single dataset, whence they were adopted here. For the rare occasions when a γ ray was observed in both ε decay and HI datasets, the more precise figures were adopted (mostly from the ε decay).

[‡] From α_K(exp) data from ^{158}Tm ε decay and for E2 γ's in ground-state band from $\gamma(\theta)$ or DCO in (HI,xnγ) studies (1972Be39,1972Li34,1977Le10,1982Bu28,1984Si05,1985Ho04,2013DiZZ). For many others, assignments are from 1984Si05 and are based on analysis of data for the whole scheme including the deduced J^π assignments.

[#] From (HI,xnγ) (1984Si05).

[@] Relative photon branching measured by 1984Si05 (HI dataset).

[&] Estimated by evaluator to connect lower and upper portions of the band (HI dataset).

[a] Additional information 4.

[b] If no value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.

[c] Multiply placed with undivided intensity.

[d] Placement of transition in the level scheme is uncertain.

$^{158}_{68}Er_{90}$-16

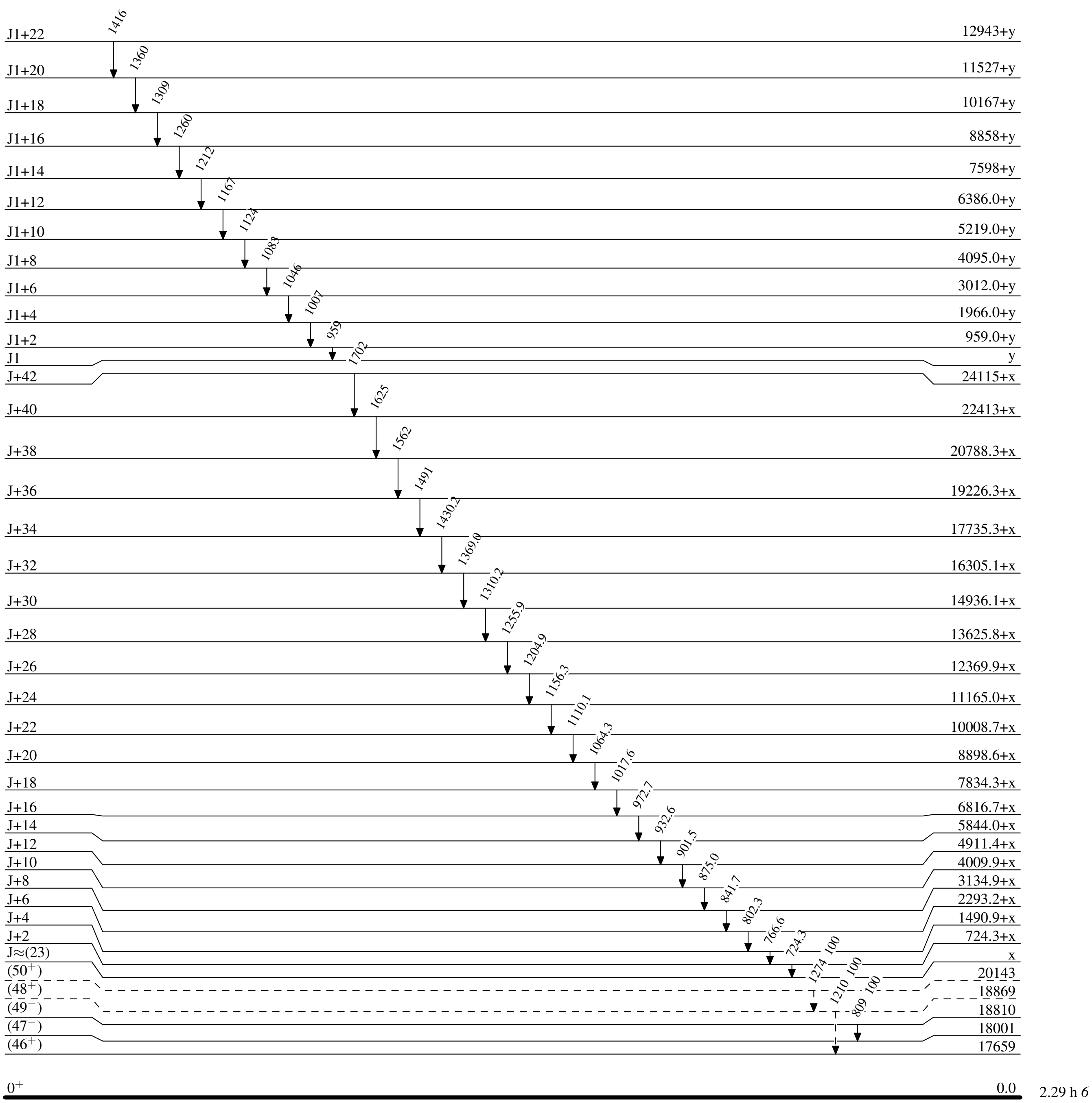
Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

Legend

γ Decay (Uncertain)

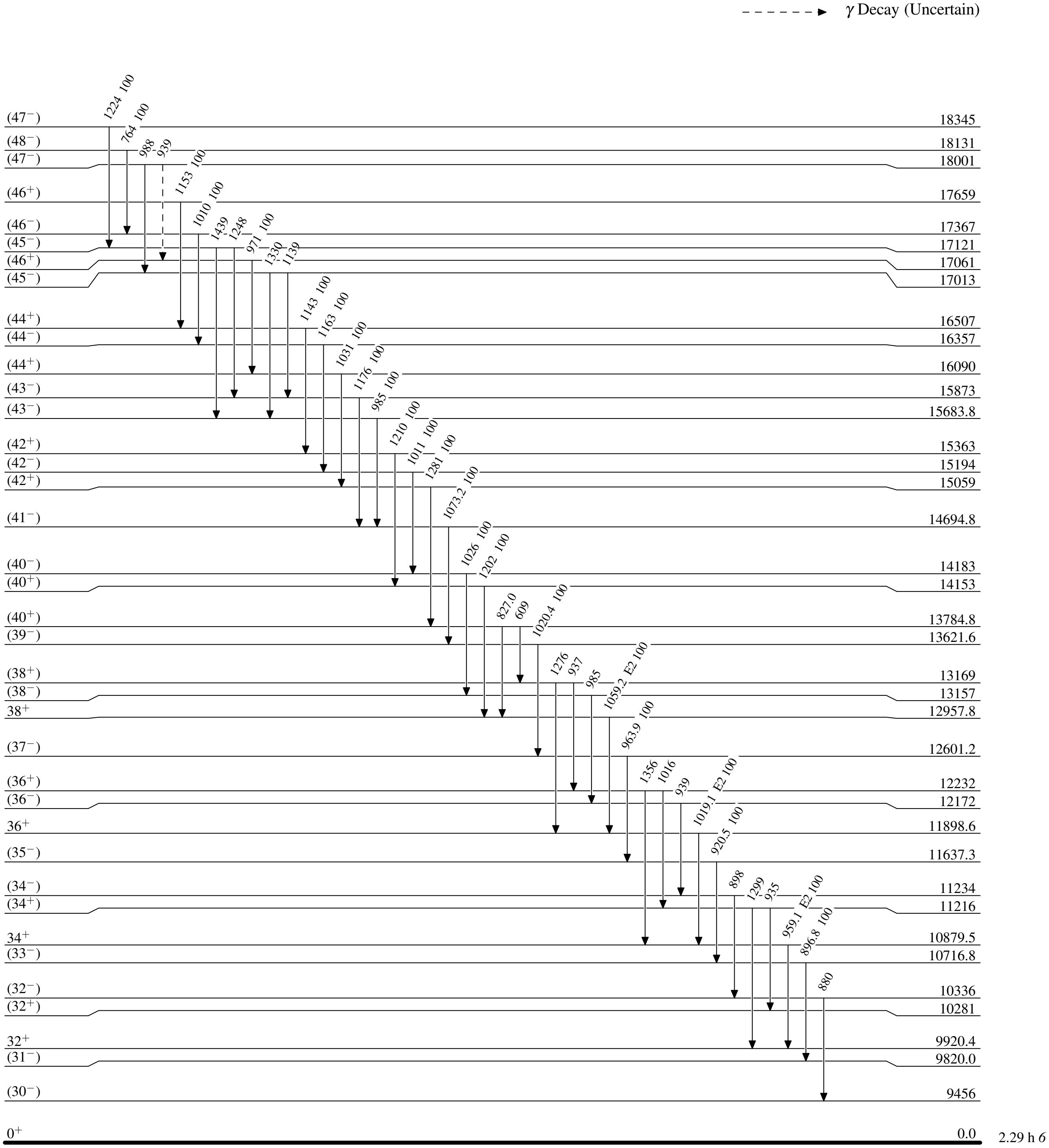


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

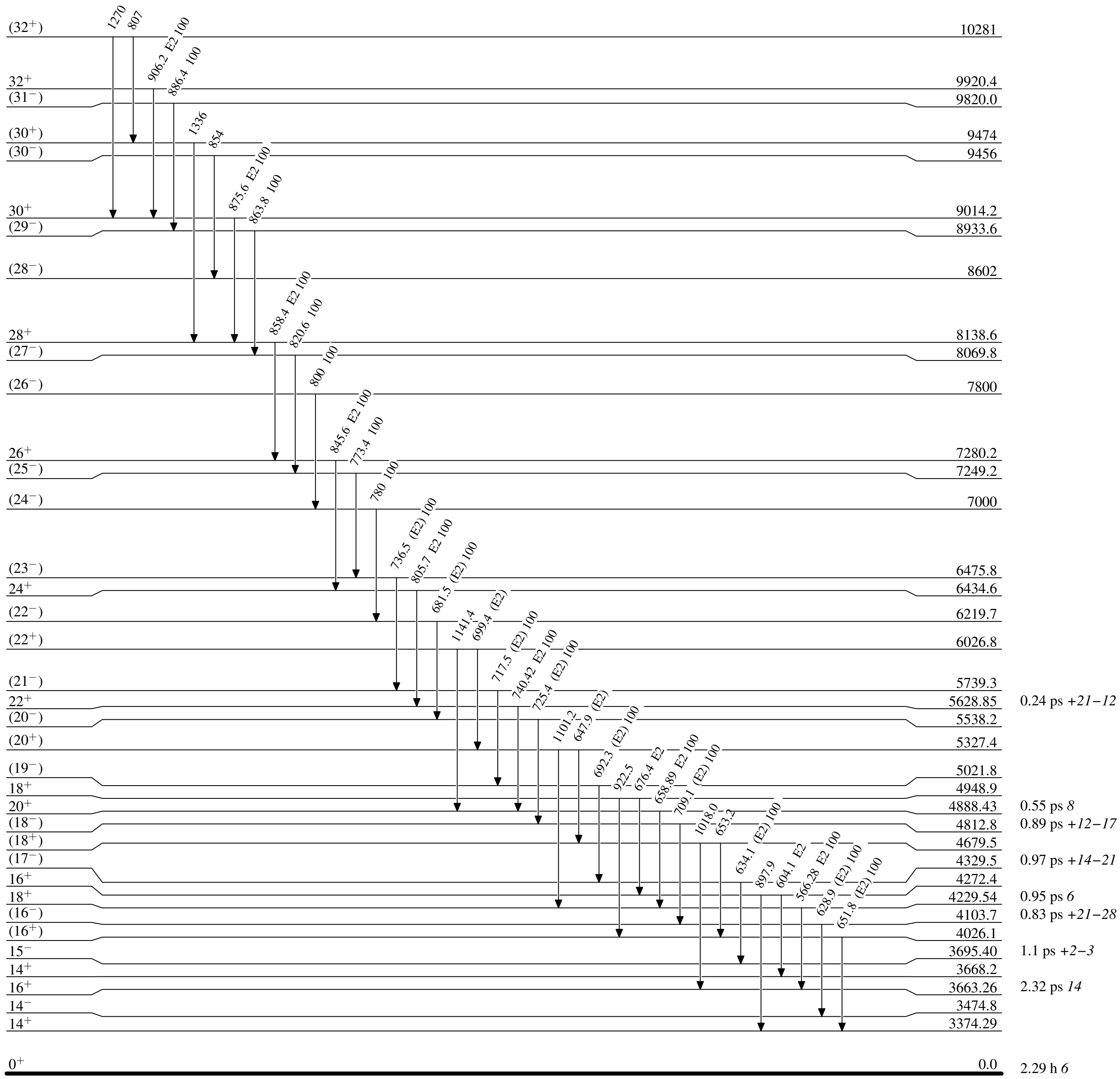


$^{158}_{68}Er_{90}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

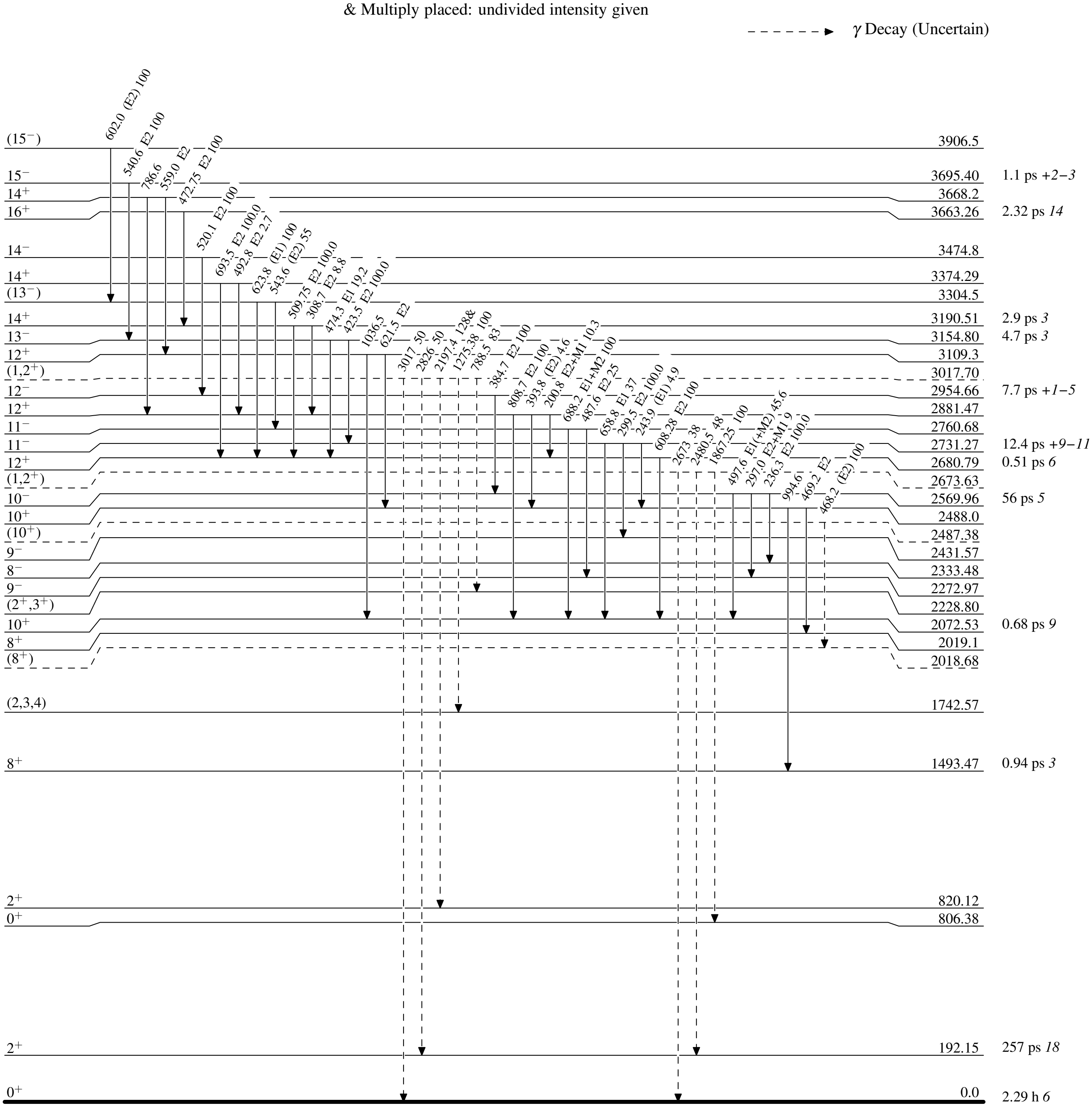


$^{158}_{68}Er_{90}$

Adopted Levels, Gammas

Level Scheme (continued)

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

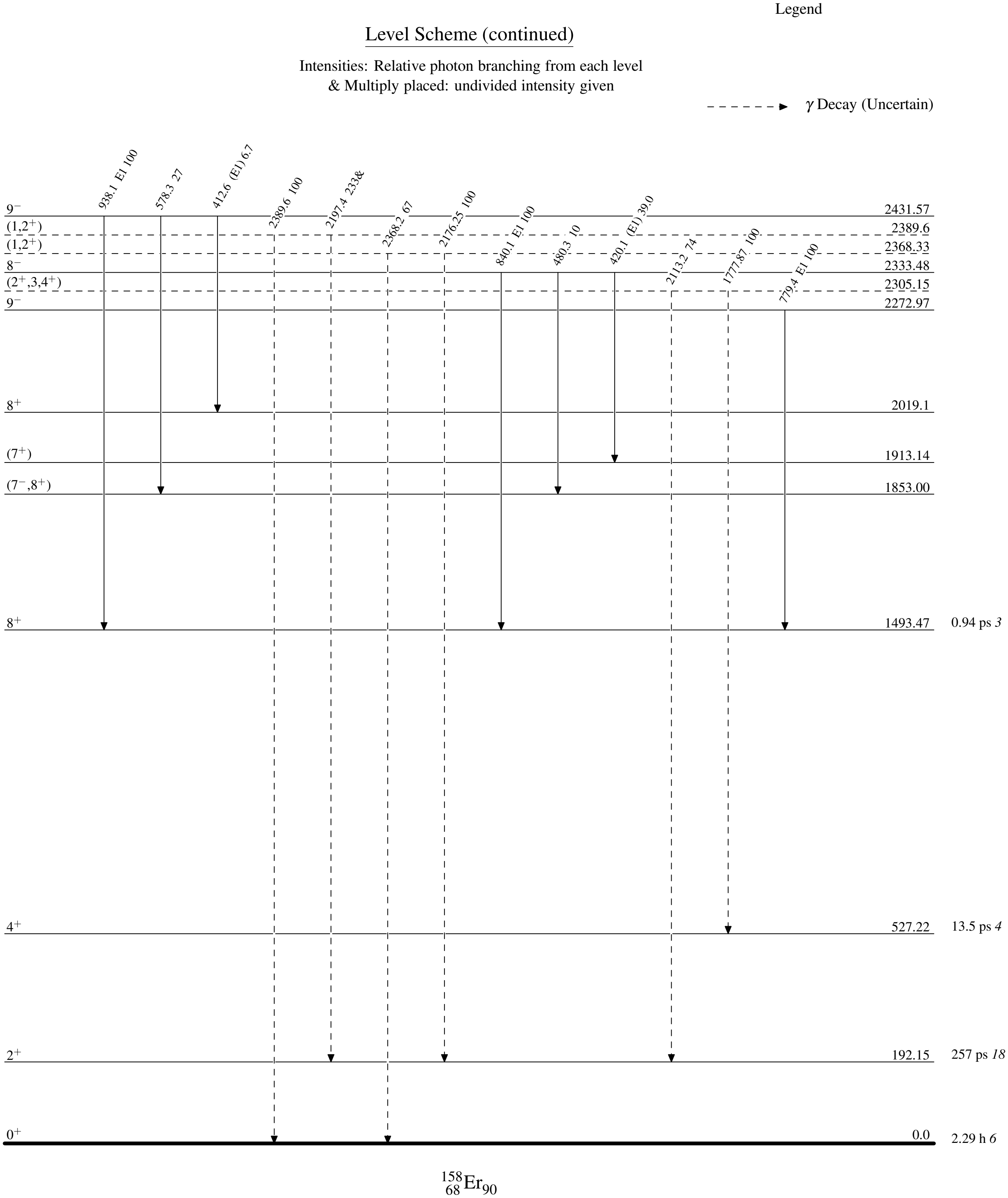


$^{158}_{68}Er_{90}$

Adopted Levels, Gammas

Level Scheme (continued)

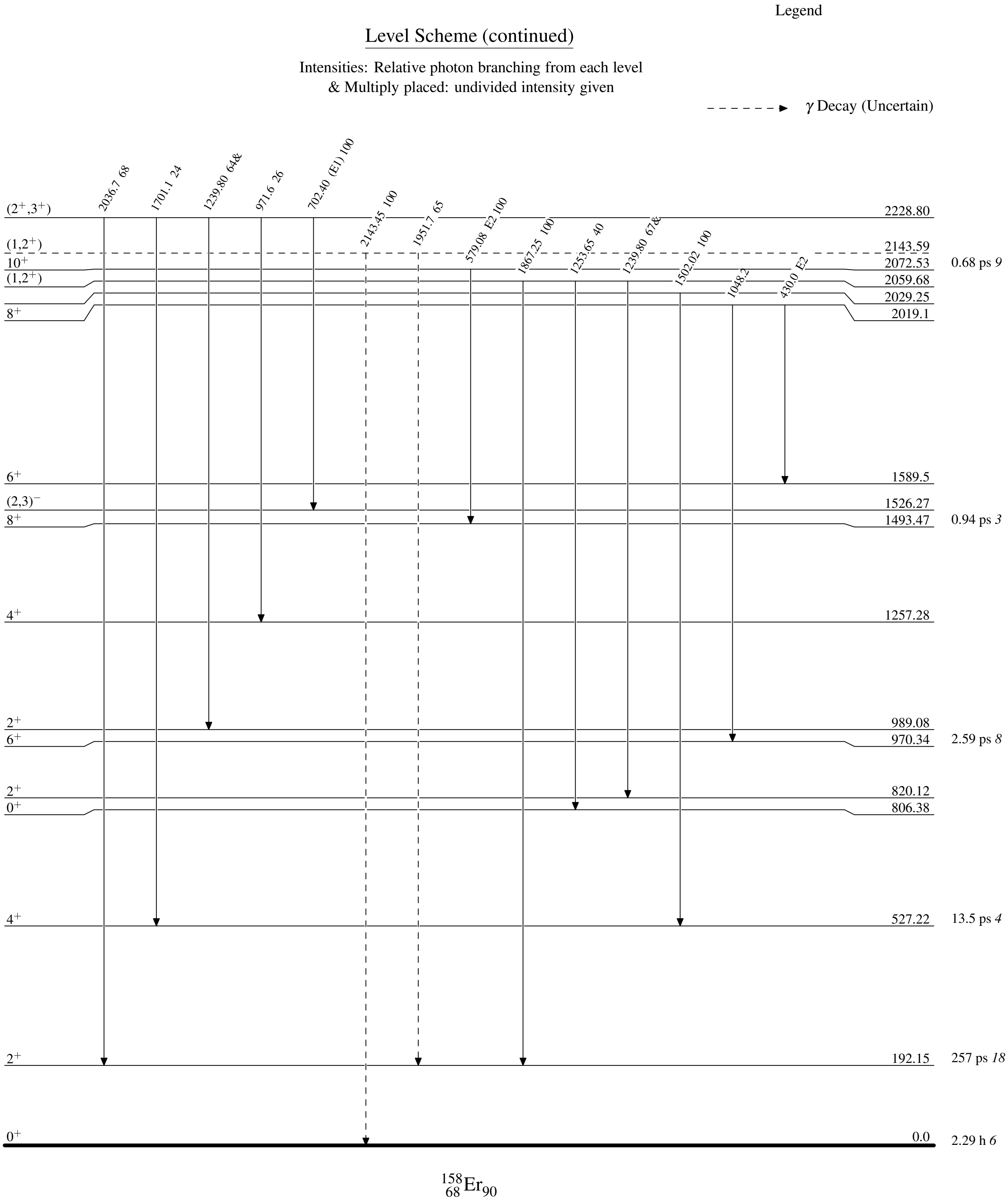
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

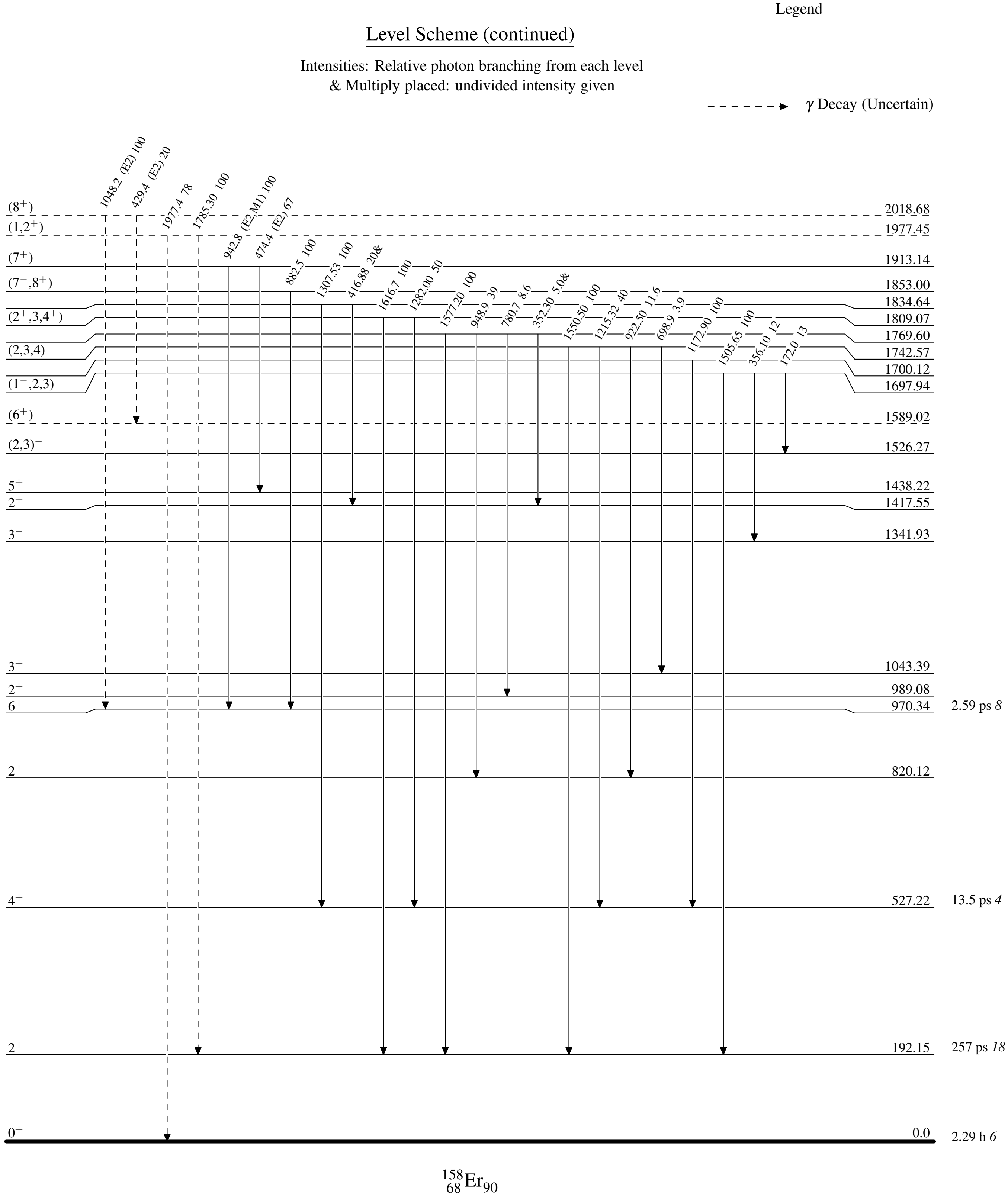
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



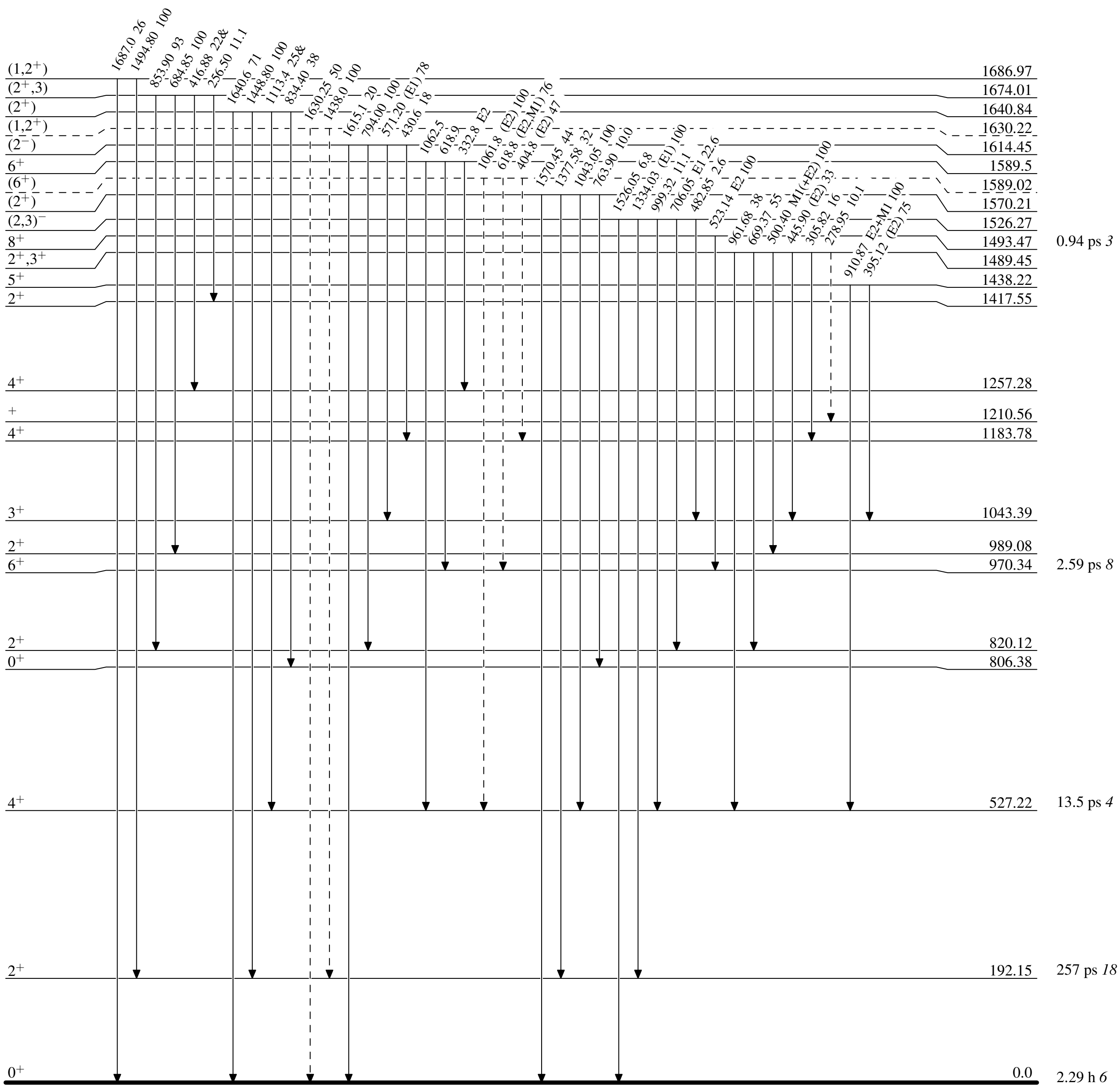
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{158}_{68}Er_{90}$

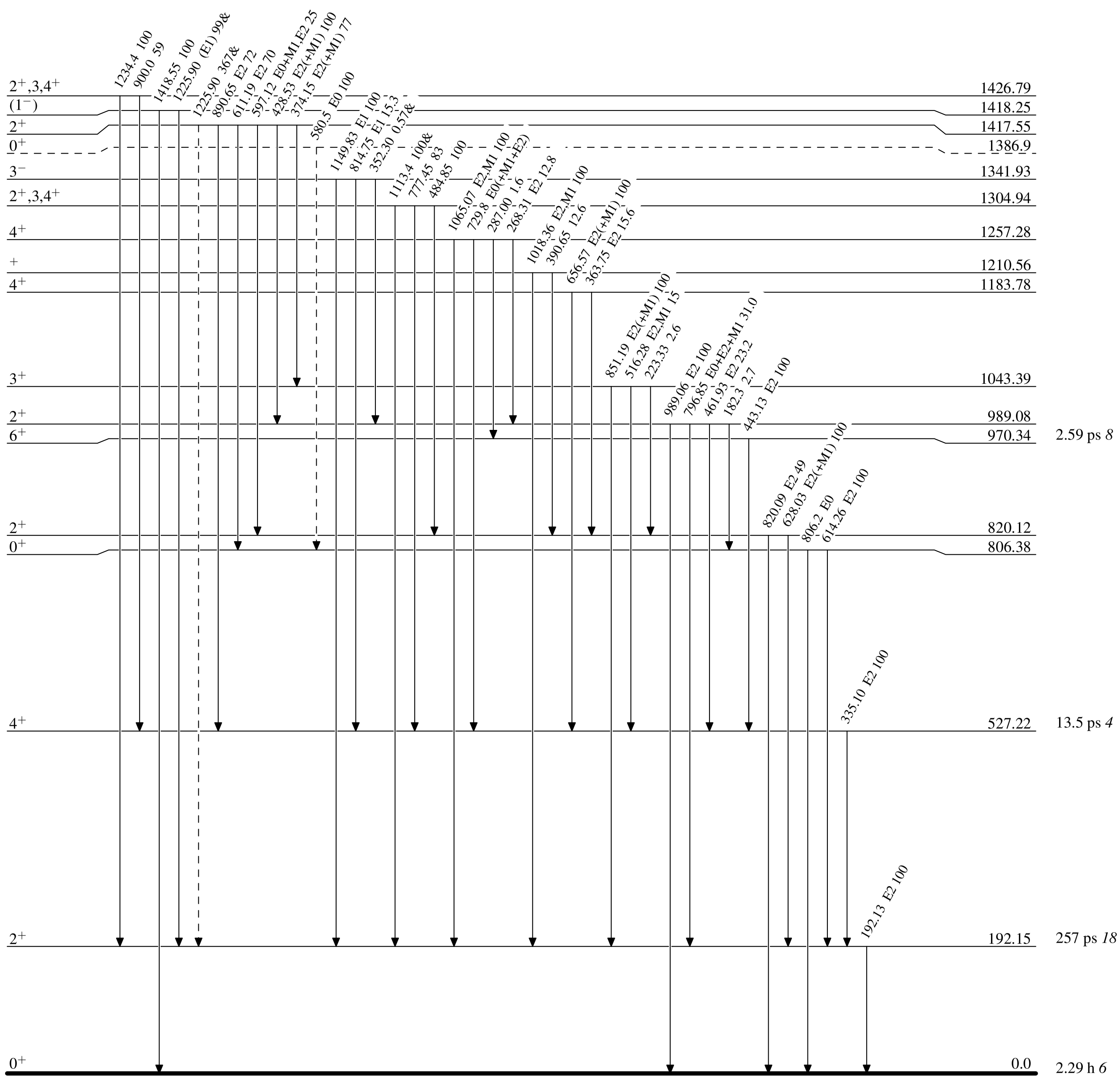
Adopted Levels, Gammas

Legend

Level Scheme (continued)

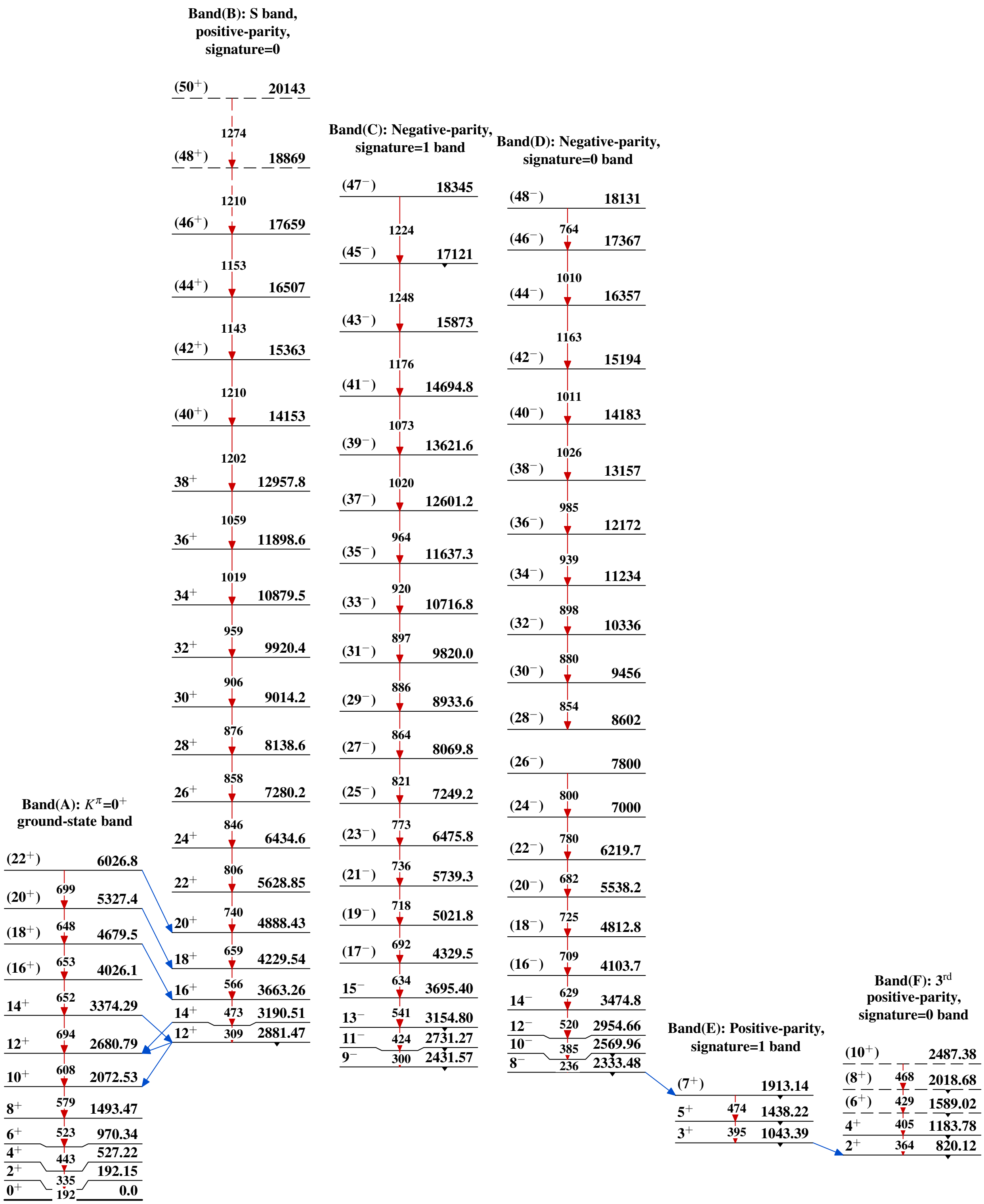
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



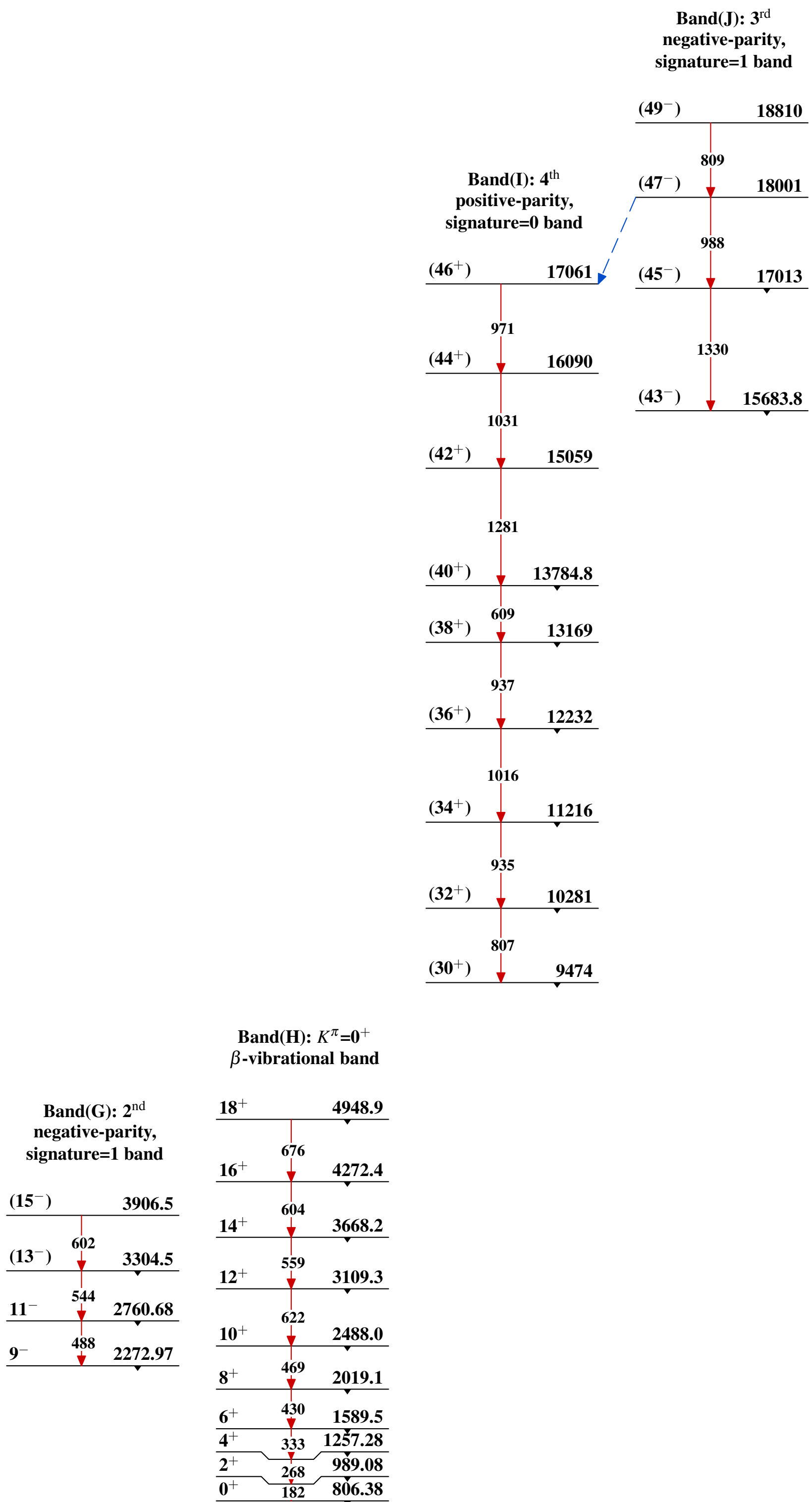
$^{158}_{68}Er_{90}$

Adopted Levels, Gammas



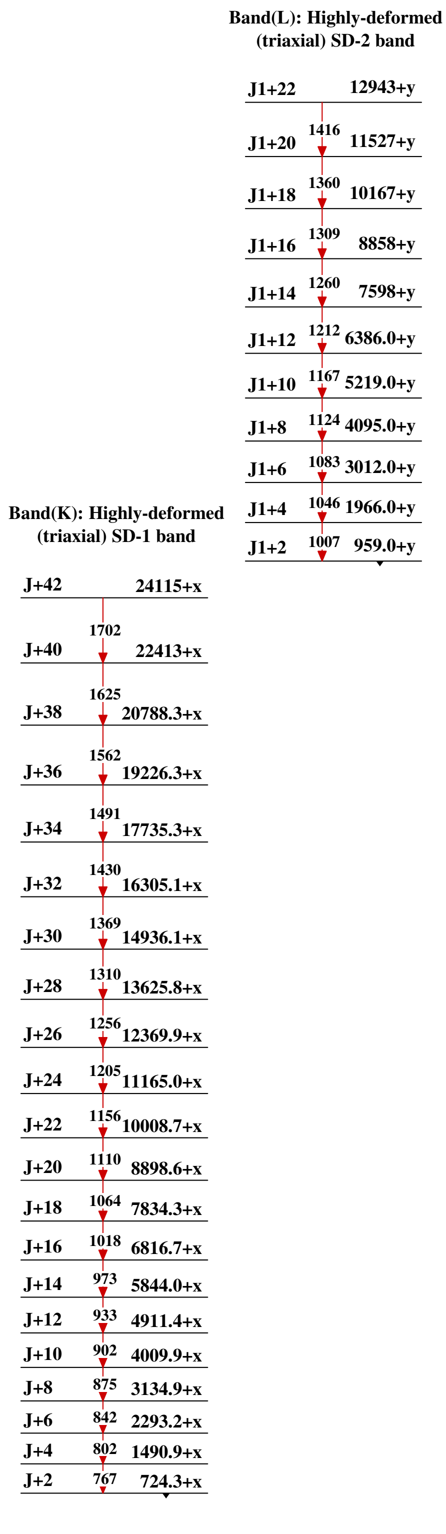
$^{158}_{68}Er_{90}$

Adopted Levels, Gammas (continued)



$^{158}_{68}Er_{90}$

Adopted Levels, Gammas (continued)



$^{158}_{68}Er_{90}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 195,1 (2024)	19-Sep-2023

Q(β^-)=−4857 *26*; S(n)=9204 *9*; S(p)=6426.9 *22*; Q(α)=1648.0 *23* 2021Wa16
S(2n)=16413 *24*, S(2p)=11239.7 *3* (2021Wa16).
Additional information 1.

^{162}Er Levels

Measured Coulomb displacement energies: 1983Ja03.
Theory and model calculations:
1976Fa01: description of ground-state band.
1989Gu01: B(E2) ratios between γ-vibrational and ground-state bands.
Additional information 2.

Cross Reference (XREF) Flags

A	^{162}Tm ε decay (21.70 min)	E	^{162}Er(d,d′)
B	^{162}Tm ε decay (24.3 s)	F	^{165}Ho(p,4nγ),Dy(α,xnγ),
C	^{154}Sm(^{12}C,4nγ)	G	Coulomb excitation
D	^{160}Gd(^{9}Be,7nγ)		

E(level)[†‡]	J$^\pi$[@]	T$_{1/2}$	XREF	Comments
0.0[&]	0$^+$	stable	ABCDEFG	T$_{1/2}$: from a cluster-model calculation, 2004Xu02 estimate T$_{1/2}$(α)=2.8×10^{29} y. See, also, 1988Al13 and 1956Po16 for discussions of the α-decay half-life. T$_{1/2}$: using the pseudo SU(3) model, 1999Ce12 compute a value of 2.85×10^{22} y for the half-life of the 2ε2ν decay to the g.s. of ^{162}Er. Subsequently, this same value is given in 2002Hi09, a work by some of the same authors. 2004Su27 discuss the neutrinoless 2ε decay of ^{162}Er. In an evaluation of nuclear rms charge radii, 2013An02 report <r^2>$^{1/2}$=5.225 fm *4*. Δ<r^2> results (in fm^2) are: for ^{160}Er-^{162}Er, Δ<r^2>≈ 0.15 (1985Ne09) and for ^{162}Er-^{164}Er, Δ<r^2>≈0.144 (1985Be34), ≈ 0.10 (1985Ne09), 0.143 (1987Ah03), and 0.15 (1987Ok03). Values of 1985Ne09 and 1987Ok03 were taken from plots by the evaluator. For calculations of these values see 1988SuZW. For other isotope shift data, see 1965Ha11, 1965Vo02, 1967Ca21, and 1986Ch07.
102.04[&] *3*	2$^+$	1389 ps *21*	ABCDEFG	Q<0 J$^\pi$: from E2 γ to 0$^+$ level. T$_{1/2}$: from weighted average lifetime, τ=2004 ps *30*, of the following measured τ values: 2040 ps *30* (2020Kn03, from time distribution curve, see ^{154}Sm(^{12}C,4nγ) dataset); 2200 ps *400* (from $\beta\gamma$(t) in 2003Ca03); 1985 ps *25* (from B(E2)↑=5.01 *3* in 1977Ro27); 1690 ps *150* (from ce-γ(t) in 1970Mo39); 2036 ps *104* (from B(E2)↑=4.89 *25* in 1963Bj04). Q: from the compilation of 2016St14 and based on data of 1981Hu02.
329.62[&] *4*	4$^+$	60.3 ps *42*	ABCDEFG	B(E4)↑=0.03 *+6−3* B(E4)↑: computed from the E4 matrix element of 0.16 *+16−26* in Coul. ex. (1977Ro27). J$^\pi$: E2 γ to 2$^+$. Level energy consistent with that expected for the 4$^+$ member of the g.s. band. T$_{1/2}$: mean lifetime τ=87 ps *6* (2020Kn03) in ^{154}Sm(^{12}C,4nγ) dataset.
666.68[&] *9*	6$^+$	6.2 ps *42*	ABCDEFG	J$^\pi$: γ to 4$^+$ level and population in Coul. ex. Energy is consistent with that

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{162}Er Levels (continued)

E(level)[†‡]	J^{π}[@]	$T_{1/2}$	XREF	Comments
				expected for the 6^+ member of the g.s. band. $T_{1/2}$: mean lifetime τ=9 ps *6* (2020Kn03) in ^{154}Sm(^{12}C,4nγ) dataset.
900.72[a] *5*	2^+	1.25 ps *7*	ABCDEFG	Q=1.8 *6* J^{π}: from γ to 0^+ level and direct population in Coul. ex. $T_{1/2}$: computed from B(E2)↑=0.164 *8* (Coul. ex.) and the adopted γ branching. Q: from the compilation of 2016St14 and based on Coulomb excitation reorientation data (1983Hu01).
1002.06[a] *5*	3^+		AB F	J^{π}: from E2 γ to 2^+ level, γ to 4^+. Energy consistent with that of the 3^+ member of the γ-vibrational band.
1087.16[b] *7*	0^+		A E	XREF: E(1081). J^{π}: E0 transition to 0^+ level.
1096.70[&] *11*	8^+	<3.5 ps	CD F	J^{π}: γ to 6^+ member of the g.s. band. Energy is consistent with that expected for the 8^+ member of the g.s. band. Also, from $\gamma(\theta)$ in ^{165}Ho(p,4nγ) (1977Ja06). $T_{1/2}$: mean lifetime τ<5 ps (2020Kn03) in ^{154}Sm(^{12}C,4nγ) dataset.
1128.11[a] *7*	4^+		AB EF	XREF: E(1124). J^{π}: γ's to 2^+ and 6^+ levels.
1171.02[b] *9*	2^+	1.2 ps *2*	A E G	XREF: E(1166). J^{π}: γ's to 0^+ and 4^+ levels. E0 component in the γ transition to a 2^+ level. $T_{1/2}$: computed from B(E2)↑=0.042 *7* (Coul. ex.) and the adopted γ branching.
1286.22[a] *8*	5^+		F	J^{π}: M1 components in γ's to 4^+ and 6^+ levels.
1352.17[c] *5*	1^-		A F	J^{π}: E1 γ to 2^+ and (E1) γ to 0^+.
1356.77[c] *7*	3^-		A EFG	B(E3)↑=0.19 *4* XREF: E(1351). B(E3)↑: from 1982Ro07, Coul. ex. J^{π}: γ's to 2^+ and 4^+ levels; (d,d′) cross-section ratios.
≈1369[#b]	(4^+)		E	J^{π}: energy consistent with that expected for the 4^+ member of the proposed first-excited $K^{\pi}=0^+$ band.
1412.58 *14*	$1,2^+$		A	J^{π}: γ's to 0^+ and 2^+ levels.
1420.45 *5*	(2^-)		A e	XREF: e(1423). J^{π}: γ's to 2^+ and 3^+ levels suggest $J^{\pi}=1^+,2^-$. 2002Ca35, in ^{162}Tm ε decay, suggest $J^{\pi}=2^-$, based on the occurrence of $K^{\pi}=2^-$ octupole bands in several neighboring nuclei.
1429.79 *7*	2^+	0.43 ps *19*	A e G	XREF: e(1423). J^{π}: E0 component in γ transition to 2^+. $T_{1/2}$: computed from B(E2)↑=0.018 *8* (Coul. ex.) and the adopted γ branching.
1459.58[a] *8*	6^+		F	J^{π}: M1 component in γ to 6^+, γ's to 4^+ and $\gamma(\theta)$. Energy consistent with that expected for the 6^+ member of the γ-vibrational band.
1469.12[c] *11*	5^-		EF	XREF: E(1464). J^{π}: γ to 4^+ and $\gamma(\theta)$. Energy consistent with that expected for the 5^- member of the associated band.
1500.58 *19*	2^+		A G	J^{π}: from γ's to 0^+ and 3^+ levels. Possible population in Coul. ex. makes 0^+ unlikely. $T_{1/2}$: from B(E2)↑<0.022 (Coul. ex.) and the adopted γ branching, one computes $T_{1/2}$>0.32 ps, but the B(E2) may be influenced by multistep processes.
1506.36[d] *5*	1^-		A	J^{π}: γ's to 0^+ and 2^+ levels. This argument also allows 1^+ and 2^+ assignments, but assignment as the $K^{\pi}=1^-$ bandhead supports 1^-.
1542.62[e] *20*	(4^-)		F	J^{π}: γ deexcitation and $\gamma(\theta)$ in ^{165}Ho(p,4nγ) agree with the listed J value, but other values are allowed. This assignment is that proposed by 1977Ja06 in ^{165}Ho(p,4nγ) from consideration of the expected octupole-band structure.
1572.84[d] *7*	2^-		A	J^{π}: E1 γ's to 2^+ and 3^+; γ's to 0^+ and 4^+. Proposed member of the indicated band.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{162}Er Levels (continued)

E(level)[†‡]	J^{π}[@]	$T_{1/2}$	XREF	Comments
1594[#d]	(1$^-$)		E	J^π: from (d,d′) cross-section ratios.
1602.83[&] *13*	10$^+$		C F	J^π: γ to 8$^+$ level and $\gamma(\theta)$. Energy consistent with that expected for the 10$^+$ member of the g.s. band.
1623.24[d] *10*	3$^-$	>0.31 ns	A E G	B(E3)↑<0.072 XREF: E(1616). B(E3)↑: from 1982Ro07, Coul. ex. J^π: from (d,d′) cross-section ratios and γ′s to 0$^+$, 2$^+$, and 4$^+$ levels. The γ to 0$^+$ may suggest the presence of two levels. $T_{1/2}$: from B(E3)<0.072 in Coul. ex. and the adopted γ branching.
1669.13[a] *11*	7$^+$		F	J^π: M1 component in transition to 6$^+$, γ′s to 5$^+$ and 8$^+$, and $\gamma(\theta)$. Energy consistent with that expected for that of the 7$^+$ member of the γ-vibrational band.
1682.26[c] *22*	7$^{(-)}$		F	J^π: $\gamma(\theta)$ and γ to 6$^+$. Energy consistent with that expected for the 7$^-$ member of the associated band.
1712.18[f] *10*	4$^+$		B	J^π: from γ′s to 2$^+$, 3$^+$, and 4$^+$ levels and log *ft* ≈ 4.6 for the ε transition from 24 s ^{162}Tm (J^π=5$^+$). This fast ε transition establishes the presence of the 5/2[523] neutron orbital as a component in this state. The dominant configuration is most likely (ν 5/2[523])+(ν 3/2[521]). 1994Bu16 assign this state as a hexadecapole vibration.
1729.63[d] *18*	(5$^-$)		A E	XREF: E(1725). J^π: from (d,d′) cross-section ratios. γ to 2$^+$ level may suggest the presence of two levels.
1740[#]			E	
1761.26[e] *12*	(6$^-$)		F	J^π: γ′s to 6$^+$ and (4$^-$). Possible member of the indicated band.
1805.21 *9*			A	
1856.69 *13*			A	
1864.89 *21*	2$^+$		A F	J^π: γ′s to 0$^+$ and 4$^+$ levels.
1872.66[a] *14*	8$^+$		F	J^π: γ′s to 6$^+$ and 10$^+$ levels.
1910[#]			E	
1931.30 *13*			A	
1955[#]	(3$^-$,4$^+$)		E	J^π: from (d,d′) cross-section ratios.
1966			E	
1974.74 *10*			A E	XREF: E(1966).
1986.01[c] *15*	9$^-$		F	J^π: E1 γ to 8$^+$; energy consistent with that expected for the 9$^-$ member of the indicated band.
2025.57 *13*	7$^{(-)}$	76.7 ns *39*	CD F	J^π: γ′s to 6$^+$ and 8$^+$ levels, $\gamma(\theta)$. Level energy and decay path are similar to that of a 7$^{(-)}$ 1985-keV isomer in ^{164}Er (^{9}Be) (2012Sw01). $T_{1/2}$: half-life τ=76.7 ns *39*, weighted average of 76 ns *4* (2020Kn03, ^{12}C) and 88 ns *16* (2012Sw01, ^{9}Be). configuration=π7/2[523]⊗π7/2[404] (BCS calculations (^{9}Be), 2012Sw01).
2026.01 *13*			A	
2033[#]			E	
2061.35 *16*	(1,2$^+$)		A	J^π: γ′s to 0$^+$, 2$^+$, and 2$^-$ levels.
2061.95[e] *12*	(8$^-$)		F	J^π: γ to 8$^+$ and stretched E2 to (6$^-$). Energy consistent with that of the 8$^-$ member of this level sequence.
2114.11 *15*	(0$^+$)		A	J^π: γ decay takes place to 2$^+$ levels only.
2121.67 *8*			A E	XREF: E(2116).
2133.79[a] *11*	9$^+$		F	J^π: γ′s to 7$^+$, 8$^+$, and 10$^+$ levels. Energy consistent with that expected for the 9$^+$ member of the indicated 2$^+$ band.
2165.12[&] *14*	12$^+$		C F	J^π: E2 γ to the 10$^+$ member of the g.s. (yrast) band. Energy consistent with that expected for the 12$^+$ member of this band.
2192.09 *18*	2$^+$		A	J^π: γ′s to 0$^+$ and 4$^+$ levels.

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Adopted Levels, Gammas (continued)

^{162}Er Levels (continued)

E(level)[†‡]	J^{π}[@]	XREF	Comments
2205.94 *25*		A	
2242.21 *10*		A	
2260.24 *14*		A	
2288[#]	$(3^-,4^+)$	E	J^{π}: from (d,d′) cross-section ratios.
2318.67 *11*		A E	XREF: E(2306).
2332[#]		E	
2346.59[a] *12*	10^+	F	J^{π}: from γ′s to 8^+ and 12^+ levels and $\gamma(\theta)$.
2368.19[c] *15*	11^-	F	J^{π}: from E1 γ to 10^+ level and $\gamma(\theta)$.
2399[#]		E	
2429.49[e] *14*	(10^-)	F	J^{π}: γ to 10^+ and stretched E2 to (8^-). Level energy consistent with that of the 10^- member of this level sequence.
2449.75 *16*		A E	XREF: E(2444).
2520[#]		E	
2553[#]		E	
2567[#]		E	
2598.08 *14*		A	
2603.8 *3*		A	
2618[#]		E	
2656.33[a] *13*	11^+	F	J^{π}: from γ′s to 9^+ and 10^+ levels and $\gamma(\theta)$.
2664.45 *23*		A	
2745.72[&] *17*	14^+	C F	J^{π}: γ to 12^+, $\gamma(\theta)$. Energy consistent with that expected for the 14^+ member of the g.s. (yrast) band.
2751.8	(6)	F	J^{π}: from γ to 6^+ level and $\gamma(\theta)$.
2817.76[c] *15*	13^-	F	J^{π}: E1 γ to 12^+ and γ to 11^-. Energy consistent with that expected for the 13^- member of the associated band.
2841.98[e] *17*	(12^-)	F	J^{π}: stretched E2 to (10^-). Level energy consistent with that of the 12^- member of this level sequence.
2910.85[a] *17*	12^+	F	J^{π}: from γ to 10^+ level and $\gamma(\theta)$.
3039.8 *4*		A	
3116.84 *17*	2^+	A	J^{π}: from γ′s to 4^+, 2^+, and (0^+) levels.
3132.52 *8*		A	J^{π}: γ′s to 1^-, 3^-, 2^+, 3^+, and (0^+) levels suggest $J^{\pi}=2^+$, but if the (0^+) assignment to the 2114 level is not correct, J^{π} could also be 2^- or 3^-.
3180.3 *4*		A	
3267.60 *12*		A	
3292.4[&] *3*	16^+	F	J^{π}: γ to 14^+, $\gamma(\theta)$. Energy consistent with that expected for the 16^+ member of the g.s. (yrast) band.
3293.2 *3*		A	
3367.95 *13*		A	
3389.17 *20*		A	
3400.08 *17*		A	
3414.67 *20*		A	
3435.8 *4*		A	
3518.00 *22*	(2^+)	A	J^{π}: from γ′s to 0^+, 2^+, and 4^+ levels.
3676.48 *13*	$2^+,3^-$	A	J^{π}: from γ′s to 1^-, 2^+, and 4^+ levels.
3689.6 *3*		A	
3846.6[&] *5*	18^+	F	J^{π}: γ to 16^+, $\gamma(\theta)$. Energy consistent with that expected for the 18^+ member of the g.s. (yrast) band.
4463.2[&]	20^+	F	J^{π}: γ to 18^+, $\gamma(\theta)$. Energy consistent with that expected for the 20^+ member of the g.s. (yrast) band.
6675[c]	(25^-)	F	
6742[&]	(26^+)	F	
7168[e]	(26^-)	F	

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Adopted Levels, Gammas (continued)

^{162}Er Levels (continued)

E(level)[†‡]	J^{π}[@]	XREF	E(level)[†‡]	J^{π}[@]	XREF	E(level)[†‡]	J^{π}[@]	XREF
7516[c]	(27−)	F	10898[e]	(34−)	F	16820[c]	(45−)	F
7623[&]	(28+)	F	11252[c]	(35−)	F	17063[&]	(46+)	F
8014[e]	(28−)	F	11470[&]	(36+)	F	18129[c]	(47−)	F
8418[c]	(29−)	F	12242[c]	(37−)	F	18358[&]	(48+)	F
8551[&]	(30+)	F	12490[&]	(38+)	F	19511?[c]	(49−)	F
8934[e]	(30−)	F	13290[c]	(39−)	F	19721[&]	(50+)	F
9367[c]	(31−)	F	13553[&]	(40+)	F	21152[&]	(52+)	F
9508[&]	(32+)	F	14398[c]	(41−)	F	22659[&]	(54+)	F
9916?[e]	(32−)	F	14664[&]	(42+)	F	24237[&]	(56+)	F
10302[c]	(33−)	F	15574[c]	(43−)	F	25883[&]	(58+)	F
10481[&]	(34+)	F	15832[&]	(44+)	F	27581?[&]	(60+)	F

† There are several levels, namely J^{π}=22$^+$ and 24$^+$ on band A, 15$^-$ to 23$^-$ on band D, and 14$^-$ to 24$^-$ on band F, that are missing from the bands reported by 1990Ri03 and 1990Ri09 but which, they state, have been observed by others, and quoted as "private communication and to be published" in the References lists of 1990Ri03,1990Ri09. However no publication with the missing levels was found. See 1990Ri03,1990Ri09 for a discussion.

‡ From a least-squares fit to the listed γ energies where γ's are involved.

\# Value from 1968Tj02. Where the (d,d′) levels are seen in other reactions, the values from (d,d′) are systematically low, in some instances by as much as 6 to 7 keV. Thus, where the level is seen only in (d,d′), the listed energy may be smaller that the actual one.

@ The J^{π} assignments for those levels having J≥25 are those proposed by 1990Ri03 (and 1990Ri09) and 2000Si26 and are based on general considerations of rotational-band structure and a stretched E2 character for the deexciting transitions.

& Band(A): K$^{\pi}$=0$^+$ g.s. (yrast) band. A=17.23; B=−0.038. Band parameters computed from the energies of the 0$^+$, 2$^+$ and 4$^+$ levels.

a Band(B): K$^{\pi}$=2$^+$ γ-vibrational band. A=17.27; B=−0.051; A_4=−0.0050. Band parameters computed from the energies of the 2$^+$ through 5$^+$ levels.

b Band(C): First excited K$^{\pi}$=0$^+$ band. Possible β−vibrational band. A=13.9; B=+0.008.

c Band(D): Negative-parity band, signature=1. At low spins, it can be considered as a K^{π}=0$^-$ octupole vibration. At the higher spins (≥25, say) the configuration is more complicated. See the discussion in the heavy-ion reaction data set and comment above.

d Band(E): K$^{\pi}$=1$^-$ octupole-vibrational band.

e Band(F): Negative-parity band, signature=0. Probably octupole-related states. See the discussion in the heavy-ion reaction data set.

f Band(G): Bandhead of a K$^{\pi}$=4$^+$ band. Configuration=(ν 5/2[523])+(ν 3/2[521]). Proposed as a hexadecapole vibration (1994Bu16).

$\gamma(^{162}Er)$

Additional information 3.

Data are from ^{162}Tm ε decay (primarily 1974De47) and in-beam studies (primarily 1977Ja06,1990Ri03 and 1990Ri09).

The α(K)exp values were normalized to the theoretical E2 values at 227 keV (1974De47), 102 keV (1975St12) and 506 keV (1976Zo02).

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†‡]	α[&]	Comments
102.04	2^+	102.00 *3*	100	0.0	0^+	E2	2.73	B(E2)(W.u.)=188.6 *35* α(K)=1.026 *15*; α(L)=1.305 *19*; α(M)=0.317 *5* α(N)=0.0718 *10*; α(O)=0.00844 *12*; α(P)=4.27×10^{-5} *6* B(E2)(W.u.) value calculated directly from B(E2)↑=5.01 *3*. Mult.: from ce ratios K/L1=12.5 (1963Ab02) and 12.8 (1965Ab05), L1/L2=0.15 (1963Ab02,1965Ab05,1987BaZB), L1/L3=0.16 (1987BaZB), L2/L3=1.0 (1963Ab02) and 0.95 (1965Ab05), and L/M/N (1965Ab05), as well as α(L)exp=1.48 *21* (1974De47). Also from $\gamma(\theta)$ in (α,2nγ) (1976We24).
329.62	4^+	227.52 *3*	100	102.04	2^+	E2	0.1647	α(K)=0.1115 *16*; α(L)=0.0410 *6*; α(M)=0.00972 *14* α(N)=0.00222 *4*; α(O)=0.000277 *4*; α(P)=5.41×10^{-6} *8* B(E2)(W.u.)=253 *18* Mult.: from ce ratios K:L1:L2:L3=40:5.1:6.7:5.3 (1965Ab05) and α(K)exp=0.11 (1975St12). Also from $\gamma(\theta)$ in (α,4nγ) (1975Fe06) and (α,2nγ) (1976We24).
666.68	6^+	337.51 *18*	100	329.62	4^+	(E2)	0.0486	α(K)=0.0365 *6*; α(L)=0.00937 *14*; α(M)=0.00218 *3* α(N)=0.000500 *7*; α(O)=6.50×10^{-5} *10*; α(P)=1.92×10^{-6} *3* B(E2)(W.u.)=3.8×10^2 *+41−16* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,xnγ) studies (1975Fe06,1976We24).
900.72	2^+	571.2 *4*	2.3 *16*	329.62	4^+	[E2]	0.01177	B(E2)(W.u.)=1.8 *+13−10* α(K)=0.00950 *14*; α(L)=0.001765 *25*; α(M)=0.000400 *6* α(N)=9.25×10^{-5} *13*; α(O)=1.266×10^{-5} *18*; α(P)=5.31×10^{-7} *8* Mult.: α(K)exp=0.0045 *3* (1974De47) for the combination of this γ and the 570 E1 from the 1572 level. See also 1975St12.
		798.68 *5*	100 *3*	102.04	2^+	E2	0.00541	B(E2)(W.u.)=14.7 *9* α(K)=0.00448 *7*; α(L)=0.000729 *11*; α(M)=0.0001633 *23* α(N)=3.79×10^{-5} *6*; α(O)=5.31×10^{-6} *8*; α(P)=2.54×10^{-7} *4* Mult.: from α(K)exp=0.0044 *6* (1974De47) for combination of this γ and that from 1128 level; both are deduced to be E2. 1975St12 give α(K)exp=0.007 and deduce that one transition is M1.
		900.7 *4*	77 *3*	0.0	0^+	[E2]	0.00418	B(E2)(W.u.)=6.22 *+41−39* α(K)=0.00348 *5*; α(L)=0.000547 *8*; α(M)=0.0001220 *18* α(N)=2.83×10^{-5} *4*; α(O)=3.99×10^{-6} *6*; α(P)=1.98×10^{-7} *3* Mult.: α(K)exp=0.0037 *3* (1974De47) for the combination of this γ and 899.9 from 1002 level; both are deduced to be E2. 1975St12 give α(K)exp=0.0043 and deduce that one component is E2,M1.

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Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†‡]	α[&]	$I_{(\gamma+ce)}$	Comments
1002.06	3$^+$	672.35 *5*	32.8 *23*	329.62	4$^+$	(M1,E2)	0.0122 *43*		α(K)=0.0102 *37*; α(L)=0.00156 *43*; α(M)=3.47×10^{-4} *93* α(N)=8.1×10^{-5} *22*; α(O)=1.15×10^{-5} *34*; α(P)=6.0×10^{-7} *24* Mult.,δ: from $\gamma(\theta)$ in (α,2nγ), 1976We24 report δ=−0.04 *+27−17* or −6.6 *+44−∞*; evaluator assigns this as M1,E2 rather than E1,M2. α(K)exp=0.0029 *8* (1974De47) for combination of this γ and one from the 1572 level, which indicates that the stronger γ (from the 1572 level) is E1. Also, α(K)exp=0.0056 (1975St12) for this combination.
		899.9 *4*	100 *6*	102.04	2$^+$	E2	0.00419		α(K)=0.00348 *5*; α(L)=0.000548 *8*; α(M)=0.0001222 *18* α(N)=2.84×10^{-5} *4*; α(O)=4.00×10^{-6} *6*; α(P)=1.98×10^{-7} *3* Mult.: α(K)exp=0.0037 *3* (1974De47) for the combination of this γ and the 900.7 from 900 level; both are deduced to be E2. 1975St12 give α(K)exp=0.0043 and deduce that one component is E2,M1.
1087.16	0$^+$	985.12 *6*	100	102.04	2$^+$	[E2]	0.00347		α(K)=0.00290 *4*; α(L)=0.000445 *7*; α(M)=9.90×10^{-5} *14* α(N)=2.30×10^{-5} *4*; α(O)=3.26×10^{-6} *5*; α(P)=1.649×10^{-7} *23*
		1087.16		0.0	0$^+$	E0		1.5 *5*	Mult.: from α(K)exp>0.067 *36* (1974De47).
1096.70	8$^+$	430.1 *1*	100	666.68	6$^+$	(E2)	0.0245		α(K)=0.0191 *3*; α(L)=0.00415 *6*; α(M)=0.000954 *14* α(N)=0.000220 *3*; α(O)=2.93×10^{-5} *5*; α(P)=1.042×10^{-6} *15* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06) and (α,2nγ) (1976We24).
1128.11	4$^+$	227		900.72	2$^+$	[E2]	0.1660		α(K)=0.1122 *16*; α(L)=0.0414 *6*; α(M)=0.00981 *14* α(N)=0.00224 *4*; α(O)=0.000279 *4*; α(P)=5.45×10^{-6} *8* E_γ: energy is the same as the 4$^+$ to 2$^+$ γ in ground-state band.
		461.5 *2*	8.3 *6*	666.68	6$^+$	[E2]	0.0203		α(K)=0.01599 *23*; α(L)=0.00332 *5*; α(M)=0.000761 *11* α(N)=0.0001754 *25*; α(O)=2.35×10^{-5} *4*; α(P)=8.78×10^{-7} *13*
		798.6 *1*	100 *6*	329.62	4$^+$	[E2]	0.00541		α(K)=0.00448 *7*; α(L)=0.000729 *11*; α(M)=0.0001634 *23* α(N)=3.79×10^{-5} *6*; α(O)=5.31×10^{-6} *8*; α(P)=2.54×10^{-7} *4* Mult.: α(K)exp=0.0044 *6* (1974De47) for combination of this γ and that from the 900 level. Data are consistent with E1, E2, or M1 for components from the 1128 level. E1 is ruled out by the level scheme.
		1026.0 *2*	27 *6*	102.04	2$^+$	[E2]	0.00319		α(K)=0.00267 *4*; α(L)=0.000406 *6*; α(M)=9.02×10^{-5} *13* α(N)=2.10×10^{-5} *3*; α(O)=2.98×10^{-6} *5*; α(P)=1.519×10^{-7} *22* I_γ: from in-beam study (1977Ja06). From the ^{162}Tm ε decay, the value is 2 *14* (1974De47).
1171.02	2$^+$	841.37 *18*	59 *3*	329.62	4$^+$	[E2]	0.00483		B(E2)(W.u.)=4.8 *+10−7* α(K)=0.00401 *6*; α(L)=0.000643 *9*; α(M)=0.0001437 *21* α(N)=3.33×10^{-5} *5*; α(O)=4.69×10^{-6} *7*; α(P)=2.28×10^{-7} *4*
		1069.05 *15*	100 *5*	102.04	2$^+$	E0+M1+E2	0.0041 *12*		α(K)=0.0035 *10*; α(L)=5.0×10^{-4} *13*; α(M)=1.10×10^{-4} *28* α(N)=2.56×10^{-5} *66*; α(O)=3.70×10^{-6} *98*; α(P)=2.02×10^{-7} *63*

From ENSDF

Adopted Levels, Gammas (continued)

$\gamma(^{162}\mathrm{Er})$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.†‡	δ@a	α&	$I_{(\gamma+ce)}$	Comments
										Mult.: from α(K)exp=0.028 3 (1974De47), compared to α(K)(E2)=0.0025 and α(K)(M1)=0.0046. α: deduced by the evaluator from α(K)exp.
1171.02	2^+	1171.05 15	100 5	0.0	0^+	[E2]		0.00245		B(E2)(W.u.)=1.57 +32−24 α(K)=0.00205 3; α(L)=0.000304 5; α(M)=6.74×10^{-5} 10 α(N)=1.565×10^{-5} 22; α(O)=2.24×10^{-6} 4; α(P)=1.170×10^{-7} 17; α(IPF)=2.67×10^{-6} 4
1286.22	5^+	158.1 1	6.9 8	1128.11	4^+					
		284		1002.06	3^+	[E2]		0.0817		α(K)=0.0590 9; α(L)=0.01749 25; α(M)=0.00410 6 α(N)=0.000938 14; α(O)=0.0001199 17; α(P)=3.01×10^{-6} 5
		619.6 1	19.8 16	666.68	6^+	M1		0.0202		α(K)=0.01707 24; α(L)=0.00245 4; α(M)=0.000541 8 α(N)=0.0001261 18; α(O)=1.83×10^{-5} 3; α(P)=1.027×10^{-6} 15 δ: δ(E2/M1)=0.00 +16−10 from 1976We24 in (α,2nγ).
		956.6 1	100 8	329.62	4^+	M1+E2	−8 +4−10	0.00373 15		α(K)=0.00312 13; α(L)=0.000481 17; α(M)=0.000107 4 α(N)=2.49×10^{-5} 9; α(O)=3.52×10^{-6} 13; α(P)=1.78×10^{-7} 8 δ: from 1976We24, (α,2nγ).
1352.17	1^-	1250.01 6	100 4	102.04	2^+	E1		9.57×10^{-4}		α(K)=0.000780 11; α(L)=0.0001042 15; α(M)=2.28×10^{-5} 4 α(N)=5.30×10^{-6} 8; α(O)=7.67×10^{-7} 11; α(P)=4.29×10^{-8} 6; α(IPF)=4.37×10^{-5} 7 Mult.: from α(K)exp=0.00049 90 (1974De47). Also α(K)exp<0.0011 (1975St12).
		1352.20 6	71 3	0.0	0^+	(E1)		8.93×10^{-4}		α(K)=0.000680 10; α(L)=9.06×10^{-5} 13; α(M)=1.98×10^{-5} 3 α(N)=4.61×10^{-6} 7; α(O)=6.67×10^{-7} 10; α(P)=3.74×10^{-8} 6; α(IPF)=9.71×10^{-5} 14 Mult.: from α(K)exp=0.0011 5 (1974De47). Also α(K)exp<0.0014 (1975St12).
1356.77	3^-	1027.08 15	62 5	329.62	4^+	[E1]		1.30×10^{-3}		α(K)=0.001111 16; α(L)=0.0001496 21; α(M)=3.28×10^{-5} 5 α(N)=7.62×10^{-6} 11; α(O)=1.099×10^{-6} 16; α(P)=6.09×10^{-8} 9
		1254.72 7	100 7	102.04	2^+	[E1]		9.53×10^{-4}		α(K)=0.000775 11; α(L)=0.0001035 15;

From ENSDF

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γ(^{162}Er) (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†‡]	α[&]	Comments
								α(M)=2.27×10^{-5} *4* α(N)=5.27×10^{-6} *8*; α(O)=7.62×10^{-7} *11*; α(P)=4.26×10^{-8} *6*; α(IPF)=4.59×10^{-5} *7*
1412.58	1,2$^+$	1310.80 *20*	100 *13*	102.04	2$^+$			
		1412.24 *20*	72 *13*	0.0	0$^+$			
1420.45	(2$^-$)	418.1 *2*	0.95 *13*	1002.06	3$^+$			
		519.54 *13*	11.9 *4*	900.72	2$^+$			
		1318.42 *6*	100 *4*	102.04	2$^+$	(E1)	9.09×10^{-4}	α(K)=0.000711 *10*; α(L)=9.48×10^{-5} *14*; α(M)=2.07×10^{-5} *3* α(N)=4.82×10^{-6} *7*; α(O)=6.98×10^{-7} *10*; α(P)=3.91×10^{-8} *6*; α(IPF)=7.72×10^{-5} *11* Mult.: from α(K)exp=0.0016 *7*, 1974De47, in ^{162}Tm ε decay, assign mult=E2. 2002Ca35 point out that this does not exclude mult=E1. E2 excluded by Δπ. Other: α(K)exp≈0.002 (1975St12).
1429.79	2$^+$	1100.00 *8*	100 *5*	329.62	4$^+$	E2	0.00277	B(E2)(W.u.)=8 *+6−3* α(K)=0.00232 *4*; α(L)=0.000348 *5*; α(M)=7.72×10^{-5} *11* α(N)=1.79×10^{-5} *3*; α(O)=2.56×10^{-6} *4*; α(P)=1.323×10^{-7} *19*
		1328.14 *15*	64 *5*	102.04	2$^+$	E0+M1+E2	0.0025 *6*	α(K)=0.0021 *6*; α(L)=0.00030 *7*; α(M)=6.6×10^{-5} *15* α(N)=1.5×10^{-5} *4*; α(O)=2.2×10^{-6} *6*; α(P)=1.24×10^{-7} *33*; α(IPF)=2.7×10^{-5} *3* Mult.: from α(K)exp=0.0081 *46* (1974De47). α: deduced by the evaluator from α(K)exp.
		1430.45 *25*	32 *4*	0.0	0$^+$	[E2]	1.71×10^{-3}	B(E2)(W.u.)=0.7 *+5−2* α(K)=0.001399 *20*; α(L)=0.000200 *3*; α(M)=4.42×10^{-5} *7* α(N)=1.028×10^{-5} *15*; α(O)=1.478×10^{-6} *21*; α(P)=7.97×10^{-8} *12*; α(IPF)=5.04×10^{-5} *7*
1459.58	6$^+$	173.4 *1*	7.4 *15*	1286.22	5$^+$	(M1+E2)	0.50 *10*	α(K)=0.37 *13*; α(L)=0.100 *26*; α(M)=0.0232 *67* α(N)=0.0053 *15*; α(O)=0.00069 *14*; α(P)=2.10×10^{-5} *99* δ: from γ(θ) in (α,2nγ) (1976We24), δ=+0.48 *+28−15* or +2.6 *+15−7*; evaluator assigns M1+E2 rather than E1+M2.
		331.5 *1*	35.1 *23*	1128.11	4$^+$	[E2]	0.0512	α(K)=0.0383 *6*; α(L)=0.00998 *14*; α(M)=0.00232 *4* α(N)=0.000532 *8*; α(O)=6.91×10^{-5} *10*; α(P)=2.01×10^{-6} *3* Mult.: from γ(θ) reported by 1976We24 (α,2nγ).
		793.0 *1*	100 *5*	666.68	6$^+$	(M1+E2)	0.0082 *27*	α(K)=0.0069 *24*; α(L)=1.03×10^{-3} *29*; α(M)=2.28×10^{-4} *62* α(N)=5.3×10^{-5} *15*; α(O)=7.6×10^{-6} *22*; α(P)=4.1×10^{-7} *15* δ: from γ(θ) in (α,2nγ) (1976We24), δ=−3.5 *+22−0* or ≥+18; evaluator assigns M1+E2 rather than E1+M2.
		1129.8 *1*	62 *8*	329.62	4$^+$			Mult.: from γ(θ) in (α,2nγ) (1976We24).
1469.12	5$^-$	1139.5 *1*	100	329.62	4$^+$			
1500.58	2$^+$	499.2[b] *6*	≤37[b]	1002.06	3$^+$			

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Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†‡]	α[&]	Comments
1500.58	2+	1398.2 *4*	100 *32*	102.04	2+			
		1500 *1*	31 *9*	0.0	0+	[E2]	1.58×10^{-3}	α(K)=0.001279 *18*; α(L)=0.000182 *3*; α(M)=4.02×10^{-5} *6* α(N)=9.34×10^{-6} *14*; α(O)=1.344×10^{-6} *19*; α(P)=7.29×10^{-8} *11*; α(IPF)=7.20×10^{-5} *11*
1506.36	1−	1404.23 *7*	100 *4*	102.04	2+			Mult.: from α(K)exp=0.0011 *4* (1974De47), γ is E1 or E2. Also, α(K)exp<0.0018 (1975St12).
		1506.40 *6*	49 *3*	0.0	0+			
1542.62	(4−)	1213.0 *2*	100	329.62	4+			
1572.84	2−	570.74 *5*	35 *3*	1002.06	3+	E1	0.00419	α(K)=0.00356 *5*; α(L)=0.000494 *7*; α(M)=0.0001085 *16* α(N)=2.52×10^{-5} *4*; α(O)=3.60×10^{-6} *5*; α(P)=1.92×10^{-7} *3* Mult.: from α(K)exp=0.0045 *3* (1974De47) for the combination of this γ and that from the 900 level, this γ is deduced to be E1. Also α(K)exp≤0.0095 (1975St12).
		672.33 *10*	100 *5*	900.72	2+	E1	0.00297	α(K)=0.00253 *4*; α(L)=0.000348 *5*; α(M)=7.63×10^{-5} *11* α(N)=1.771×10^{-5} *25*; α(O)=2.54×10^{-6} *4*; α(P)=1.370×10^{-7} *20* Mult.: α(K)exp=0.0029 *8* (1974De47) and 0.0056 (1975St12) for the combination of this γ and one from the 1002 level; the lower value indicates primarily E1 and the upper one mostly E2.
		1243 *1*	1.9 *6*	329.62	4+	[M2,E3]	0.0066 *22*	α(K)=0.0055 *19*; α(L)=8.5×10^{-4} *24*; α(M)=1.90×10^{-4} *52* α(N)=4.4×10^{-5} *13*; α(O)=6.4×10^{-6} *19*; α(P)=3.4×10^{-7} *12*; α(IPF)=3.05×10^{-6} *7* Mult.: mixture suggested by 1974De47 from ^{162}Tm ε decay (21.70 min).
		1470.8 *2*	10.9 *26*	102.04	2+	[E1,M2,E3]	0.00091 *5*	α(K)=0.00063 *5*; α(L)=8.4×10^{-5} *7*; α(M)=1.85×10^{-5} *14* α(N)=4.3×10^{-6} *4*; α(O)=6.2×10^{-7} *5*; α(P)=3.5×10^{-8} *3*; α(IPF)=0.000175 *3* Mult.: mixture suggested by 1974De47 from ^{162}Tm ε decay (21.70 min).
		1573.0 *10*	3.3 *8*	0.0	0+	[M2]	0.00485	α(K)=0.00405 *6*; α(L)=0.000590 *9*; α(M)=0.0001307 *19* α(N)=3.05×10^{-5} *5*; α(O)=4.43×10^{-6} *7*; α(P)=2.49×10^{-7} *4*; α(IPF)=4.62×10^{-5} *7*
1602.83	10+	506.1 *2*	100	1096.70	8+	(E2)	0.01594	α(K)=0.01271 *18*; α(L)=0.00251 *4*; α(M)=0.000572 *8* α(N)=0.0001320 *19*; α(O)=1.79×10^{-5} *3*; α(P)=7.04×10^{-7} *10* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06) and (α,2nγ) (1976We24).
1623.24	3−	1293.42 *15*	80 *9*	329.62	4+	[E1]	9.24×10^{-4}	α(K)=0.000735 *11*; α(L)=9.80×10^{-5} *14*; α(M)=2.14×10^{-5} *3* α(N)=4.99×10^{-6} *7*; α(O)=7.22×10^{-7} *11*; α(P)=4.04×10^{-8} *6*; α(IPF)=6.41×10^{-5} *9*
		1521.32 *15*	100 *8*	102.04	2+	[E1]	8.63×10^{-4}	α(K)=0.000556 *8*; α(L)=7.38×10^{-5} *11*; α(M)=1.613×10^{-5} *23*

$\gamma(^{162}$Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†‡]	δ[@a]	α[&]	Comments
									α(N)=3.75×10^{-6} 6; α(O)=5.44×10^{-7} 8; α(P)=3.07×10^{-8} 5; α(IPF)=0.000212 3
1623.24	3$^-$	1622.1 10	15 5	0.0	0$^+$	[E3]		0.00255	α(K)=0.00208 3; α(L)=0.000323 5; α(M)=7.21×10^{-5} 11 α(N)=1.677×10^{-5} 24; α(O)=2.39×10^{-6} 4; α(P)=1.239×10^{-7} 18; α(IPF)=5.50×10^{-5} 8
1669.13	7$^+$	382.9 1	43 3	1286.22	5$^+$	[E2]		0.0338	α(K)=0.0259 4; α(L)=0.00607 9; α(M)=0.001404 20 α(N)=0.000323 5; α(O)=4.25×10^{-5} 6; α(P)=1.391×10^{-6} 20 Mult.: $\gamma(\theta)$ reported in (α,2nγ) (1976We24).
		572.4 2	7.2 16	1096.70	8$^+$	[M1,E2]		0.0182 65	α(K)=0.0152 57; α(L)=0.00238 63; α(M)=5.3×10^{-4} 14 α(N)=1.23×10^{-4} 32; α(O)=1.75×10^{-5} 50; α(P)=8.9×10^{-7} 37
		1002.3 2	100 9	666.68	6$^+$	(M1+E2)	−8. +3−7	0.00339 8	α(K)=0.00283 7; α(L)=0.000432 10; α(M)=9.62×10^{-5} 21 α(N)=2.23×10^{-5} 5; α(O)=3.17×10^{-6} 7; α(P)=1.62×10^{-7} 5 δ: from $\gamma(\theta)$ in (α,2nγ) (1976We24). The evaluator assigns M1+E2 rather than E1+M2.
1682.26	7$^{(-)}$	1015.6 2	100	666.68	6$^+$				
1712.18	4$^+$	583 1	5 3	1128.11	4$^+$				
		709.99 15	55 4	1002.06	3$^+$				
		811.52 10	100 7	900.72	2$^+$				
1729.63	(5$^-$)	1627.60 20	100	102.04	2$^+$	[E3]		0.00254	α(K)=0.00207 3; α(L)=0.000321 5; α(M)=7.15×10^{-5} 10 α(N)=1.664×10^{-5} 24; α(O)=2.37×10^{-6} 4; α(P)=1.231×10^{-7} 18; α(IPF)=5.62×10^{-5} 8 Mult.: level may be a doublet, in which case γ may be [M1,E2].
1761.26	(6$^-$)	218.8		1542.62	(4$^-$)				
		1094.6 1	100	666.68	6$^+$				
1805.21		453.02 8	100 12	1352.17	1$^-$				
		634.5 5	46 2	1171.02	2$^+$				
		1476.0 5	37 6	329.62	4$^+$				
1856.69		499.2[b] 6	≤21[b]	1356.77	3$^-$				
		1754.68 15	100 10	102.04	2$^+$				
1864.89	2$^+$	736.6 4	15 4	1128.11	4$^+$				Mult.: $\gamma(\theta)$ reported in (α,2nγ) (1976We24).
		1536.1 5	100 15	329.62	4$^+$				
		1763.4[b] 5	≤45[b]	102.04	2$^+$				
		1864.3 4	80 11	0.0	0$^+$				
1872.66	8$^+$	269.6 3	35 11	1602.83	10$^+$				
		413		1459.58	6$^+$				
		776.0 2	100 11	1096.70	8$^+$				
		1205.9 3	57 7	666.68	6$^+$				
1931.30		424.6 5	3.6 24	1506.36	1$^-$				
		759.6[b] 4	≤20[b]	1171.02	2$^+$				
		929.25 20	30 6	1002.06	3$^+$				

From ENSDF

Adopted Levels, Gammas (continued)

$\gamma(^{162}Er)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†‡]	α[&]	Comments
1931.30		1829.2 *5*	84 *8*	102.04	2^+			
		1931.54 *20*	100 *12*	0.0	0^+			
1974.74		1872.9 *6*	9.9 *23*	102.04	2^+			
		1974.72 *10*	100 *7*	0.0	0^+			
1986.01	9^-	889.3 *1*	100	1096.70	8^+	E1	1.71×10^{-3}	α(K)=0.001455 *21*; α(L)=0.000197 *3*; α(M)=4.32×10^{-5} *6* α(N)=1.005×10^{-5} *14*; α(O)=1.447×10^{-6} *21*; α(P)=7.95×10^{-8} *12* Mult.: from α(K)exp in (α,3nγ) (1976Zo02) and $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
2025.57	$7^{(-)}$	928.9 *2*	26.9 *18*	1096.70	8^+	[E1]	1.57×10^{-3}	α(K)=0.001339 *19*; α(L)=0.000181 *3*; α(M)=3.97×10^{-5} *6* α(N)=9.23×10^{-6} *13*; α(O)=1.330×10^{-6} *19*; α(P)=7.33×10^{-8} *11* B(E1)(W.u.)=7.8×10^{-10} *7* E_γ: other value, 930.1 *4* (^{9}Be) (2012Sw01). I_γ: weighted average of 26.1 *18* (^{9}Be) (2012Sw01) and 31 *4* ((α,2nγ), 1976We24). Mult.: $\gamma(\theta)$ reported in ((α,2nγ), 1976We24).
		1358.9 *1*	100 *6*	666.68	6^+	[E1]	8.90×10^{-4}	α(K)=0.000674 *10*; α(L)=8.98×10^{-5} *13*; α(M)=1.96×10^{-5} *3* α(N)=4.57×10^{-6} *7*; α(O)=6.61×10^{-7} *10*; α(P)=3.71×10^{-8} *6*; α(IPF)=0.0001012 *15* B(E1)(W.u.)=9.3×10^{-10} *5* E_γ: other value, 1359.6 *2* (^{9}Be) (2012Sw01). I_γ: weighted average of 100 *9* (^{9}Be) (2012Sw01) and 100 *7* ((α,2nγ), 1976We24). Mult.: $\gamma(\theta)$ reported in ((α,2nγ), 1976We24).
2026.01		1125.5 *3*	30 *5*	900.72	2^+			
		1924.05 *15*	100 *8*	102.04	2^+			
2061.35	$(1,2^+)$	488.8 *10*	9 *3*	1572.84	2^-			
		640.0 *4*	18 *4*	1420.45	(2^-)			
		890.7[b] *5*	≤17[b]	1171.02	2^+			
		1959.25 *20*	100 *8*	102.04	2^+			
		2062.1[b] *4*	≤27[b]	0.0	0^+			
2061.95	(8^-)	300.7 *1*	80 *5*	1761.26	(6^-)	E2	0.0686	α(K)=0.0502 *7*; α(L)=0.01417 *20*; α(M)=0.00331 *5* α(N)=0.000759 *11*; α(O)=9.75×10^{-5} *14*; α(P)=2.59×10^{-6} *4* Mult.: from $\gamma(\theta)$ in ^{165}Ho(p,4nγ), 1977Ja06 conclude that this γ is a stretched E2.
		965.3 *1*	100 *8*	1096.70	8^+			
2114.11	(0^+)	1213.3 *3*	64 *11*	900.72	2^+			
		2012.30 *20*	100 *10*	102.04	2^+			
2121.67		764.4 *5*	34 *8*	1356.77	3^-			
		993.64 *8*	70 *7*	1128.11	4^+			
		1119.6 *3*	21 *4*	1002.06	3^+			

$^{162}_{68}Er_{94}$-12

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†‡]	α[&]	Comments
2121.67		1220.63 14	100 12	900.72	2^+			
		1792.3[b] 8	≤35[b]	329.62	4^+			
2133.79	9^+	464.6 1	71 5	1669.13	7^+			
		530.9 3	8 4	1602.83	10^+			
		1037.1 1	100 7	1096.70	8^+			
2165.12	12^+	562.3 1	100	1602.83	10^+	E2	0.01223	α(K)=0.00986 14; α(L)=0.00185 3; α(M)=0.000419 6 α(N)=9.67×10^{-5} 14; α(O)=1.322×10^{-5} 19; α(P)=5.51×10^{-7} 8 Mult.: from α(K)exp in (α,3nγ) (1976Zo02) and from $\gamma(\theta)$ in (α,4nγ) (1975Fe06) and in (α,2nγ) (1976We24).
2192.09	2^+	1862.0 4	98 12	329.62	4^+			
		2089.9 3	85 17	102.04	2^+			
		2192.35 25	100 12	0.0	0^+			
2205.94		2103.84 25	100 12	102.04	2^+			
		2206.5[b] 9	≤29[b]	0.0	0^+			
2242.21		821.50 20	25.4 23	1420.45	(2^-)			
		890.7[b] 5	≤7.3[b]	1352.17	1^-			
		1342.7[b] 8	≤8.5[b]	900.72	2^+			
		2140.20 11	100 5	102.04	2^+			
2260.24		759.6[b] 4	≤40[b]	1500.58	2^+			
		830.47 20	67 12	1429.79	2^+			
		2158.17 23	100 12	102.04	2^+			
		2260.9 5	38 10	0.0	0^+			
2318.67		695.2 3	16.7 26	1623.24	3^-			
		966.24 20	31 6	1352.17	1^-			
		2216.80 15	100 8	102.04	2^+			
		2319.1 4	24 5	0.0	0^+			
2346.59	10^+	181.5 1	93 8	2165.12	12^+			
		212.6 1	100 9	2133.79	9^+			
		473.9 1	28.3 22	1872.66	8^+			
		743.8 1	32 3	1602.83	10^+			
2368.19	11^-	381.1		1986.01	9^-	(E2)	0.0342	α(K)=0.0263 4; α(L)=0.00617 9; α(M)=0.001426 20 α(N)=0.000328 5; α(O)=4.32×10^{-5} 6; α(P)=1.407×10^{-6} 20 Mult.: evaluator′s interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
		765.4 1	100	1602.83	10^+	E1	0.00229	α(K)=0.00195 3; α(L)=0.000266 4; α(M)=5.83×10^{-5} 9 α(N)=1.355×10^{-5} 19; α(O)=1.95×10^{-6} 3; α(P)=1.060×10^{-7} 15 Mult.: from α(K)exp in (α,3nγ) (1976Zo02) and $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
2429.49	(10^-)	367.6 1	5.6 6	2061.95	(8^-)	E2	0.0379	α(K)=0.0289 4; α(L)=0.00697 10; α(M)=0.001614 23 α(N)=0.000371 6; α(O)=4.87×10^{-5} 7; α(P)=1.542×10^{-6} 22 Mult.: from $\gamma(\theta)$ in ^{165}Ho(p,4nγ), 1977Ja06 conclude that this γ is a stretched E2.

$^{162}_{68}$Er$_{94}$-13

$\gamma(^{162}Er)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†‡]	α[&]	Comments
2429.49	(10^-)	826.6 *1*	100 *8*	1602.83	10^+			
2449.75		720.1 *3*	52 *10*	1729.63	(5^-)			
		1036.6 *5*	60 *8*	1412.58	$1,2^+$			
		1092.5 *6*	50 *12*	1356.77	3^-			
		1447.7[b] *5*	≤65[b]	1002.06	3^+			
		1549.2 *3*	100 *18*	900.72	2^+			
		2347.7[b] *10*	≤17[b]	102.04	2^+			
		2449.9 *3*	60 *10*	0.0	0^+			
2598.08		733.4[b] *5*	≤8.4[b]	1864.89	2^+			
		1595.80 *15*	85 *8*	1002.06	3^+			
		1698.1 *4*	100 *14*	900.72	2^+			
		2269.3[b] *5*	≤20[b]	329.62	4^+			
		2496.6 *10*	14 *4*	102.04	2^+			
2603.8		2502.1 *5*	67 *13*	102.04	2^+			
		2603.6 *3*	100 *10*	0.0	0^+			
2656.33	11^+	309.6 *1*	84 *7*	2346.59	10^+			
		522.7 *1*	100 *7*	2133.79	9^+			
		1053.4 *5*	19 *3*	1602.83	10^+			
2664.45		733.4[b] *5*	≤38[b]	1931.30				
		1493.5[b] *4*	≤169[b]	1171.02	2^+			
		1763.4[b] *5*	≤156[b]	900.72	2^+			
		2335.3 *9*	100 *25*	329.62	4^+			
		2562.2 *5*	88 *19*	102.04	2^+			
2745.72	14^+	580.6 *1*	100	2165.12	12^+	E2	0.01131	α(K)=0.00914 *13*; α(L)=0.001685 *24*; α(M)=0.000382 *6* α(N)=8.83×10^{-5} *13*; α(O)=1.210×10^{-5} *17*; α(P)=5.12×10^{-7} *8* Mult.: from α(K)exp in (α,3nγ) (1976Zo02) and $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
2751.8	(6)	1292.2		1459.58	6^+			
2817.76	13^-	449.6 *1*	45 *5*	2368.19	11^-	(E2)	0.0217	α(K)=0.01708 *24*; α(L)=0.00361 *5*; α(M)=0.000827 *12* α(N)=0.000190 *3*; α(O)=2.55×10^{-5} *4*; α(P)=9.35×10^{-7} *13* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
		652.6 *1*	100 *7*	2165.12	12^+	E1	0.00316	α(K)=0.00268 *4*; α(L)=0.000370 *6*; α(M)=8.12×10^{-5} *12* α(N)=1.89×10^{-5} *3*; α(O)=2.70×10^{-6} *4*; α(P)=1.454×10^{-7} *21* Mult.: from α(K)exp in (α,3nγ) (1976Zo02) and $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
2841.98	(12^-)	412.5 *1*	100	2429.49	(10^-)	E2	0.0274	α(K)=0.0213 *3*; α(L)=0.00475 *7*; α(M)=0.001094 *16* α(N)=0.000252 *4*; α(O)=3.34×10^{-5} *5*; α(P)=1.155×10^{-6} *17* Mult.: from $\gamma(\theta)$ in ^{165}Ho(p,4nγ), 1977Ja06 conclude that this γ is a stretched E2.
2910.85	12^+	564.4[c] *1*	100	2346.59	10^+			
3039.8		1415.9 *10*	43 *7*	1623.24	3^-			

$^{162}_{68}Er_{94}$-14

$\gamma(^{162}Er)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.[†‡]	α[&]	Comments
3039.8		1533.3 *5*	100 *18*	1506.36	1^-			
		3040.7 *10*	11 *5*	0.0	0^+			
3116.84	2^+	1493.5[b] *4*	≤38[b]	1623.24	3^-			
		1545.3 *5*	15 *4*	1572.84	2^-			
		1616.3 *3*	44 *7*	1500.58	2^+			
		1696.0 *4*	100 *14*	1420.45	(2^-)			
		1704.4 *5*	21 *3*	1412.58	$1,2^+$			
		2786.9 *3*	5.6 *14*	329.62	4^+			
3132.52		872.7 *6*	11.9 *25*	2260.24				
		890.7[b] *5*	≤11.0[b]	2242.21				
		1010.56 *24*	35 *8*	2121.67				
		1018.9 *3*	3.4 *25*	2114.11	(0^+)			
		1107.0 *3*	11.9 *25*	2026.01				
		1776.3 *5*	3.4 *17*	1356.77	3^-			
		1780.5 *5*	6.8 *25*	1352.17	1^-			
		1961.5 *5*	22.9 *25*	1171.02	2^+			
		2130.5 *2*	55 *6*	1002.06	3^+			
		2231.70 *8*	100 *7*	900.72	2^+			
3180.3		3077.8 *4*	68 *12*	102.04	2^+			
		3181.2 *6*	100 *20*	0.0	0^+			
3267.60		1007.6 *4*	31 *7*	2260.24				
		1410.89 *20*	46 *8*	1856.69				
		1838.1 *3*	45 *6*	1429.79	2^+			
		1846.9 *3*	25 *5*	1420.45	(2^-)			
		1914.71 *25*	100 *6*	1352.17	1^-			
		2097.4[b] *4*	≤32[b]	1171.02	2^+			
		2265.5 *5*	12 *4*	1002.06	3^+			
		2368.1 *5*	5.8 *24*	900.72	2^+			
		3165.5 *4*	38 *6*	102.04	2^+			
		3267.1 *8*	7.1 *24*	0.0	0^+			
3292.4	16^+	546.7 *2*	100	2745.72	14^+	(E2)	0.01312	α(K)=0.01054 *15*; α(L)=0.00200 *3*; α(M)=0.000455 *7* α(N)=0.0001050 *15*; α(O)=1.431×10^{-5} *20*; α(P)=5.88×10^{-7} *9* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
3293.2		1792.3[b] *8*	≤97[b]	1500.58	2^+			
		2206.5[b] *9*	≤40[b]	1087.16	0^+			
		3191.2 *3*	100 *11*	102.04	2^+			
		3292.1 *10*	60 *14*	0.0	0^+			
3367.95		1342.7[b] *8*	≤9.5[b]	2026.01				
		1947.5[b] *10*	≤4.4[b]	1420.45	(2^-)			
		2015.75 *12*	100 *6*	1352.17	1^-			

$^{162}_{68}Er_{94}$-15

γ(^{162}Er) (continued)

E_i(level)	J^{π}_i	E_γ	I_γ	E_f	J^{π}_f	Mult.[†‡]	α[&]	Comments
3367.95		3367.6 *7*	3.2 *13*	0.0	0^+			
3389.17		1969.3[b] *8*	≤76[b]	1420.45	(2^-)			
		2036.6 *4*	36 *9*	1352.17	1^-			
		2302.5 *5*	18 *4*	1087.16	0^+			
		3286.9 *3*	76 *11*	102.04	2^+			
		3389.5 *5*	100 *13*	0.0	0^+			
3400.08		1969.3[b] *8*	≤37[b]	1429.79	2^+			
		2049.2 *10*	23 *5*	1352.17	1^-			
		3297.9 *2*	100 *7*	102.04	2^+			
		3400.3 *3*	37 *5*	0.0	0^+			
3414.67		1096.02 *22*	100 *10*	2318.67				
		1994.7 *5*	13 *3*	1420.45	(2^-)			
		2062.1[b] *4*	≤34[b]	1352.17	1^-			
3435.8		3333.7 *8*	62 *12*	102.04	2^+			
		3435.8 *4*	100 *12*	0.0	0^+			
3518.00	(2^+)	1199.8 *5*	42 *22*	2318.67				
		2097.4[b] *4*	≤75[b]	1420.45	(2^-)			
		2347.7[b] *10*	≤19[b]	1171.02	2^+			
		2389.8 *5*	47 *11*	1128.11	4^+			
		3415.7 *4*	100 *14*	102.04	2^+			
		3517.8 *10*	31 *6*	0.0	0^+			
3676.48	$2^+,3^-$	1947.5[b] *10*	≤12[b]	1729.63	(5^-)			
		2175.8 *5*	19 *7*	1500.58	2^+			
		2323.7 *5*	17 *3*	1352.17	1^-			
		2505.3 *5*	31 *7*	1171.02	2^+			
		2548.27 *20*	17 *5*	1128.11	4^+			
		2775.8 *5*	10 *3*	900.72	2^+			
		3574.58 *20*	100 *8*	102.04	2^+			
3689.6		1447.7[b] *5*	≤124[b]	2242.21				
		2269.3[b] *5*	≤67[b]	1420.45	(2^-)			
		2688.3 *10*	33 *10*	1002.06	3^+			
		3587.2 *4*	100 *14*	102.04	2^+			
3846.6	18^+	554.2 *5*		3292.4	16^+	(E2)	0.01268	α(K)=0.01020 *15*; α(L)=0.00192 *3*; α(M)=0.000437 *7* α(N)=0.0001009 *15*; α(O)=1.377×10^{-5} *20*; α(P)=5.69×10^{-7} *8* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
4463.2	20^+	616.6		3846.6	18^+	(E2)	0.00978	α(K)=0.00795 *12*; α(L)=0.001426 *20*; α(M)=0.000322 *5* α(N)=7.46×10^{-5} *11*; α(O)=1.027×10^{-5} *15*; α(P)=4.46×10^{-7} *7* Mult.: evaluator's interpretation of $\gamma(\theta)$ in (α,4nγ) (1975Fe06).
7516	(27^-)	841		6675	(25^-)	#		

$^{162}_{68}$Er$_{94}$-16

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J^π_i	E_γ	E_f	J^π_f	Mult.[†‡]
7623	(28$^+$)	881	6742	(26$^+$)	#
8014	(28$^-$)	846	7168	(26$^-$)	#
8418	(29$^-$)	902	7516	(27$^-$)	#
8551	(30$^+$)	927	7623	(28$^+$)	#
8934	(30$^-$)	920	8014	(28$^-$)	#
9367	(31$^-$)	949	8418	(29$^-$)	#
9508	(32$^+$)	958	8551	(30$^+$)	#
9916?	(32$^-$)	982[c]	8934	(30$^-$)	#
10302	(33$^-$)	935	9367	(31$^-$)	
10481	(34$^+$)	973	9508	(32$^+$)	#
10898	(34$^-$)	982	9916?	(32$^-$)	
11252	(35$^-$)	950	10302	(33$^-$)	
11470	(36$^+$)	989	10481	(34$^+$)	#
12242	(37$^-$)	990	11252	(35$^-$)	
12490	(38$^+$)	1020	11470	(36$^+$)	#
13290	(39$^-$)	1048	12242	(37$^-$)	
13553	(40$^+$)	1063	12490	(38$^+$)	#
14398	(41$^-$)	1108	13290	(39$^-$)	
14664	(42$^+$)	1111	13553	(40$^+$)	#
15574	(43$^-$)	1176	14398	(41$^-$)	
15832	(44$^+$)	1168	14664	(42$^+$)	#
16820	(45$^-$)	1246	15574	(43$^-$)	
17063	(46$^+$)	1231	15832	(44$^+$)	
18129	(47$^-$)	1309	16820	(45$^-$)	
18358	(48$^+$)	1295	17063	(46$^+$)	
19511?	(49$^-$)	1382[c]	18129	(47$^-$)	
19721	(50$^+$)	1363	18358	(48$^+$)	
21152	(52$^+$)	1431	19721	(50$^+$)	
22659	(54$^+$)	1507	21152	(52$^+$)	
24237	(56$^+$)	1578	22659	(54$^+$)	
25883	(58$^+$)	1646	24237	(56$^+$)	
27581?	(60$^+$)	1698[c]	25883	(58$^+$)	

† Unless noted otherwise, the multipolarities are from ce ratios (K/L1, L1/L2, etc.) (1963Ab02,1965Ab02,1987BaZB) or α(K)exp measurements (1974De47,1975St12,1976Zo02), α(L)exp and α(M)exp measurements (1974De47), and in-beam $\gamma(\theta)$ measurements (1975Fe06).

‡ Where numerical values are given for conversion coefficients (and ratios), the listed references are from the the ^{162}Tm ε decay (21.70 min) data set, unless noted otherwise.

Transition assumed to be a stretched E2 (1990Ri03,1990Ri09).

@ From $\gamma(\theta)$ in (α,2nγ) (1976We24).

& Additional information 4.

a If no value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.

b Multiply placed with undivided intensity.

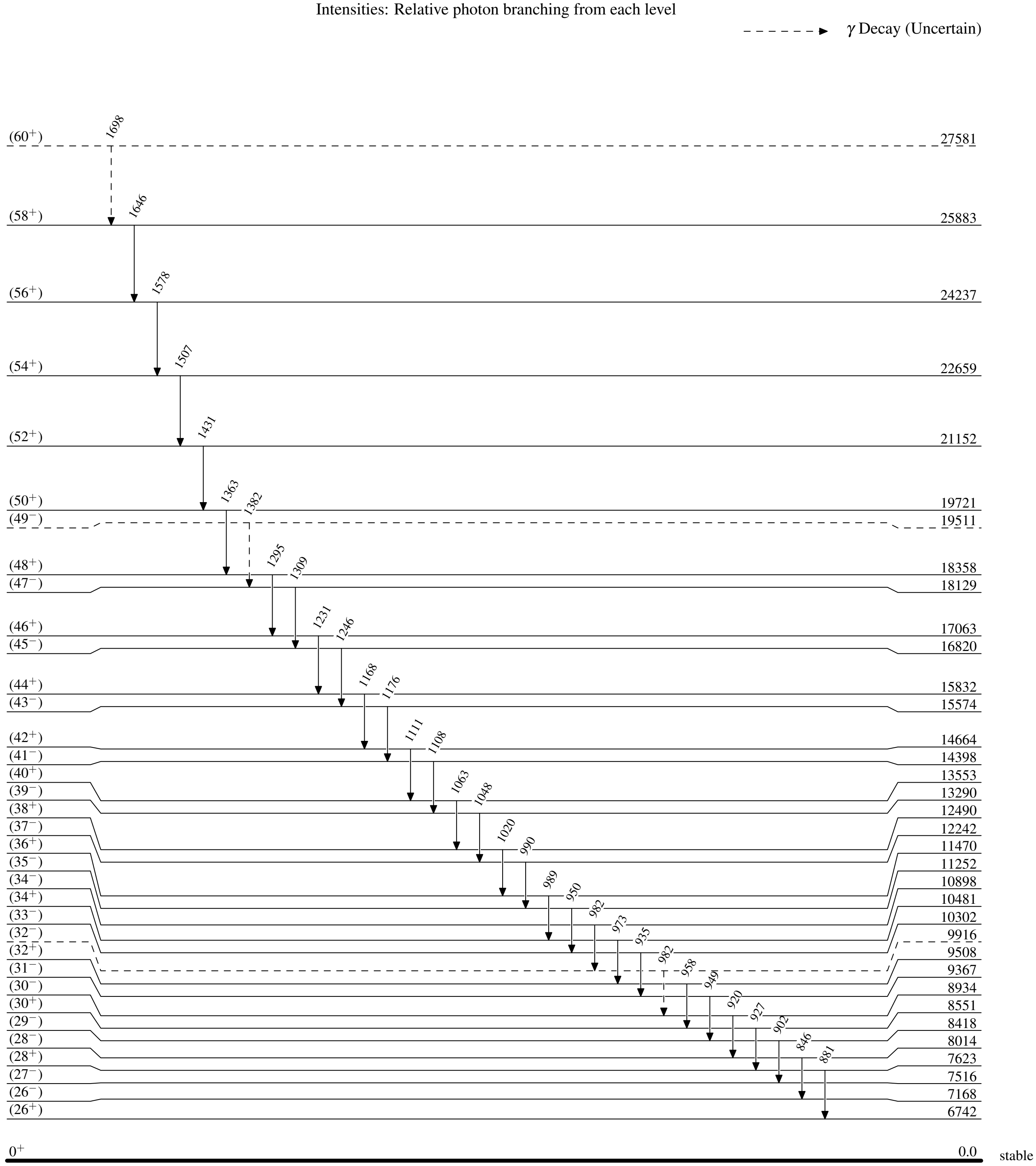
c Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

Legend

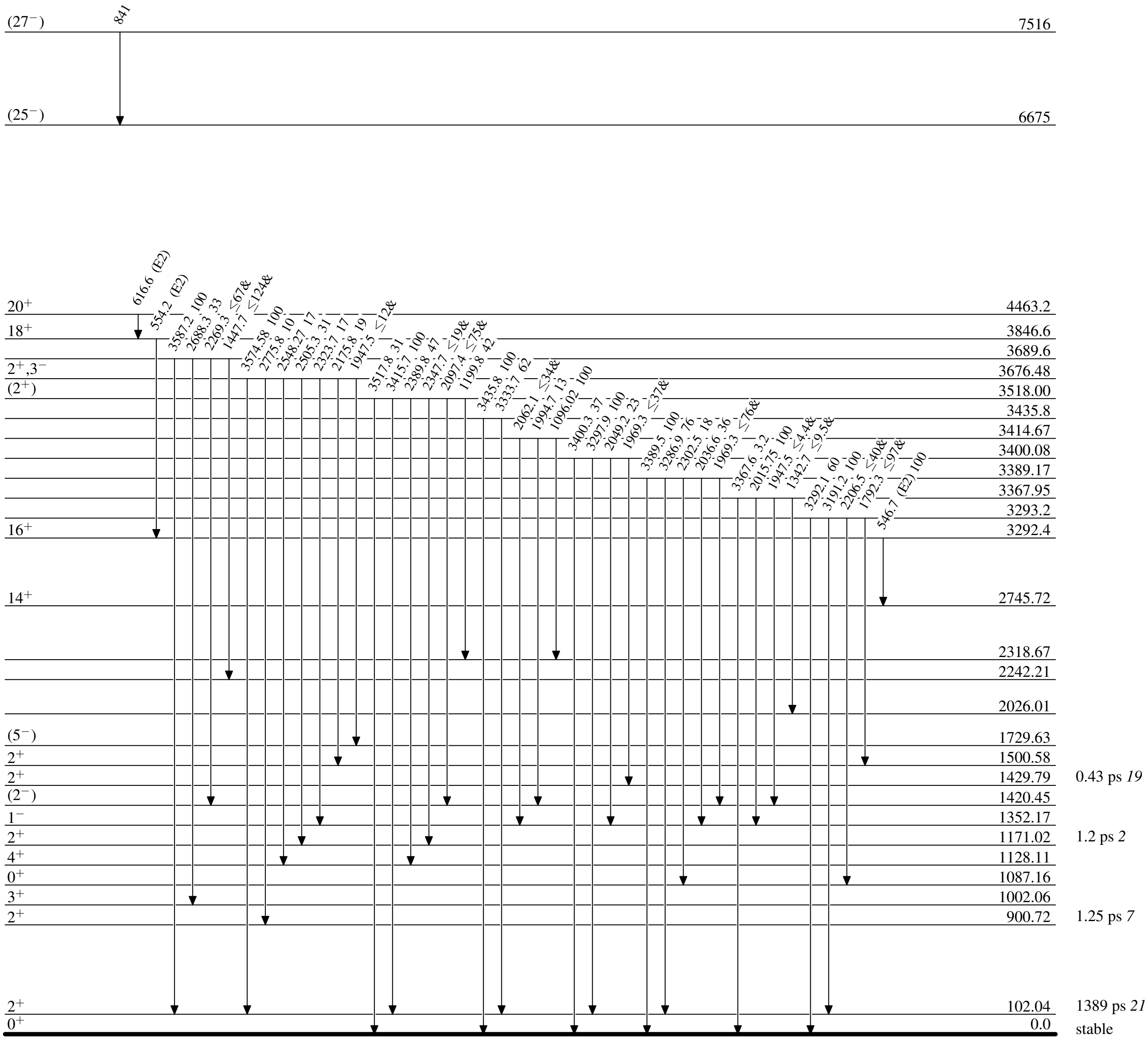


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

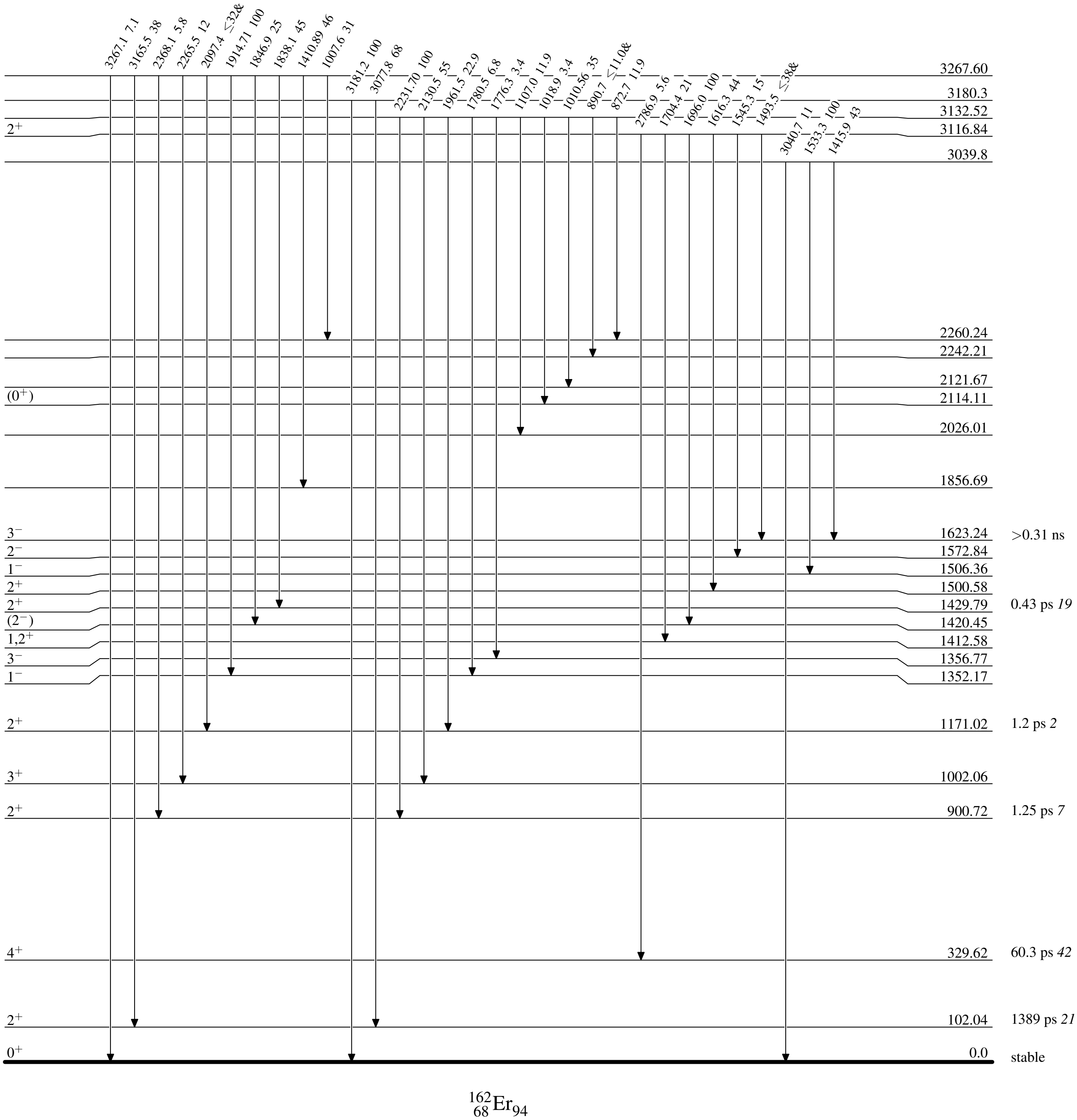


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

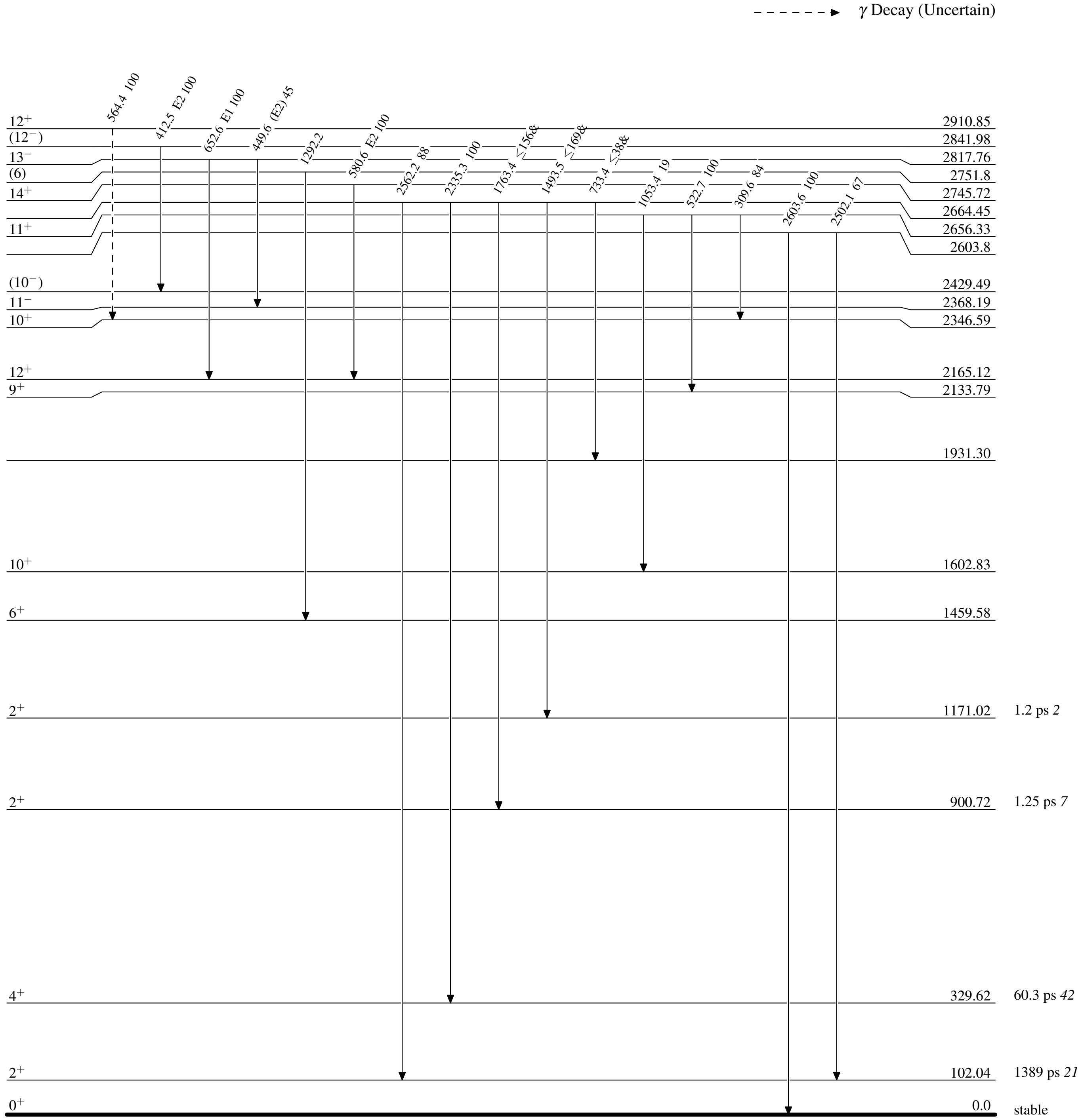
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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

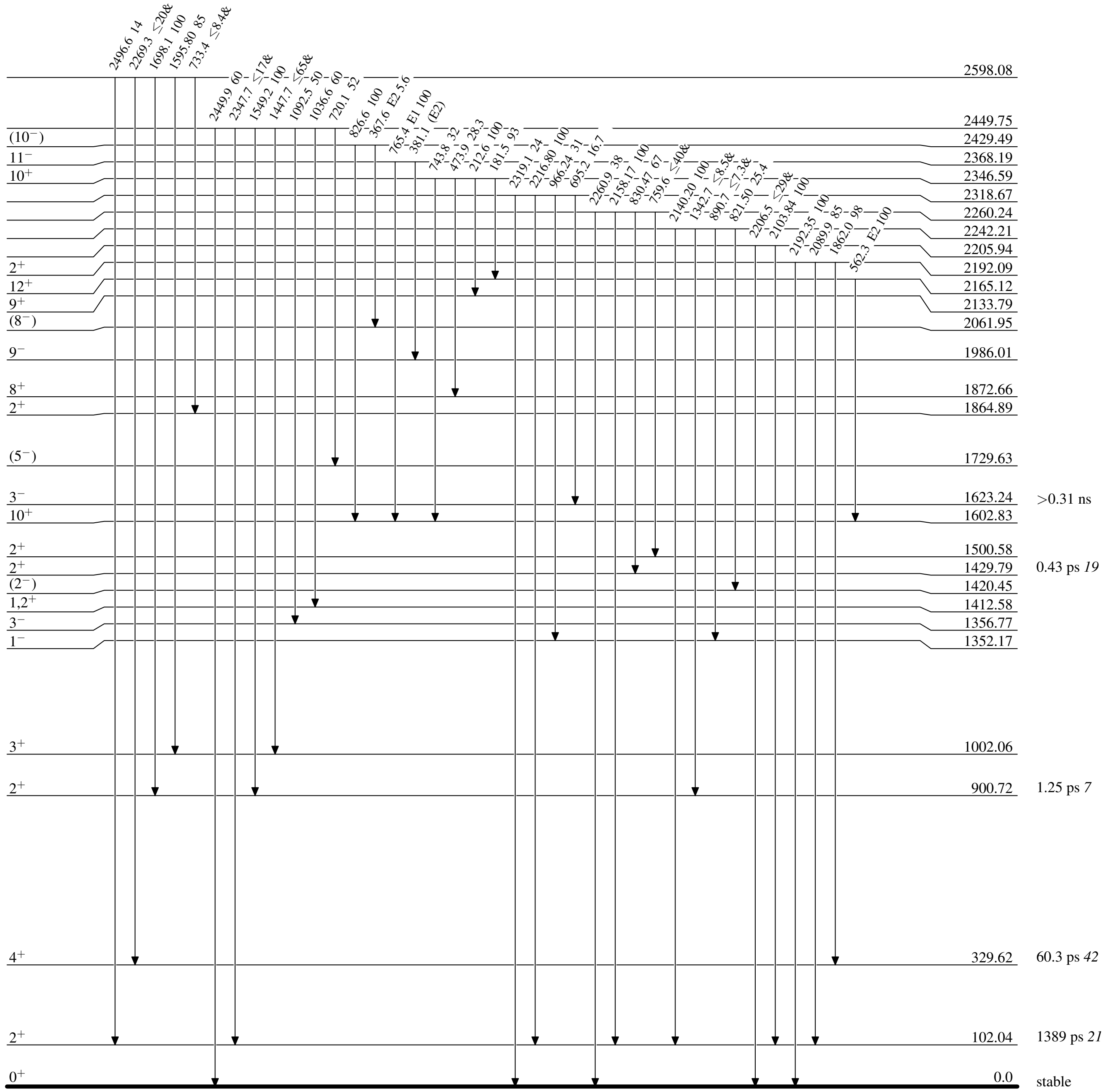


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

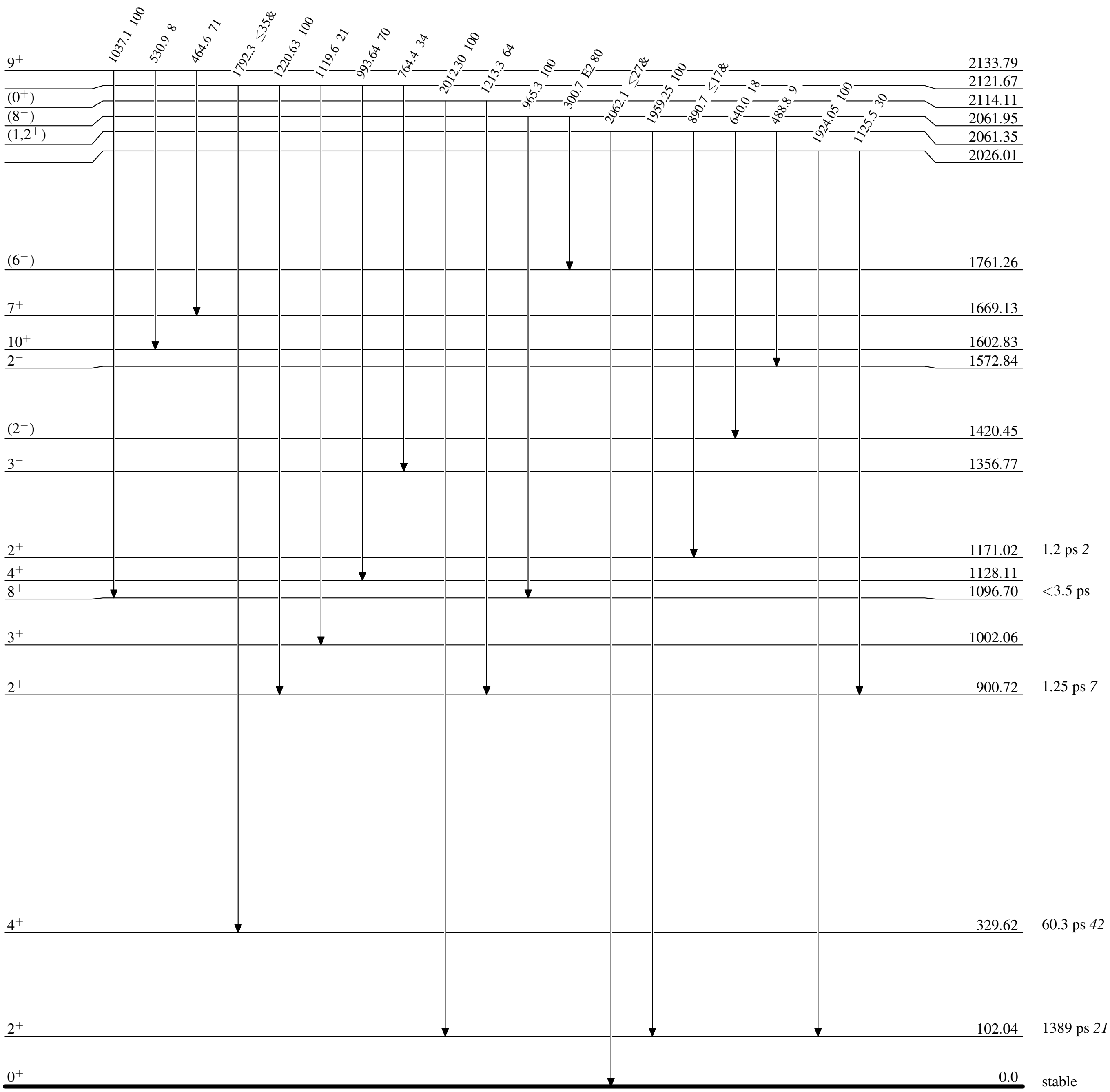


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

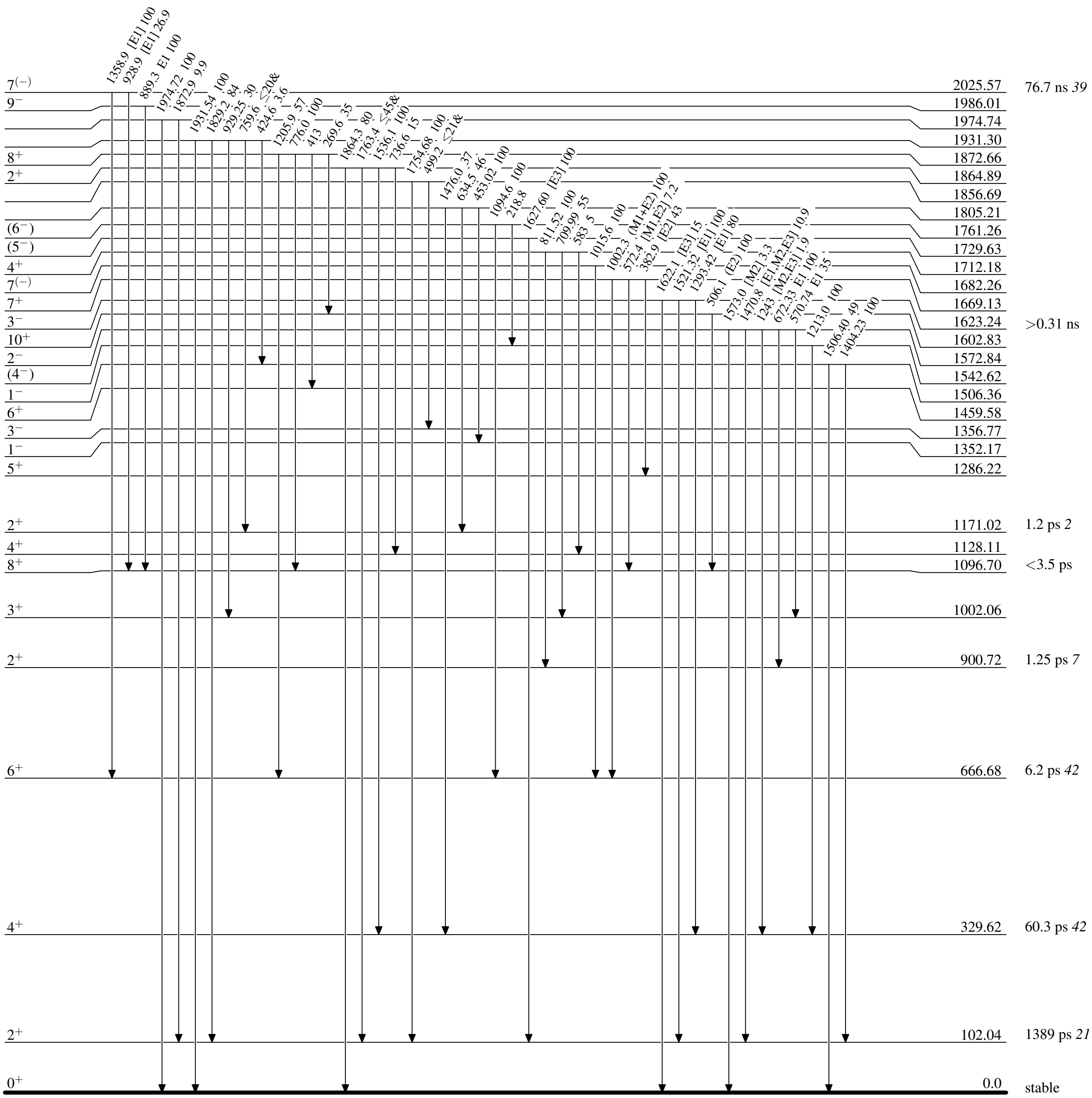


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

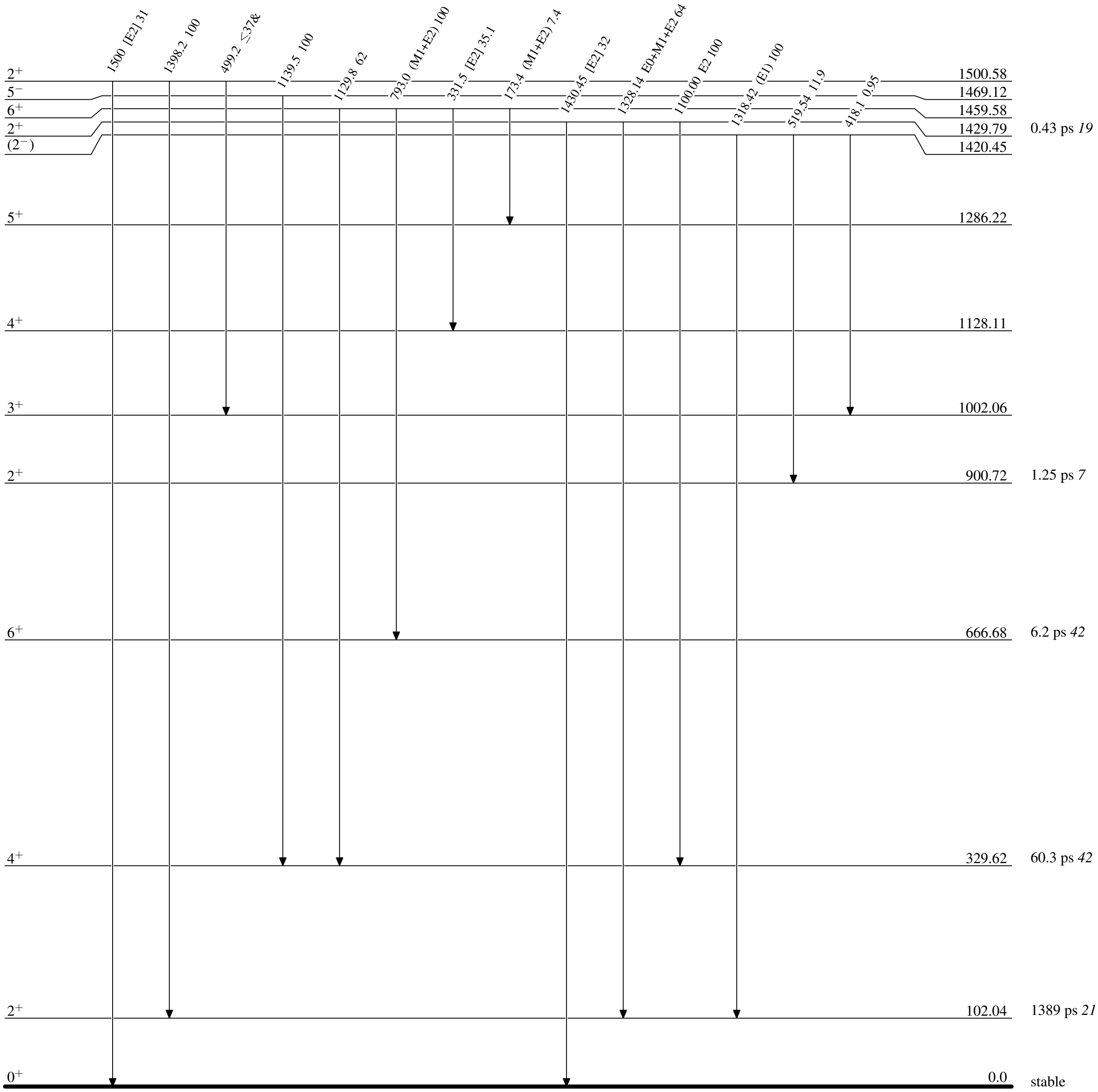


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

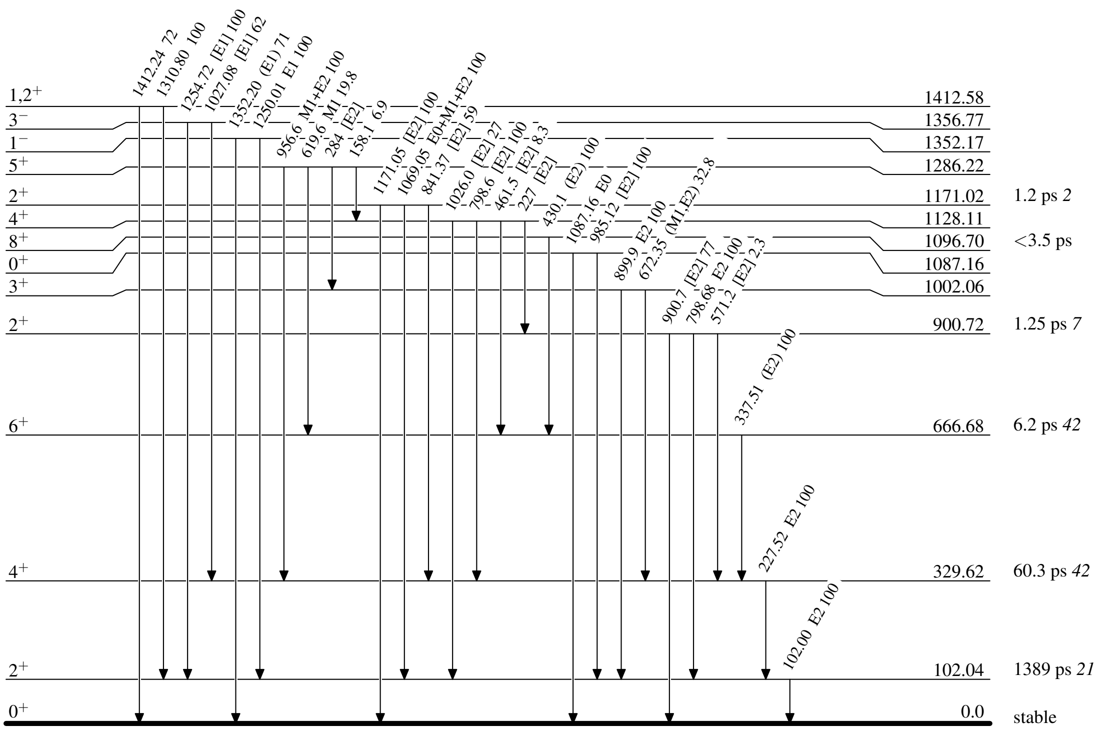


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

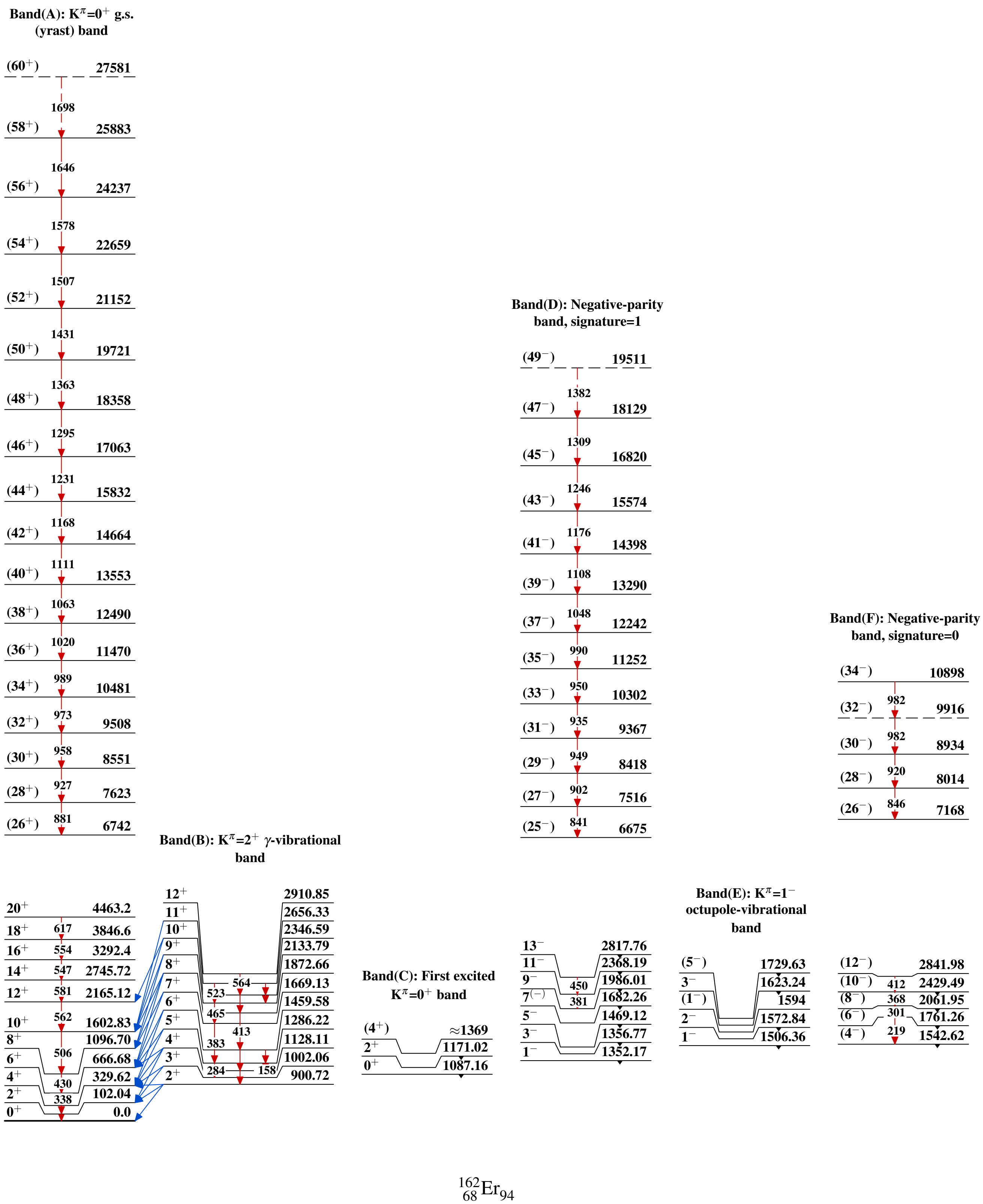
Level Scheme (continued)

Intentities: Relative photon branching from each level
& Multiply placed: undivided intensity given

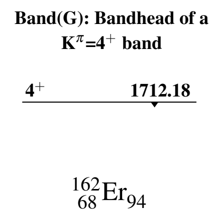


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas



Adopted Levels, Gammas (continued)



Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 147, 1 (2018)	30-Nov-2017

Q(β^-)=−4039 *24*; S(n)=8846 *5*; S(p)=6853.32 *13*; Q(α)=1304.92 *17* 2017Wa10
S(2n)=15751.0 *3*, S(2p)=12339.35 *14* (2017Wa10).

Other reactions:

^{164}Er double electron capture: 2011El08. Measured Q(β^-) value using a Penning-trap.

^{159}Tb(^{7}Li,X): 2011Pr06. Measured Eγ, Iγ. Deduced ratios of cross sections from different reaction channels.

^{124}Sn(^{40}Ar,xn): 2004Na03. Measured Eγ, Iγ, (recoil)γ-coin. Deduced GDR parameters, angular momentum dependence of strength function.

^{162}Dy(^{58}Ni,^{56}Fe): 1996De17. Measured transfer probability.

^{164}Dy(n,n) E=low: 1997Kn01.

^{164}Dy(γ,γ): Mossbauer: 1968Mu01, 1967Mu11. Measured g factor.

Hyperfine structure, isotope shifts, and rms radius for ground state: 2000As04, 1993Kr22, 1990Ji07, 1987Ok03, 1987Ah03, 1986Ch07, 1985Ne09, 1985Be34, 1967Ca21, 1965Vo02.

Mass measurements: 2011El08, 1972Ba08, 1963De30.

For theoretical nuclear structure calculations, consult NSR database, for about 300 references. About 90 of these are listed in the ENSDF dataset as document records.

Additional information 1.

^{164}Er Levels

Nomenclature for quasiparticle labels:
A: ν5/2[642],α=+1/2.
B: ν5/2[642],α=−1/2.
E: ν5/2[523],α=+1/2.
F: ν5/2[523],α=−1/2.

Cross Reference (XREF) Flags

A	^{164}Ho β^- decay (28.8 min)	E	^{160}Gd(^{9}Be,5nγ):E=59 MeV	I	^{164}Er(n,n′γ)
B	^{164}Tm ε decay (1.95 min)	F	^{160}Gd(^{9}Be,5nγ):E=57 MeV	J	^{164}Er(d,d′)
C	^{164}Tm ε decay (5.1 min)	G	^{162}Dy(α,2nγ)	K	Coulomb excitation
D	^{150}Nd(^{18}O,4nγ)	H	^{164}Er(γ,γ')	L	^{166}Er(p,t)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0[@]	0+	stable	ABCDEFGHIJKL	The rms charge radius ($<r^2>)^{1/2}$: 5.2389 fm *35* (2013An02 evaluation). See also 2009An12 for trends in nuclear radii.
91.380[@] *22*	2+	1.569 ns *34*	ABCDEFGHIJKL	μ=0.697 *15* (1968Mu01,2014StZZ) Q<0 (1981Hu02,2016St14) B(E2)↑=5.48 *4* (1977Ro27) μ: Mossbauer effect (1968Mu01). Other: 0.686 *16* (transient-field integral PAC method,1996Br09). Q: reorientation method (1981Hu02). J$^\pi$: E2 γ to 0+. $T_{1/2}$: from 2016Pr01 evaluation, based on $\gamma\gamma$(t) and $\beta\gamma$(t) in ^{164}Ho decay, (ce)γ(t) in ^{164}Tm decay, and B(E2) in Coulomb excitation. Measured values are: B(E2)=5.48 *4* (1977Ro27), 5.04 *35* (1960El07); mean lifetimes τ=2.140 ns *120* (1970Mo39), 2.190 ns *90* (1968Se02), 2.060 ns *70* (1963Fo02), 2.499 ns *46* (1963De21), 2.020 ns *720* (1954Br96).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Er Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	XREF	Comments
				μ: Mossbauer effect.
299.43[@] *3*	4$^+$	86 ps *9*	BCDEFG IJKL	μ=+1.46 *15* (1997Al25,2014StZZ) B(E4)↑=0.014 *+43−14* (1977Ro27) μ: IPAC method (1997Al25). Other: +1.36 *8* from transient-field method (1996Br09). J$^{\pi}$: stretched E2 γ to 2$^+$. $T_{1/2}$: from microwave beam pulsing method (1968Be29).
614.39[@] *5*	6$^+$		CDEFG IJKL	μ=+1.884 *90* (1996Br09,2014StZZ) μ: transient-field integral PAC method. J$^{\pi}$: stretched E2 γ to 4$^+$; band member.
860.25[&] *3*	2$^+$	1.9 ps *2*	B D G IJKL	μ=+0.808 *60* (1996Br09,2014StZZ) Q=2.4 *3* (1983Hu01,2016St14) B(E2)↑=0.148 *6* (1982Ro07) μ: transient-field integral PAC method. Q: reorientation method In Coulomb excitation (1983Hu01). J$^{\pi}$: E2 γ to 0$^+$. $T_{1/2}$: from B(E2) (1982Ro07).
946.34[&] *5*	3$^+$		BCD FG I	J$^{\pi}$: E2+M1 γs to 2$^+$ and 4$^+$.
1024.62[@] *7*	8$^+$	2.59 ps *14*	CDEFG I K	μ=+2.72 *13* (1996Br09,2014StZZ) μ: transient-field integral PAC method. J$^{\pi}$: stretched E2 γ to 6$^+$. $T_{1/2}$: Doppler-broadened line shape in Coulomb excitation.
1058.49[&] *8*	4$^+$		BCD G IJK	J$^{\pi}$: ΔJ=(0), E2(+M1) γ to 4$^+$; E2 γ to 2$^+$; band member.
1197.48[&] *6*	5$^+$		CDEFG I	J$^{\pi}$: E2+M1 gammas to 4$^+$ and 6$^+$.
1246.06[a] *5*	0$^+$		B I L	XREF: L(1248). J$^{\pi}$: E0 transition to 0$^+$.
1314.56[a] *4*	2$^+$		B G IJKL	XREF: L(1308). J$^{\pi}$: E2 γ to 0$^+$.
1358.73[&] *12*	6$^+$		CDE G I K	J$^{\pi}$: ΔJ=2, E2 γs to 4$^+$; E2+M1 γ to 6$^+$.
1386.74[j] *4*	1$^-$		B HIJ	J$^{\pi}$: E1 γ to 0$^+$.
1416.57 *5*	0$^+$		B I L	J$^{\pi}$: E0 transition to 0$^+$.
1433.98[j] *5*	3$^-$		B IJK	B(E3)↑=0.15 *3* (1982Ro07) J$^{\pi}$: E1 γs to 2$^+$ and 4$^+$.
1469.72[a] *25*	4$^+$		B G IJ	J$^{\pi}$: E0 admixture in γ to 4$^+$.
1483.69 *4*	2$^+$		B IJK	J$^{\pi}$: E2 γ to 0$^+$.
1495.05 *25*			B G I	J$^{\pi}$: γs to 2$^+$ and 3$^+$ suggest 1$^+$,2,3,4$^+$; population in (α,2nγ) favors 3,4$^+$.
1507.6? *10*			G	
1518.08[@] *11*	10$^+$	1.01 ps *5*	DEFG K	μ=+3.18 *34* (1996Br09,2014StZZ) μ: transient-field integral PAC method. $T_{1/2}$: from Doppler-broadened line shape and Coul. ex. (1977Ke06,1980Ya03).
1545.10[&] *9*	7$^+$		CDE G	J$^{\pi}$: E2+M1 γs to 6$^+$ and 8$^+$.
1555.3[j] *3*	(5)$^-$		G I	J$^{\pi}$: E1 γ to 6$^+$; γ to 4$^+$; band member.
1568.67 *14*	(3$^-$)		B IJK	B(E3)↑=0.091 *34* (1982Ro07) J$^{\pi}$: γs to 2$^+$ and 4$^+$; probable E3 excitation in (d,d′).
1577.79 *5*	1$^-$		B I L	J$^{\pi}$: E1 γ to 2$^+$; γ to 0$^+$.
1610.26 *17*	(4$^-$,5$^-$)		C G	J$^{\pi}$: γs to 3$^+$ and 4$^+$; (E1) γ from (5$^+$), 1683 level.
1631.5 *5*			B IJ	J$^{\pi}$: γ to 4$^+$; (5$^-$) proposed in (d,d′).
1640.2 *5*			I	J$^{\pi}$: γ to 4$^+$.
1664.21[c] *7*	5$^-$	<0.08 ns	CDEFG I	$T_{1/2}$: $\gamma\gamma$(t) (1973Ch28) in ^{164}Tm ε decay (5.1 min). J$^{\pi}$: E1 γ to 6$^+$; γ to 4$^+$. Configuration=ν5/2[523]⊗ν5/2[642], K^{π}=5$^-$.
1683.40 *9*	(5$^+$)		C	J$^{\pi}$: γs to 3$^+$ and 5$^+$; possible β feeding from 6$^-$ parent state.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
1702.2 *5*			G l	J^{π}: γ to 2^+, 4^+ suggested in (α,2nγ).
1702.20 *4*	0^+		B I l	J^{π}: E0 transition to 0^+.
1706.7[a] *5*	$(6)^+$		G I l	J^{π}: M1(+E2) γ to 6^+; γ to 4^+; band member.
1715.34 *7*	(2^-)		B	J^{π}: E1 γ from $J=1^{(+)}$; γ to 3^+.
1726.1? *10*			G	
1741.6 *3*			I	
1744.55[d] *6*	6^-	0.22 ns *3*	CDEFG I	J^{π}: E1 γ to 5^+, E2 γ to 5^-; band member. $T_{1/2}$: from $\gamma\gamma$(t) (1973Ch28) in ^{164}Tm ε decay.
1744.88[&] *11*	8^+		DE G K	J^{π}: E2 γ to 6^+, γ to 8^+.
1763.8[j] *4*	$(7)^-$		C G	J^{π}: E1 γ to 6^+.
1765.86 *4*	0^+		B I	J^{π}: E0 transition to 0^+.
1788.35 *6*	2^+		B I	J^{π}: E0 admixture in γ to 2^+.
1798.4 *4*	$(5)^-$		C G IJ	J^{π}: $\Delta J=1$, E1 γ to 6^+; γ to 4^+.
1806.5 *10*			G	J^{π}: γ to 4^+.
1813.99 *14*	$(6)^-$		G	J^{π}: $\Delta J=1$, E1 γ to 5^+.
1833.41 *4*	2^+		B I	J^{π}: E0 admixture in γ to 2^+.
1841.7? *4*	(0^+)		B	J^{π}: possible E0 transition to 0^+.
1845.54[c] *7*	7^-		CDEFG I	J^{π}: E1 γs to 8^+ and 6^+.
1861.46? *19*	$(0,1,2)^+$		B	J^{π}: E2 γ to 2^+. Possible β feeding from 1^+.
1875.26 *7*	$1^{(+)}$[#]		B HI	J^{π}: (M1) γ between 2173,0^+ and 1875, J=1 levels.
1911.27 *7*	2^+		B I	J^{π}: E0 admixture in γ to 2^+.
1929.5 *10*			G	J^{π}: γ to 5^+.
1953.92 *6*	2^+		B IJ	J^{π}: E0 admixture in γ to 2^+.
1961.29 *8*			B	
1964.34[d] *12*	(8^-)		DE G	
1969.6 *6*	$(2^+,3^-,4^+)$		IJ	J^{π}: gammas to 2^+ and 4^+; population in (d,d′) disfavors 3^+.
1977.15[&] *9*	9^+		DE G	J^{π}: $\Delta J=2$, E2 γ to 7^+; band member.
1985.06[g] *6*	7^-	23.0 ns *12*	CDEFG	J^{π}: M1 γ to 6^-; E2+M1 γ to 7^-; 6^- rejected by γ to 8^+ and RUL; also log *ft*=5.0 from 6^- parent. Configuration=π7/2[523]$\otimes\pi$7/2[404]. $T_{1/2}$: weighted average of 22.7 ns *17*, 23.3 ns *16* in ^{164}Tm ε decay (5.1 min) and 21.6 ns *15* in (α,2nγ).
2002.6 *4*	$(2^+$ to $5^-)$		IJ	J^{π}: gammas to 4^+ and 3^-.
2005.4 *5*	8^+		G	J^{π}: E0 admixture in γ to 8^+.
2018.0 *10*			G	J^{π}: γ to 6^+.
2022.50 *8*			B I	
2025.77 *6*	(2^+)		B I	J^{π}: gammas to 0^+ and 2^+.
2032.1? *2*			B	
2035.43 *20*	1[#]		B HIJ	
2046.4 *20*			G	
2054.6[j] *10*	$(9)^-$		G	J^{π}: E1 γ to 8^+.
2068.9[a] *6*	$(8)^+$		G	J^{π}: E2+M1 γ to 8^+, γ to 6^+.
2069.38 *15*	$(1^-,2^-)$		B IJ	J^{π}: M1,E2 γ to (2^-); γs to 2^+ and 3^-; possible ε feeding from 1^+.
2082.1 *5*			G	J^{π}: γ to 7^+.
2082.81[@] *12*	12^+	0.63 ps *10*	DEFG K	$T_{1/2}$: from Doppler-broadened line shape and Coul. ex. (1977Ke06,1980Ya03). J^{π}: $\Delta J=2$, E2 γ to 10^+.
2091.00[i] *11*	(8^-)		DE G	
2093.62? *12*			G	J^{π}: M1+E2 γ to 8^+ suggests 9^+,8^+,7^+, but the placement of the γ ray is uncertain.
2108.57[c] *11*	9^-		DE G	J^{π}: E1 γ to 8^+.
2141.4 *20*			G	
2151.4 *10*			G	

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Adopted Levels, Gammas (continued)

^{164}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
2163.67[h] *8*	(8⁻)		CDEFG	
2168.1 *3*			B	
2173.04 *5*	0⁺		B I	J^{π}: E0 transition to 0⁺.
2184.31[&] *12*	10⁺		DE G K	J^{π}: M1+E2 γ to (10)⁺, E2 γ to 8⁺.
2240.2? *6*			G	
2254.24 *9*			B I	
2261.27[d] *13*	(10⁻)		DE G	
2278.38 *6*	2⁺		B	J^{π}: E0 admixture in γ to 2⁺.
2278.9 *10*			G J	XREF: J(2288).
2337	(3⁻)		J	J^{π}: probable E3 excitation in (d,d′).
2337.32 *12*	(9⁻)[#]		G	
2339.99 *10*	(8)		F	J^{π}: γ to 7⁻.
2356.4 *20*			G	
2363.58[g] *9*	(9⁻)		DEFG	
2370.6 *3*			C	
2404.2 *7*	1[#]		H	
2408.18[c] *15*	11⁻		DE G	J^{π}: E1 γ to 10⁺.
2416.2 *7*	1[#]		H	
2421.13[i] *12*	(10)⁻		DE G	J^{π}: E1 γ to (9)⁺.
2444.53 *6*	(2⁺)		B	J^{π}: (E1) gammas to 1⁻ and (3⁻).
2448.1 *5*			G	
2462.68[a] *15*	10⁺		G	J^{π}: E0 admixture in γ to 10⁺.
2470.1[j] *10*	(11⁻)		G	J^{π}: γ to 10⁺; possible band member.
2479.48[&] *11*	11⁺		DE G	J^{π}: E2 γ to (9)⁺.
2483.4 *20*			G	
2519.05[b] *25*	12⁺		DE G	J^{π}: ΔJ=2, E2 γ to 10⁺, M1(+E2) γ to 12⁺.
2525.85 *10*	(9)		F	J^{π}: γ to (8⁻).
2541.03 *17*	(1⁺,2⁺)		B	J^{π}: (E2) γ to $1^{(+)}$; possible γ to 0⁺.
2577.2 *7*	1[#]		H	
2583.67[h] *10*	(10⁻)		DEFG	
2591.6 *10*			G	
2631.23[d] *14*	(12⁻)		DE G	
2640.2 *7*	1[#]		H	
2702.58[@] *16*	14⁺	0.27 ps *4*	DE G K	$T_{1/2}$: deduced by evaluators from B(E2)↓(620γ)=2.3 *3* in Coul. ex. (1980Ya03), assuming 100% branch for 620γ.
2729.57 *11*	(10)		F	J^{π}: γ to (9).
2733.3[&] *5*	12⁺	0.76 ps *+67−24*	DE K	$T_{1/2}$: deduced by evaluators from B(E2)↓(549γ)=1.5 *7* in Coul. ex. (1980Ya03), assuming 100% branch for 549γ.
2747.2 *7*	1[#]		H	
2759.01 *9*	(9⁻)		F	J^{π}: γ to 7⁻.
2762.2 *7*	1[#]		H	
2800.45[i] *14*	(12⁻)		DE	
2815.21[c] *15*	13⁻		DE G	J^{π}: ΔJ=1, E1(+M2) γ to 12⁺; ΔJ=2 γ to 11⁻.
2822.55[g] *14*	(11⁻)		DEFG	
2823.50? *21*			B	
2874.78[b] *14*	14⁺		DE K	J^{π}: stretched E2 γ to 12⁺; band member.
2933.2 *7*	1[#]		H	
2950.26 *10*	(11)		F	J^{π}: γs to (9) and (10⁻).
2966.2 *7*	1[#]		H	
2980.56 *9*	(10⁻)		F	J^{π}: γs to (8⁻) and (9⁻).

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Adopted Levels, Gammas (continued)

^{164}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
3018.0 *10*	1[#]		H	
3027.3[&] *5*	13$^+$		DE	
3028.76 *15*			B	
3066.6[d] *4*	(14$^-$)		DE G	
3079.4[h] *4*	(12$^-$)		DE	
3133.2 *7*	1[#]		H	
3179.2 *7*	1[#]		H	
3220.2 *7*	1[#]		H	
3221.18 *9*	(11$^-$)		F	J^{π}: γs to (9$^-$) and (10$^-$).
3244.35[i] *24*	(14$^-$)		DE	
3263.09[b] *18*	16$^+$	>0.30 ps	DE G K	J^{π}: ΔJ=2, E2 γ to 14$^+$. $T_{1/2}$: deduced by evaluators from B(E2)↓(561γ)<2.8 in Coul. ex. (1980Ya03) and using the γ-branching ratios for 388γ and 561γ.
3267.0[&] *6*	14$^+$	0.69 ps *+61−22*	DE K	$T_{1/2}$: deduced by evaluators from B(E2)↓(534γ)=1.9 *9* in Coul. ex. (1980Ya03), assuming 100% branch for 534γ.
3281.01[c] *18*	15$^-$		DE	
3303.1 *3*	(6$^-$,7$^-$)		C	J^{π}: gammas to (8$^-$) and 7$^-$; log *ft*=5.8 from 6$^-$.
3352.3[g] *4*	(13$^-$)		DE	
3377.57[e] *11*	(12$^+$)	68 ns *2*	D F	4-qp state with configuration=ν(5/2[523],5/2[642])⊗π(7/2[523],7/2[404]). $T_{1/2}$: 555γ(t) (2012Sw02). Other: ≥170 ns (1997Ba63).
3408.2 *3*			B	
3411.2[@] *4*	16$^+$	0.21 ps *4*	DE K	$T_{1/2}$: deduced by evaluators from B(E2)↓(709γ)=1.5 *3* in Coul. ex. (1980Ya03), assuming 100% branch for 709γ.
3458.2 *7*	1[#]		H	
3518.7[&] *6*	(15$^+$)		DE	
3534.58? *7*	(2$^+$)		B	J^{π}: (E2) γ to 0$^+$.
3541.0 *10*	1,2[#]		H	
3545.6[f] *8*	(13$^+$)		D F	
3551.2 *7*	1[#]		H	
3559.6[d] *5*	(16$^-$)		DE	
3602.2 *7*	1[#]		H	
3629.67 *10*	2$^+$		B	J^{π}: E2 γ to 0$^+$.
3734.5[e] *8*	(14$^+$)		D F	
3752.0 *10*	1[#]		H	
3760.0[i] *4*	(16$^-$)		DE	
3768.19 *11*	(1$^+$,2$^+$)		B	J^{π}: (E2) γ to 2$^+$, γ to 0$^+$.
3768.59[b] *19*	18$^+$		DE G	
3800.7[&] *6*	(16$^+$)		DE	
3804.9[c] *5*	17$^-$		DE	
3942.7[f] *10*	(15$^+$)		D F	
3944.1 *10*	1[#]		H	
4017.9[&] *7*	(17$^+$)		DE	
4105.6[d] *7*	(18$^-$)		DE	
4121.2[@] *5*	18$^+$		DE K	
4169.4[e] *11*	(16$^+$)		D F	
4344.5[i] *6*	(18$^-$)		DE	
4345.7[b] *4*	20$^+$		DE	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Er Levels (continued)

E(level)[†]	J^π[‡]	XREF	E(level)[†]	J^π[‡]	XREF	E(level)[†]	J^π[‡]	XREF
4364.3[&] *8*	(18^+)	D	5678[i] *2*	(22^-)	E	7999.3[e] *19*	(28^+)	D
4384.9[c] *5*	(19^-)	DE	5704.1[c] *11*	(23^-)	DE	8095.1[c] *20*	(29^-)	D
4413.1[f] *12*	(17^+)	D F	5729.1[b] *8*	24^+	DE	8338.1[b] *19*	30^+	D
4590.1[&] *8*	(19^+)	DE	5857.7[e] *15*	(22^+)	D	8396.6[f] *20*	(29^+)	D
4673.2[e] *13*	(18^+)	D	6052.9[d] *13*	(24^-)	DE	8533.9[d] *22*	(30^-)	D
4702.0[d] *8*	(20^-)	DE	6186.5[f] *16*	(23^+)	D	8803.9[e] *20*	(30^+)	D
4868.4[@] *6*	20^+	DE	6442.1[c] *15*	(25^-)	D	9016.1[c] *23*	(31^-)	D
4948.2[f] *13*	(19^+)	D	6526.6[e] *17*	(24^+)	D	9225.6[f] *22*	(31^+)	D
4987.4[i] *12*	(20^-)	E	6529.1[b] *13*	26^+	D	9342.1[b] *22*	32^+	D
5000.1[b] *6*	22^+	DE	6814.9[d] *17*	(26^-)	D	9492.0[d] *24*	(32^-)	D
5018.2[c] *7*	(21^-)	DE	6878.4[f] *17*	(25^+)	D	9658.9[e] *23*	(32^+)	D
5230.6[&] *9*	(21^+)	D	7238.1[c] *18*	(27^-)	D	10001.1[c] *25*	(33^-)	D
5238.1[e] *14*	(20^+)	D	7241.0[e] *18*	(26^+)	D	10410.1[b] *24*	34^+	D
5349.9[d] *9*	(22^-)	DE	7399.1[b] *16*	28^+	D	10515[d] *3*	(34^-)	D
5541.4[f] *15*	(21^+)	D	7614.6[f] *19*	(27^+)	D	11049[c] *3*	(35^-)	D
5651.5[@] *8*	22^+	D	7640.9[d] *20*	(28^-)	D	11549[b] *3*	36^+	D

† From least-squares fit to Eγ data. Uncertainties of the following γ rays were doubled due to their somewhat poor fits: 318γ from 2278 level, 666γ from 1911 level and 689γ from 2173 level. With adjustment, only the energies of six γ rays out of a total of about 400 γ rays deviate by $\approx$3 σ. Reduced χ^2=1.9 as compared to critical χ^2=1.3.

‡ For high-spin (J>7) levels, populated mostly in in-beam reactions ((^{18}O,4nγ), (^{9}Be,5nγ) and (α,2nγ)), the assignments are based on multipolarities and ΔJ extracted from $\gamma(\theta)$ and ce data in (α,2nγ); $\gamma(\theta)$ and γ(lin pol) in (^{9}Be,5nγ); and $\gamma(\theta)$ data in (^{18}O,4nγ); combined with associated band structures. All ΔJ=2 transitions are assumed as stretched E2 and ΔJ=1, mixed transitions as M1+E2 when there is no evidence for long-lived (>20 ns or so) states. In such reactions, spins are assumed to be in ascending order as the excitation energy increases, due to yrast nature of level population.

Population in (γ,γ').

@ Band(A): $K^\pi=0^+$ g.s. band.

& Band(B): $K^\pi=2^+$ γ band.

a Band(C): $K^\pi=0^+$ band. Band based on 1246 level.

b Band(D): $K^\pi=12^+$ band. Band based on 2519 level. Configuration=AB.

c Band(E): $K^\pi=5^-$,α=1. Configuration=AE.

d Band(e): $K^\pi=5^-$ band,α=0. Configuration=AF.

e Band(F): $K^\pi=12^+$, 4-qp band,α=0. Configuration=ν(5/2[523],5/2[642])$\otimes\pi$(7/2[523],7/2[404]) (2015Ko14).

f Band(f): $K^\pi=12^+$, 4-qp band,α=1. Configuration=ν(5/2[523],5/2[642])$\otimes\pi$(7/2[523],7/2[404]) (2015Ko14).

g Band(G): $K^\pi=7^-$ band,α=1. Configuration=π7/2[523]$\otimes\pi$7/2[404] (2015Ko14).

h Band(g): $K^\pi=7^-$ band,α=0. Configuration=π7/2[523]$\otimes\pi$7/2[404] (2015Ko14).

i Band(H): Band based on (8),α=0.

j Band(I): Probable $K^\pi=0^-$, octupole band. Band proposed by 1984Fi07.

Adopted Levels, Gammas (continued)

$\gamma(^{164}Er)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[a]	α[b]	$I_{(\gamma+ce)}$	Comments
91.380	2^+	91.39 *1*	100	0.0	0^+	E2		4.14		α(K)=1.314 *19*; α(L)=2.17 *3*; α(M)=0.528 *8* α(N)=0.1194 *17*; α(O)=0.01396 *20*; α(P)=5.51×10^{-5} *8* B(E2)(W.u.)=206 *5*
299.43	4^+	208.08 *3*	100	91.380	2^+	E2		0.221		α(K)=0.1445 *21*; α(L)=0.0587 *9*; α(M)=0.01396 *20* α(N)=0.00318 *5*; α(O)=0.000394 *6*; α(P)=6.87×10^{-6} *10* B(E2)(W.u.)=2.6×10^2 *3*
614.39	6^+	314.97 *4*	100	299.43	4^+	E2		0.0596		α(K)=0.0441 *7*; α(L)=0.01197 *17*; α(M)=0.00279 *4* α(N)=0.000640 *9*; α(O)=8.27×10^{-5} *12*; α(P)=2.29×10^{-6} *4*
860.25	2^+	561.5 *3*	3.0 *5*	299.43	4^+	E2		0.01228		B(E2)(W.u.)=1.6 *4*
		768.92 *4*	100 *4*	91.380	2^+	E2(+M1)	>1.8	0.00725 *11*		B(E2)(W.u.)=9 *2*; B(M1)(W.u.)<0.0036
		860.29 *4*	84 *3*	0.0	0^+	E2				B(E2)(W.u.)=5.3 *6*
946.34	3^+	86.24 *12*		860.25	2^+	E2+M1		4.8 *5*		α(K)=2.6 *11*; α(L)=1.7 *12*; α(M)=0.4 *3* α(N)=0.09 *7*; α(O)=0.011 *7*; α(P)=0.00014 *9*
		646.94 *7*	21 *3*	299.43	4^+	E2+M1	2.7 *10*			Mult.,δ: from ce data in (α,2nγ); ce data in ε decay (1.95 min) gives M1,E2.
		855.01 *7*	100 *9*	91.380	2^+	E2+M1	−2.8 *7*			Mult.,δ: δ from $\gamma(\theta)$ in (α,2nγ), mult from ce data in ε decay (1.95 min).
1024.62	8^+	410.22 *7*	100	614.39	6^+	E2		0.0279		α(K)=0.0216 *3*; α(L)=0.00484 *7*; α(M)=0.001114 *16* α(N)=0.000256 *4*; α(O)=3.40×10^{-5} *5*; α(P)=1.171×10^{-6} *17* B(E2)(W.u.)=343 *19*
1058.49	4^+	198.4[‡] *3*		860.25	2^+					
		758.85 *9*	100 *7*	299.43	4^+	E2(+M1)	>+7			Mult.,δ: from ce and $\gamma(\theta)$ in (α,2nγ), and ce data in ε decay (1.95 min).
		967.8 *3*	47 *16*	91.380	2^+	E2				This γ seen in both the activities of ^{164}Tm ε. From relative branching ratios, this γ should have been seen in (α,2ng).
1197.48	5^+	251.0 *2*	5.1 *5*	946.34	3^+					
		583.21 *10*	18.8 *12*	614.39	6^+	E2+M1[@]	3.1 *8*	0.0124 *9*		
		898.05 *6*	100 *5*	299.43	4^+	E2+M1	−2.5 *+17−7*	0.0047 *4*		Mult.,δ: from ce data in ε decay (5.1 min) and (α,2nγ); sign from $\gamma(\theta)$, where δ=−4.8 *+15−59* or 0.00 *+7−14* from $\gamma(\theta)$ in (α,2nγ).
1246.06	0^+	385.3 *7*	0.8 *4*	860.25	2^+	E2		0.0332		α(K)=0.0255 *4*; α(L)=0.00595 *9*; α(M)=0.001374 *21* α(N)=0.000316 *5*; α(O)=4.17×10^{-5} *7*; α(P)=1.369×10^{-6} *21*
		1154.66 *5*	100 *3*	91.380	2^+	E2				
		1246.1 *4*		0.0	0^+	E0			0.65 *12*	q_K^2(E0/E2)=2.5 *4*, X(E0/E2)=0.25 *4* (2005Ki02 evaluation).

$^{164}_{68}Er_{96}$-7

Adopted Levels, Gammas (continued)

$\gamma(^{164}Er)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[a]	α[b]	Comments
1314.56	2^+	68.49 14		1246.06	0^+	(E2)		13.09 22	α(K)=2.03 3; α(L)=8.47 15; α(M)=2.06 4 α(N)=0.466 8; α(O)=0.0540 10; α(P)=0.0001027 15
		368.2[‡d] 3		946.34	3^+				
		454.6 1	2.2 11	860.25	2^+	E2		0.0211	α(K)=0.01661 24; α(L)=0.00348 5; α(M)=0.000798 12 α(N)=0.000184 3; α(O)=2.47×10^{-5} 4; α(P)=9.10×10^{-7} 13
		1015.15[c] 7	<26	299.43	4^+	(E2)			
		1223.14 5	100 3	91.380	2^+	M1+E2+E0			ρ^2(E0)=0.0053 27 (review by 1999Wo07).
		1314.3 2	56 3	0.0	0^+	E2			B(E2)(W.u.)=0.23 12 from B(E2)↑=0.006 3 in Coul. ex. (1982Ro07).
1358.73	6^+	300.0 3	65 15	1058.49	4^+	E2		0.0691	α(K)=0.0506 8; α(L)=0.01429 21; α(M)=0.00334 5 α(N)=0.000765 11; α(O)=9.83×10^{-5} 15; α(P)=2.60×10^{-6} 4
		744.1 2	100 30	614.39	6^+	E2+M1	3.7 +19−8	0.0068 3	Mult.,δ: from ce data in (α,2nγ). Other: δ=−1.9 +16−11 or >7 from γ(θ) in (α,2nγ).
		1059.3 10	40 5	299.43	4^+	E2			
1386.74	1^-	140.6[‡] 2		1246.06	0^+				
		526.3[‡d] 4		860.25	2^+				
		1295.36 5	100 3	91.380	2^+	E1			
		1386.69 5	66 4	0.0	0^+	E1			
1416.57	0^+	170.6[‡] 3		1246.06	0^+	(E0)			
		1325.17 5	100 3	91.380	2^+	E2			
		1416.6 1		0.0	0^+	E0			q_K^2(E0/E2)=1.08 19, X(E0/E2)=0.14 3 (2005Ki02 evaluation).
1433.98	3^-	574.2[‡] 4		860.25	2^+				
		1134.60 5	57 5	299.43	4^+	E1			
		1342.59 7	100 5	91.380	2^+	E1			
1469.72	4^+	855[d]		614.39	6^+				
		1170.2 3	100 20	299.43	4^+	M1+E2+E0			Mult.: from ce data in ε decay (1.95 min). Other: M1(+E2), δ<0.5 from ce data in (^{18}O,4nγ).
		1378.5 4	20 20	91.380	2^+				
1483.69	2^+	168.9[‡] 3		1314.56	2^+				
		237.6[‡] 3		1246.06	0^+				
		623.5[‡] 4		860.25	2^+				
		1184.30 5	100 12	299.43	4^+	E2			
		1392.48 5	81 4	91.380	2^+	M1+E2+E0		0.021 9	ρ^2(E0)=0.09 5 (review by 1999Wo07).
		1483.2 3	46 19	0.0	0^+	E2			B(E2)(W.u.)=1.1 3 from B(E2)↑=0.030 9 in Coul. ex. (1982Ro07).
1495.05		547.9[‡] 4		946.34	3^+				
		634.6 5		860.25	2^+				
1507.6?		1208.2	100	299.43	4^+				
1518.08	10^+	493.46 10	100	1024.62	8^+	E2		0.01701	B(E2)(W.u.)=353 18
1545.10	7^+	347.2 2	48 20	1197.48	5^+				
		520.3 5	28 6	1024.62	8^+	E2+M1	2.1 +26−7	0.018 3	Mult.,δ: from ce data in (α,2nγ).

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$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	α[b]	$I_{(\gamma+ce)}$	Comments
1545.10	7^+	930.5 *4*	100 *13*	614.39	6^+	E2+M1	−2.4 *3*			Mult.,δ: from $\gamma(\theta)$ data in (α,2nγ). Other: δ=1.1 *2* from ce data in (α,2nγ).
1555.3	$(5)^-$	358.0 *5*	30 *10*	1197.48	5^+					
		941.0 *5*	40 *12*	614.39	6^+	E1[@]				
		1255.5 *5*	100 *20*	299.43	4^+					
1568.67	(3^-)	1268.4 *5*	41 *16*	299.43	4^+					
		1477.1 *4*	100 *25*	91.380	2^+					
1577.79	1^-	190.6[‡] *3*		1386.74	1^-					
		331.0[‡] *3*		1246.06	0^+					
		1486.27 *17*	100 *10*	91.380	2^+	E1				
		1577.72 *8*	26.2 *16*	0.0	0^+	(E1)				
1610.26	$(4^-,5^-)$	551.5 *5*	16 *3*	1058.49	4^+					
		663.9 *2*	100 *6*	946.34	3^+					
1631.5		136.1[‡d] *2*		1495.05						
		572.9[‡d] *4*		1058.49	4^+					
		685.0[‡d] *4*		946.34	3^+					
		1017.2	<10	614.39	6^+					γ not reported in ε decay (1.95 min).
		1332.0 *5*	100 *40*	299.43	4^+					γ not reported in ε decay (1.95 min).
1640.2		582.0 *5*	100 *20*	1058.49	4^+					
		1339.5 *10*	37 *24*	299.43	4^+					
1664.21	5^-	1049.86 *9*	42 *2*	614.39	6^+	E1[@]				B(E1)(W.u.)>7.2×10^{-7} Reduced hindrance factor $f_\nu\leq34.3$, ν=4 (2015Ko14 evaluation).
		1364.68 *9*	100 *6*	299.43	4^+	[E1]				B(E1)(W.u.)>7.8×10^{-7} Reduced hindrance factor $f_\nu\leq33.6$, ν=4 (2015Ko14 evaluation).
1683.40	(5^+)	73.0 *3*	73 *12*	1610.26	$(4^-,5^-)$	(E1)		0.743 *14*		α(K)=0.611 *11*; α(L)=0.1037 *19*; α(M)=0.0230 *5* α(N)=0.00524 *10*; α(O)=0.000685 *13*; α(P)=2.64×10^{-5} *5*
		486.00 *8*	27 *8*	1197.48	5^+					
		624.6 *2*	100 *12*	1058.49	4^+					
		736.9 *2*	88 *27*	946.34	3^+					
1702.2		841.9 *5*	100	860.25	2^+					
1702.20	0^+	218.5 *3*	3.8 *13*	1483.69	2^+					
		315.44 *6*	11.9 *6*	1386.74	1^-	E1		0.01638		
		387.7[d]	<0.6	1314.56	2^+					
		456.4 *2*		1246.06	0^+	E0			0.14 *3*	q^2_K(E0/E2)=0.98 *19*, X(E0/E2)=0.69 *14* (2005Ki02 evaluation).
		842.06 *5*	36 *2*	860.25	2^+	E2				
		1610.71 *5*	100 *3*	91.380	2^+	E2				
		1702.1 *4*		0.0	0^+	E0			0.057 *13*	q^2_K(E0/E2)=0.38 *9*, X(E0/E2)=0.073 *18* (2005Ki02 evaluation).

$^{164}_{68}Er_{96}$-9

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	α[b]	$I_{(\gamma+ce)}$	Comments
1706.7	(6)$^+$	1092.4 8	100 35	614.39	6$^+$	M1(+E2)[@]	<0.4			
		1407 1	57 30	299.43	4$^+$					
1715.34	(2$^-$)	137.7 2		1577.79	1$^-$					
		768.7		946.34	3$^+$					
		854.9		860.25	2$^+$					
1726.1?		1111.7		614.39	6$^+$					
1741.6		881.0 4	100 28	860.25	2$^+$					
		1442.4 5	87 22	299.43	4$^+$					
		1651.5 10	65 22	91.380	2$^+$					
1744.55	6$^-$	80.27 9	13.4 14	1664.21	5$^-$	E2		6.88		α(K)=1.682 24; α(L)=3.99 6; α(M)=0.971 15; α(N)=0.219 4; α(O)=0.0255 4; α(P)=7.35×10^{-5} 11; B(E2)(W.u.)=8.8×10^2 16
		199.4 2	2.8 10	1545.10	7$^+$	[E1]		0.0524		B(E1)(W.u.)=1.6×10^{-6} 7
		385.59 14	5.7 4	1358.73	6$^+$	[E1]		0.0101		B(E1)(W.u.)=4.6×10^{-7} 8
		547.08 7	100 5	1197.48	5$^+$	E1		0.00459		B(E1)(W.u.)=2.8×10^{-6} 5
		1130.06 10	6.9 6	614.39	6$^+$	[E1]		0.0011		B(E1)(W.u.)=2.2×10^{-8} 4
1744.88	8$^+$	386.6 4	100 40	1358.73	6$^+$	E2[&]		0.0329		α(K)=0.0253 4; α(L)=0.00588 9; α(M)=0.001359 20; α(N)=0.000312 5; α(O)=4.12×10^{-5} 6; α(P)=1.358×10^{-6} 20
		720.1 2	77 45	1024.62	8$^+$	E2+M1	−1.5 +8−30			Mult.,δ: from ce and $\gamma(\theta)$ data in (α,2nγ); also γ(lin pol) in (^{9}Be,5nγ),E=59 MeV.
1763.8	(7)$^-$	1149.4 4	100	614.39	6$^+$	E1				
1765.86	0$^+$	451.3[d]	<0.6	1314.56	2$^+$					
		519.76 21		1246.06	0$^+$	E0			0.39 13	q^2_K(E0/E2)=2.9 7, X(E0/E2)=2.1 6 (2005Ki02 evaluation).
		905.70 5	32 2	860.25	2$^+$	E2				
		1674.34 5	100 3	91.380	2$^+$	E2				
		1765.8 4		0.0	0$^+$	E0			0.32 6	q^2_K(E0/E2)=2.3 4, X(E0/E2)=0.47 8 (2005Ki02 evaluation).
1788.35	2$^+$	474.2 2	4.7 16	1314.56	2$^+$	M1+E2+E0		0.10 4		
		729.3 4	7.8 16	1058.49	4$^+$					
		1489.15 11	100 11	299.43	4$^+$	E2				
		1696.86 6	61 3	91.380	2$^+$	M1+E2+E0		0.0048 15		
		1788.4 4	9.4 16	0.0	0$^+$					
1798.4	(5)$^-$	1184.3 5	65	614.39	6$^+$	E1[@]				I_γ: other: 233 in (α,2nγ).
		1498.6 6	100	299.43	4$^+$					
1806.5		748	100	1058.49	4$^+$					
1813.99	(6)$^-$	616.3 5	100	1197.48	5$^+$	E1				
1833.41	2$^+$	973.4 4	9 3	860.25	2$^+$					
		1533.93 5	64 3	299.43	4$^+$	E2				
		1742.09 5	100 3	91.380	2$^+$	M1+E2+E0		0.0055 19		

From ENSDF

$^{164}_{68}Er_{96}$-10

Adopted Levels, Gammas (continued)

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	α[b]	Comments
1833.41	2^+	1833.35 *16*	48 *6*	0.0	0^+	E2			
1841.7?	(0^+)	358.0 *4*	100 *30*	1483.69	2^+	E2		0.0409	α(K)=0.0311 *5*; α(L)=0.00763 *11*; α(M)=0.00177 *3* α(N)=0.000406 *6*; α(O)=5.32×10^{-5} *8*; α(P)=1.649×10^{-6} *24*
		1750.2 *6*	30 *10*	91.380	2^+				
		1841.6[d]		0.0	0^+	(E0)			
1845.54	7^-	101.0[d]	<0.25	1744.55	6^-				
		820.78 *11*	32.3 *15*	1024.62	8^+	E1			
		1231.13 *7*	100 *5*	614.39	6^+	E1[@]			
1861.46?	$(0,1,2)^+$	377.77 *24*	20 *10*	1483.69	2^+				
		546.9 *3*	100 *20*	1314.56	2^+	E2		0.01310	
1875.26	$1^{(+)}$	159.93 *3*	40 *10*	1715.34	(2^-)	E1		0.0935	α(K)=0.0784 *11*; α(L)=0.01184 *17*; α(M)=0.00262 *4* α(N)=0.000602 *9*; α(O)=8.26×10^{-5} *12*; α(P)=3.77×10^{-6} *6* E_γ,I_γ,Mult.: from ^{164}Tm ε decay (1.95 min) only.
		305.9[d] *4*	40 *10*	1568.67	(3^-)				
		1015.15[c] *7*	<240	860.25	2^+				
		1783.6 *2*	100 *10*	91.380	2^+				
		1873.5[d] *5*	90 *10*	0.0	0^+				
1911.27	2^+	524.52 *9*	15 *3*	1386.74	1^-	E1			
		666.5[c] *6*	<8	1246.06	0^+	(E2)			E_γ: level-energy difference=665.2.
		1819.78 *9*	100 *5*	91.380	2^+	E2+M1+E0		0.0036 *10*	
		1910.92[d] *9*	12 *1*	0.0	0^+				
1929.5		732	100	1197.48	5^+				
1953.92	2^+	1093.4 *5*	7 *3*	860.25	2^+	E2			
		1654.9 *4*	7 *3*	299.43	4^+	E2			
		1862.52 *5*	100 *5*	91.380	2^+	M1+E2+E0		0.0030 *8*	
1961.29		383.0 *4*		1577.79	1^-				
		465.3 *4*		1495.05					
		574.2 *4*		1386.74	1^-				
		1015.15[c] *7*		946.34	3^+				
		1661.2 *4*		299.43	4^+				
		1869.3[c] *10*		91.380	2^+				
1964.34	(8^-)	118.7 *2*	70 *30*	1845.54	7^-	(M1+E2)[&]		1.65 *10*	
		219.9 *2*	100 *40*	1744.55	6^-	(E2)[&]		0.184	
1969.6	$(2^+,3^-,4^+)$	1671.5 *10*	60 *20*	299.43	4^+				
		1877.5 *7*	100 *25*	91.380	2^+				
1977.15	9^+	431.95 *7*	100 *8*	1545.10	7^+	E2[@]		0.0242	
		952.60 *7*	51 *6*	1024.62	8^+	D+Q[&]			
1985.06	7^-	139.44 *8*	32.0 *11*	1845.54	7^-	E2+M1	15 *5*	0.872	B(M1)(W.u.)=2.5×10^{-7} *17*; B(E2)(W.u.)=1.40 *10* α(K)=0.457 *7*; α(L)=0.319 *5*; α(M)=0.0769 *12*;

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	α[b]	Comments
									α(N)=0.0174 *3* α(O)=0.00209 *3*; α(P)=1.97×10^{-5} *3* Mult.: (M1) assumed in ^{160}Gd(^{9}Be,5nγ) (2012Sw02). Assuming M1, reduced hindrance factor f_ν=1.81×10^4 *12*, ν=1 (2015Ko14 evaluation, using branching ratio=32.5 *12*).
1985.06	7$^-$	240.49 *3*	100 *3*	1744.55	6$^-$	M1		0.242	α(K)=0.204 *3*; α(L)=0.0301 *5*; α(M)=0.00668 *10* α(N)=0.001557 *22*; α(O)=0.000225 *4*; α(P)=1.248×10^{-5} *18* B(M1)(W.u.)=3.47×10^{-5} *23* Reduced hindrance factor f_ν=3.02×10^4 *17*, ν=1 (2015Ko14 evaluation).
		626.4 *8*	0.6 *4*	1358.73	6$^+$	[E1]			B(E1)(W.u.)=1.2×10^{-10} *8* Reduced hindrance factor f_ν=310 *50*, ν=4 (2015Ko14 evaluation).
		960.5 *2*	3.0 *4*	1024.62	8$^+$	[E1]			B(E1)(W.u.)=1.67×10^{-10} *25* Reduced hindrance factor f_ν=43.4 *16*, ν=6 (2015Ko14 evaluation, using branching ratio=2.8 *6*).
		1370.73 *10*	10.8 *7*	614.39	6$^+$	[E1]			B(E1)(W.u.)=2.07×10^{-10} *18* Reduced hindrance factor f_ν=40.6 *8*, ν=6 (2015Ko14 evaluation, using branching ratio=12.2 *11*).
2002.6	(2$^+$ to 5$^-$)	568.4 *5*	100 *30*	1433.98	3$^-$				
		1703.5 *7*	39 *20*	299.43	4$^+$				
2005.4	8$^+$	298.7 *5*		1706.7	(6)$^+$				
		980.8 *5*		1024.62	8$^+$	E2+M1+E0			
		1391[d]		614.39	6$^+$				
2018.0		1403.6	100	614.39	6$^+$				
2022.50		589.0[d] *6*	133 *42*	1433.98	3$^-$				E_γ: from (n,n$'\gamma$) only.
		635.10[c] *25*	<114	1386.74	1$^-$				
		2022.55 *8*	100 *14*	0.0	0$^+$				
2025.77	(2$^+$)	711.2[d] *4*	4 *1*	1314.56	2$^+$				
		780.1 *4*	4 *1*	1246.06	0$^+$				
		1165.45 *5*	100 *5*	860.25	2$^+$	E2			
		1934.96[c] *15*	<22	91.380	2$^+$	(E2)			E_γ: level-energy difference=1934.37.
		2026[d] *1*	15 *7*	0.0	0$^+$				E_γ: from (n,n$'\gamma$) only.
2032.1?		786.06[d] *14*	100	1246.06	0$^+$				
2035.43	1	721.1[d] *7*	18 *9*	1314.56	2$^+$				
		1943.5 *4*	59 *14*	91.380	2$^+$				
		2035.60 *23*	100 *18*	0.0	0$^+$				
2046.4		1747 *2*	100	299.43	4$^+$				
2054.6	(9)$^-$	1030.0	100	1024.62	8$^+$	E1[@]			
2068.9	(8)$^+$	1044.3	100	1024.62	8$^+$	E2+M1	1.3 *7*		
		1454.5 *7*	40	614.39	6$^+$				

${}^{164}_{68}Er_{96}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	α[b]	$I_{(\gamma+ce)}$	Comments
2069.38	(1⁻,2⁻)	355.00 *22*	67 *7*	1715.34	(2⁻)	M1,E2		0.064 *22*		
		635.10[c] *25*	<107	1433.98	3⁻					
		1978.0 *2*	100 *7*	91.380	2⁺					
2082.1		537.0 *5*	100	1545.10	7⁺					
2082.81	12⁺	564.73 *6*	100	1518.08	10⁺	E2		0.01210		B(E2)(W.u.)=294 *47*
2091.00	(8⁻)	277.0 *1*	≈30	1813.99	(6)⁻	(E2)				Mult.: from $\gamma(\theta)$ in (α,2nγ) and RUL.
		346.1 *1*	25 *8*	1744.88	8⁺					
		546.0 *1*	100 *20*	1545.10	7⁺					
2093.62?		1069.0[d] *1*	100	1024.62	8⁺	M1+E2[@]	0.9 *5*			
2108.57	9⁻	1083.95 *9*	100	1024.62	8⁺	E1				
2141.4		1842 *2*	100	299.43	4⁺					
2151.4		1537 *1*	100	614.39	6⁺					
2163.67	(8⁻)	178.48 *6*	100	1985.06	7⁻					
2168.1		142.3 *3*	100 *43*	2025.77	(2⁺)					
		1110.5[d] *8*	43 *29*	1058.49	4⁺					
		1869.3[c] *10*	43 *29*	299.43	4⁺					
2173.04	0⁺	298.09 *21*	8 *2*	1875.26	1⁽⁺⁾	(M1)		0.1357		
		339.4	<1	1833.41	2⁺					
		407.0 *1*		1765.86	0⁺	E0			0.07 *1*	q^2_K(E0/E2)=0.69 *12*, X(E0/E2)=1.18 *20* (2005Ki02 evaluation).
		595.17 *5*	62 *2*	1577.79	1⁻	E1				
		689.63 *12*	15 *2*	1483.69	2⁺	E2				E_γ: level-energy difference=689.16.
		858.3	<2	1314.56	2⁺					
		926.6 *4*		1246.06	0⁺	E0			0.5 *1*	q^2_K(E0/E2)=4.8 *9*, X(E0/E2)=4.1 *8* (2005Ki02 evaluation).
		1312.25 *14*	55 *11*	860.25	2⁺	E2				
		2081.54 *14*	100 *5*	91.380	2⁺	E2				
		2172.5 *4*		0.0	0⁺	E0			1.5 *4*	q^2_K(E0/E2)=8.1 *18*, X(E0/E2)=2.6 *6* (2005Ki02 evaluation).
2184.31	10⁺	439.43 *8*	100 *12*	1744.88	8⁺	E2		0.0231		
		666.2 *1*	62 *30*	1518.08	10⁺	M1(+E2)[@]	<0.9	0.0149 *20*		
2240.2?		235[d]		2005.4	8⁺					
		722[d]	100	1518.08	10⁺					
2254.24		1955.20 *11*	100	299.43	4⁺					Level-energy difference=1954.80.
2261.27	(10⁻)	152.70 *12*	17 *7*	2108.57	9⁻	(M1+E2)[&]		0.74 *12*		
		296.93 *7*	100 *6*	1964.34	(8⁻)	(E2)[&]		0.071		
2278.38	2⁺	318.6 *6*		1961.29						E_γ: level-energy difference=317.0.
		794.6 *5*	12 *4*	1483.69	2⁺	M1+E2+E0		0.058 *30*		
		844.7 *1*	≈12	1433.98	3⁻					E_γ: level-energy difference=844.35.
		963.9[d] *3*	21 *4*	1314.56	2⁺	M1+E2+E0		0.040 *20*		
		1417.96 *8*	100 *8*	860.25	2⁺	E2				

From ENSDF

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	α[b]	Comments
2278.38	2^+	2186.4 *4*	21 *4*	91.380	2^+	M1+E2+E0		0.025 *10*	
		2278.09 *12*	46 *5*	0.0	0^+	(E2)			
2278.9		534 *1*	100	1744.88	8^+				
2337.32	(9^-)	1312.7 *1*	100	1024.62	8^+				
2339.99	(8)	355.0 *1*	100	1985.06	7^-				
2356.4		1742 *2*	100	614.39	6^+				
2363.58	(9^-)	199.75 *9*	100	2163.67	(8^-)				
		379		1985.06	7^-				
2370.6		385.51 *25*	100	1985.06	7^-				
2404.2	1	2313	183 *53*	91.380	2^+				
		2404	100	0.0	0^+				
2408.18	11^-	890.1 *1*	100	1518.08	10^+	E1			
2416.2	1	2325	83 *20*	91.380	2^+				
		2416	100	0.0	0^+				
2421.13	$(10)^-$	330.2 *1*	45 *7*	2091.00	(8^-)				
		443.9 *1*	100 *10*	1977.15	9^+	E1			
2444.53	(2^+)	484.0 *4*		1961.29					
		729.3 *4*	7 *1*	1715.34	(2^-)				
		875.43 *19*	7 *1*	1568.67	(3^-)	(E1)			
		1057.81 *5*	100 *4*	1386.74	1^-	(E1)			
		1584.0 *4*	5.8 *15*	860.25	2^+				
		2353.0[cd] *2*	<26	91.380	2^+				
2448.1		1423.5 *5*	100	1024.62	8^+				
2462.68	10^+	944.6 *1*	100	1518.08	10^+	E2+M1+E0[@]			
2470.1	(11^-)	952	100	1518.08	10^+				
2479.48	11^+	502.33 *6*	100	1977.15	9^+	E2[@]			
		961.3[d]	24	1518.08	10^+				E_γ: from (α,2nγ) only.
2483.4		1869 *2*	100	614.39	6^+				
2519.05	12^+	279[d]		2240.2?					
		334.4 *4*	81 *33*	2184.31	10^+				
		436.5 *5*	100 *15*	2082.81	12^+	M1(+E2)[@]	<0.35	0.0481 *16*	α(K)=0.0405 *14*; α(L)=0.00595 *15*; α(M)=0.00132 *3* α(N)=0.000307 *8*; α(O)=4.44×10^{-5} *12*; α(P)=2.45×10^{-6} *9*
		1001.2 *5*	67	1518.08	10^+	E2[@]			
2525.85	(9)	185.9 *1*	97 *16*	2339.99	(8)				
		362.1 *1*	100 *8*	2163.67	(8^-)				
2541.03	$(1^+,2^+)$	666.5[c] *3*	<50	1875.26	$1^{(+)}$	(E2)			
		775.47[d] *22*	70 *20*	1765.86	0^+				
		2449.3 *2*	100 *10*	91.380	2^+				
2577.2	1	2486	148 *28*	91.380	2^+				
		2577	100	0.0	0^+				
2583.67	(10^-)	220.1 *1*	100 *25*	2363.58	(9^-)				

$^{164}_{68}Er_{96}$-14

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[a]	Comments
2583.67	(10⁻)	419.9[d] *6*	≈8	2163.67	(8⁻)			
2591.6		1567 *1*	100	1024.62	8⁺			
2631.23	(12⁻)	369.96 *6*	100	2261.27	(10⁻)	(E2)[&]		
2640.2	1	2549	71 *7*	91.380	2⁺			
		2640	100	0.0	0⁺			
2702.58	14⁺	619.76 *11*	100	2082.81	12⁺	E2		Mult.: from $\gamma(\theta)$ in (α,2nγ) and (^{18}O,4nγ); linear pol in (^{9}Be,5nγ),E=59 MeV. B(E2)(W.u.)=432 *56* from B(E2)↓=2.3 *3* in Coul. ex. (1980Ya03).
2729.57	(10)	203.7 *1*	100 *6*	2525.85	(9)			
		389.6 *1*	37 *4*	2339.99	(8)			
2733.3	12⁺	549.0 *4*	100	2184.31	10⁺	(E2)		B(E2)(W.u.)=282 *132* from B(E2)↓=1.5 *7* in Coul. ex. (1980Ya03). Mult.: ΔJ=(2),(Q) from $\gamma(\theta)$ in (^{9}Be,5nγ),E=59 MeV; population in Coul. ex.
2747.2	1	2656	46 *20*	91.380	2⁺			
		2747	100	0.0	0⁺			
2759.01	(9⁻)	595.1 *1*	19 *8*	2163.67	(8⁻)			
		773.9 *1*	100 *14*	1985.06	7⁻			
2762.2	1	2671	93 *20*	91.380	2⁺			
		2762	100	0.0	0⁺			
2800.45	(12⁻)	379.32 *7*	100	2421.13	(10)⁻	(E2)[&]		
2815.21	13⁻	407.1 *4*	50 *25*	2408.18	11⁻	Q		
		732.4 *1*	100 *16*	2082.81	12⁺	E1(+M2)	−0.040 *26*	Mult.,δ: from $\gamma(\theta$,lin pol) in (^{9}Be,5nγ).
2822.55	(11⁻)	239.0 *3*	100 *25*	2583.67	(10⁻)			
		458.5 *4*	100 *50*	2363.58	(9⁻)			
2823.50?		753.4 *4*	60 *20*	2069.38	(1⁻,2⁻)			
		797.9 *3*	100 *20*	2025.77	(2⁺)			
		862.7 *4*		1961.29				
		1876.9 *7*	100 *40*	946.34	3⁺			
2874.78	14⁺	355.7 *4*	23 *13*	2519.05	12⁺			
		791.98 *7*	100 *7*	2082.81	12⁺	E2[&]		
2933.2	1	2842	132 *26*	91.380	2⁺			
		2933	100	0.0	0⁺			
2950.26	(11)	220.7 *1*	95 *27*	2729.57	(10)			
		366.6 *1*	65 *10*	2583.67	(10⁻)			
		424.4 *1*	100 *11*	2525.85	(9)			
2966.2	1	2875	194 *35*	91.380	2⁺			
		2966	100	0.0	0⁺			
2980.56	(10⁻)	221.7 *1*	57 *12*	2759.01	(9⁻)			
		616.9 *1*	25 *4*	2363.58	(9⁻)			
		816.8 *1*	100 *10*	2163.67	(8⁻)			
3018.0	1	3018	100	0.0	0⁺			
3027.3	13⁺	547.8 *4*	100	2479.48	11⁺	(Q)[&]		

$^{164}_{68}Er_{96}$-15

$\gamma(^{164}$Er) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[b]	Comments
3028.76		1460.20 *16*	100 *13*	1568.67	(3⁻)			
		1714.1 *2*	52 *3*	1314.56	2⁺			
		1969.6 *5*	27 *7*	1058.49	4⁺			
3066.6	(14⁻)	435.4 *3*	100	2631.23	(12⁻)	Q[&]		
3079.4	(12⁻)	256.8 *4*	100	2822.55	(11⁻)			
		496		2583.67	(10⁻)			
3133.2	1	3042	47 *14*	91.380	2⁺			
		3133	100	0.0	0⁺			
3179.2	1	3088	40 *11*	91.380	2⁺			
		3179	100	0.0	0⁺			
3220.2	1	3129	154 *27*	91.380	2⁺			
		3220	100	0.0	0⁺			
3221.18	(11⁻)	240.6 *1*	100 *10*	2980.56	(10⁻)			
		462.3 *1*	16 *2*	2759.01	(9⁻)			
		637.5 *1*	39 *4*	2583.67	(10⁻)			
		857.5 *1*	71 *5*	2363.58	(9⁻)			
3244.35	(14⁻)	443.9 *2*	100	2800.45	(12⁻)	(Q)[&]		
3263.09	16⁺	388.4 *3*	22 *7*	2874.78	14⁺	(E2)[&]		B(E2)(W.u.)<7.2×10²
		560.50 *11*	100 *10*	2702.58	14⁺	E2[&]	0.01233	B(E2)(W.u.)<526 from B(E2)↓<2.8 in Coul. ex. (1980Ya03).
3267.0	14⁺	533.7[c] *3*	100	2733.3	12⁺	(E2)		B(E2)(W.u.)=357 *170* from B(E2)↓=1.9 *9* in Coul. ex. (1980Ya03). Mult.: ΔJ=(2),(Q) from $\gamma(\theta)$ in (^{9}Be,5nγ),E=59 MeV; population in Coul. ex.
3281.01	15⁻	465.8 *1*	100 *14*	2815.21	13⁻	Q[&]		
		578.4 *6*	48 *25*	2702.58	14⁺	D[&]		
3303.1	(6⁻,7⁻)	1139.5 *3*	100 *10*	2163.67	(8⁻)			
		1317.6 *10*	26 *16*	1985.06	7⁻			
3352.3	(13⁻)	273.2	83	3079.4	(12⁻)			
		529.7 *4*	100	2822.55	(11⁻)			
3377.57	(12⁺)	156.4 *1*	22 *2*	3221.18	(11⁻)	(E1)	0.0992	α(K)=0.0831 *12*; α(L)=0.01258 *18*; α(M)=0.00278 *4* α(N)=0.000640 *9*; α(O)=8.77×10⁻⁵ *13*; α(P)=3.99×10⁻⁶ *6* B(E1)(W.u.)=1.29×10⁻⁷ *13* Mult.: from α(exp) In (^{9}Be,5nγ) (2012Sw02). Reduced hindrance factor f_ν=2.78×10³ *12*, ν=2 (2015Ko14 evaluation).
		427.3 *1*	21 *1*	2950.26	(11)	[D]	0.030 *22*	
		555.0 *1*	100 *3*	2822.55	(11⁻)	[E1]		B(E1)(W.u.)=1.31×10⁻⁸ *7* Reduced hindrance factor f_ν=93.4 *8*, ν=4 (2015Ko14 evaluation).
		1294.8 *3*	2.0 *3*	2082.81	12⁺	[M1]		B(M1)(W.u.)=2.0×10⁻⁹ *4* Reduced hindrance factor f_ν=6.17 *9*, ν=11 (2015Ko14 evaluation).
		1859.5[d] *6*	0.4 *2*	1518.08	10⁺	[E2]		B(E2)(W.u.)=1.9×10⁻⁸ *10* Reduced hindrance factor f_ν=5.9 *3*, ν=10 (2015Ko14 evaluation).
3408.2		1840.8 *7*	33 *16*	1568.67	(3⁻)			

$^{164}_{68}$Er$_{96}$-16

γ(^{164}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	Comments
3408.2		1974.5 *5*	100 *17*	1433.98	3^-		
		3108.2 *4*	42 *9*	299.43	4^+		
		3315.6[d] *5*	50 *8*	91.380	2^+		
3411.2	16^+	708.6 *3*	100	2702.58	14^+	(E2)[&]	B(E2)(W.u.)=282 *56* from B(E2)↓=1.5 *3* in Coul. ex. (1980Ya03).
3458.2	1	3367	2.9×10^2 *12*	91.380	2^+		
		3458	100	0.0	0^+		
3518.7	(15^+)	491.4 *4*	100	3027.3	13^+		
3534.58?	(2^+)	1361.53 *5*	100 *5*	2173.04	0^+	(E2)	
		1623.9[d] *3*	71 *9*	1911.27	2^+		
		2052.5[cd] *5*	<36	1483.69	2^+		
3541.0	1,2	3541	100	0.0	0^+		
3545.6	(13^+)	168		3377.57	(12^+)		
3551.2	1	3460	58 *24*	91.380	2^+		
		3551	100	0.0	0^+		
3559.6	(16^-)	493.0 *3*	100	3066.6	(14^-)		
3602.2	1	3511	46 *15*	91.380	2^+		
		3602	100	0.0	0^+		
3629.67	2^+	1350.9 *5*	7 *4*	2278.38	2^+		
		2052.5[cd] *5*	<7	1577.79	1^-		
		2383.61 *9*	100 *5*	1246.06	0^+	E2	
		2570.9 *5*	10 *1*	1058.49	4^+		
3734.5	(14^+)	189		3545.6	(13^+)		
		357		3377.57	(12^+)		
3752.0	1	3752	100	0.0	0^+		
3760.0	(16^-)	515.7 *3*	100	3244.35	(14^-)	Q[&]	
3768.19	$(1^+,2^+)$	1894.4 *4*	50 *12*	1875.26	$1^{(+)}$		E_γ: level-energy difference=1893.0.
		1934.96[c] *15*	<312	1833.41	2^+	(E2)	
		2353.0[cd] *2*	<225	1416.57	0^+		
		2521.77 *14*	100 *12*	1246.06	0^+		
3768.59	18^+	505.50 *6*	100	3263.09	16^+	Q[&]	
3800.7	(16^+)	533.7[c] *3*	100	3267.0	14^+		
3804.9	17^-	523.9 *4*	100	3281.01	15^-	Q[&]	
3942.7	(15^+)	208		3734.5	(14^+)		
		397		3545.6	(13^+)		
3944.1	1	3944	100	0.0	0^+		
4017.9	(17^+)	499.2 *4*	100	3518.7	(15^+)	(Q)[&]	
4105.6	(18^-)	546.0 *5*	100	3559.6	(16^-)	(Q)[&]	
4121.2	18^+	710.0 *3*	100	3411.2	16^+	(E2)[&]	
4169.4	(16^+)	227		3942.7	(15^+)		
		435		3734.5	(14^+)		

Adopted Levels, Gammas (continued)

$\gamma(^{164}Er)$ (continued)

E_i(level)	J^{π}_i	E_{γ}†	I_{γ}†	E_f	J^{π}_f	Mult.#
4344.5	(18⁻)	584.4 *4*	100	3760.0	(16⁻)	
4345.7	20⁺	577.1 *3*	100	3768.59	18⁺	Q&
4364.3	(18⁺)	563.6 *5*	100	3800.7	(16⁺)	
4384.9	(19⁻)	580.0 *2*	100	3804.9	17⁻	
4413.1	(17⁺)	244		4169.4	(16⁺)	
		470		3942.7	(15⁺)	
4590.1	(19⁺)	572.2 *2*	100	4017.9	(17⁺)	
4673.2	(18⁺)	260		4413.1	(17⁺)	
		504		4169.4	(16⁺)	
4702.0	(20⁻)	596.4 *3*	100	4105.6	(18⁻)	Q&
4868.4	20⁺	747.2 *4*	100	4121.2	18⁺	
4948.2	(19⁺)	275		4673.2	(18⁺)	
		535		4413.1	(17⁺)	
4987.4	(20⁻)	642.9	100	4344.5	(18⁻)	
5000.1	22⁺	654.4 *4*	100	4345.7	20⁺	Q&
5018.2	(21⁻)	633.3 *4*	100	4384.9	(19⁻)	(Q)&
5230.6	(21⁺)	640.5 *4*	100	4590.1	(19⁺)	
5238.1	(20⁺)	290		4948.2	(19⁺)	
		565		4673.2	(18⁺)	
5349.9	(22⁻)	647.9 *4*	100	4702.0	(20⁻)	
5541.4	(21⁺)	303		5238.1	(20⁺)	
		593		4948.2	(19⁺)	
5651.5	22⁺	783.1 *4*	100	4868.4	20⁺	
5678	(22⁻)	691[d]	100	4987.4	(20⁻)	
5704.1	(23⁻)	685.9 *8*	100	5018.2	(21⁻)	
5729.1	24⁺	729.0 *5*	100	5000.1	22⁺	
5857.7	(22⁺)	316		5541.4	(21⁺)	
		620		5238.1	(20⁺)	
6052.9	(24⁻)	703		5349.9	(22⁻)	
6186.5	(23⁺)	329		5857.7	(22⁺)	
		645		5541.4	(21⁺)	
6442.1	(25⁻)	738		5704.1	(23⁻)	

E_i(level)	J^{π}_i	E_{γ}†	E_f	J^{π}_f
6526.6	(24⁺)	340	6186.5	(23⁺)
		669	5857.7	(22⁺)
6529.1	26⁺	800	5729.1	24⁺
6814.9	(26⁻)	762	6052.9	(24⁻)
6878.4	(25⁺)	352	6526.6	(24⁺)
		692	6186.5	(23⁺)
7238.1	(27⁻)	796	6442.1	(25⁻)
7241.0	(26⁺)	362	6878.4	(25⁺)
		714	6526.6	(24⁺)
7399.1	28⁺	870	6529.1	26⁺
7614.6	(27⁺)	373	7241.0	(26⁺)
		737	6878.4	(25⁺)
7640.9	(28⁻)	826	6814.9	(26⁻)
7999.3	(28⁺)	385	7614.6	(27⁺)
		758	7241.0	(26⁺)
8095.1	(29⁻)	857	7238.1	(27⁻)
8338.1	30⁺	939	7399.1	28⁺
8396.6	(29⁺)	397	7999.3	(28⁺)
		782	7614.6	(27⁺)
8533.9	(30⁻)	893	7640.9	(28⁻)
8803.9	(30⁺)	407	8396.6	(29⁺)
		805	7999.3	(28⁺)
9016.1	(31⁻)	921	8095.1	(29⁻)
9225.6	(31⁺)	829	8396.6	(29⁺)
9342.1	32⁺	1004	8338.1	30⁺
9492.0	(32⁻)	958	8533.9	(30⁻)
9658.9	(32⁺)	855	8803.9	(30⁺)
10001.1	(33⁻)	985	9016.1	(31⁻)
10410.1	34⁺	1068	9342.1	32⁺
10515	(34⁻)	1023	9492.0	(32⁻)
11049	(35⁻)	1048	10001.1	(33⁻)
11549	36⁺	1139	10410.1	34⁺

† When a level is populated in more than one reaction, values are taken from weighted averages of all available data of comparable precision, from the following datasets: ^{164}Tm ε decay (1.95 min); ^{164}Tm ε decay (5.1 min); ^{150}Nd(^{18}O,4nγ); and ^{160}Gd(^{9}Be,5nγ),E=59 MeV (this dataset used mainly for Iγ values as ΔEγ are not provided). Selected data for a few levels are also available from ^{160}Gd(^{9}Be,5nγ),E=57 MeV and ^{164}Er(n,n$'\gamma$). For J=1 states values are generally from ^{164}Er(γ,γ').

‡ Weak γ ray from ^{164}Tm ε decay (1.95 min) only, branching is not available.

From ce data in ε decay (1.95 min) for γ rays from low-spin (J≤3), and from ce and $\gamma(\theta)$ in (α,2nγ), $\gamma(\theta)$ and linear polarization in (^{18}O,4nγ) and

$\gamma(^{164}Er)$ (continued)

(^{9}Be,5nγ),E=59 MeV for γ rays from higher spin (J>3) levels. Exceptions are noted. Mult=Q indicates ΔJ=2, quadrupole (likely to be E2), and D+Q indicates ΔJ=1, dipole+quadrupole (likely to be M1+E2). Further RUL for E2 and M2 transitions is used to assign (E2) or (M1+E2), assuming level half-life is <20 ns or so. All data for pure E0 or for those with E0 admixture are from 1990Ad07 in ^{164}Tm ε decay (1.95 min). See this dataset for details of conversion electron measurements for E0 transitions.

[@] From $\gamma(\theta)$ in (^{18}O,4nγ).

[&] From $\gamma(\theta)$, and linear polarization for selected transitions in (^{9}Be,5nγ),E=59 MeV.

[a] From ce data in ε decay (1.95 min) and/or in (α,2nγ).

[b] Additional information 2.

[c] Multiply placed.

[d] Placement of transition in the level scheme is uncertain.

$^{164}_{68}$Er$_{96}$-19

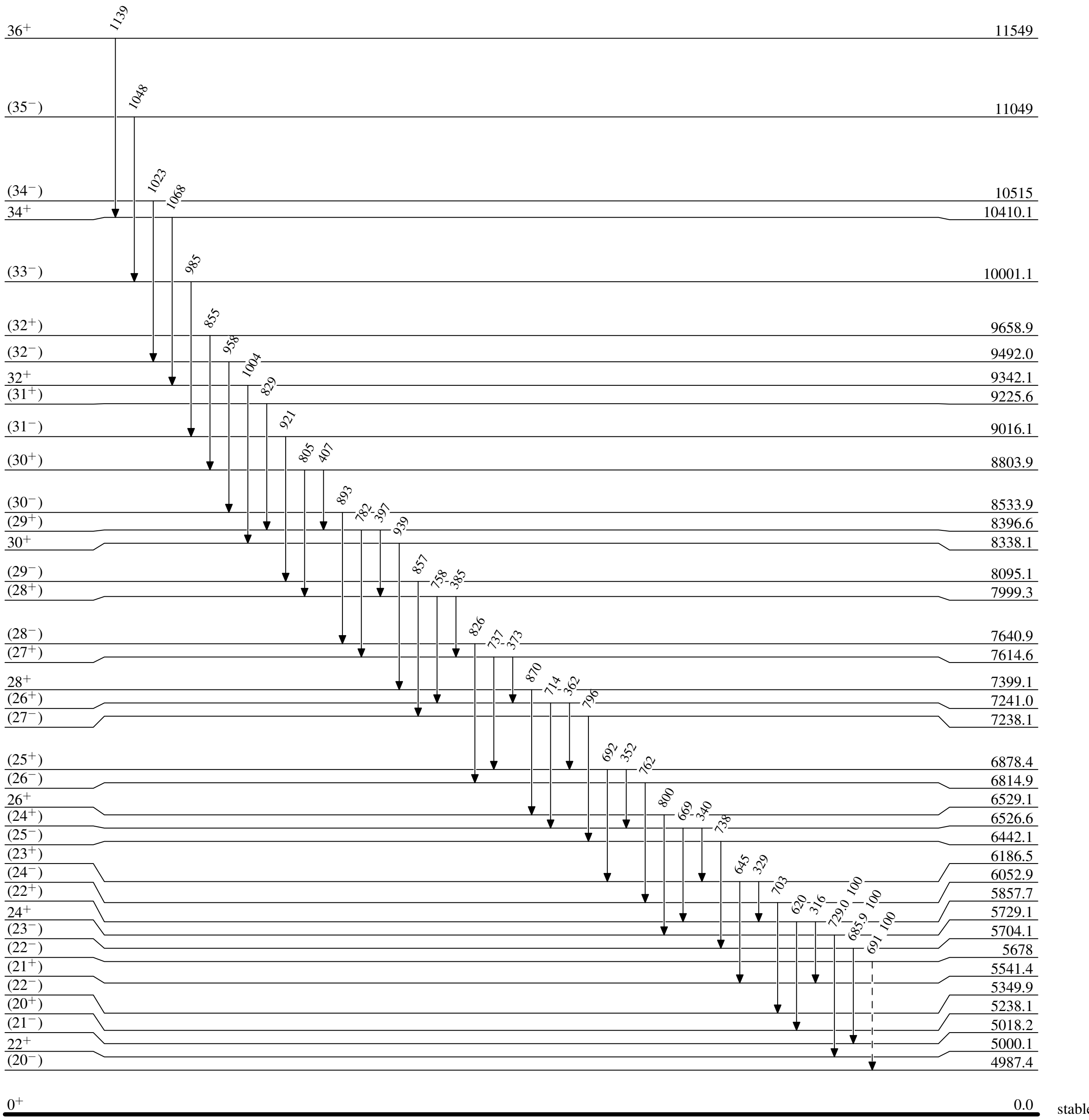
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{164}_{68}Er_{96}$

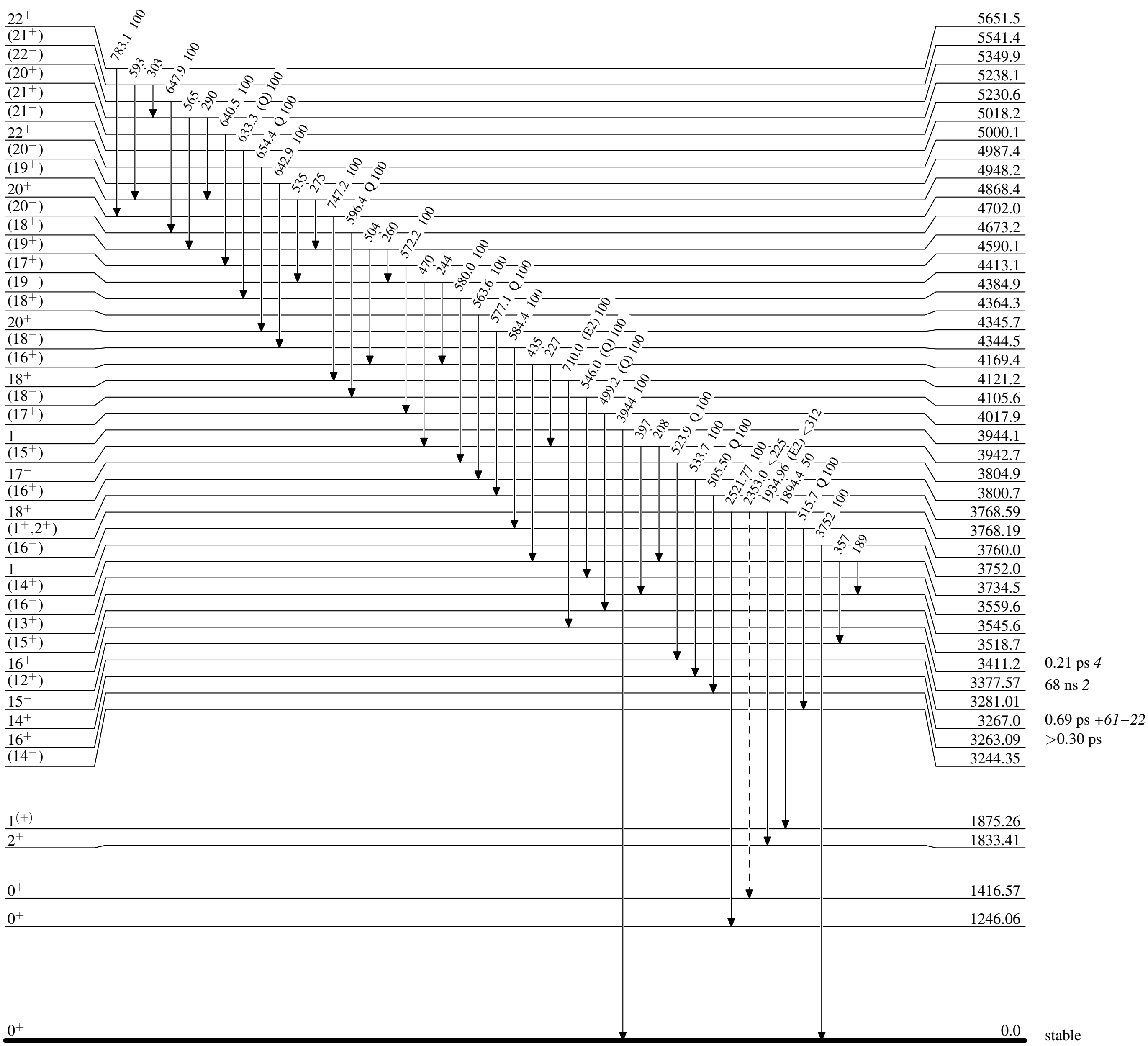
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



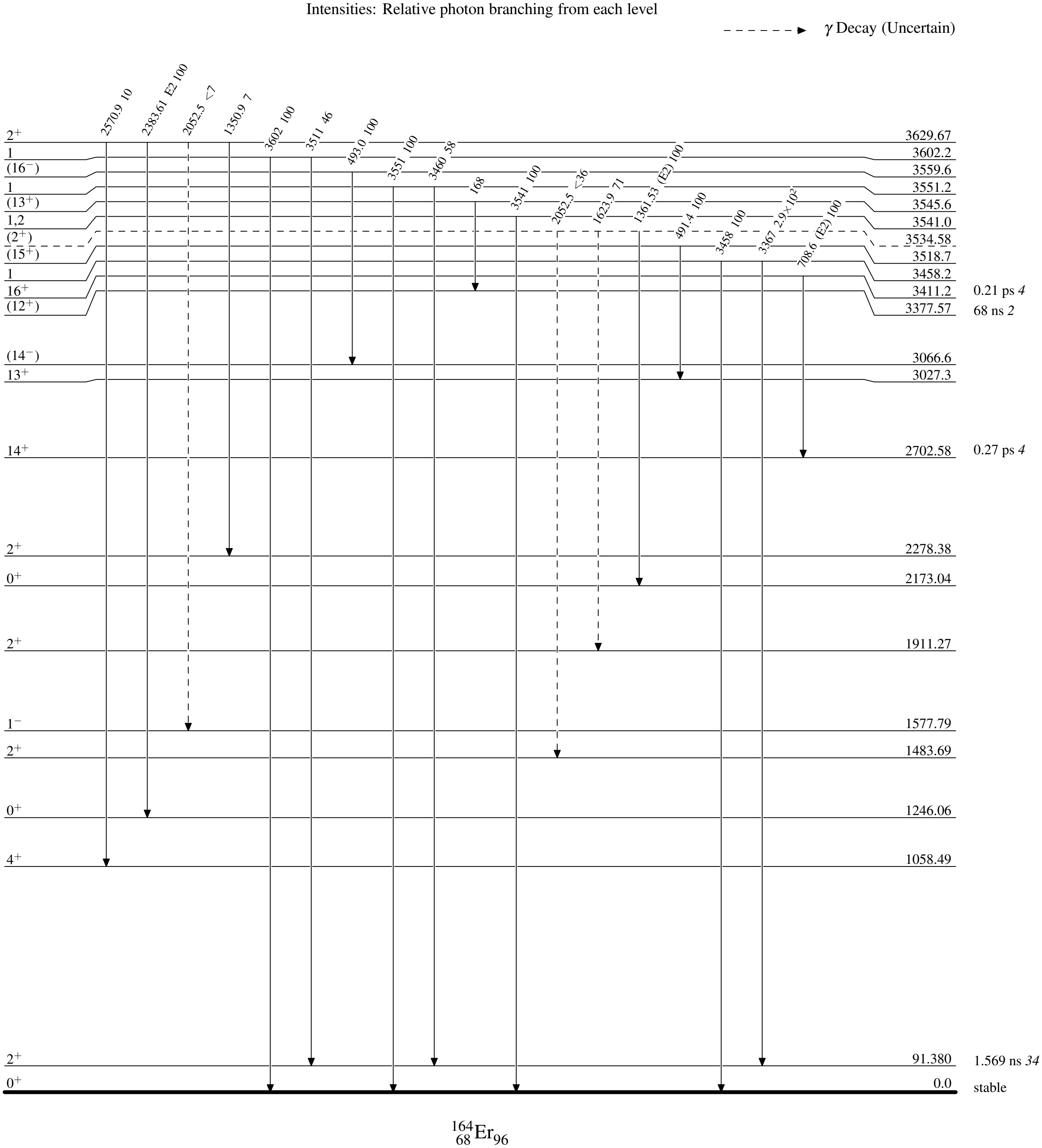
$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



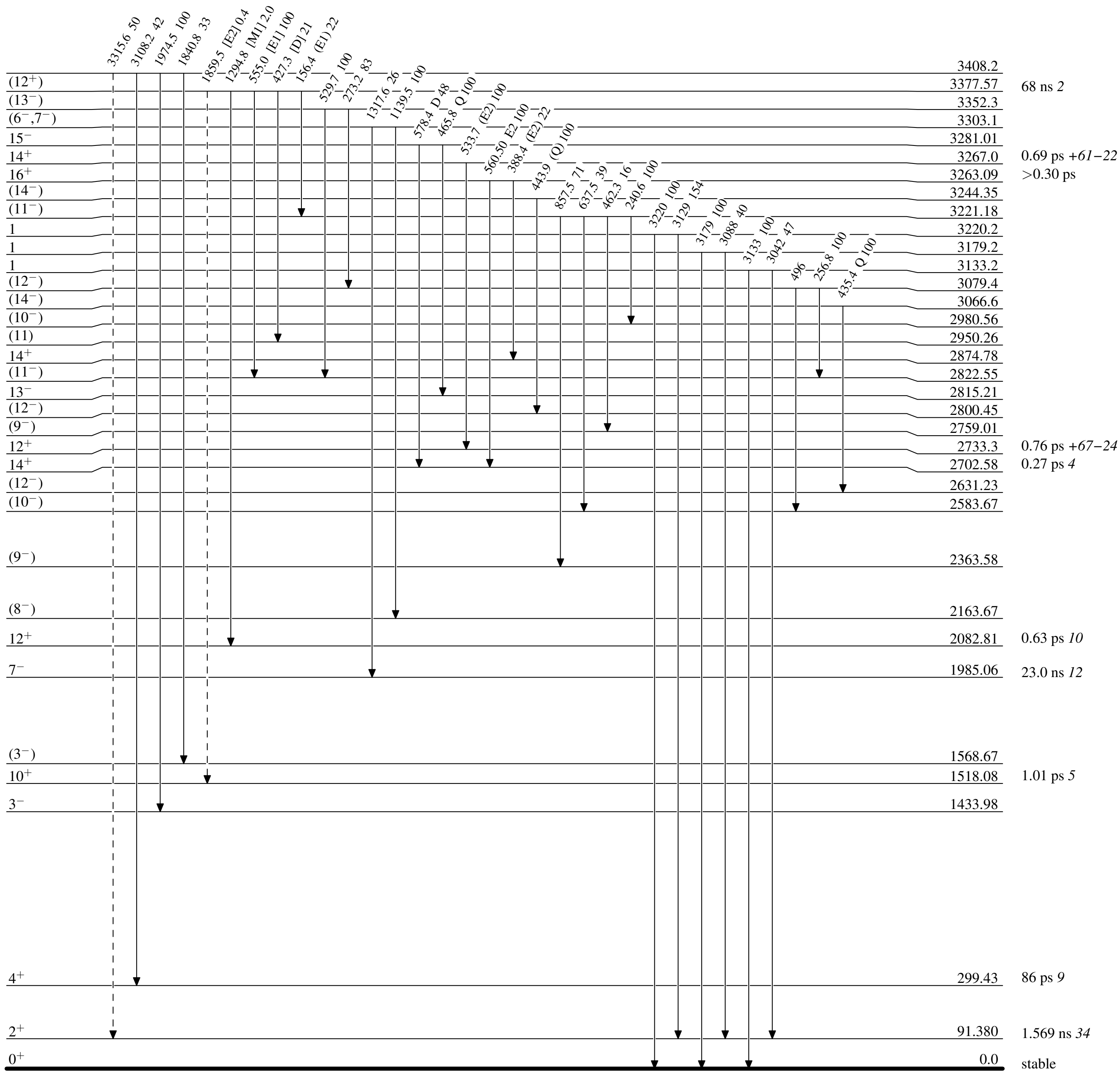
Adopted Levels, Gammas

Legend

Level Scheme (continued)

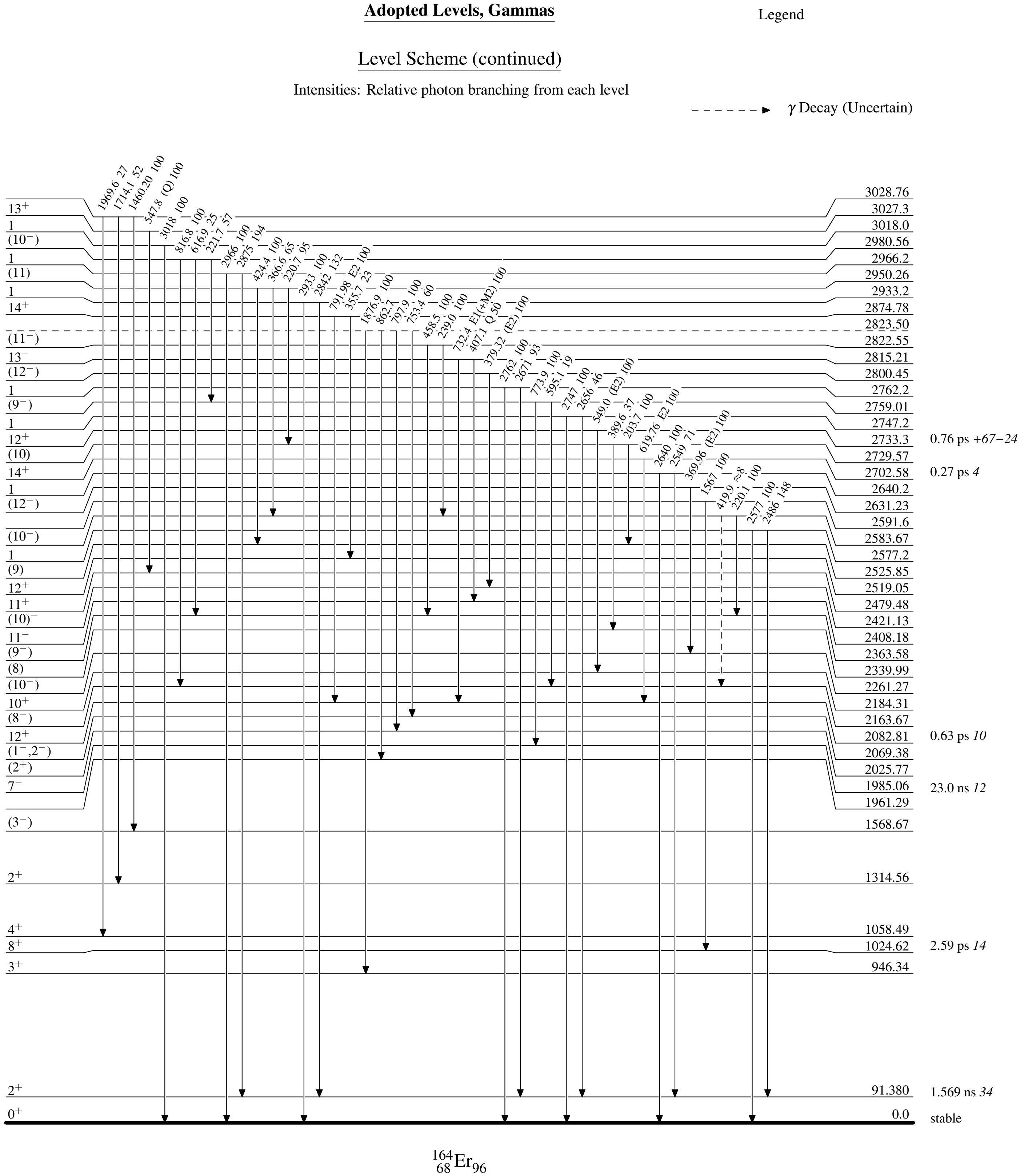
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

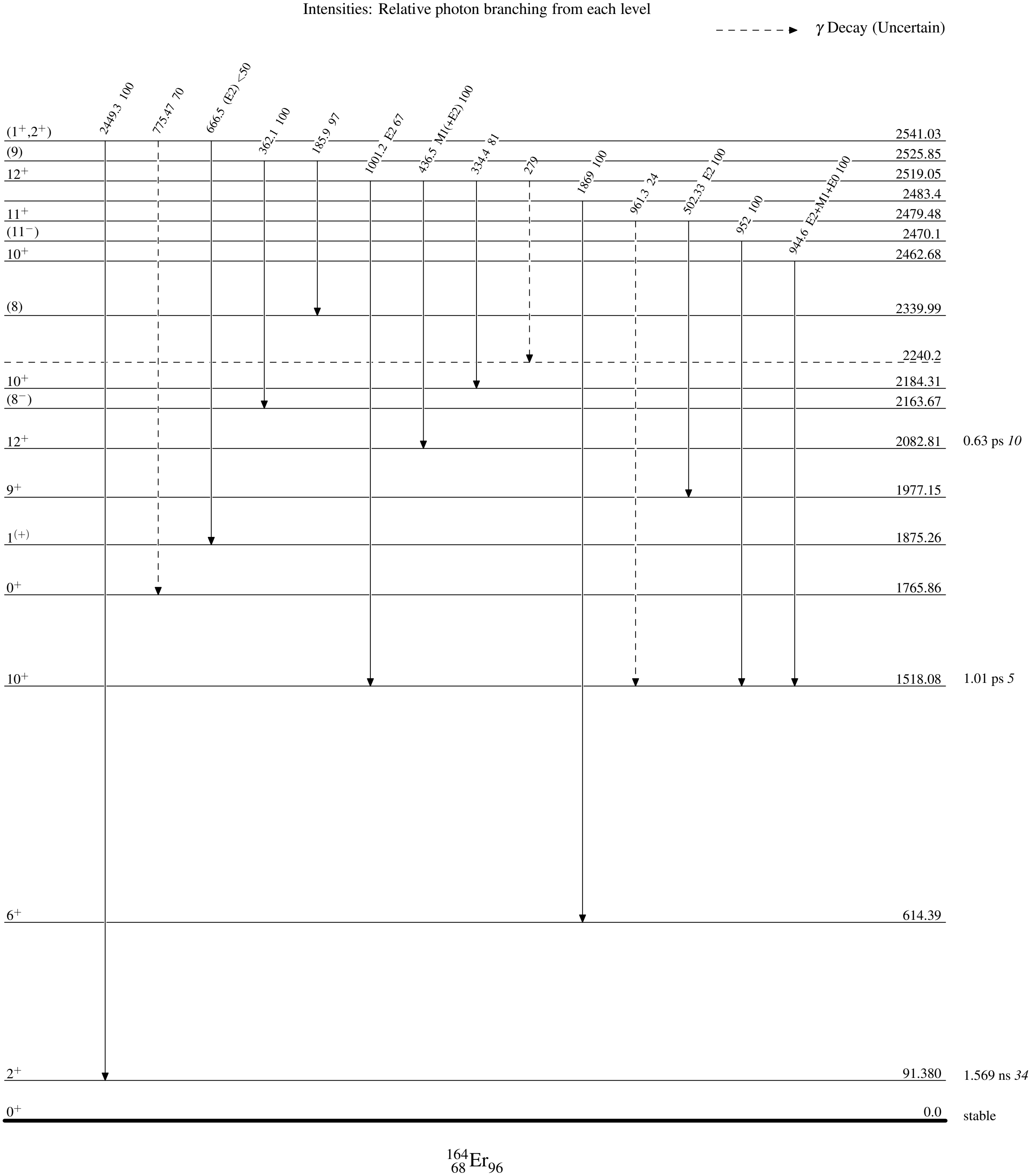


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

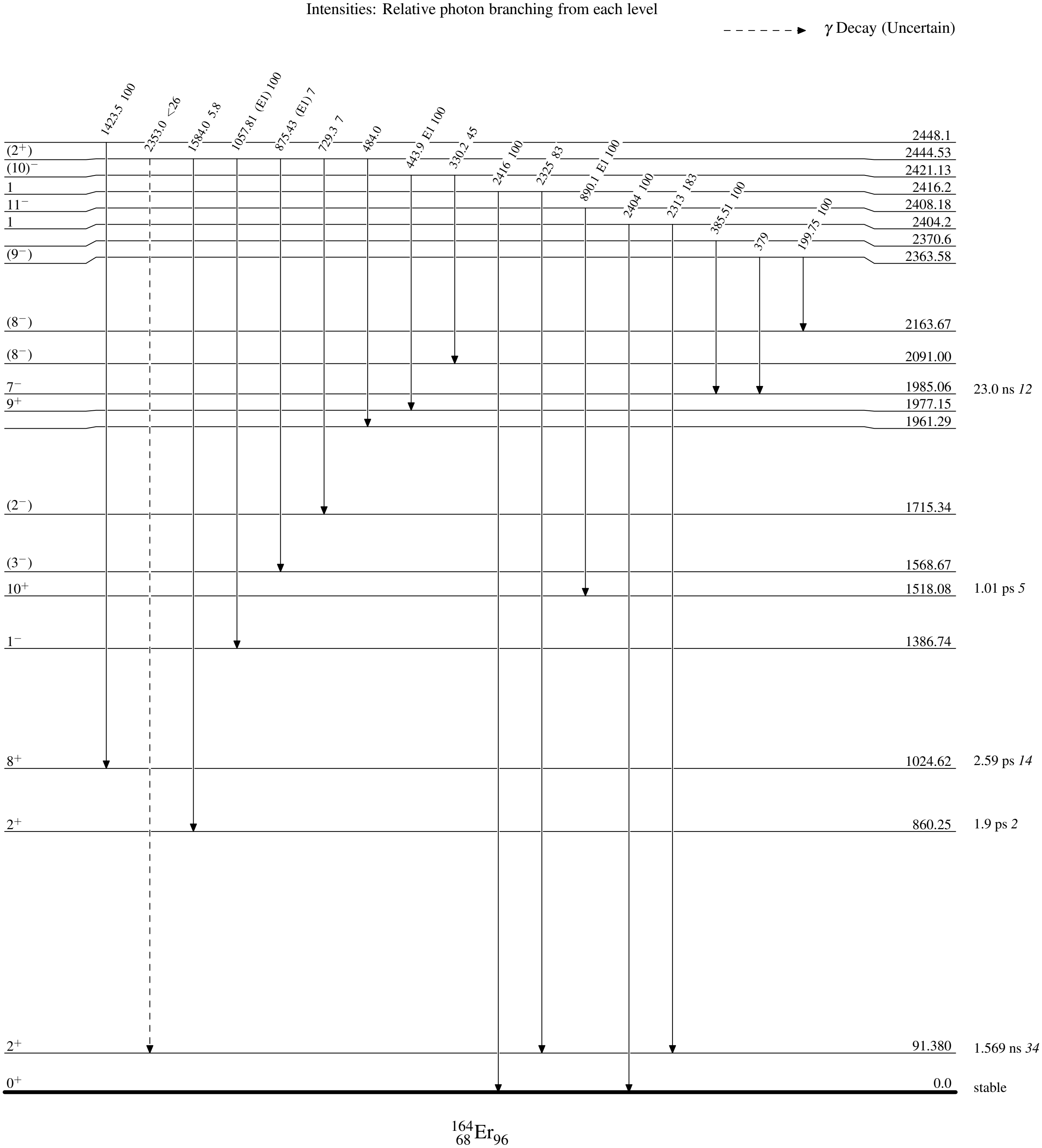


Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

Legend



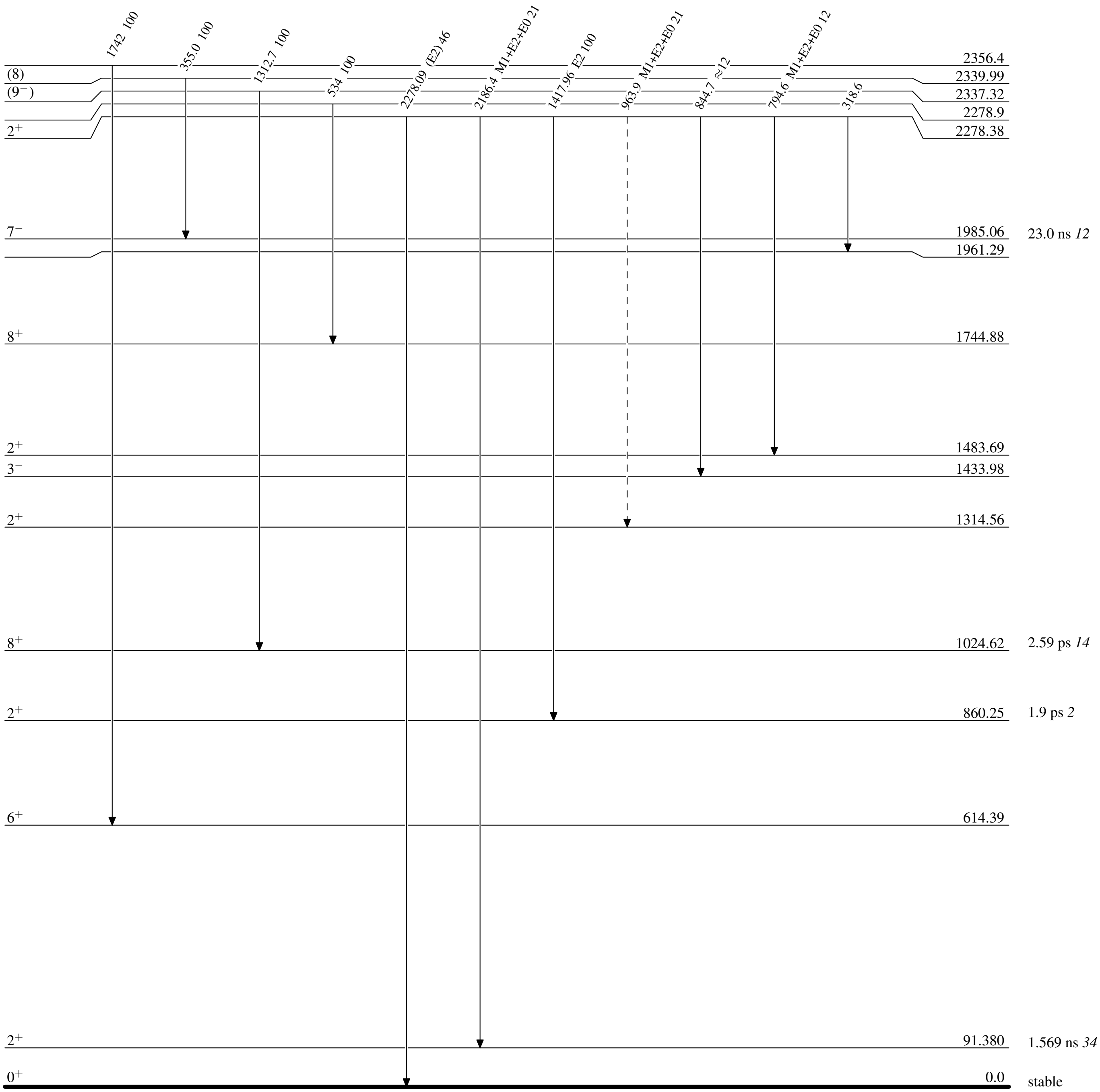
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{164}_{68}Er_{96}$

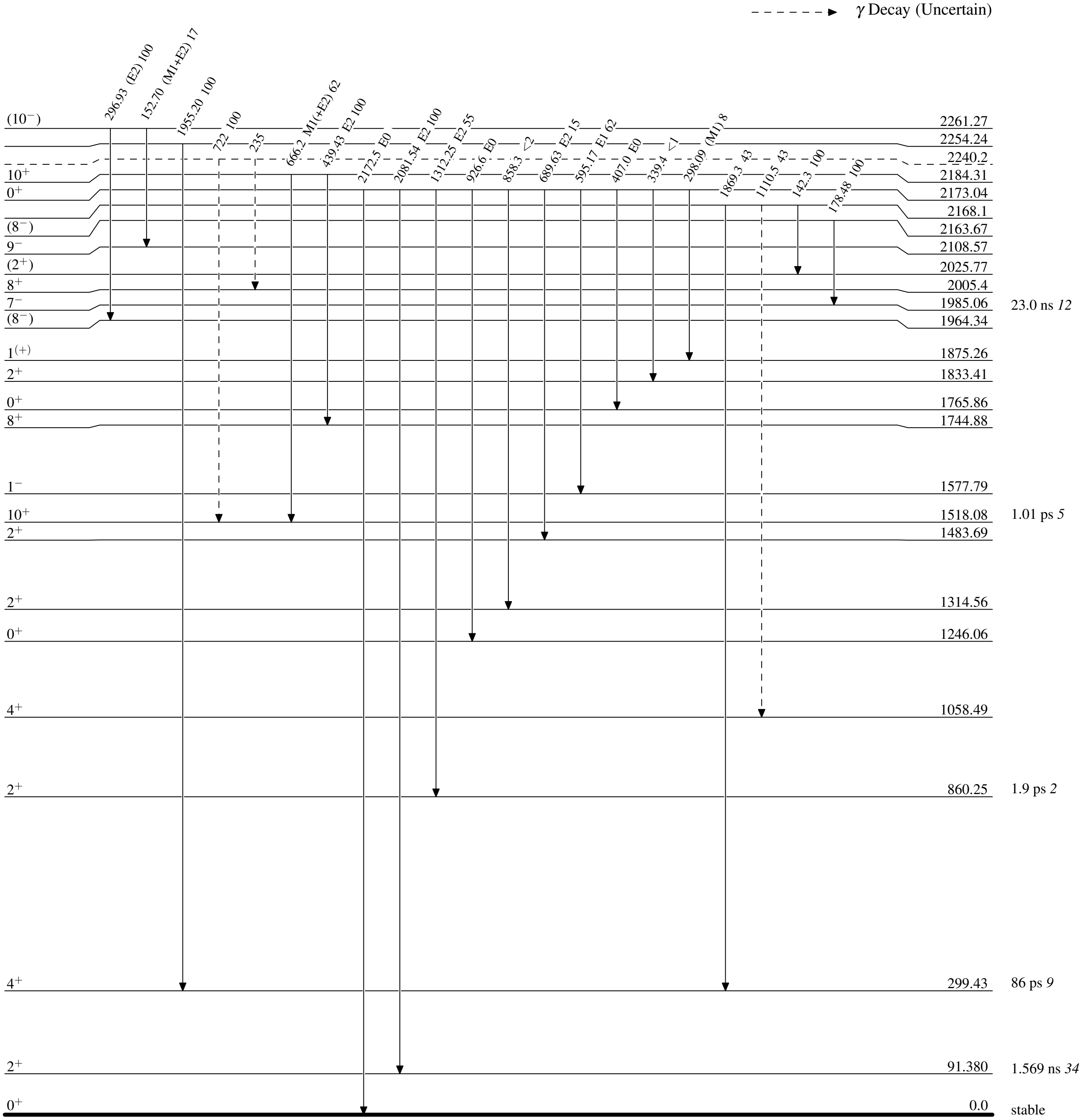
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

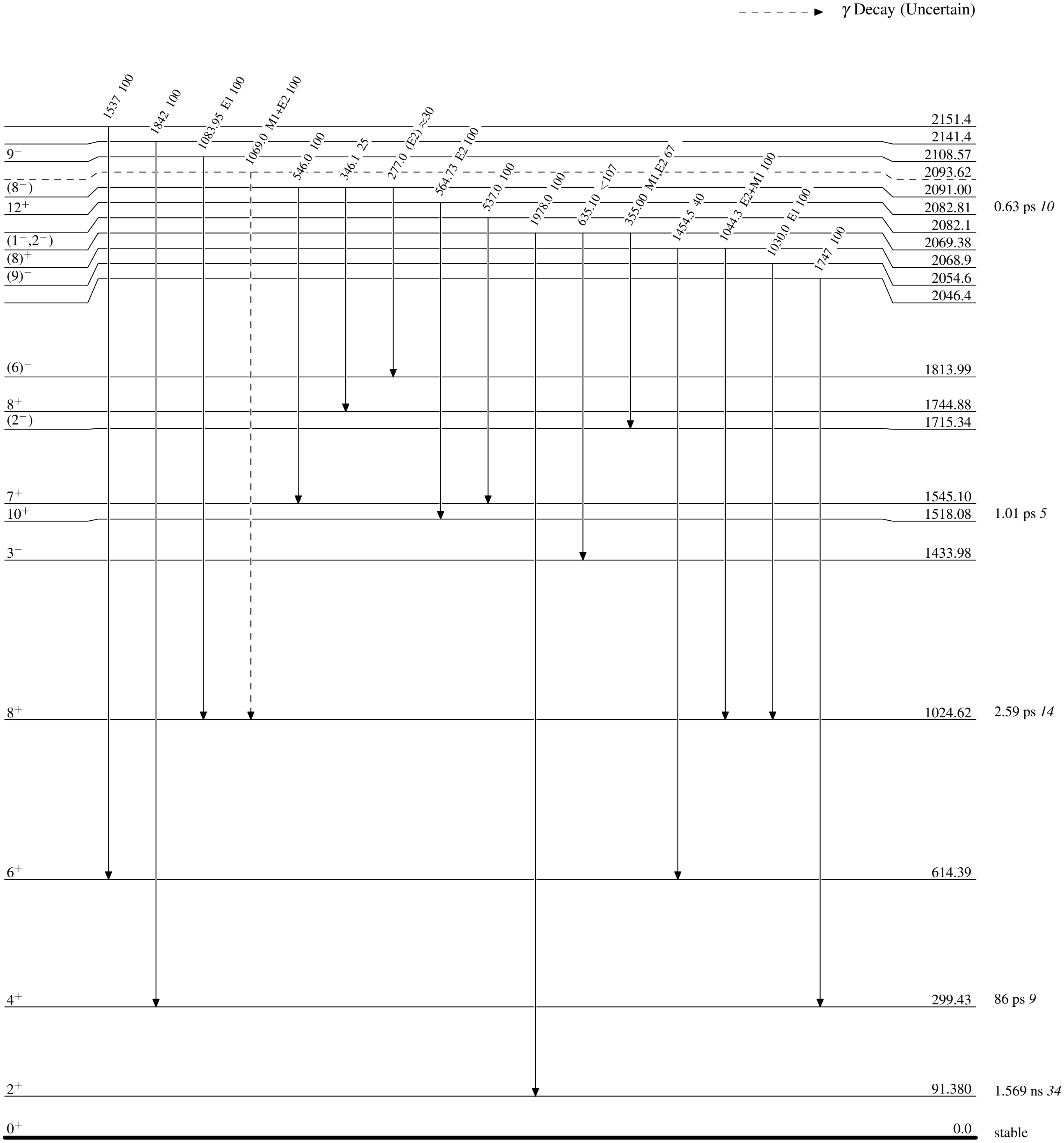


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

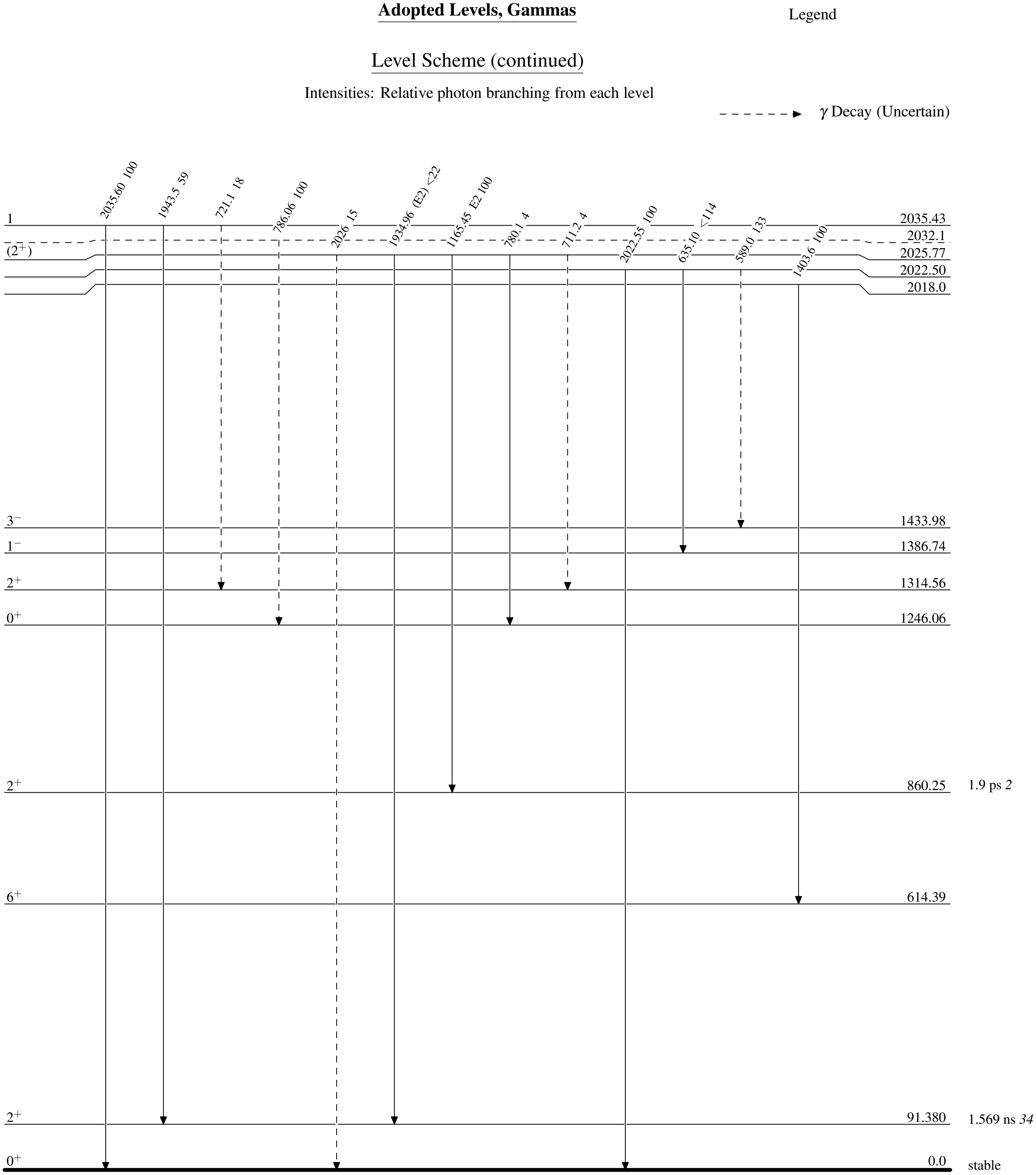


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

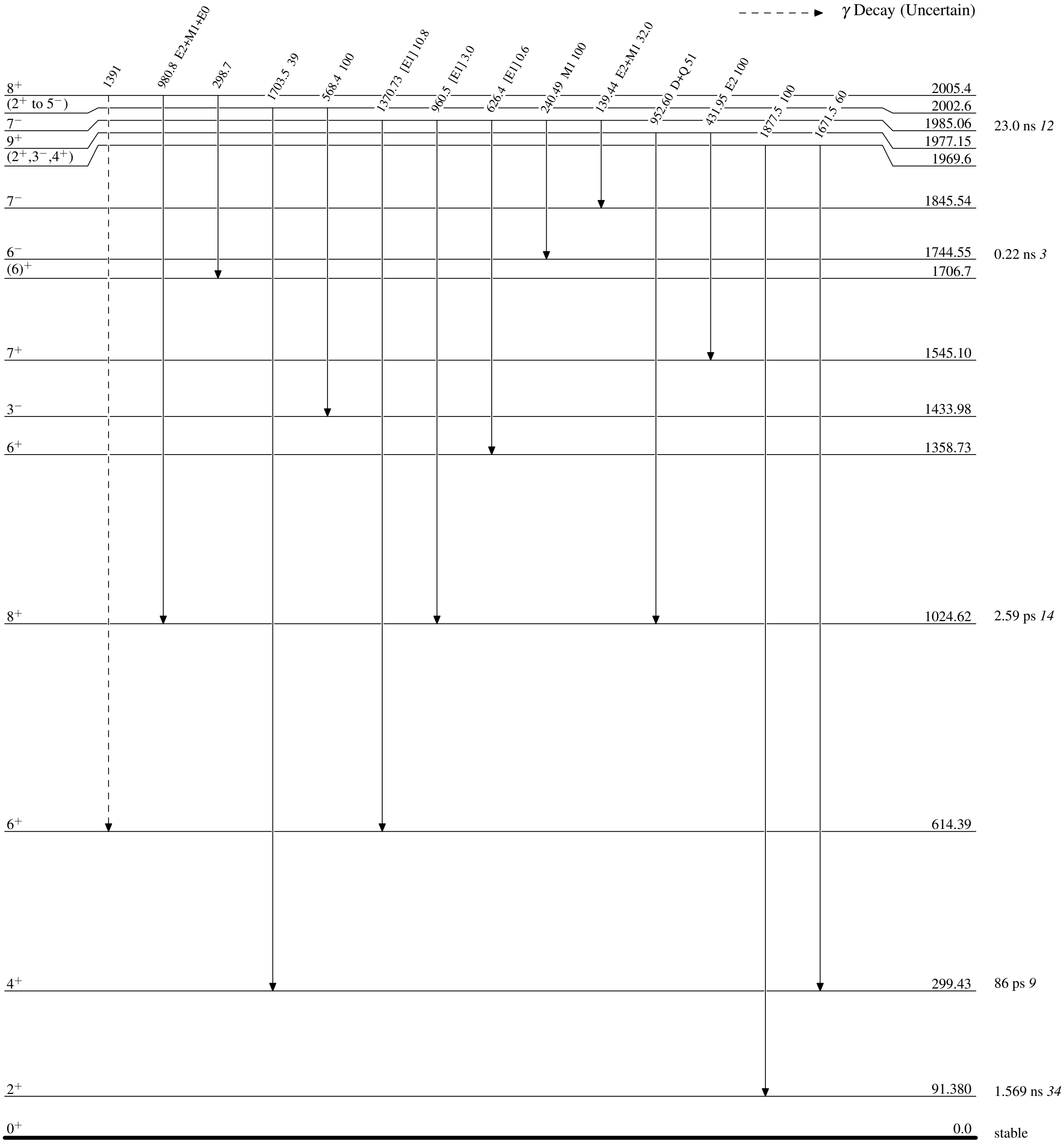


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



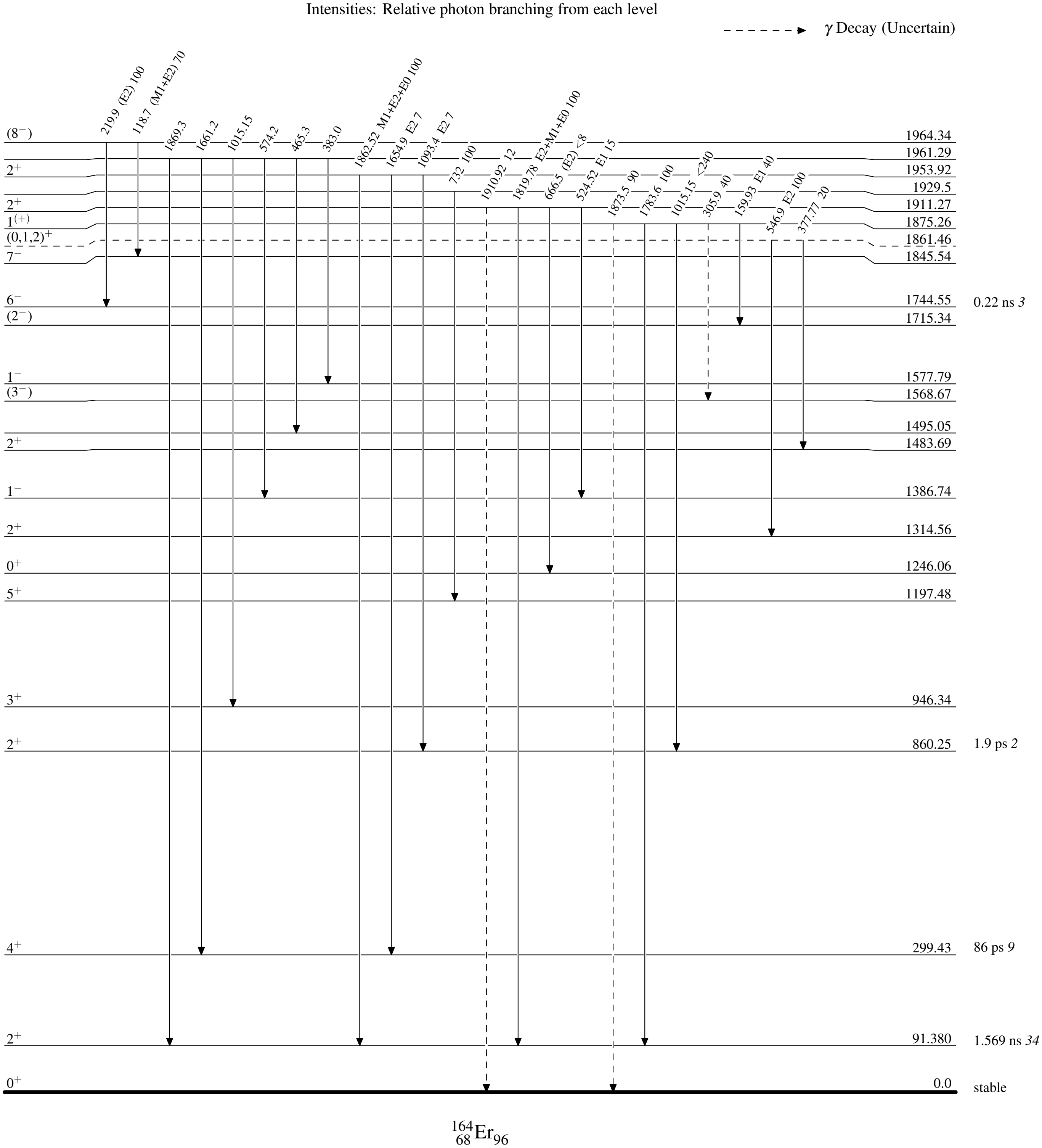
$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

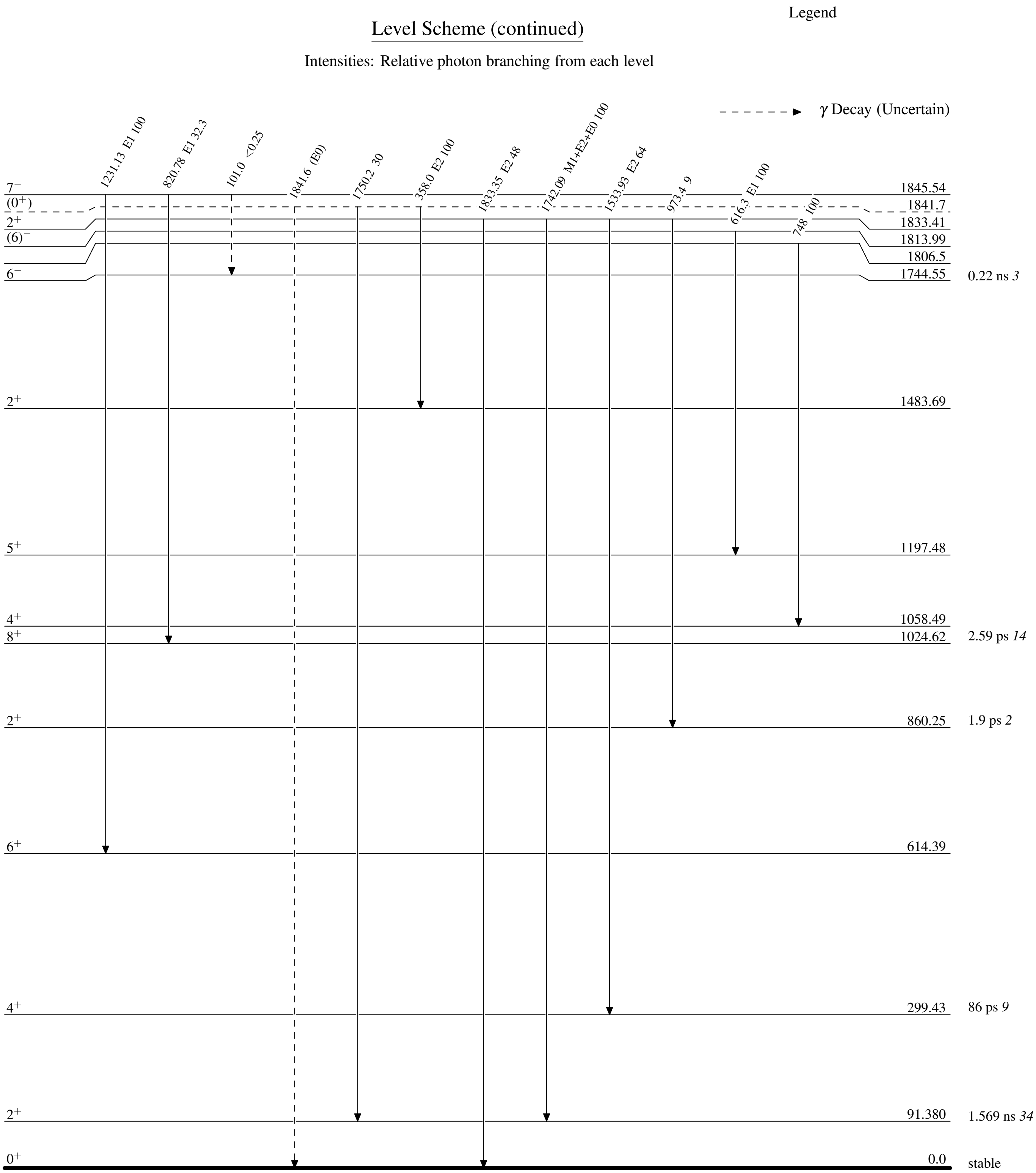
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

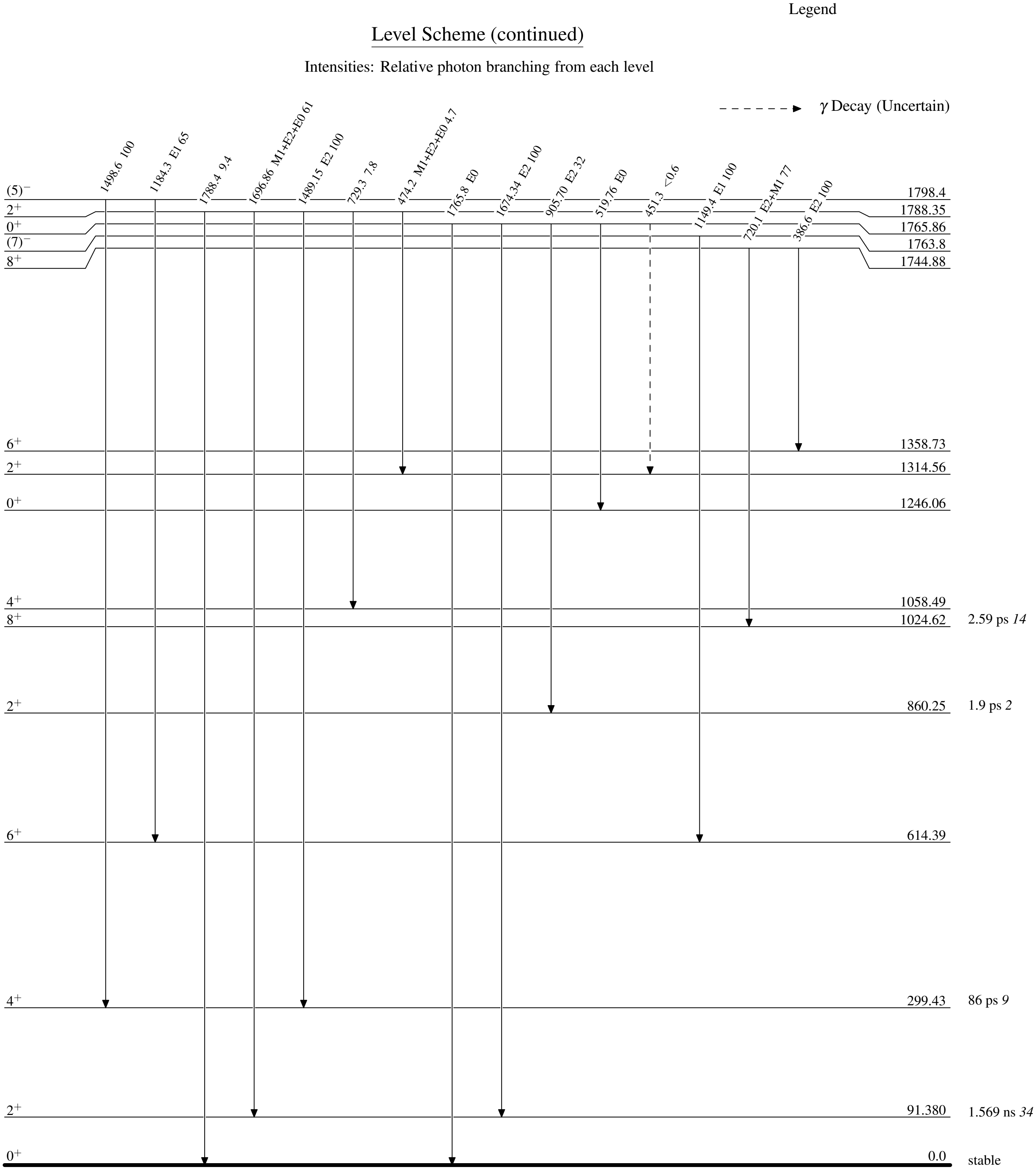


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

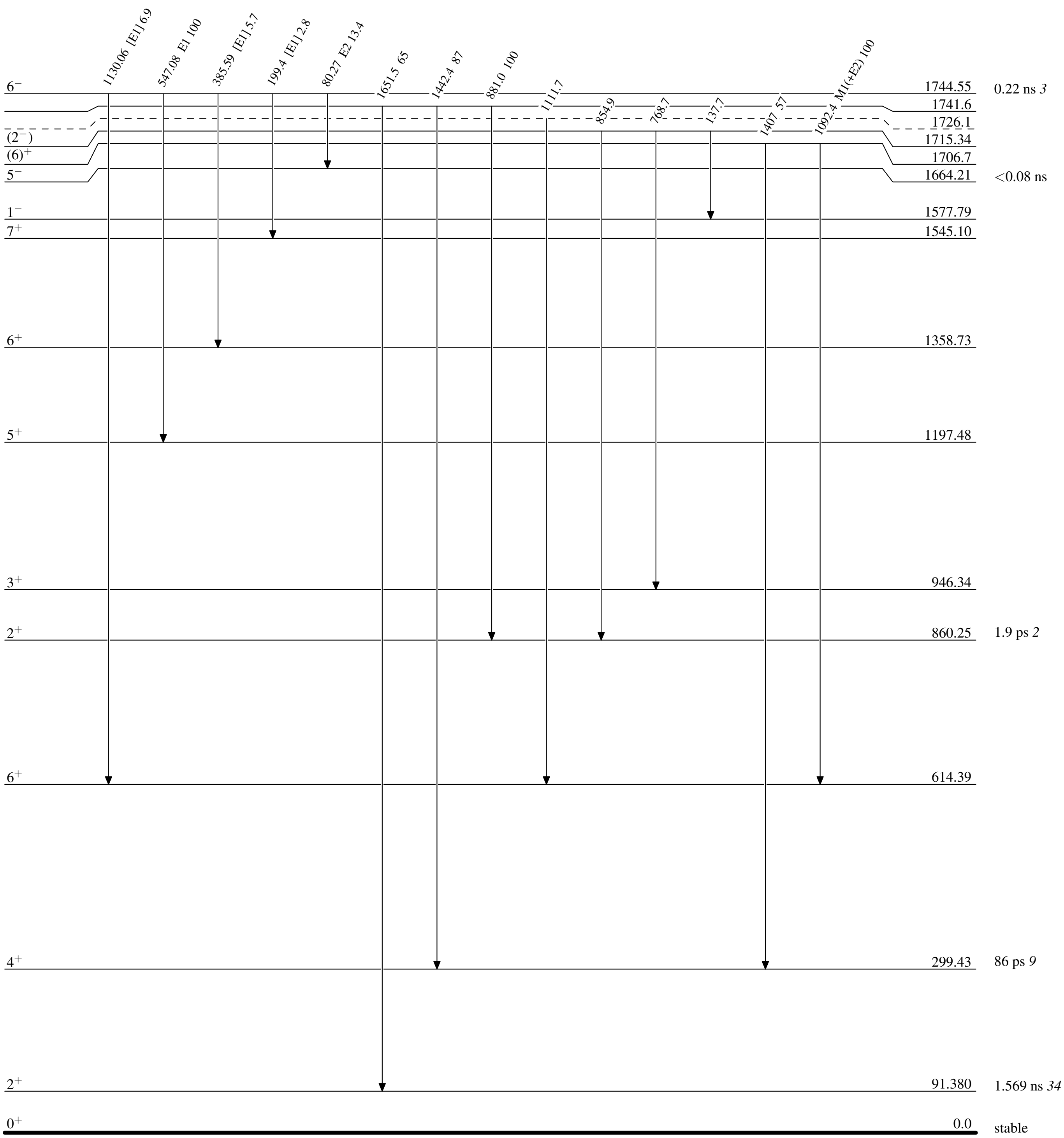


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

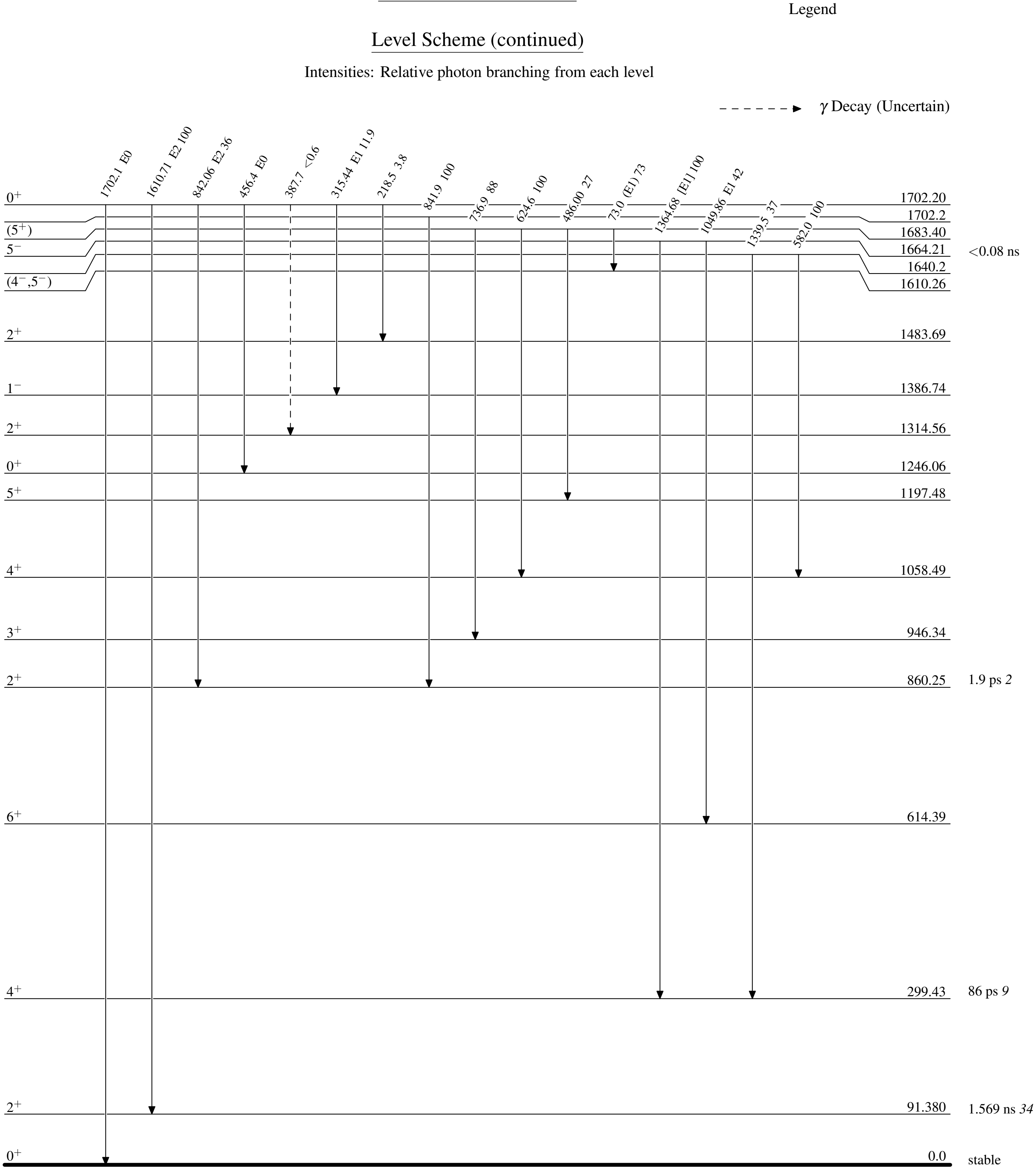


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

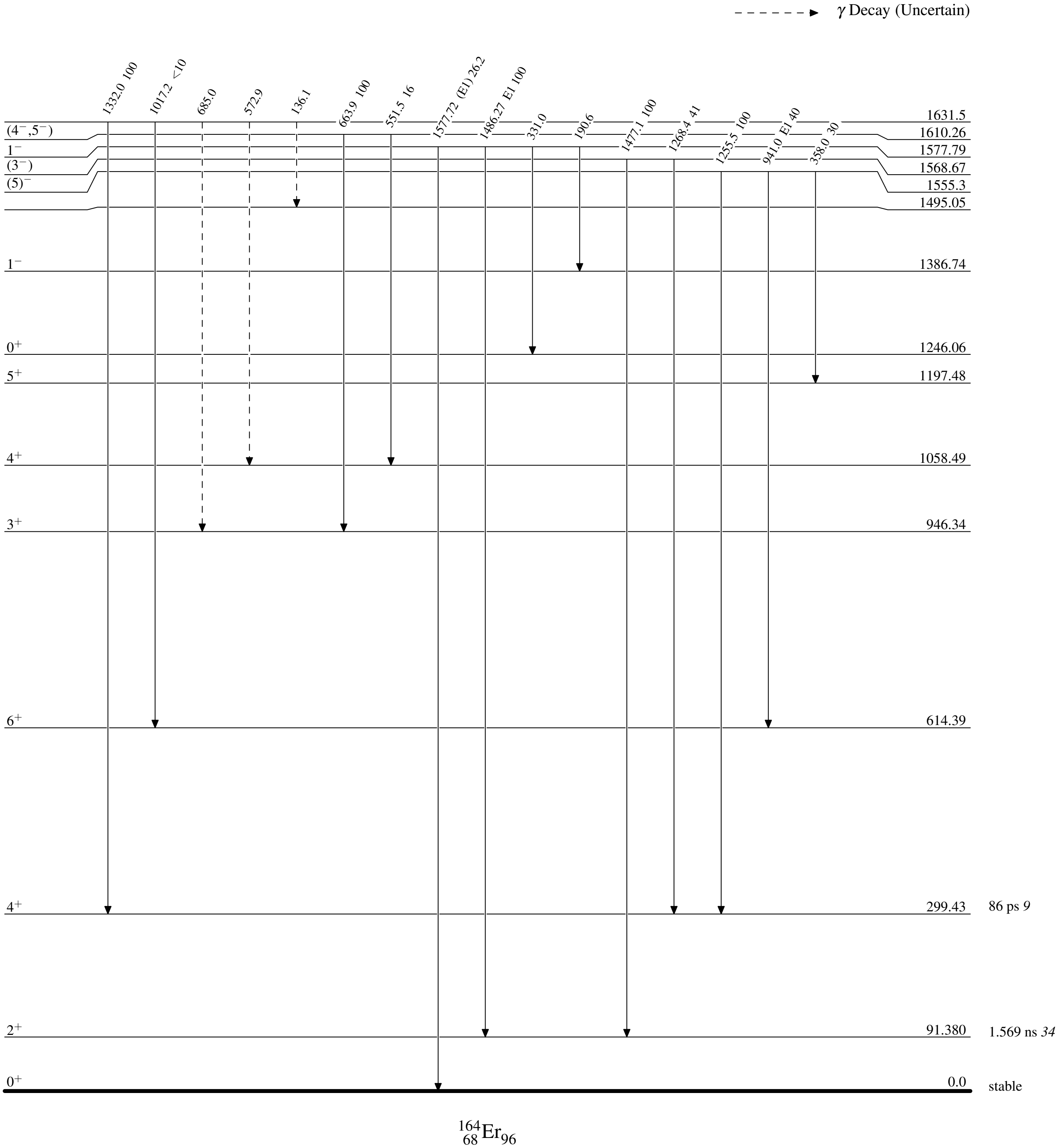


$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

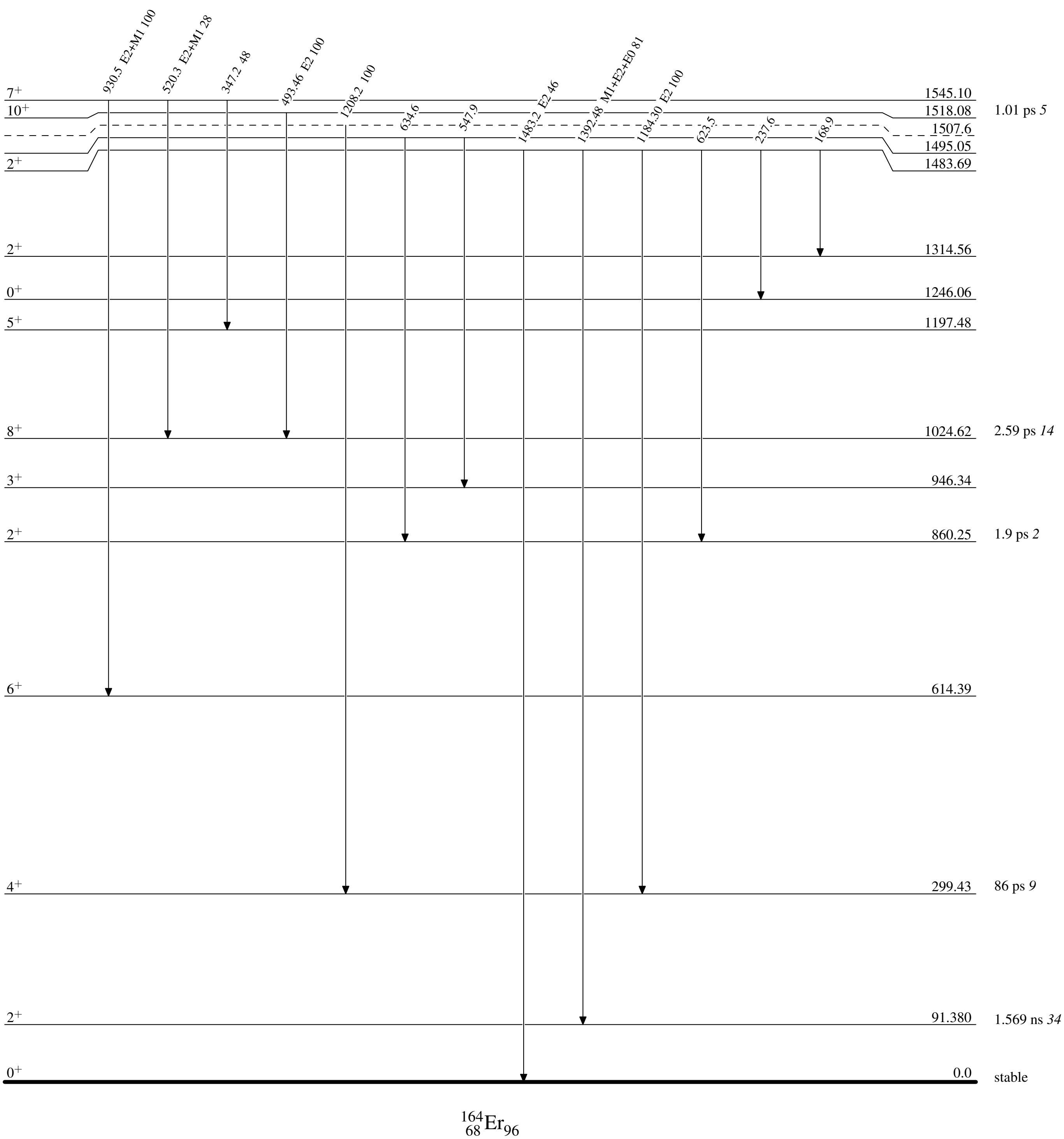
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



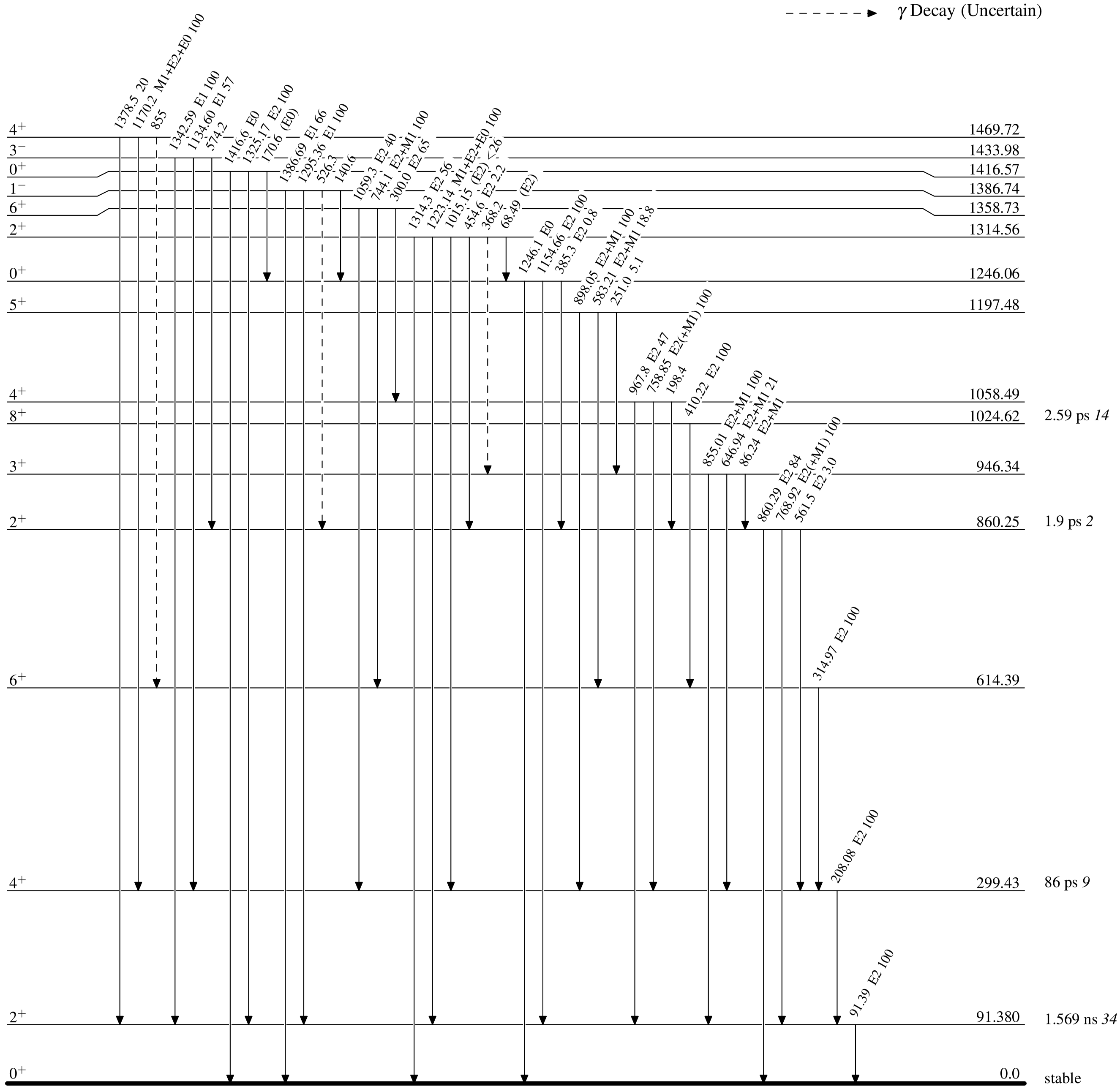
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

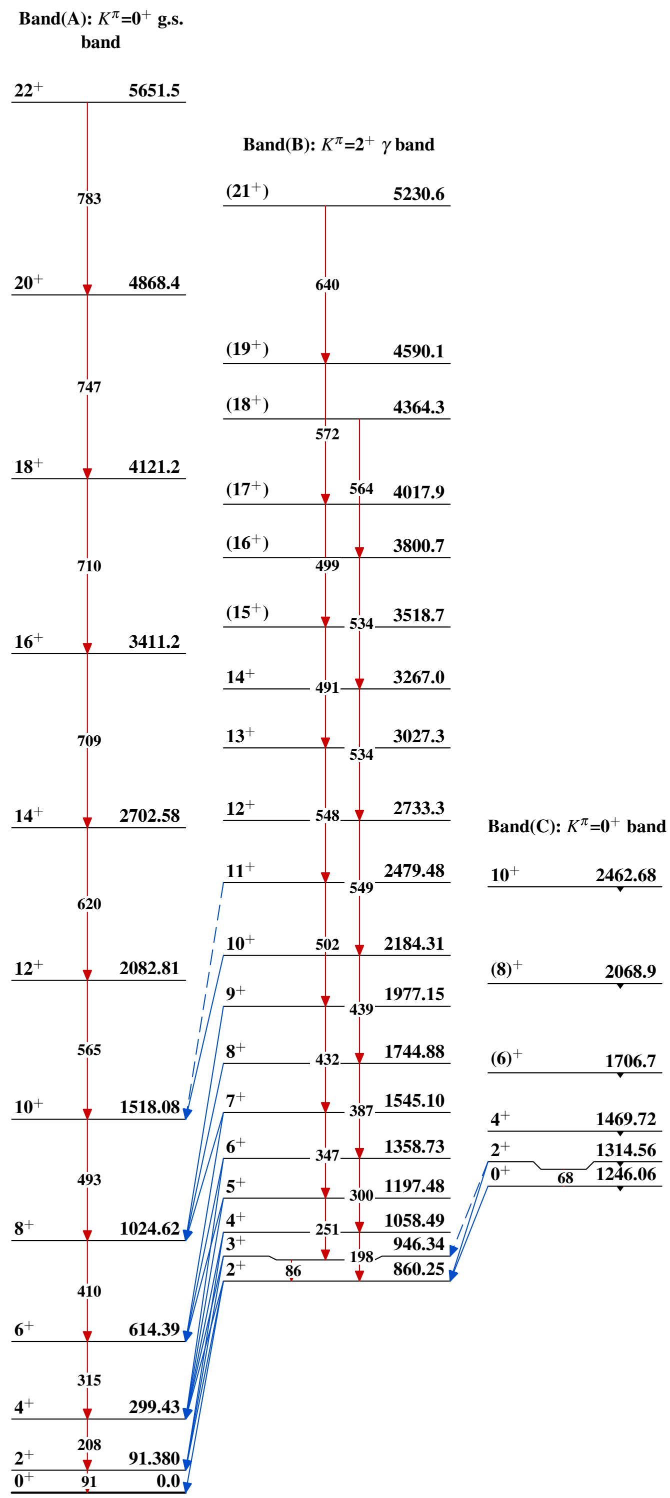
Legend

γ Decay (Uncertain)



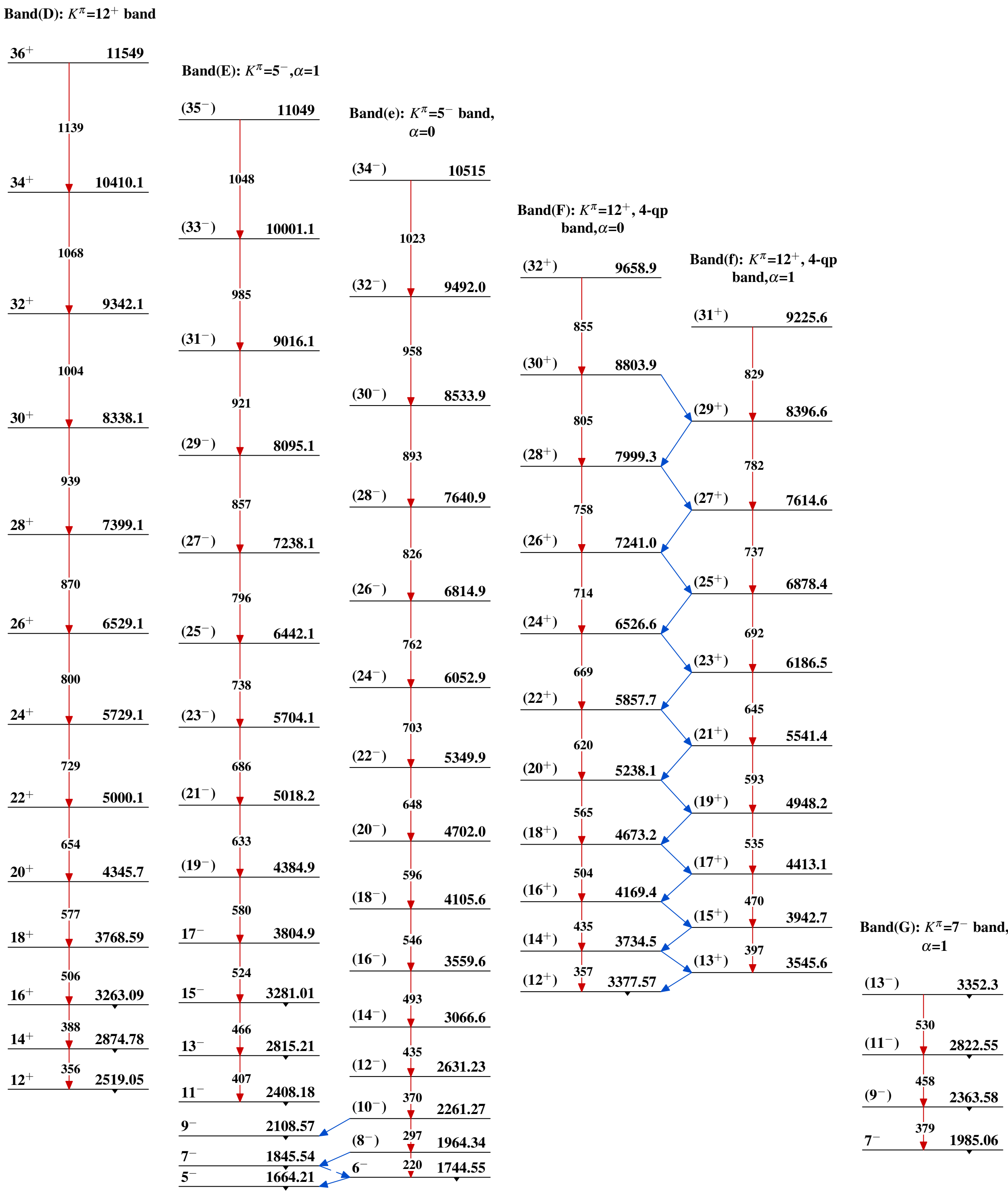
$^{164}_{68}Er_{96}$

Adopted Levels, Gammas



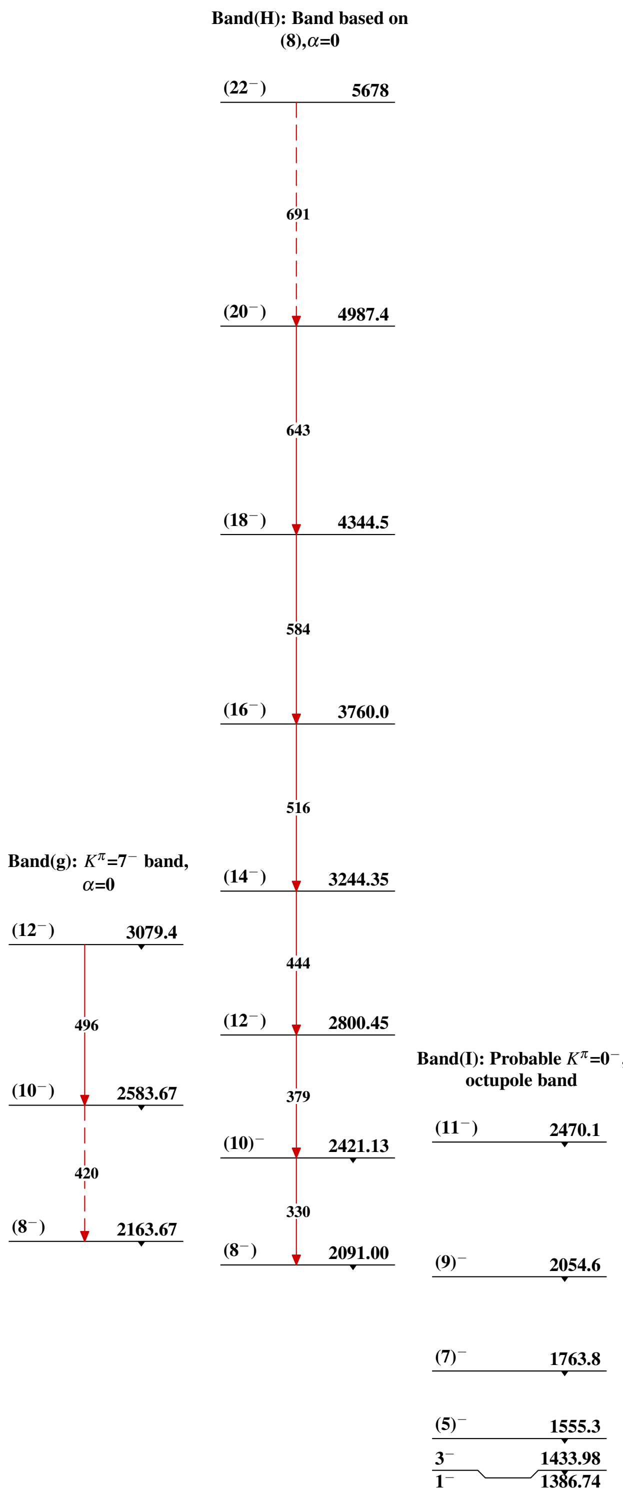
$^{164}_{68}Er_{96}$

Adopted Levels, Gammas (continued)



$^{164}_{68}Er_{96}$

Adopted Levels, Gammas (continued)



$^{164}_{68}Er_{96}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109,1103 (2008)	1-Mar-2008

Q(β^-)=−3038 *12*; S(n)=8476.5 *13*; S(p)=7316.3 *9*; Q(α)=829.7 *12* 2012Wa38
Note: Current evaluation has used the following Q record −3038 12 *8474.6 19* 7316.0 *9* 830.3 *12* 2003Au03.
For fine structure, hyperfine structure and isotope shift data see, e.g., 1989Kr16, 2000As04.

Other Reactions:

^{167}Er(^{3}He,$\alpha\gamma$), E=45 MeV: measured primary γ spectra; deduced level density and γ-ray strength function; see, e.g., 2001Me07. Observed pygmy resonance at E=2.98 *8* MeV with Γ=1.3 *3* MeV.
^{148}Nd(^{18}O,γ), E=78 MeV: measured $\gamma(\theta)$ for gammas emitted by the GDR in hot ^{166}Er at moderate excitation energy and spin (1993Br09, 1994Ca11).

^{166}Er Levels

The evaluator has not included the 1784.8 level from (n,n′γ). A comparison of branching of 1704γ and 1889γ, placed from 1969 level in ε decay, suggests that this level is being seen in both reactions and that entire Iγ(1704γ) in (n,n′γ) can be assigned to the 1969 level. The 1784γ is placed only from the 1865 level in ε decay with assignment of the 1704γ entirely to the 1969 level, the alternative placement of the 1784γ from a possible 1785 level is less convincing.
For discussion of structure of one-phonon states see, e.g., 2006De30.
Band (f) K^π=(4)$^-$ band. K^π=4$^-$ two−quasiproton 7/2[523]+1/2[411] states strongly mixed with K^π=2$^-$ octupole vibration states (please see comment on that band). Attribution of predominant K=4 character has been based on mixing calculations from 1989Ad12.

Cross Reference (XREF) Flags

A	^{166}Tm ε decay	F	^{165}Ho(^{3}He,d),(α,t)	K	^{164}Er(t,p)
B	^{166}Ho β^- decay (1.20×10^3 y)	G	^{166}Er(γ,γ′)	L	^{168}Er(p,t)
C	^{166}Ho β^- decay (26.824 h)	H	^{166}Er(d,d′)	M	^{166}Er(pol p,p′),(^{3}He,^{3}He′),
D	^{166}Er(n,n′γ)	I	^{167}Er(d,t),(^{3}He,α)		
E	Coulomb excitation	J	^{164}Dy(α,2nγ)		

E(level)[†]	J$^\pi$	T$_{1/2}$[‡]	XREF	Comments
0.0[b]	0$^+$[#]	stable	ABCDEFGHIJKLM	
80.5776[b] *20*	2$^+$[#]	1.815 ns *23*	ABCDEFGHIJKLM	μ=+0.641 *10*; Q=−1.9 *4* (1965Hu01) μ: Mean of +0.649 *10* (1981Ho31) and +0.632 *10* (1968Mu01); Mossbauer effect. Q: From Mossbauer effect; Sternheimer correction applied. Others: −2.7 *9* (1970McZQ), −2.9 *10* (1970Ka45); from Coulomb excitation reorientation. <r^2>$^{1/2}$(charge)=5.251 *3* (2004An14). T$_{1/2}$: weighted average of 1.76 ns *5* (1963De21), 1.80 ns *5* (1963Fo02) in β^- decay (26.824 h); 1.83 ns *6* (1963Li04), 1.83 ns *5* (1968Ku03) in β^- decay (1.20 E3 y); 1.86 ns *5* from B(E2) in Coulomb excitation and adopted γ properties. Others: 1.98 ns *21* (1961Bo05) in β decay(26.824 h), 1961Ge14, 1967Ku07. J$^\pi$: E2 91γ to 0$^+$ g.s.
264.990[b] *3*	4$^+$[#]	118 ps *4*	ABCDEF HIJKLM	μ=+1.19 *4*; Q=−2.7 *9* (1969McZS) T$_{1/2}$: from $\gamma\gamma$(t) (^{166}Ho β^- decay (1200 y)). Other: 120 ps *7* from measured B(E2) and adopted γ properties. μ: Unweighted average of +1.26 *6* (1985Al22, IPAC), and +1.14 *8* (1996Br09) and 1.18 *5* (1986Do13), transient field IPAC.

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[‡]	XREF	Comments
				Q: From Coulomb excitation reorientation. J^π: E2 184γ to 2^+ 81.
545.454[b] *4*	6^+[#]	15.0 ps *8*	AB DEF HIJKLM	μ=+1.60 *6* $T_{1/2}$: from RDM in Coulomb excitation. Other value: 17.7 ps *+10−14* from measured B(E2) and adopted γ properties. μ: Weighted average of +1.55 *7* (1985Al22, IPAC), +1.51 *16* (1986Do13, transient field IPAC) and +1.72 *9* (1996Br09, transient field IPAC).
785.905[c] *6*	2^+[a]	3.12 ps *10*	A CDEF HIJKLM	μ=0.69 *8*; Q=2.13 *15* μ: Weighted average of +0.54 *9* (1986Do13, transient field IPAC) and +0.74 *5* (1996Br09, transient field IPAC). Q: Weighted average of 2.2 *2* (1983Hu01), 2.1 *4* (1977Mc11) and 2.0 *3* (1970McZQ); from Coulomb excitation reorientation. $T_{1/2}$: from B(E2)↑=0.140 *4* in Coulomb excitation and adopted γ properties. J^π: E2 786γ to 0^+ g.s.
859.389[c] *5*	3^+[a]	4.5 ps *8*	AB DEF IJKL	J^π: M1 73γ to 2^+ 786, E2+M1 594γ to 4^+ 265. $T_{1/2}$: from B(E2)(594γ) in Coulomb excitation and adopted γ properties.
911.208[b] *6*	8^+[#]	4.12 ps *15*	B DEF IJ M	μ=+2.1 *2* $T_{1/2}$: from Coulomb excitation. μ: Weighted average of +2.1 *4* (1985Al22, IPAC), +1.8 *3* (1986Do13, transient field IPAC) and +2.2 *2* (1996Br09, transient field IPAC).
956.232[c] *5*	4^+[a]	3.5 ps *2*	AB DEF HIJKLM	J^π: E2 170γ to 2^+, E2 411γ to 6^+. $T_{1/2}$: from Coulomb excitation (measured B(E2) and RDM).
1075.277[c] *4*	5^+[a]	2.7 ps *3*	AB DEF IJ	J^π: γ's to 4^+ and 6^+ are E2+M1. $T_{1/2}$: from measured B(E2) in Coulomb excitation and adopted transition properties. Other datum: ≤60 ps from γγ(t) (^{166}Ho β^- decay (1200 y)).
1215.968[c] *5*	6^+[a]	4.4 ps *3*	B DEF IJ	μ=+1.52 *19* (1985Al22) J^π: M1+E2 671γ to 6^+, E2 951γ to 4^+ 265. γγ(θ) data of 1965Re02 consistent with J=6. μ: From 1985Al22 (IPAC). $T_{1/2}$: from Coulomb excitation (RDM).
1349.53[b] *7*	10^+[#]	1.62 ps *7*	E J	μ=+2.6 *3* J^π: continuation of established g.s. band. $T_{1/2}$: from Coulomb excitation; weighted average of 1.59 ps *8* (RDM) and 1.72 ps *14* (B(E2) and adopted γ properties). μ: Weighted average of +1.9 *7* (1986Do13) and +2.8 *4* (1996Br09); from transient field IPAC.
1376.035[c] *5*	7^+[a]	4.9 ps *9*	B DE IJ	J^π: γ's to 6^+ and 8^+ are E2+M1. $T_{1/2}$: from B(E2)(301γ) in Coulomb excitation and adopted transition properties.
1458.154[d] *9*	$(2)^-$		A D F I	XREF: F(1452). J^π: γ to 2^+ and 3^+ are E1, fit to a band.
1460.031[e] *6*	0^+	0.76 ps *28*	CD JKL	J^π: the 1460γ is E0 to 0^+ g.s. $T_{1/2}$: from DSAM in (n,n′γ).
1513.751[d] *9*	3^-		A DE H JKLM	B(E3)↑=0.061 *10* (1978Mc02) XREF: J(1515). B(E3)↑: From Coulomb excitation; B(E3)(W.u.)↑=37 *6*. J^π: γ's to 2^+ and 4^+ are E1.
1528.401[e] *10*	2^+	45 fs *6*	A CDEF JKL	J^π: γ to 0^+ is E2. $T_{1/2}$: from B(E2)↑=0.018 *2* in Coulomb excitation and adopted transition properties assuming negligible 572.2 branch.

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J$^\pi$	T$_{1/2}$[‡]	XREF	Comments
1555.737[c] *10*	8$^+$[a]	3.7 ps *3*	B DEF J	J$^\pi$: E2 γ's to 6$^+$ and 8$^+$. T$_{1/2}$: from Coulomb excitation (RDM).
1572.183 *7*	(4)$^-$		AB D F I	J$^\pi$: γ to 3$^+$ is E1, γ to 5$^+$ is (E1).
1596.241[d] *7*	(4)$^-$		AB D F IJ	J$^\pi$: E1 γ from 3$^+$; γ from 6$^-$.
1662.435[f] *5*	1$^-$	5.2 fs *5*	A CD FGH	XREF: F(1651). J$^\pi$: E1 γ to 0$^+$. T$_{1/2}$: from $\Gamma^2_{\gamma0}/\Gamma$=13.9 *16* in ($\gamma,\gamma'$) and adopted $\Gamma_{\gamma0}/\Gamma$=0.397 *7*. K=(0) (1996Ma18) from (γ,γ').
1665.799 *6*	5$^{(-)}$		B D F IJKL	J$^\pi$: J=5 from $\gamma\gamma(\theta)$ (^{166}Ho β^- decay (1200 y)).
1673.70 *10*			D J	
1678.765[e] *24*	(4)$^+$[a]		A D F IJ	XREF: F(1680)I(1679)J(1674). J$^\pi$: M1(+E2+E0) 1414γ to 4$^+$ 265.
1692.297[d] *5*	5$^-$		B D F HIJK	XREF: H(1698). J$^\pi$: J=5 from $\gamma\gamma(\theta)$ (^{166}Ho β^- decay (1200 y)); E1(+M2) γ 1427 to 4$^+$ 265.
1703.050 *18*	(2,3,4)$^+$		A D I KL	XREF: I(1700)K(1704). J$^\pi$: M1 γ from 3$^+$.
1713.4 *7*	0$^+$	>0.97 ps	D KL	J$^\pi$: L(p,t)=0. T$_{1/2}$: from DSAM in (n,n'γ) (1997Ga13).
1721.7[f] *6*	3$^-$[a]		DEF HI	B(E3)↑=0.032 *5* (1978Mc02) XREF: F(1720). B(E3)↑: From Coulomb excitation; B(E3)(W.u.)↑=20 *3*. J$^\pi$: E1(+M2) 1641γ to 2$^+$ 81, D(+Q) 1457γ to 4$^+$ 265.
1751.36[c] *7*	9$^+$[a]	2.4 ps *5*	E J	J$^\pi$: γ to 8$^+$ is (E2+M1); band assignment. T$_{1/2}$: from B(E2)(375γ) in Coulomb excitation and adopted transition properties.
1760.9 *4*			D F HI KL	XREF: F(1757)H(1759)I(1762).
1786.975 *5*	6$^-$		B D F IJ	J$^\pi$: J=6 from $\gamma\gamma(\theta)$ in ^{166}Ho β^- decay (1200 y), π=− from E1+(M2) 711.68γ to 5$^+$.
1813.2[k] *3*	1$^{(+)}$	39 fs *7*	A D FG I	J$^\pi$: D, $\Delta\pi$=(no) γ to 0$^+$. T$_{1/2}$: from $\Gamma^2_{\gamma0}/\Gamma$ in (γ,γ') and adopted branching. K=1 (1996Ma18) from (γ,γ').
1827.557[d] *5*	6$^-$		B D F IJ	XREF: I(1829). J$^\pi$: γ's to 5$^+$ and 7$^+$ levels are E1+M2.
1830.425 *12*	1$^-$	45 fs *8*	A CD G L	J$^\pi$: log *ft*=5.1 from 0$^-$, γ to 0$^+$. T$_{1/2}$: from (γ,γ') assuming adopted branching.
1846.53[b] *12*	12$^+$[#]	0.91 ps *5*	E J	J$^\pi$: continuation of established g.s. band. T$_{1/2}$: from RDM in Coulomb excitation.
1865.17 *4*			A D F I KL	
1894.355 *21*	2$^+$,3$^+$,4$^+$		A	J$^\pi$: M1 238γ from 3$^+$ 2132 level.
1897.27[e] *10*	(6$^+$)[a]		D IJ	XREF: I(1896).
1901[f]	(5$^-$)[a]		H KL	
1904.8? *5*	2,3,4		D	J$^\pi$: D+Q γ to 2$^+$ 81.
1908.2[q] *4*	(6$^-$)		D I	J$^\pi$: σ in (d,t).
1917.758[g] *8*	3$^-$		A D F	XREF: F(1915). J$^\pi$: γ's to 2$^+$ and 4$^+$ are E1.
1934.1 *5*	0$^+$	54 fs *6*	D KL	XREF: K(1928). J$^\pi$: L(p,t)=0. T$_{1/2}$: from DSAM in (n,n'γ).
1938.263 *11*	(3)$^+$		A D F I	XREF: I(1940). J$^\pi$: γ's to 2$^+$ and 3$^+$ are M1, J^π=(3,4)$^+$ from (d,t).
1942.6 *4*	(0$^+$)	0.24 ps *7*	DE	J$^\pi$: Possible K^π=0$^+$, $\gamma\gamma$ bandhead.

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[‡]	XREF	Comments
				$T_{1/2}$: from DSAM in (n,n′γ) (1997Ga11).
1948			K	
1964.04[c] *8*	10^+[a]	1.78 ps *17*	E J	J^π: γ to 10^+ is E2. $T_{1/2}$: from Coulomb excitation (RDM and B(E2)(409γ)).
1969.71 *17*	(2,3,4)		A D I K	J^π: γ′s to 2^+ and 4^+.
1978.422[h] *13*	4^+	2.2 ps *+11−9*	A DEF HI L	XREF: F(1976)H(1973)I(1979). J^π: M1+E2 154.5γ from 3^+ level; (α,t) σ fingerprint for assigned band. Decay pattern to γ band states consistent with that for a state carrying a portion of the $K^\pi=4^+$ γγ vibration strength expected at roughly this energy (1998Fa15). $T_{1/2}$: from B(E2)(1193γ) in Coulomb excitation and adopted transition properties assuming 521-keV branch is negligible.
1985.629 *12*	3^-		A I	XREF: I(1987). J^π: γ to 3^- is M1, γ′s to 4^+ and 2^+.
1986.2 *7*	(4^+)		E	J^π: γ to 2^+ and 3^+ levels; decay pattern to γ band states consistent with that for a state carrying a portion of the $K^\pi=4^+$ γγ vibration strength expected at roughly this energy (1998Fa15).
1992.70[i] *10*	$(7)^-$		F J	XREF: F(1988). J^π: E1 1082γ to 8^+ 911; band assignment. Suggested as possible J=7 member of $K^\pi=4^-$ band (1989Ad12), but E is too high for that.
2001.865 *12*	$(3)^-$		A D I L	XREF: I(2003). J^π: E1 1046γ to 4^+ 956, γ to 2^+.
2002[&g]	(4^-)[@]		F	
2021.348 *12*	$(2,3)^-$		A D f	J^π: E1(+M2) 1235γ to 2^+ 786, E1 1162γ to 3^+ 859.
2022[r]	(4^-)		f I	E(level): from (d,t),(^{3}He,α). J^π: band assignment from (d,t).
2022.59 *12*	(4^+)		A D f l	J^π: gammas to 2^+ and 6^+.
2027.9[t] *5*	(4^+)	0.22 ps *8*	DE l	J^π: D+Q 1169γ to 3^+ 859; Q 1243γ to 2^+ 786, γ to $(4)^-$ 1572; possible γγ band assignment. $T_{1/2}$: from DSAM in (n,n′γ) (1997Ga11). Other value: 0.33 ps *12* from B(E2)(1243γ) and adopted transition properties, assuming negligible 1070 branch.
2031.5 *10*	(5^+)		D I	J^π: σ in (d,t).
2045[&h]	5^+		D F	J^π: from (α,t) σ fingerprint for assigned band. The 1089γ in (n,n′γ) may Be a doublet which deexcites this level as well as the 2047 level.
2046.87 *4*	$2^+,3^+$		A D	J^π: ε decay from 2^+ is allowed or first−forbidden, M1(+E2) 1188γ to 3^+ 859.
2050[q]	(7^-)		I	J^π: σ in (d,t).
2055[p]	(1^-)[@]		FG	E(level): from (γ,γ′); 2057-keV J=1, $K^\pi=1^-$ and J=2, $K^\pi=2^-$ doublet in (^{3}He,d), (α,t).
2057[&l]	(2^-)[@]		F	E(level): 2057-keV J=1, $K^\pi=1^-$ and J=2, $K^\pi=2^-$ doublet in (^{3}He,d), (α,t).
2062.1 *17*			I KL	E(level): weighted average from (t,p) and (p,t).
2073.20[d] *7*	$(8)^-$		I	J^π: γ to 7^+ is E1, fit to a band.
2074[&]	(2^-)		F	J^π: σ in (^{3}He,d).
2076.294[s] *20*	(3^-)		A I	XREF: I(2080). J^π: σ in (d,t).
2082.8 *4*			D	
2092.31 *10*	$(7,8,9)^-$		IJKL	XREF: I(2090). J^π: E1 1181γ to 8^+ 911; band assignment. Suggested as possible J=7 member of $K^\pi=2^-$ octupole band (1989Ad12), but E is too high for that assignment.

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[‡]	XREF	Comments
2101.6 *3*	(4$^+$)	0.27 ps *19*	A C	J^π: transitions to J=2,3 and possibly 4 members of γ band; candidate for K^π=4$^+$ $\gamma\gamma$ vibration state (1994OsZZ). $T_{1/2}$: from B(E2)(1316γ) in Coulomb excitation and adopted transition properties assuming negligible 1145γ branch.
2116[&]	(6$^+$)		F	J^π: σ in (^{3}He,d).
2117.8 *8*	(2$^+$,3,4$^+$)		A	J^π: γ's to 2$^+$ and 4$^+$.
2117.8 *8*			D	
2124.7[r] *7*	(5$^-$)		D I	J^π: σ in (d,t).
2132[&l]	(3$^-$)[@]		F	
2132[&h]	6$^+$		F	J^π: from (α,t) σ fingerprint for assigned band.
2132.941[m] *7*	3$^+$		A D F I	XREF: F(2132)I(2128). J^π: γ's to 2$^+$ and 4$^+$ are M1+E2.
2144.64 *10*	(8$^-$)[a]		J	
2148.6[s] *5*	(4$^-$)		D I	J^π: σ in (d,t).
2152[&p]	(2$^-$)		F	J^π: σ in (^{3}He,d).
2155.8 *7*	(6$^+$)		E	J^π: γ to 4$^+$ and 5$^+$; possible member of band built on the 4$^+$ 1978 level.
2160.114 *9*	3$^+$		A D I L	XREF: I(2161). J^π: γ's to 2$^+$ and 4$^+$ are M1+E2.
2167[&]	(2$^-$)		F	J^π: σ in (^{3}He,d).
2172.751 *17*	3$^+$		A D K	XREF: K(2174). J^π: γ to 2$^+$ is M1+E2, γ to 5$^+$ is E2.
2182			I	
2187	0$^+$		K	J^π: from L(p,t)=0.
2189.70[c] *10*	(11$^+$)[a]		J	
2194.61[e] *10*	(8$^+$)[a]		J	
2196.3 *17*	0$^+$		KL	J^π: L(p,t)=0. E(level): weighted average from (t,p) and (p,t).
2201.3 *6*	1$^{(+)}$	9.7 fs *12*	D fG	XREF: f(2204). J^π: D, $\Delta\pi$=(no) γ to 0$^+$. $T_{1/2}$: assuming negligible 743γ branch. K=0 (1996Ma18) from (γ,γ').
2207 *3*			f L	XREF: f(2204). E(level): from (p,t); 2204 in (^{3}He,d),(α,t).
2212.95 *12*			A	
2215.963 *13*	2$^-$,3$^-$		A F I	XREF: F(2217). J^π: 298γ to 3$^-$ is M1, 386γ to 1$^-$ is E2.
2226[&l]	(4$^-$)[@]		F	
2226[&p]	(3$^-$)[@]		F	
2239[&m]	4$^+$		F	J^π: from (α,t) σ fingerprint for assigned band.
2240.1[j] *10*	(5$^-$)		HI	XREF: H(2238)I(2242). J^π: σ in (d,t). The 2240 level J^π=(4$^+$) from (^{3}He,d) might be a separate level.
2243.087 *20*	3$^-$		A L	J^π: γ's to 2$^+$ and 4$^+$ are E1.
2246.31[d] *10*	(9$^-$)[a]		J	
2260.3[t] *7*	(6$^+$)		E	J^π: from band assignment.
2260.65 *3*	2$^{(+)}$,3		A L	J^π: ε decay from 2$^+$ is allowed or first-forbidden, γ to 4$^+$.
2264.31 *6*	(1,2$^+$)		A D I	J^π: γ's to 0$^+$ and 2$^+$.
2266[&h]	7$^+$		F	J^π: from (α,t) σ fingerprint for assigned band.
2273.01 *3*	3$^-$		A I	XREF: I(2274). J^π: γ's to 2$^+$ and 4$^+$ are E1.
2282.68 *5*	2$^{(+)}$,3		A D F	XREF: F(2279).

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$[‡]	XREF	Comments
				J^{π}: ε decay from 2^+ is allowed or first-forbidden, γ to 4^+.
2290.959 *23*	$(3)^+$		A D F I L	XREF: F(2289)I(2295). J^{π}: $(3,4)^+$ from σ in (d,t), M1(+E2) γ to to 2^+ and 4^+.
2302 *3*			L	E(level): from (p,t).
2315	$(3,4)^+$		F I	XREF: F(2312). J^{π}: σ in (d,t).
2328.51 *10*	$(9)^-$		J	J^{π}: 1417γ to 8^+ 911; band assignment.
2328.69 *9*	(1,2)		A	J^{π}: γ's to 0^+ and 2^+.
2333[&]			F I	XREF: I(2336).
2352.91 *8*	$2^{(+)}$,3		A F I	XREF: F(2347)I(2353). J^{π}: ε decay from 2^+ is allowed or first forbidden, γ to 4^+.
2359[&m]	5^+		F	J^{π}: from (α,t) σ fingerprint for assigned band.
2368[&j]	(6^-)		F I	J^{π}: σ in (d,t).
2377.77 *5*	1^+		A I	XREF: I(2377). J^{π}: γ to 0^+ is M1.
2382.26 *4*	$(3)^+$		A F I	XREF: F(2387)I(2386). J^{π}: M1(+E2) 1523γ to 3^+ 859, 924γ to $(2)^-$ 1458, $J^{\pi}=(3,4)^+$ from σ in (d,t).
2389.33[b] *16*	14^+[#]	0.55 ps *7*	E J	J^{π}: continuation of established g.s. band. $T_{1/2}$: from Coulomb excitation (RDM).
2393.129 *15*	$2^+,3^+$		A	J^{π}: γ to 2^+ is M1, γ to 4^+.
2402[&]			F I	
2413.67 *8*	(2,3,4)		A D F I	XREF: F(2418)I(2417). J^{π}: γ's to 2^+ and 4^+. If the 1630γ in (n,n'γ) is correctly placed from this level, its D+Q multipolarity would rule out J=4.
2427			I	
2428.4?[d] *4*	(10^-)[a]		J	
2428.77[c] *13*	(12^+)[a]	1.18 ps *21*	E J	$T_{1/2}$: from RDM in Coulomb excitation.
2435.10 *10*	$(3,4)^+$		A F I	XREF: F(2438)I(2438). J^{π}: σ in (d,t).
2442.0? *10*	$(3^+,4^+,5^+)$		D	J^{π}: significantly mixed D+Q 2177γ to 4^+ 265.
2444.16 *24*			A I	XREF: I(2449).
2453[&]			F	
2459.0? *10*			D	
2464.51 *10*	1^+	43 fs *6*	A G	J^{π}: M1 γ to 0^+. $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$=5.1 *5* in ($\gamma$,$\gamma'$) and adopted $\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$=0.44 *7*. K=1 (1996Ma18) from (γ,γ').
2475.39 *4*	$(1,2)^+$		A F I	XREF: F(2476)I(2478). J^{π}: γ to 0^+; E2,M1 γ to 2^+.
2479.74?[e] *12*	(10^+)[a]		J	
2495	(9^-)		I	J^{π}: σ in (d,t).
2504.6 *10*	$(3,4)^+$		D F I	XREF: F(2504)I(2499). J^{π}: σ in (d,t).
2512	$(3,4)^+$		I	J^{π}: σ in (d,t).
2525	1	23 fs *3*	G I	XREF: I(2522). J^{π}: D γ to 0^+. E(level): from (γ,γ'). K=1 from (γ,γ') (1996Ma18).
2534			F I	XREF: F(2536).
2542.87 *5*			A I	XREF: I(2542).
2563[m]	6^+		F I	XREF: F(2568). J^{π}: from (α,t) σ fingerprint for assigned band.
2574.0[t] *10*	(8^+)		E	J^{π}: band assignment.

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[‡]	XREF	Comments
2578			I	
2586.06 *12*	$(3,4)^+$		A F I	XREF: F(2583). J^π: σ in (d,t).
2600.63 *3*	1^+		A G I	XREF: G(2601)I(2603). J^π: M1 γ to 0^+. $T_{1/2}$: 12 fs *3* from (γ,γ'), if I(1142γ) is negligible. K=1 from (γ,γ') (1996Ma18).
2608[&]	(6^-)		F	Possible configuration: π^2(7/2[523]+5/2[402]) (1993Li12). J^π: σ in (^{3}He,d).
2613.50 *17*			A	
2619.6 *6*	(2^+)		A I	XREF: I(2622). J^π: γ's to 0^+ and 4^+.
2624.8 *3*	$(1,2^+)$		A	J^π: γ's to 0^+ and 2^+.
2628.5 *3*	$(1,2^+)$		A	J^π: γ's to 0^+ and 2^+.
2632.66 *17*	$(3,4)^+$		A F I	XREF: F(2632)I(2631). J^π: σ in (d,t).
2649			I	
2654.40?[c] *14*	(13^+)[a]		J	
2655			F	
2656.9?[e] *4*	(12^+)[a]		J	
2671.98 *17*			A F I	XREF: F(2671)I(2670).
2679.05 *18*	1^+	20 fs *3*	A G I	XREF: I(2677). J^π: M1 γ to 0^+. K=1 from (γ,γ') (1996Ma18).
2687			F I	XREF: F(2684).
2713[&m]	7^+		F	J^π: from $(\alpha$,t) σ fingerprint for assigned band.
2729.090 *17*	$(3,4)^+$		A I	XREF: I(2734). J^π: σ in (d,t).
2742[&]			F	
2767.8 *7*	1	22 fs *4*	FG	J^π: from $\gamma(\theta)$ in (γ,γ'). K=0 (1996Ma18) from (γ,γ').
2783.69 *19*	1^+	49 fs *14*	A FG	J^π: M1 γ to 0^+. $T_{1/2}$: from $\Gamma^2_{\gamma0}/\Gamma$=2.6 *5* from (γ,γ') and adopted $\Gamma_{\gamma0}/\Gamma$=0.53 *6*.
2797.5 *4*	$(1,2^+)$		A F	XREF: F(2808). J^π: γ's to 0^+ and 2^+.
2811.98 *11*	1	3.1 fs *3*	A G	J^π: from $\gamma(\theta)$ in (γ,γ'). $T_{1/2}$: if 2026γ branch is negligible. K=0 (1996Ma18) from (γ,γ').
2858.16 *18*	$(1,2^+)$		A	J^π: γ's to 0^+ and 2^+.
2880.07?[c] *17*	(14^+)[a]		F J	
2912[&]			F	
2954[&]			F	
2967.3[b] *6*	(16^+)[#]	0.49 ps *27*	E J	
2993?[&]			F	
3000[&]			F	
3043[&]			F	
3073	1	11 fs *4*	G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=0 (1996Ma18) from (γ,γ').
3077[&n]	(8^+)		F	J^π: σ in (^{3}He,d).
3087[&]			F	
3123	1	17 fs *6*	G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ').

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[‡]	S	XREF	Comments
3144	1	5.4 fs *5*		G	K=(0) (1996Ma18) from (γ,γ'). J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). Other E: 3141 from (γ,γ'). K=1 (1996Ma18) from (γ,γ').
3147[&]				F	
3160[&]				F	
3175	1	11.8 fs *15*	14.9 *16*	G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=(1) (1996Ma18) from (γ,γ').
3187	1	11.4 fs *10*		G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=1 (1996Ma18) from (γ,γ').
3197	1	7.4 fs *7*		G	K=1 (1996Ma18) from (γ,γ'). J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). Other E: 3193 in (γ,γ') (1973Me17).
3211[&]				F	
3239[&]				F	
3253[&]				F	
3273[&n]	(9^+)			F	J^π: σ in (^{3}He,d).
3288	1	6.0 fs *9*		G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=(0) (1996Ma18) from (γ,γ').
3296[&]				F	
3322	1	5.8 fs *14*		FG	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=0 (1996Ma18) from (γ,γ').
3329	1	15.0 fs *25*		G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=1 (1996Ma18) from (γ,γ').
3345[&]				F	
3371[&]				F	
3386	1	5.3 fs *12*		G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=(0) (1996Ma18) from (γ,γ').
3394[&]				F	
3425	1	38 fs *19*		fG	J^π: D γ to 0^+ g.s. E(level): from (γ,γ').
3430	1	13 fs *3*		fG	J^π: D γ to 0^+ g.s. E(level): from (γ,γ'). K=1 (1996Ma18) from (γ,γ').
3440	1	3.4 fs *13*		G	$T_{1/2}$: from (γ,γ').
3459[&]				F	
3476[&]				F	
3493	1			G	J^π: D γ to 0^+ g.s. E(level): from (γ,γ').
3498	1			FG	XREF: F(3501). J^π: D γ to 0^+ g.s. E(level): from (γ,γ').
3554[&]				F	
3577?[b]	(18^+)[#]			E	E(level): from Coulomb excitation.
3579[&]				F	
3600[&]				F	

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Adopted Levels, Gammas (continued)

^{166}Er Levels (continued)

E(level)[†]	XREF	E(level)[†]	XREF	E(level)[†]	XREF
3627[&]	F	3978[&]	F	4256[&]	F
3663[&]	F	4002[&o]	F	4274[&]	F
3721[&]	F	4026[&]	F	4297[&]	F
3751[&]	F	4045[&]	F	4329[&]	F
3783[&]	F	4064[&]	F	4359[&]	F
3808[&]	F	4087[&o]	F	4381[&]	F
3838[&]	F	4106[&]	F	4407[&]	F
3856[&]	F	4126[&]	F	4418[&]	F
3881[&]	F	4149[&]	F	4442[&]	F
3907[&]	F	4174[&]	F		
3932[&]	F	4227[&]	F		

[†] From least-squares fit to Eγ, omitting the 646.8γ from the 2160 level, the 1053γ from the 1964 level, and all three placements for the 1216.173γ because these transitions have Eγ values that deviate from the expected value by at least 5σ. Exceptions are noted.

[‡] Deduced from measured $\Gamma^2_{\gamma 0}/\Gamma$ and $\Gamma_{\gamma 1}/\Gamma_{\gamma 0}$, in ($\gamma$,$\gamma'$) assuming Γ=$\Gamma_{\gamma 1}$+$\Gamma_{\gamma 0}$. Thus, deduced $T_{1/2}$ will Be an upper limit if branches exist to levels other than the g.s. and the 81-keV level.

[#] Assignments for J<16 g.s. band members are based on known J^π of g.s., the E2 transition between J=2 and 0 members and large B(E2) for excitation of levels in multiple Coulomb excitation.

[@] Assignments based on (^{3}He,d) or (α,t) cross section and (^{3}He,d) to (α,t) cross section ratios.

[&] From ^{165}Ho(^{3}He,d),(α,t).

[a] Fit to a band, unless otherwise noted.

[b] Band(A): $K^\pi=0^+$ g.s. band. A=13.9, B=-12.8×10^{-3}.

[c] Band(B): $K^\pi=2^+$ γ-vibrational band. A=12.44, B=-10.4×10^{-3}.

[d] Band(C): $K^\pi=(2)^-$ octupole vibrational band. K=2 octupole-vibrational states are strongly Coriolis mixed with $K^\pi=4^-$ two−quasiproton 7/2[523]+1/2[411] states for J≥4. K=2 dominates in 1458, 1514,1596 and 1692 levels, K=4 dominates in 1572 and 1666 levels and K=2 and K=4 amplitudes are comparable in E>1692 levels (see 1974Ka02 and 1989Ad12; see also 2000Gr33). Attribution of predominant K=2 character has been based on mixing calculations from 1989Ad12. The 1458, 1514 and 1596 level energies imply A=10.75, B=−0.034.

[e] Band(D): $K^\pi=0^+$ band. A=11.7, B=−0.05.

[f] Band(E): $K^\pi=0^-$ band.

[g] Band(F): $K^\pi=3^-$ band (1993Li12). Configuration: 7/2[523]−1/2[411].

[h] Band(G): $K^\pi=4^+$ band (1993Li12). Configuration: 7/2[523]+1/2[541]; established from (α,t), (^{3}He,d) cross section fingerprint for observed band members.

[i] Band(H): $K^\pi=7^-$ band (1993Li12). Configuration: 7/2[523]+7/2[404].

[j] Band(I): $K^\pi=(5^-)$ band (1975Pa15). Configuration: 7/2[633]+3/2[521].

[k] Band(J): $K^\pi=1^+$ band.

[l] Band(K): $K^\pi=2^-$ band. Configuration: 7/2[523]−3/2[411].

[m] Band(L): $K^\pi=3^+$ band. Configuration: 7/2[523]−1/2[541]; established from (α,t), (^{3}He,d) cross section fingerprint for observed band members.

[n] Band(M): $K^\pi=8^+$ band. Configuration: 7/2[523]+9/2[514].

[o] Band(N): K^π=1+? band (1993Li12). Possible configuration: 7/2[523]−9/2[514].

[p] Band(O): $K^\pi=1^-$ band. Configuration: 7/2[523]−5/2[402].

[q] Band(P): $K^\pi=(6^-)$ band (1975Pa15). Configuration: 7/2[633]+5/2[523].

[r] Band(Q): $K^\pi=(4^-)$ band (1975Pa15). Configuration: 7/2[633]+1/2[521].

[s] Band(R): $K^\pi=(3^-)$ band (1975Pa15). Configuration: 7/2[633]−1/2[521].

[t] Band(S): possible $K^\pi=4^+$, $\gamma\gamma$ vibration band (1998Fa15).

$\gamma(^{166}Er)$

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
80.5776	2^+	80.576 *2*	100	0.0	0^+	E2		6.78	B(E2)(W.u.)=217 *5* E_γ: from ^{166}Ho β^- decay (26.824 h). Mult.: based on ce data from ^{166}Ho β^- decay (26.824 h).
264.990	4^+	184.4113[&] *24*	100	80.5776	2^+	E2		0.331	B(E2)(W.u.)=312 *11*
545.454	6^+	280.464[&] *2*	100	264.990	4^+	E2		0.0849	B(E2)(W.u.)=370 *20*
785.905	2^+	520.945[&] *15*	1.72 *4*	264.990	4^+	E2		0.01481	B(E2)(W.u.)=0.78 *4*
		705.333 *20*	100.0 *21*	80.5776	2^+	E2+M1	−5 *+3−14*	0.0074 *12*	B(M1)(W.u.)=0.0004 *+5−4*; B(E2)(W.u.)=9.6 *6* δ: from ε decay (1987Kr12). Other δ: −22 *+13−7*, −7 *+23−3* in ε decay; >50 from (n,n′γ); −19 *+9−38*, −38 *+24−∞*, >25 in Coulomb excitation.
		785.904 *15*	88.9 *18*	0.0	0^+	E2		0.00561	B(E2)(W.u.)=5.17 *21* I_γ: weighted average of 86.3 *15* from β^- decay (26.824 h), 81 *4* from (n,n′γ) and 90.5 *10* from ε decay.
859.389	3^+	73.45 *2*	0.04	785.905	2^+	M1		6.92	I_γ: from Coulomb excitation.
		594.409 *15*	18.82 *17*	264.990	4^+	E2+M1	−12 *2*	0.01076 *16*	B(M1)(W.u.)=2.5×10^{-5} *10*; B(E2)(W.u.)=4.8 *9* δ: from ^{166}Tm ε decay; −45 *+19−137* from (n,n′γ), −8 *+3−15* from Ho β^- decay (1200 y).
		778.839[&] *11*	100.0 *24*	80.5776	2^+	E2+M1	−20 *+2−4*	0.00574	E_γ: from β^- decay (1200 y). δ: from β^- decay (1200 y). Other δ include: −45 *+8−13* from β^- decay (1200 y), <−7 from (α,2nγ), −75 *+26−134* from (n,n′γ); however, data from ε decay range from +8.4 *7* to −6.2 *+10−8* and source of discrepancy is not known.
		859.3[&] *1*	1.18 *24*	0.0	0^+				E_γ: from β^- decay (1200 y).
911.208	8^+	365.760[&] *5*	100	545.454	6^+	E2		0.0385	B(E2)(W.u.)=373 *14* Mult.: from ce data in ^{164}Dy(α,2nγ).
956.232	4^+	96.85 *5*	0.166[&] *8*	859.389	3^+	E2		3.32	B(E2)(W.u.)=3.7×10^2 *3*
		170.325 *16*	1.05[&] *3*	785.905	2^+	E2		0.433	B(E2)(W.u.)=138 *9*
		410.797 *16*	1.25[&] *4*	545.454	6^+	E2		0.0278	B(E2)(W.u.)=2.01 *14*
		691.251[&] *16*	100.0[&] *6*	264.990	4^+	E2+M1	−3.7 *5*	0.00802 *20*	B(M1)(W.u.)=0.00082 *22*; B(E2)(W.u.)=11.1 *7* δ: from ^{166}Tm ε decay. Other δ: ≥50 from (n,n′γ), −3.3 *+12−30* from Coulomb excitation, 3.8 *+34−12* and −10 *+4−27* from β^- decay (1200 y). However, discrepant data exist, e.g., +5.5 *+28−14* in ε decay or −16 +427 and +566 −522-616 in β^- decay (1200 y).
		875.650 *15*	54.2[&] *4*	80.5776	2^+	E2		0.00444	B(E2)(W.u.)=1.98 *12* Other Iγ: 55.0 *10* from ε decay, 57 from Coulomb excitation, 43.9 *24* from (n,n′γ), 70 *7* from (α,2nγ).

From ENSDF

$\gamma(^{166}$Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
1075.277	5^+	119.041[&] *3*	0.298[&] *6*	956.232	4^+	(M1+E2)	+1.94 *+23−21*	1.578 *24*	B(M1)(W.u.)=0.0024 *6*; B(E2)(W.u.)=3.1×10^2 *4* Mult.,δ: D+Q from 119γ-876$\gamma(\theta)$ for intraband γ in ^{166}Ho β^- decay (1200 y).
		215.8887[&] *21*	4.52[&] *1*	859.389	3^+	[E2]		0.196	B(E2)(W.u.)=3.0×10^2 *4* Iγ(215.9γ)/Iγ(810.3γ)=0.0502 *22* (^{166}Tm ε decay), 0.109 *11* in (α,2nγ), 0.0432 in Coulomb excitation, <0.029 in (n,n′γ).
		529.807[&] *11*	16.63[&] *27*	545.454	6^+	E2+M1[&]	−25 *+4−5*	0.01421	B(M1)(W.u.)=1.2×10^{-5} *4*; B(E2)(W.u.)=12.4 *15* Iγ(529.8γ)/Iγ(810.3γ)=0.164 *7* (^{166}Tm ε decay). 0.167 *23* in (α,2nγ), 0.156 in Coulomb excitation, 0.300 *23* in (n,n′γ). δ: other values: see β^- decay (1200 y) and (n,n′γ) data sets.
		810.293[&] *10*	100.0[&] *19*	264.990	4^+	E2+M1[&]	−21.2 *+18−21*	0.00526	B(M1)(W.u.)=2.8×10^{-5} *6*; B(E2)(W.u.)=8.9 *11* Other δ: −27 *+4−6* in (n,n′γ); <−17 in ε decay.
1215.968	6^+	140.692[&] *6*	0.78[&] *1*	1075.277	5^+	[M1,E2]		0.96 *12*	
		259.740[&] *3*	19.60[&] *11*	956.232	4^+	[E2]		0.1079	B(E2)(W.u.)=225 *16* Other Iγ: 25.9 *24* in (α,2nγ), 24.8 in Coulomb excitation.
		304.91[&] *5*	0.36[&] *5*	911.208	8^+	[E2]		0.06574	B(E2)(W.u.)=1.9 *3*
		670.516[&] *14*	100.0[&] *17*	545.454	6^+	E2+M1[&]	+10.0 *+16−12*	0.00811	B(M1)(W.u.)=9.E−5 *3*; B(E2)(W.u.)=9.9 *7* Other δ: ≥+11 in (n,n′γ); −6 +∞−3 in (α,2nγ).
		950.964[&] *9*	50.40[&] *24*	264.990	4^+	E2		0.00373	B(E2)(W.u.)=0.88 *6* Mult.: from ce data (^{164}Dy(α,2nγ)).
1349.53	10^+	438.2[ib] *1*	100[i]	911.208	8^+	[E2]		0.0233	B(E2)(W.u.)=390 *17*
1376.035	7^+	160.076[&] *5*	0.98[&] *6*	1215.968	6^+	[M1,E2]		0.64 *11*	
		300.755[&] *4*	39.16[&] *23*	1075.277	5^+	E2(+M3)	−0.018 *+15−16*	0.0691 *19*	B(E2)(W.u.)=2.2×10^2 *4* δ: B(M3)(W.u.) exceeds RUL, unless δ<0.00003.
		464.832[&] *6*	12.8[&] *6*	911.208	8^+	E2+M1[&]	−63 *+12−19*	0.0200 *4*	B(M1)(W.u.)=9.E−7 *4*; B(E2)(W.u.)=8.0 *16* δ: from 1985Al22; however δ=−13 *+5−3* (1981Kr12) also reported.
		830.585[&] *9*	100.0[&] *23*	545.454	6^+	E2+M1	−16.6 *+15−18*	0.00499	B(M1)(W.u.)=1.8×10^{-5} *5*; B(E2)(W.u.)=3.4 *7* δ: from β^- decay (1200 y). Other δ: <−20 in (α,2nγ); −34 *+14−51* in (n,n′γ).
1458.154	$(2)^-$	598.764 *19*	34.4 *7*	859.389	3^+	E1(+M2)	−0.02 *6*	0.0038 *4*	Other Iγ: 51 *9* in (n,n′γ). Mult.,δ: E1 from ε decay; D(+Q), δ=−0.02 *6* or −5.4 *+13−30* from (n,n′γ).
		672.242 *20*	100.0 *22*	785.905	2^+	E1		0.00297	δ: −0.01<δ(D,Q)<0 from ^{166}Tm ε decay; mult=D+Q and δ(D,Q)=+0.01 *+7−5* or +2.2 *+3−4* from (n,n′γ).

$^{166}_{68}$Er$_{98}$-11

$\gamma(^{166}Er)$ (continued)

E$_i$(level)	J_i^π	E$_\gamma$[†]	I$_\gamma$[‡]	E$_f$	J_f^π	Mult.[#]	δ[@]	α[h]	I$_{(\gamma+ce)}$	Comments
1458.154	(2)$^-$	1378.6 *10*	0.12 *6*	80.5776	2$^+$					
1460.031	0$^+$	674.188[a] *15*	2.07[a] *10*	785.905	2$^+$					
		1379.437[a] *6*	100[a]	80.5776	2$^+$	E2		0.00181		B(E2)(W.u.)=2.7 *10* Mult.: from ^{166}Ho β^- decay (26.824 h).
		1460.0[a]		0.0	0$^+$	E0			≈0.030	Mult.: from ^{166}Ho β^- decay (26.824 h). ρ^2(E0)=0.0020 *10* (1999Wo07).
1513.751	3$^-$	557.514 *18*	67.0 *13*	956.232	4$^+$	E1		0.00440		
		654.358 *16*	85.7 *17*	859.389	3$^+$	E1		0.00314		Other Iγ: 52 *6* in (n,n$'\gamma$). Mult.: from ε decay; δ(D,Q)=−0.08 *+9−6* or +1.55 *+21−23* from (n,n$'\gamma$).
		727.858 *20*	91 *4*	785.905	2$^+$	E1		0.00253		Other Iγ: 78 *7* in (n,n$'\gamma$). δ(D,Q)=+0.01 *+3−4* from (n,n$'\gamma$).
		1248.78 *3*	51.1 *11*	264.990	4$^+$	E1+M2	+0.13 *3*	0.00109 *7*		Other Iγ: 41 *7* in (n,n$'\gamma$). Mult.,δ: from (n,n$'\gamma$).
		1433.42 *25*	100 *17*	80.5776	2$^+$	E1+M2	+0.054 *+19−27*	8.85×10^{-4} *18*		E$_\gamma$: from ^{166}Ho β^- decay (1200 y). Mult.,δ: from (n,n$'\gamma$).
1528.401	2$^+$	572.2		956.232	4$^+$					
		742.59 *10*	2.89 *25*	785.905	2$^+$					
		1263.412 *16*	100.0 *21*	264.990	4$^+$	E2		0.00212		B(E2)(W.u.)=39 *6* Mult.: from $\gamma(\theta)$ and linear polarization in (n,n$'\gamma$); M1,E2 from α(K)exp in ε decay.
		1447.820 *25*	71.1 *17*	80.5776	2$^+$	M1+E2+E0	+0.5 *3*	0.00242 *18*		B(M1)(W.u.)=0.013 *13* δ: from (n,n$'\gamma$).
		1528.38 *4*	4.3 *4*	0.0	0$^+$	E2		1.54×10^{-3}		B(E2)(W.u.)=0.66 *8* Other Iγ: 5.8 *7* from ^{166}Ho β^- decay (26.824 h), 18 *7* from (n,n$'\gamma$). B(E2)(W.u.): from measured B(E2)=0.018 *2* in Coulomb excitation.
1555.737	8$^+$	179.3[b] *1*	<16[b]	1376.035	7$^+$					
		206.0		1349.53	10$^+$	[E2]		0.2282		B(E2)(W.u.)≈1.5 E$_\gamma$: from Coulomb excitation. B(E2)(W.u.) from measured B(E2)(↓)≈0.008 in Coulomb excitation.

From ENSDF

γ(^{166}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
1555.737	8^+	339.751[&] *21*	100.0[&] *10*	1215.968	6^+	(E2)		0.0476	B(E2)(W.u.)=250 *23*
		644.60[&] *5*	86.9[&] *27*	911.208	8^+	E2+M1	+4.9 *+23−11*	0.0092 *3*	B(M1)(W.u.)=0.0003 *3*; B(E2)(W.u.)=8.5 *9* Mult.: from α(K)exp in (α,2nγ) and $\gamma(\theta$,H,t) in β^- decay (1200 y). δ: from $\gamma(\theta$,H,t) ^{166}Ho β^- decay (1200 y). Other δ: ≤−1 or ≥+4, >+1.4 or <−6 in β^- decay (1200 y); +1.6 *+10−6* or −0.75 *20* in (α,2nγ).
		1010.288[&] *11*	48.3[&] *6*	545.454	6^+	E2		0.00329	B(E2)(W.u.)=0.52 *5* Other Iγ: 41 *4* from (α,2nγ), 38 from Coulomb excitation. Mult.: from ce data (^{164}Dy(α,2nγ)).
1572.183	$(4)^-$	114.09		1458.154	$(2)^-$	E2		1.80	
		496.935 *16*	45.2 *9*	1075.277	5^+	(E1)		0.00566	Other Iγ: 26 *5* in (n,n′γ).
		615.963 *15*	34.8 *8*	956.232	4^+	(E1(+M2))			Other Iγ: 22 *4* in (n,n′γ). Mult.: D(+Q) from (n,n′γ); $\Delta\pi$=yes from level scheme. δ(D,Q)=−0.03 *+10−6* or +1.02 *+14−18* from (n,n′γ).
		712.817 *22*	100 *2*	859.389	3^+	E1		0.00264	
		1307.17 *15*	1.1 *3*	264.990	4^+				
1596.241	$(4)^-$	520.94[&] *3*	66.8 *18*	1075.277	5^+				I$_\gamma$: from β^- decay (1200 y). Other Iγ: 44 *6* from ε decay, 36 *7* from (n,n′γ).
		640.015[&] *9*	37.2 *7*	956.232	4^+				I$_\gamma$: weighted average of 37.7 *9* from β^- decay (1200 y) and 36.5 *11* from ε decay. Other Iγ: 48 *7* from (n,n′γ).
		736.832 *22*	100[&] *6*	859.389	3^+	E1		0.00247	Mult.,δ: from (n,n′γ); δ(D,Q)=+0.002 *+19−25*.
		1331.17[&] *11*	1.7[&] *2*	264.990	4^+				I$_\gamma$: based on Iγ(1331.2γ)/Iγ(640γ)=0.041 *6* (^{166}Ho β^- decay (1200 y)).
1662.435	1^-	1581.834[a] *7*	100.0[a] *11*	80.5776	2^+	E1(+M2)	−0.027 *27*	8.69×10^{-4} *15*	B(E1)(W.u.)=0.0066 *7*; B(M2)(W.u.)=9 *+18−9* Mult.,δ: from ^{166}Ho β^- decay (26.824 h). Other δ: −0.04 *+8−9* or −3.0 *+7−11* from (n,n′γ).
		1662.439[a] *6*	65.3[a] *7*	0.0	0^+	E1		8.77×10^{-4}	B(E1)(W.u.)=0.0037 *4* I$_\gamma$: other Iγ: 65.8 *17* in (γ,γ'), 80 *10* in ε decay, 73 *7* in (n,n′γ). Mult.: from (γ,γ').
1665.799	$5^{(-)}$	590.56[&] *3*	4.6[&] *4*	1075.277	5^+				
		1120.330[&] *11*	39.2[&] *4*	545.454	6^+				Other Iγ: 48 *5* from (α,2nγ), 95 *10* from (n,n′γ).

$^{166}_{68}Er_{98}$-13

Adopted Levels, Gammas (continued)

γ(^{166}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
1665.799	$5^{(-)}$	1400.770[&] 15	100.0[&] 7	264.990	4^+	E1(+M2)	+0.025 +18−26	8.81×10^{-4} 14	Mult.,δ: from (n,n′γ).
1673.70		1408.7 1	100	264.990	4^+				
1678.765	$(4)^+$	819.0[c]	49[c] 15	859.389	3^+				
		892[c]	<9[c]	785.905	2^+				
		1413.81 4	100 5	264.990	4^+	M1(+E2+E0)	+0.35 30	0.0062 21	δ: from (n,n′γ).
		1598.2[c]	<21[c]	80.5776	2^+				
1692.297	5^-	476.378[&] 19	7.3[&] 4	1215.968	6^+				
		617.0[&] 5	4.5[&] 13	1075.277	5^+				
		736.02[&] 8	28[&] 3	956.232	4^+				
		1146.825[&] 12	41.1[&] 4	545.454	6^+				
		1427.227[&] 21	100.0[&] 7	264.990	4^+	E1(+M2)	−0.002 +22−31	8.72×10^{-4} 14	Mult.,δ: from (n,n′γ).
1703.050	$(2,3,4)^+$	1622.45 3	100	80.5776	2^+	E2,M1		0.0018 4	
1713.4	0^+	927.4[c]	12.4[c] 6	785.905	2^+				
		1632.9[c]	100.0[c] 6	80.5776	2^+	[E2]			B(E2)(W.u.)<0.83
1721.7	3^-	935[k]		785.905	2^+				Tentative γ reported in Coulomb excitation only.
		1456.6[c] 10	78[c] 12	264.990	4^+	D(+Q)			Mult.: from (n,n′γ). δ: −0.01 10 or −8 +13−12 from (n,n′γ).
		1641.2[c] 7	100[c] 13	80.5776	2^+	E1(+M2)	+0.01 +3−4	8.74×10^{-4} 14	Mult.,δ: from (n,n′γ).
1751.36	9^+	375.2[b] 1	100[b] 10	1376.035	7^+	E2		0.0358	B(E2)(W.u.)=3.7×10^2 15 Mult.: from ce data in ^{164}Dy(α,2nγ).
		401.9[b] 1	5	1349.53	10^+				I_γ: from Coulomb excitation. Other: <16 from (α,2nγ).
		840.2[ib] 1	90[ib] 9	911.208	8^+	(E2+M1)		0.0072 23	Mult.: from α(K)exp in ^{164}Dy(α,2nγ). δ(D,Q)=−11 +3- infinity from γ(θ) in ^{164}Dy(α,2nγ) for γ that may Be doubly placed. E_γ,I_γ: for doubly-placed γ.
1760.9		1215.5[c] 5	<95[c]	545.454	6^+				
		1495.7[c] 7	100[c] 16	264.990	4^+	D+Q			E_γ: Eγ=1495.57 18 for unplaced γ in ^{166}Tm ε decay. Mult.: from (n,n′γ). δ: +0.41 +7−4 or +4.2 8 from (n,n′γ).
1786.975	6^-	94.674[&] 3	0.259[&] 4	1692.297	5^-	[M1]		3.33	
		121.175[&] 3	0.465[&] 7	1665.799	$5^{(-)}$	[E2]		1.443	
		190.774[&] 23	0.395[&] 4	1596.241	$(4)^-$	[E2]		0.295	
		214.807[&] 8	0.803[&] 11	1572.183	$(4)^-$	[E2]		0.199	

From ENSDF

$^{166}_{68}Er_{98}$-14

$\gamma(^{166}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
1786.975	6^-	410.944[&] *8*	20.69[&] *8*	1376.035	7^+	E1+M2[&]	−0.010 *5*	0.00873	
		570.976[&] *18*	9.99[&] *27*	1215.968	6^+	E1+M2[&]	+0.06 *3*	0.0044 *4*	
		711.681[&] *6*	100.0[&] *16*	1075.277	5^+	E1(+M2)	+0.002 *3*	0.00264	Mult.: from α(K)exp in ^{164}Dy(α,2nγ).
		1241.500[&] *14*	1.53[&] *8*	545.454	6^+	E1+M2[&]	+0.21 *5*	0.00129 *17*	
		1521.86[&] *5*	0.0298[&] *11*	264.990	4^+				
1813.2	$1^{(+)}$	1731.9 *5*	45 *8*	80.5776	2^+	(M1+E2)		0.0016 *3*	I_γ: unweighted average of 32 *11* from ε decay, 48 *5* and 67 *6* from (γ,γ'), and 33 *8* from (n,n′γ) (weighted average is 50 *7*). Mult.: D+Q from (n,n′γ), $\Delta\pi$=(no) from level scheme. δ: $-1.6<\delta$(D,Q)<-0.28 from (n,n′γ).
		1813.4 *3*	100	0.0	0^+	(M1)		1.74×10^{-3}	B(M1)(W.u.)=0.065 *13* I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(no) from (γ,γ').
1827.557	6^-	135.260[&] *4*	0.812[&] *11*	1692.297	5^-	[E2]		0.971	
		161.731[&] *8*	0.893[&] *24*	1665.799	$5^{(-)}$	[M1,E2]		0.62 *11*	
		231.318[&] *8*	1.702[&] *18*	1596.241	$(4)^-$	[E2]		0.1561	
		255.20[&] *12*	0.035[&] *8*	1572.183	$(4)^-$	[E2]		0.1140	
		451.542[&] *7*	24.05[&] *24*	1376.035	7^+	E1+M2[&]	−0.0023 *22*	0.00702	
		611.555[&] *26*	11.31[&] *11*	1215.968	6^+	E1+M2[&]	−0.18 *7*	0.0054 *16*	
		752.313[&] *12*	100.0[&] *10*	1075.277	5^+	E1(+M2)	+0.005 *4*	0.00237	Mult.: from α(K)exp in ^{164}Dy(α,2nγ).
		1282.058[&] *15*	1.524[&] *24*	545.454	6^+	E1+M2[&]	0.20 *11*	0.0012 *4*	
		1562.31 *14*	0.0280[&] *24*	264.990	4^+				
1830.425	1^-	1749.836[a] *14*	100.0[a] *14*	80.5776	2^+	(E1(+M2))		0.0023 *15*	Mult.,δ: D(+Q), δ=+0.09 *+25−15* or 1/δ=−0.20 *+25−16* from (n,n′γ); $\Delta\pi$=yes from level scheme.
		1830.419[a] *23*	30.7[a] *5*	0.0	0^+	(E1)		9.20×10^{-4}	B(E1)(W.u.)=0.00019 *4* Mult.: D from (n,n′γ), $\Delta\pi$=yes from level scheme..
1846.53	12^+	497.0[b] *1*	100	1349.53	10^+	E2		0.01670	B(E2)(W.u.)=372 *21* Mult.: from α(K)exp in ^{164}Dy(α,2nγ).
1865.17		1079.5[ck] *8*	27[c] *12*	785.905	2^+				E_γ,I_γ: for doubly-placed transition; Iγ not divided.
		1784.58[c] *4*	100 *13*	80.5776	2^+				
1894.355	$2^+,3^+,4^+$	1034.79 *13*	100 *17*	859.389	3^+				

$\gamma(^{166}Er)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[#]	δ[@]	α[h]	Comments
1894.355	$2^+,3^+,4^+$	1629.4[i] 3	<620[i]	264.990	4^+				
		1813.4 3	<1448	80.5776	2^+				I_{γ}: undivided intensity for doublet.
1897.27	(6^+)	1351.8[b] 1	72[c] 20	545.454	6^+				
		1632.7[c] 7	100[c] 32	264.990	4^+				
		1817.0[c] 10	60[c] 32	80.5776	2^+				
1904.8?	2,3,4	1824.2[k] 5	100	80.5776	2^+	D+Q			E_{γ},Mult.: from (n,n′γ). δ: −0.22 +4−3 or +4.9 +7−8 from (n,n′γ).
1908.2	(6^-)	312.0[c]	<14[c]	1596.241	$(4)^-$				
		336.0[c] 4	100[c] 21	1572.183	$(4)^-$				
1917.758	3^-	86.84		1830.425	1^-	E2		5.05	
		255.44 6	0.21 2	1662.435	1^-				
		345.569 15	18.3 5	1572.183	$(4)^-$	M1+E2	−0.57 +21−25	0.080 8	
		404.004 13	31.1 8	1513.751	3^-	M1+E2	−0.34 +17−19	0.057 4	Other Iγ: 21 4 from (n,n′γ).
		459.600 15	100 2	1458.154	$(2)^-$	M1+E2	−0.16 4	0.0428 7	Mult.: D+Q from (n,n′γ); M1 from ε decay. δ: weighted average of −0.11 +5−8 from γ(θ) in (n,n′γ), −0.17 5 and −0.21 9 from γγ(θ) in ε decay. Other solution in (n,n′γ) (−2.7 5) rejected.
		1131.872 25	9.65 23	785.905	2^+	E1		1.09×10^{-3}	
		1652.76 3	42.2 11	264.990	4^+	E1		8.75×10^{-4}	δ(D,Q)<−0.03 and −0.05 8 from ^{166}Tm ε decay.
		1837.17 3	29.8 7	80.5776	2^+	E1		9.22×10^{-4}	
1934.1	0^+	1853.5[c] 5	100	80.5776	2^+	[E2]			B(E2)(W.u.)=8.8 10
1938.263	$(3)^+$	982.00 15	0.62 11	956.232	4^+				
		1078.876 22	30.6 6	859.389	3^+	M1		0.00513	−0.007<δ(D,Q)<+1.3 in (n,n′γ) for γ which may have an additional placement.
		1152.350 16	100.0 26	785.905	2^+	M1		0.00438	δ(D,Q)=+0.01 +3−4 from (n,n′γ).
		1673.5 4	0.95 24	264.990	4^+				
		1857.62 17	1.2 4	80.5776	2^+				
1942.6	(0^+)	1156.7 4	100	785.905	2^+	[E2]		0.00251	B(E2)(W.u.)=21 7 E_{γ}: from Coulomb excitation. Mult.: γ(θ) isotropic in Coulomb excitation.
1964.04	10^+	408.5[b] 1	100[b] 10	1555.737	8^+	[E2]		0.0282	B(E2)(W.u.)=2.9×10^2 6
		614.3[b] 1	<30[b]	1349.53	10^+				
		1053.7[b,f] 1	58[b] 6	911.208	8^+	[E2]		0.00302	B(E2)(W.u.)=1.5 3
1969.71	(2,3,4)	1704.7 3	100[c] 19	264.990	4^+				
		1889.12 20	84[c] 16	80.5776	2^+				
1978.422	4^+	464.5 3	3.4 9	1513.751	3^-				
		903.01 13	3.2 6	1075.277	5^+				
		1022.175 23	33.4 13	956.232	4^+				

Adopted Levels, Gammas (continued)

γ(^{166}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
1978.422	4^+	1119.5[j]	≈77[j]	859.389	3^+				Other Iγ: Iγ(1120γ):Iγ(1193γ)=29 *10*:100 *25* in Coulomb excitation.
		1192.516 *16*	100.0 *23*	785.905	2^+	E2		0.00236	B(E2)(W.u.)=0.9 *+4−5*
1985.629	3^-	389.38 *3*	45.5 *13*	1596.241	$(4)^-$	M1		0.0668	
		413.430 *18*	57.4 *18*	1572.183	$(4)^-$	E2		0.0273	
		471.871 *23*	100.0 *23*	1513.751	3^-	M1		0.0405	
		527.58 *10*	27.6 *9*	1458.154	$(2)^-$				
		1720.87 *20*	47 *5*	264.990	4^+	(E1)		8.89×10^{-4}	
		1905.43 *23*	41 *11*	80.5776	2^+				
1986.2	(4^+)	1127		859.389	3^+				Eγ: from Coulomb excitation.
		1200		785.905	2^+				Eγ: from Coulomb excitation.
1992.70	$(7)^-$	1081.5[b] *1*	100[b] *10*	911.208	8^+	E1		1.18×10^{-3}	
		1447.0[b] *5*	<312[b]	545.454	6^+				
2001.865	$(3)^-$	84.11 *2*	7.6 *20*	1917.758	3^-	M1		4.68	
		488.19 *8*	7.2 *16*	1513.751	3^-				Other Iγ: 27 *10* in (n,n′γ).
		543.69 *3*	15.5 *4*	1458.154	$(2)^-$	E2,M1		0.021 *8*	
		1045.648 *20*	36.0 *8*	956.232	4^+	E1		1.26×10^{-3}	
		1142.45[i] *3*	<23.6[i]	859.389	3^+				
		1216.173[f] *17*	100 *20*	785.905	2^+				
		1737.09 *20*	16.4 *8*	264.990	4^+	(E1)		8.93×10^{-4}	
		1921.40 *15*	14.4 *12*	80.5776	2^+				
2021.348	$(2,3)^-$	563.21 *3*	3.24 *10*	1458.154	$(2)^-$	E2,M1		0.019 *7*	
		1161.955 *16*	38.6 *9*	859.389	3^+	E1		1.05×10^{-3}	
		1235.433 *16*	100 *2*	785.905	2^+	E1(+M2)	+0.04 *+9−6*	0.00098 *12*	Mult.,δ: from (n,n′γ). Other δ: +0.05 *10* from ε decay.
2022.59	(4^+)	1475.5[c] *10*	18[c] *7*	545.454	6^+				
		1758.06 *20*	46 *4*	264.990	4^+				
		1941.78 *15*	100 *14*	80.5776	2^+				
2027.9	(4^+)	455.7[c]	14.9[c] *21*	1572.183	$(4)^-$				
		1070		956.232	4^+				Eγ: from Coulomb excitation.
		1168.8[c]	97.9[c] *21*	859.389	3^+	D+Q	4.5 *10*		Mult.,δ: from (n,n′γ). Other Iγ: Iγ(1169γ):Iγ(1243γ)=68 *14*:100 *14* in Coulomb excitation.
		1243.2[c]	100.0[c] *21*	785.905	2^+	(E2)		0.00218	B(E2)(W.u.)=8 *3* Mult.: Q from $\gamma(\theta)$ in Coulomb excitation; $\Delta\pi$=no from level scheme.
2031.5	(5^+)	1486.0[c] *10*	100	545.454	6^+				
2046.87	$2^+,3^+$	1090.70 *6*	20.2 *11*	956.232	4^+				
		1187.49 *4*	100.0 *25*	859.389	3^+	M1(+E2)		0.0032 *9*	δ: −0.03 *+12−6* or +1.40 *+23−27* from (n,n′γ).
		1781.40 *15*	19.6 *21*	264.990	4^+				

Adopted Levels, Gammas (continued)

$\gamma(^{166}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
2073.20	(8)$^-$	286.2[b] *1*	<63[b]	1786.975	6$^-$				
		697.2[b] *1*	100[b] *10*	1376.035	7$^+$	E1		0.00276	
2076.294	(3$^-$)	1119.5[j]	≈100[j]	956.232	4$^+$				
		1216.173[fk] *17*		859.389	3$^+$				
		1290.368 *22*	62.1 *16*	785.905	2$^+$				
		1810.6 *5*	15 *4*	264.990	4$^+$				
		1996.10 *15*	6.1 *8*	80.5776	2$^+$				
2082.8		569.2[c] *4*	100[c] *24*	1513.751	3$^-$				
		1126.0[c] *8*	32[c] *16*	956.232	4$^+$				
2092.31	(7,8,9)$^-$	1181.10[b] *10*	100	911.208	8$^+$	E1		1.03×10^{-3}	
2101.6	(4$^+$)	1145.4[k]		956.232	4$^+$				E_γ: from one Coulomb excitation study only.
		1242.2 *3*	39 *8*	859.389	3$^+$				
		1315.6 *8*	100 *10*	785.905	2$^+$	[E2]		0.00197	B(E2)(W.u.)=7 *5*
2117.8	(2$^+$,3,4$^+$)	1853.1 *10*	100 *24*	264.990	4$^+$				
		2036.8 *12*	40 *8*	80.5776	2$^+$				
2117.8		1161.6[i] *8*	100[i]	956.232	4$^+$				E_γ: for doubly-placed γ.
2124.7	(5$^-$)	1168.5[c] *7*	100	956.232	4$^+$				
2132.941	3$^+$	130.90 *20*	3.0 *3*	2001.865	(3)$^-$	E1		0.1590	
		147.301 *20*	1.97 *8*	1985.629	3$^-$	E1		0.1162	
		154.508 *25*	1.19 *10*	1978.422	4$^+$	M1+E2	0.75 *25*	0.75 *4*	
		194.678 *15*	≈4.4	1938.263	(3)$^+$	M1		0.433	
		215.185 *14*	30.4 *10*	1917.758	3$^-$	E1+M2	−0.09 *+7−6*	0.056 *23*	δ: from ^{166}Tm ε decay.
		238.581 *20*	0.21 *1*	1894.355	2$^+$,3$^+$,4$^+$	M1		0.248	
		429.885 *20*	0.45 *1*	1703.050	(2,3,4)$^+$	M1		0.0516	
		454.20 *3*	0.189 *22*	1678.765	(4)$^+$	(E2)		0.0211	
		536.67 *3*	0.737 *20*	1596.241	(4)$^-$	E1		0.00478	
		560.77 *3*	0.399 *13*	1572.183	(4)$^-$				
		604.553 *15*	1.15 *3*	1528.401	2$^+$	E2		0.01025	
		619.49[i] *25*	<0.03[i]	1513.751	3$^-$				
		674.788 *22*	15.0 *3*	1458.154	(2)$^-$	E1		0.00295	
		1057.67 *4*	4.02 *13*	1075.277	5$^+$	E2		0.00300	
		1176.704 *16*	55.5 *11*	956.232	4$^+$	M1+E2	+0.20 *4*	0.00410 *7*	δ: from ^{166}Tm ε decay.
		1273.540 *16*	86.4 *18*	859.389	3$^+$	M1+E2	−0.11 *8*	0.00344 *6*	δ: from ^{166}Tm ε decay.
		1347.035 *18*	6.36 *13*	785.905	2$^+$	M1		0.00304	
		1867.94 *3*	23.5 *6*	264.990	4$^+$	M1+E2	+3.49 *+10−3*	1.26×10^{-3}	δ: from ^{166}Tm ε decay (1980Bu26).
		2052.36 *3*	100.0 *20*	80.5776	2$^+$	M1+E2	+7.0 *5*	1.16×10^{-3}	δ: from ^{166}Tm ε decay.
2144.64	(8$^-$)	768.60[b] *10*	100	1376.035	7$^+$				
2148.6	(4$^-$)	1192.5[b] *7*	<127[c]	956.232	4$^+$				E_γ: for doubly-placed γ.

$^{166}_{68}Er_{98}$-18

Adopted Levels, Gammas (continued)

$\gamma(^{166}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
2148.6	(4^-)	1883.5[b] *6*	100[c] *33*	264.990	4^+				
2155.8	(6^+)	1080		1075.277	5^+				E_γ: from Coulomb excitation.
		1200		956.232	4^+				E_γ: from Coulomb excitation.
2160.114	3^+	158.269 *25*	0.56 *3*	2001.865	$(3)^-$	E1		0.0961	
		481.33 *10*	0.27 *2*	1678.765	$(4)^+$				
		587.90 *16*	0.81 *15*	1572.183	$(4)^-$				
		631.62 *10*	1.14 *3*	1528.401	2^+	(E2)		0.00924	
		646.75[f] *4*	≈0.12	1513.751	3^-				
		1084.826 *17*	5.77 *12*	1075.277	5^+	E2		0.00285	
		1203.873 *20*	16.5 *3*	956.232	4^+	M1+E2		0.0031 *9*	
		1300.725 *16*	21.2 *4*	859.389	3^+	M1		0.00330	
		1374.194 *25*	88.9 *21*	785.905	2^+	M1+E2	−0.11 *4*	0.00290 *5*	δ: from ^{166}Tm ε decay.
		1895.12 *3*	19.2 *6*	264.990	4^+	M1+E2	+2.63 *4*	1.27×10^{-3}	δ: from ^{166}Tm ε decay.
		2079.53 *3*	100.0 *21*	80.5776	2^+	M1+E2	+5.2 *+15−5*	1.16×10^{-3}	δ: from ^{166}Tm ε decay.
2172.751	3^+	659.04 *20*	0.35 *7*	1513.751	3^-				
		1097.46 *5*	3.66 *11*	1075.277	5^+	E2		0.00278	
		1216.173[f] *17*	15 *6*	956.232	4^+				
		1313.37 *3*	13.7 *4*	859.389	3^+	E2,M1		0.0026 *7*	
		1907.71 *6*	22 *1*	264.990	4^+	E2,M1		0.00141 *21*	
		2092.13 *3*	100.0 *22*	80.5776	2^+	M1+E2	+3.7 *+19−7*	1.16×10^{-3} *2*	δ: from ^{166}Tm ε decay.
2189.70	(11^+)	438.2[ibk] *1*	100.0[ib] *13*	1751.36	9^+				
		840.2[ibk] *1*	24.4[ib] *27*	1349.53	10^+				
2194.61	(8^+)	1283.4[b] *1*	100	911.208	8^+				
2201.3	$1^{(+)}$	742.6[c]	<37	1458.154	$(2)^-$				E_γ: for doubly-placed γ.
		2120.5[c] *10*	100 *5*	80.5776	2^+	D+Q			Mult.: from (n,n′γ). I_γ: from (γ,γ').
		2202[dc]	54[e]	0.0	0^+	(M1)		1.42×10^{-3}	B(M1)(W.u.)=0.067 *11* Mult.: D, $\Delta\pi$=(no) from (γ,γ').
2212.95		166.26[i] *20*	<20[i]	2046.87	$2^+,3^+$				
		1256.7 *3*	34 *14*	956.232	4^+				
		1353.27 *25*	36 *11*	859.389	3^+				
		1427.06 *20*	100 *29*	785.905	2^+				
		1948.2[k] *3*	51 *6*	264.990	4^+				
2215.963	$2^-,3^-$	139.64 *4*	0.54 *3*	2076.294	(3^-)				
		194.678	≈2.8	2021.348	$(2,3)^-$	M1		0.433	
		298.207 *20*	7.70 *16*	1917.758	3^-	M1		0.1355	
		385.54 *4*	0.62 *2*	1830.425	1^-	E2		0.0331	
		619.49[i] *25*	<0.17[i]	1596.241	$(4)^-$				
		643.90 *10*	0.97 *5*	1572.183	$(4)^-$				

$^{166}_{68}Er_{98}$-19

Adopted Levels, Gammas (continued)

$\gamma(^{166}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[@]	α[h]	Comments
2215.963	$2^-,3^-$	702.28 *10*	22.0 *6*	1513.751	3^-	M1		0.01475	
		757.798 *17*	100 *2*	1458.154	$(2)^-$	M1		0.01220	
		1356.62 *4*	0.7 *5*	859.389	3^+				
		1430.2 *3*	6.7 *16*	785.905	2^+				
		2135.36 *4*	1.56 *6*	80.5776	2^+				
2243.087	3^-	257.36 *10*	3.8 *11*	1985.629	3^-				
		646.75 *4*	≈18	1596.241	$(4)^-$				
		729.38 *3*	100 *9*	1513.751	3^-	M1		0.01342	
		1287.1 *3*	5.1 *13*	956.232	4^+				
		1383.5 *3*	13 *7*	859.389	3^+				
		1457.17 *5*	78 *11*	785.905	2^+				
		1978.12 *20*	96 *7*	264.990	4^+	E1		9.71×10^{-4}	
		2162.54 *5*	61.8 *24*	80.5776	2^+	E1		1.04×10^{-3}	
2246.31	(9^-)	1335.1[b] *1*	100	911.208	8^+				
2260.3	(6^+)	1185		1075.277	5^+				E_γ: from Coulomb excitation.
		1304		956.232	4^+				E_γ: from Coulomb excitation.
2260.65	$2^{(+)},3$	1401.16 *4*	66 *5*	859.389	3^+				
		1474.84 *4*	100 *3*	785.905	2^+	M1,E2		0.0021 *5*	
2264.31	$(1,2^+)$	2183.68 *7*	100 *6*	80.5776	2^+	Q(+D)			Mult.,δ: from (n,n′γ). $\delta=-0.47$ $+14-19$ or $1/\delta=0.02$ $+12-13$.
		2264.34 *8*	32 *3*	0.0	0^+				
2273.01	3^-	225.9 *5*	0.58 *25*	2046.87	$2^+,3^+$				
		287.1 *3*	0.50 *17*	1985.629	3^-				
		610.8[i] *3*	<1.7[i]	1662.435	1^-				
		814.82 *20*	5.1 *10*	1458.154	$(2)^-$				
		1487.01 *15*	3.8 *7*	785.905	2^+				
		2008.00 *4*	100.0 *25*	264.990	4^+	E1		9.82×10^{-4}	
		2192.43 *4*	90.1 *25*	80.5776	2^+	E1		1.06×10^{-3}	
2282.68	$2^{(+)},3$	824.52[i] *11*	<13.8[i]	1458.154	$(2)^-$				
		2017.67 *7*	84 *8*	264.990	4^+				
		2202.09 *6*	100 *4*	80.5776	2^+	E1,E2			
2290.959	$(3)^+$	118.18 *3*	3.7 *11*	2172.751	3^+	[M1]		1.765	
		312.58 *20*	0.14 *7*	1978.422	4^+				
		832.88 *7*	1.17 *9*	1458.154	$(2)^-$				
		1334.74 *21*	0.96 *16*	956.232	4^+	M1(+E2)		0.0025 *6*	
		1431.6 *3*	41 *7*	859.389	3^+				
		1505.00 *4*	100.0 *23*	785.905	2^+	M1(+E2)	−0.2 $+2-3$	0.00237 *14*	δ: from ^{166}Tm ε decay. Other:−0.15 $+5-10$ from (n,n′γ).
		2026.06[i] *11*	<3.2[i]	264.990	4^+				
		2210.49 *6*	7.4 *3*	80.5776	2^+				

$^{166}_{68}Er_{98}$-20

$\gamma(^{166}$Er) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[h]	Comments
2328.51	$(9)^-$	1417.3[b] 1	100	911.208	8^+			
2328.69	(1,2)	2247.90 20	52 8	80.5776	2^+			
		2328.72 10	100 9	0.0	0^+			
2352.91	$2^{(+)}$,3	824.52[i] 11	<41[i]	1528.401	2^+			
		1396.8 4	19 10	956.232	4^+			
		1493.43 16	100 15	859.389	3^+			
		2272.33 15	28 3	80.5776	2^+			
2377.77	1^+	1518.8 9	3.2 7	859.389	3^+			
		1591.77 6	100.0 22	785.905	2^+	E2,M1	0.0018 4	
		2297.26 10	9.7 5	80.5776	2^+	E2,M1	0.00125 14	
		2377.84 8	12.3 12	0.0	0^+	M1	1.37×10^{-3}	
2382.26	$(3)^+$	166.26[i] 20	<5[i]	2215.963	$2^-,3^-$			
		868.47 12	9.4 16	1513.751	3^-			
		924.21 11	11.4 16	1458.154	$(2)^-$			
		1522.85 4	100 4	859.389	3^+	M1(+E2)	0.0019 4	
		1596.7 5	8 4	785.905	2^+			
2389.33	14^+	542.8[b] 1	100	1846.53	12^+	E2	0.01335	B(E2)(W.u.)=4.0×10^2 5 Mult.: from ce data in ^{164}Dy(α,2nγ).
2393.129	$2^+,3^+$	797.02 20	2.9 6	1596.241	$(4)^-$			
		1437.3 3	38 5	956.232	4^+			
		1533.80 19	3.0 8	859.389	3^+			
		1607.18 3	100 5	785.905	2^+	E2,M1	0.0018 4	
		2128.19 5	11.1 8	264.990	4^+			
		2312.57 9	10.4 5	80.5776	2^+	M1	1.38×10^{-3}	
2413.67	(2,3,4)	475.36 25	34 6	1938.263	$(3)^+$			
		899.80 18	12.5 25	1513.751	3^-			
		1554.33 20	19 9	859.389	3^+			
		1627.8 3	100 19	785.905	2^+			If this is the same transition as the 1630γ in (n,n′γ), mult=D+Q, δ=+15 +31−5.
		2148.6 3	7.5 19	264.990	4^+			
		2333.11 10	15.4 16	80.5776	2^+			
2428.4?	(10^-)	352.0[bk] 5		2076.294	(3^-)			Existence of transition is questionable.
		677.0[bk] 5		1751.36	9^+			Existence of transition is questionable.
2428.77	(12^+)	464.7[b] 1		1964.04	10^+	[E2]	0.01990	
		1081.2		1349.53	10^+			E_γ: from from level energy difference in Coulomb excitation.
2435.10	$(3,4)^+$	1575.65 26	42 9	859.389	3^+			
		1649.19 10	100 18	785.905	2^+			
2442.0?	$(3^+,4^+,5^+)$	2177[k]	100	264.990	4^+	D+Q		E_γ,Mult.: from (n,n′γ).
2444.16		1658.4 3	100 21	785.905	2^+			

$\gamma(^{166}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	α[h]	Comments
2444.16		2363.3 *4*	19.2 *23*	80.5776	2^+			
		2444.0 *10*	8.9 *26*	0.0	0^+			
2459.0?		2459[ck]	100	0.0	0^+			
2464.51	1^+	2383.91 *10*	44 *7*	80.5776	2^+	E2,M1	0.00124 *13*	I_γ: weighted average of I(2384γ):I(2465γ)=52 *5*:100 *8* in ε decay. And 38 *6*:100 in (γ,γ').
		2464.7 *5*	100	0.0	0^+	M1	1.35×10^{-3}	B(M1)(W.u.)=0.024 *4* Mult.: E2,M1 from α(K)exp in ε decay; D from (γ,γ').
2475.39	$(1,2)^+$	1017.29 *6*	50 *3*	1458.154	$(2)^-$			
		1615.88 *7*	99 *7*	859.389	3^+			
		1690.2 *4*	28 *10*	785.905	2^+			
		2394.81 *8*	100 *5*	80.5776	2^+	E2,M1	0.00124 *13*	
2479.74?	(10^+)	1130.2[b] *1*	100	1349.53	10^+			Existence of transition is questionable.
2504.6	$(3,4)^+$	2424[c]	100	80.5776	2^+			δ: δ(D,Q)=+0.36 *+6−4* or +9 *+7−3* in (n,n′γ) (1992Be29) if J(2506 level)=3, but $\gamma(\theta)$ does not rule out stretched Q.
2525	1	2444[d]	51[e] *5*	80.5776	2^+			
		2525[d]	100[e]	0.0	0^+	D[g]		
2542.87		946.57 *8*	27 *4*	1596.241	$(4)^-$			
		1586.68 *8*	100 *17*	956.232	4^+			
		1683.3 *3*	56 *21*	859.389	3^+			
		2277.88 *8*	39.2 *14*	264.990	4^+			
		2462.5 *5*	59 *6*	80.5776	2^+			
2574.0	(8^+)	1358	100	1215.968	6^+			E_γ: from Coulomb excitation.
2586.06	$(3,4)^+$	1629.4[i] *3*	<804[i]	956.232	4^+			
		1726.3 *5*	94 *36*	859.389	3^+			
		2321.18 *18*	54 *8*	264.990	4^+			
		2505.58 *20*	100 *8*	80.5776	2^+			
2600.63	1^+	1142.45[i] *3*	<263[i]	1458.154	$(2)^-$			
		2520.20 *10*	49 *3*	80.5776	2^+			
		2600.76 *20*	100 *11*	0.0	0^+	M1	1.34×10^{-3}	Mult.: E2,M1 from α(K)exp in ε decay; D from $\gamma(\theta)$ in (γ,γ').
2613.50		2532.3 *3*	41 *7*	80.5776	2^+			
		2613.75 *20*	100 *10*	0.0	0^+			
2619.6	(2^+)	2354.6 *10*	43 *19*	264.990	4^+			
		2538.8 *10*	69 *12*	80.5776	2^+			
		2619.7 *8*	100 *67*	0.0	0^+			
2624.8	$(1,2^+)$	2544.3 *3*	97 *17*	80.5776	2^+			
		2624.4 *7*	100 *10*	0.0	0^+			
2628.5	$(1,2^+)$	2547.1 *10*	37 *14*	80.5776	2^+			
		2628.5 *3*	100 *10*	0.0	0^+			
2632.66	$(3,4)^+$	1846.6 *3*	100 *38*	785.905	2^+			
		2552.12 *20*	26 *2*	80.5776	2^+			

$^{166}_{68}Er_{98}$-22

$\gamma(^{166}$Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	α[h]	Comments
2654.40?	(13$^+$)	464.7[bk] *1*	100	2189.70	(11$^+$)			Existence of transition is questionable.
2656.9?	(12$^+$)	810.3[bk] *1*	100	1846.53	12$^+$			
2671.98		2591.4 *3*	50 *15*	80.5776	2$^+$			
		2671.95 *20*	100 *7*	0.0	0$^+$			
2679.05	1$^+$	2598.2 *4*	52 *10*	80.5776	2$^+$			
		2679.09 *20*	100 *7*	0.0	0$^+$	M1	1.34×10^{-3}	B(M1)(W.u.)=0.038 *7* Mult.: E2,M1 from α(K)exp in ε decay; D from $\gamma(\theta)$ in (γ,γ').
2729.090	(3,4)$^+$	143.2 *6*	0.8 *3*	2586.06	(3,4)$^+$			
		743.8 *5*	2.2 *8*	1985.629	3$^-$			
		1200.66 *3*	100 *3*	1528.401	2$^+$	E2,M1	0.0032 *9*	
		1943.6 *15*	3.6 *24*	785.905	2$^+$			
		2648.50 *2*	5.5 *4*	80.5776	2$^+$	E2,M1	0.00123 *12*	
		2728.9 *10*	0.39 *12*	0.0	0$^+$			
2767.8	1	2687	100 *12*	80.5776	2$^+$			
		2768	67	0.0	0$^+$	D[g]		
2783.69	1$^+$	610.8[i] *3*	<60[i]	2172.751	3$^+$			
		2703.1 *4*	53 *6*	80.5776	2$^+$			I_γ: from (γ,γ'). 58 *7* from ε decay.
		2783.8 *3*	100 *5*	0.0	0$^+$	M1	1.35×10^{-3}	B(M1)(W.u.)=0.011 *4* Mult.: E2,M1 from α(K)exp in ε decay; D from $\gamma(\theta)$ in (γ,γ').
2797.5	(1,2$^+$)	2716.8 *4*	100 *12*	80.5776	2$^+$			
		2798.2 *10*	31 *13*	0.0	0$^+$			
2811.98	1	2026.06[i] *11*	<2340[i]	785.905	2$^+$			I_γ: from ε decay (for doublet).
		2732.0 *10*	100	80.5776	2$^+$			
		2811.7 *10*	55 *3*	0.0	0$^+$	D[g]		I_γ: from (γ,γ'). Other Iγ: 68 *20* in ε decay.
2858.16	(1,2$^+$)	2777.56 *18*	100 *9*	80.5776	2$^+$			
		2858.1 *10*	28 *12*	0.0	0$^+$			
2880.07?	(14$^+$)	451.3[bk] *1*	100	2428.77	(12$^+$)			Existence of transition is questionable.
2967.3	(16$^+$)	578.0[b] *5*	100	2389.33	14$^+$	E2	0.01143	B(E2)(W.u.)=3.3×10^2 *18* Other Eγ: 579.2 in Coulomb excitation.
3073	1	2992[d]	100[e] *19*	80.5776	2$^+$			
		3073[d]	31.3[e]	0.0	0$^+$	D[g]		
3123	1	3042[d]	100[e] *33*	80.5776	2$^+$			
		3123[d]	95[e]	0.0	0$^+$	D[g]		
3144	1	3063	48 *3*	80.5776	2$^+$			
		3144	100	0.0	0$^+$	D[g]		
3175	1	3094[d]	61[e] *6*	80.5776	2$^+$			

$^{166}_{68}$Er$_{98}$-23

Adopted Levels, Gammas (continued)

γ(^{166}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]	E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#]
3175	1	3175[d]	100[e]	0.0	0^+	D[g]	3329	1	3329[d]	100[e]	0.0	0^+	D[g]
3187	1	3106[d]	49[e] *4*	80.5776	2^+		3386	1	3305[d]	100[e] *11*	80.5776	2^+	
		3187[d]	100[e]	0.0	0^+	D[g]			3386[d]	68[e]	0.0	0^+	D[g]
3197	1	3116[d]	51[e] *3*	80.5776	2^+		3425	1	3425[d]	100[e]	0.0	0^+	D[g]
		3197[d]	100[e]	0.0	0^+	D[g]	3430	1	3349[d]	24[e] *6*	80.5776	2^+	
3288	1	3207[d]	100[e] *9*	80.5776	2^+				3430[d]	100[e]	0.0	0^+	D[g]
		3288[d]	66[e]	0.0	0^+	D[g]	3440	1	3359[d]	100[e] *18*	80.5776	2^+	
3322	1	3241[d]	100[e] *14*	80.5776	2^+				3440[d]	36[e]	0.0	0^+	D[g]
		3322[d]	45[e]	0.0	0^+	D[g]	3493	1	3493[d]	100[e]	0.0	0^+	D[g]
3329	1	3248[d]	40[e] *7*	80.5776	2^+		3498	1	3498[d]	100[e]	0.0	0^+	D[g]

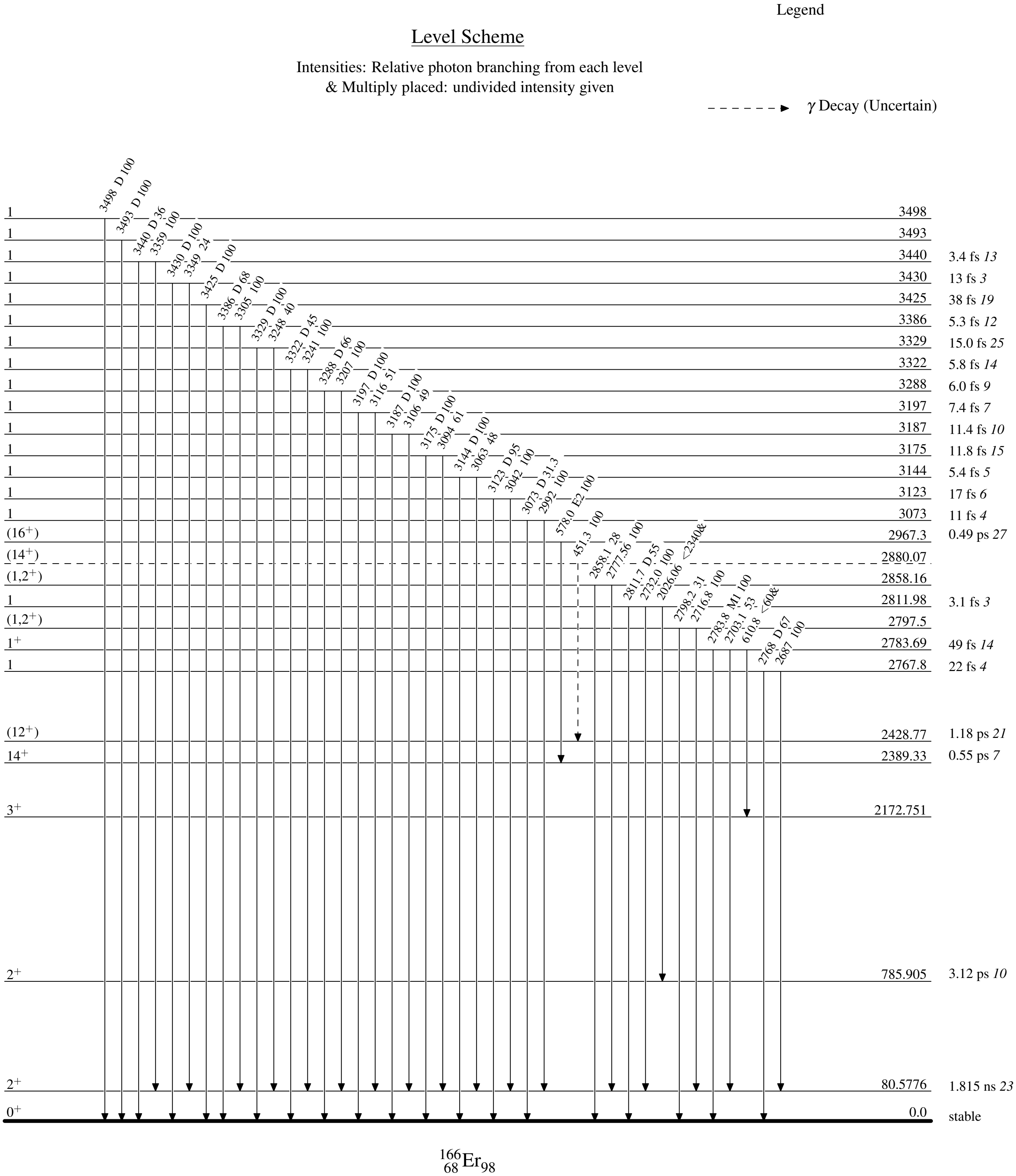
[†] From ^{166}Tm ε decay, unless otherwise noted.
[‡] Relative photon intensity normalized to 100 for strongest photon deexciting each level; based on data from ^{166}Tm ε decay, unless otherwise noted.
[#] From ce data of 1979Ad06 in ε decay, unless otherwise noted.
[@] From ^{166}Ho β^- decay (1200 y), unless otherwise noted.
[&] From ^{166}Ho β^- decay (1200 y).
[a] From ^{166}Ho β^- decay (26.824 h).
[b] From ^{164}Dy(α,2nγ).
[c] From (n,n′γ).
[d] From level energy difference.
[e] From $\Gamma_{\gamma 1}+\Gamma_{\gamma 0}$ in (γ,γ').
[f] Eγ deviates by at least 5σ from value expected for this placement. Datum excluded from least-squares fit.
[g] From $\gamma(\theta)$ in (γ,γ').
[h] 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.
[i] Multiply placed with undivided intensity.
[j] Multiply placed with intensity suitably divided.
[k] Placement of transition in the level scheme is uncertain.

$^{166}_{68}Er_{98}$-24

Adopted Levels, Gammas

Level Scheme

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



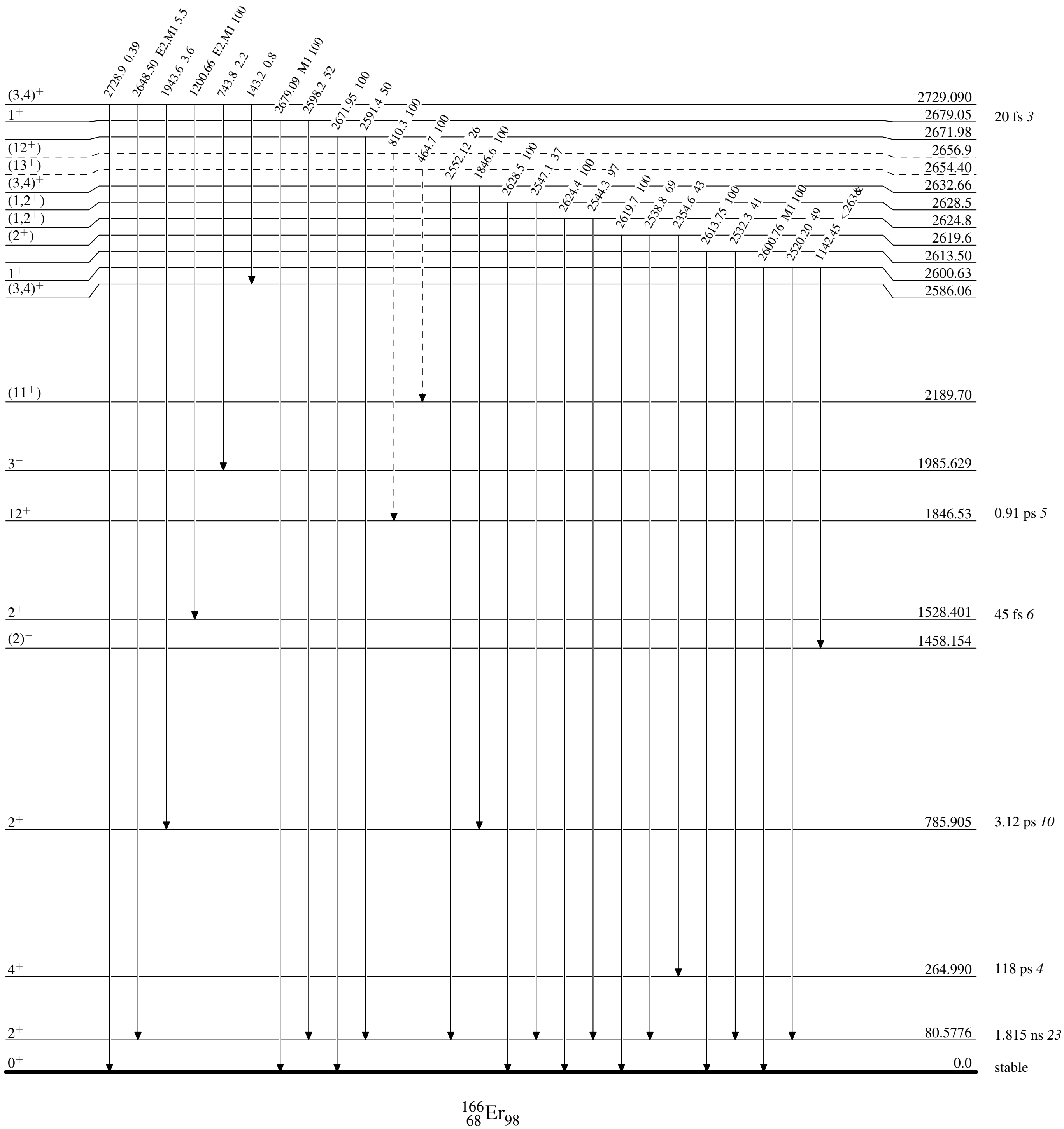
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)



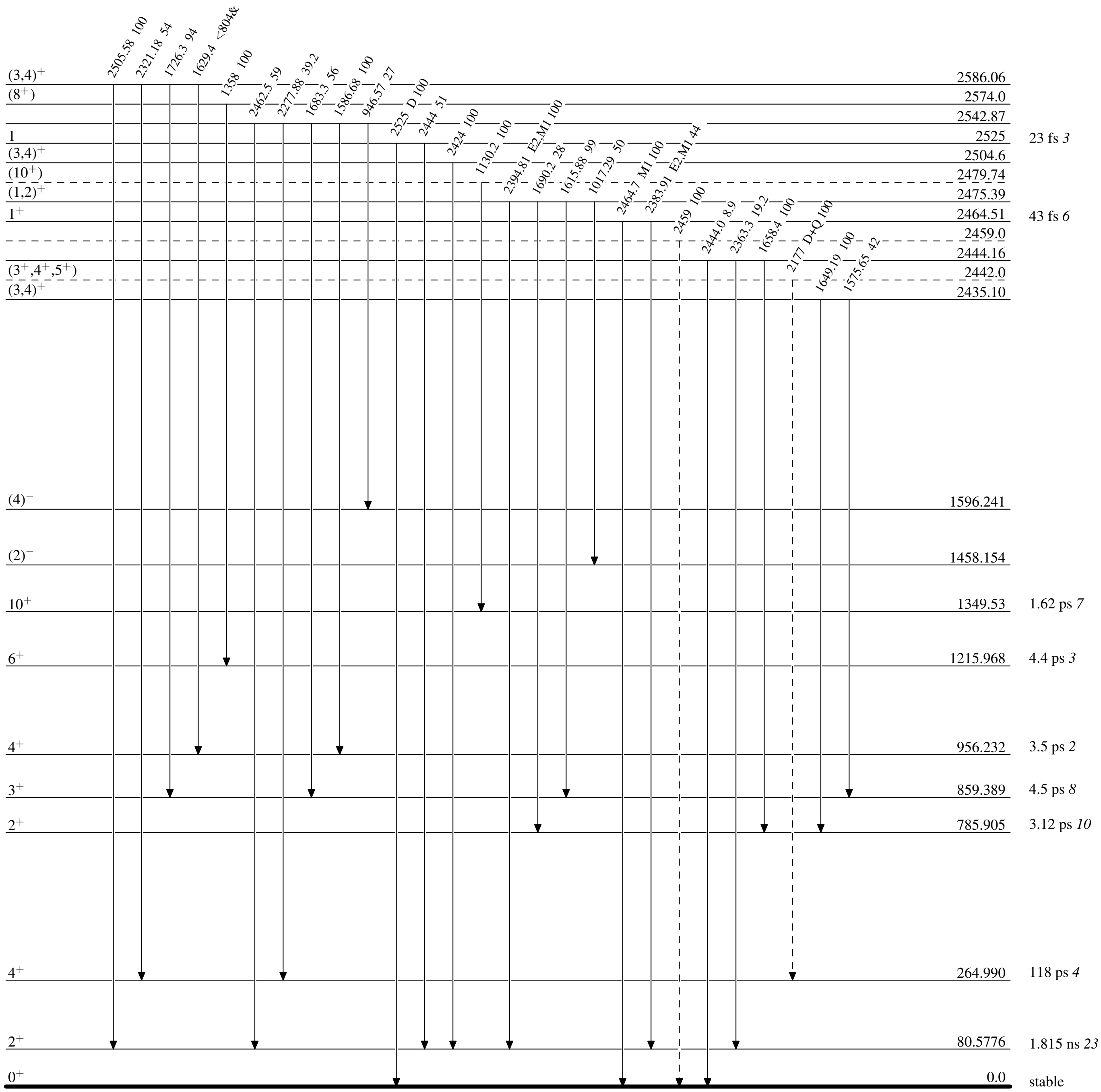
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

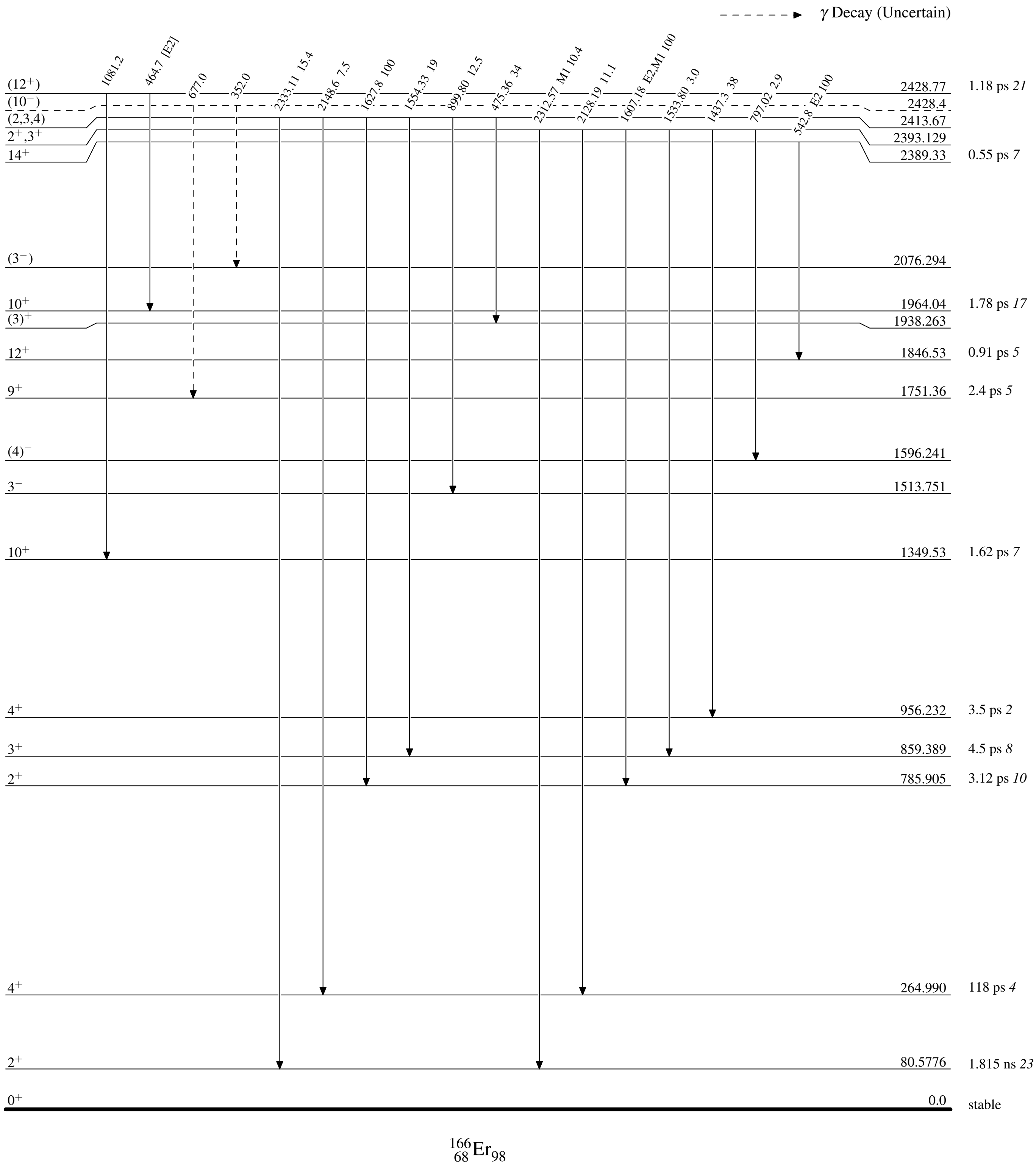


$^{166}_{68}Er_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

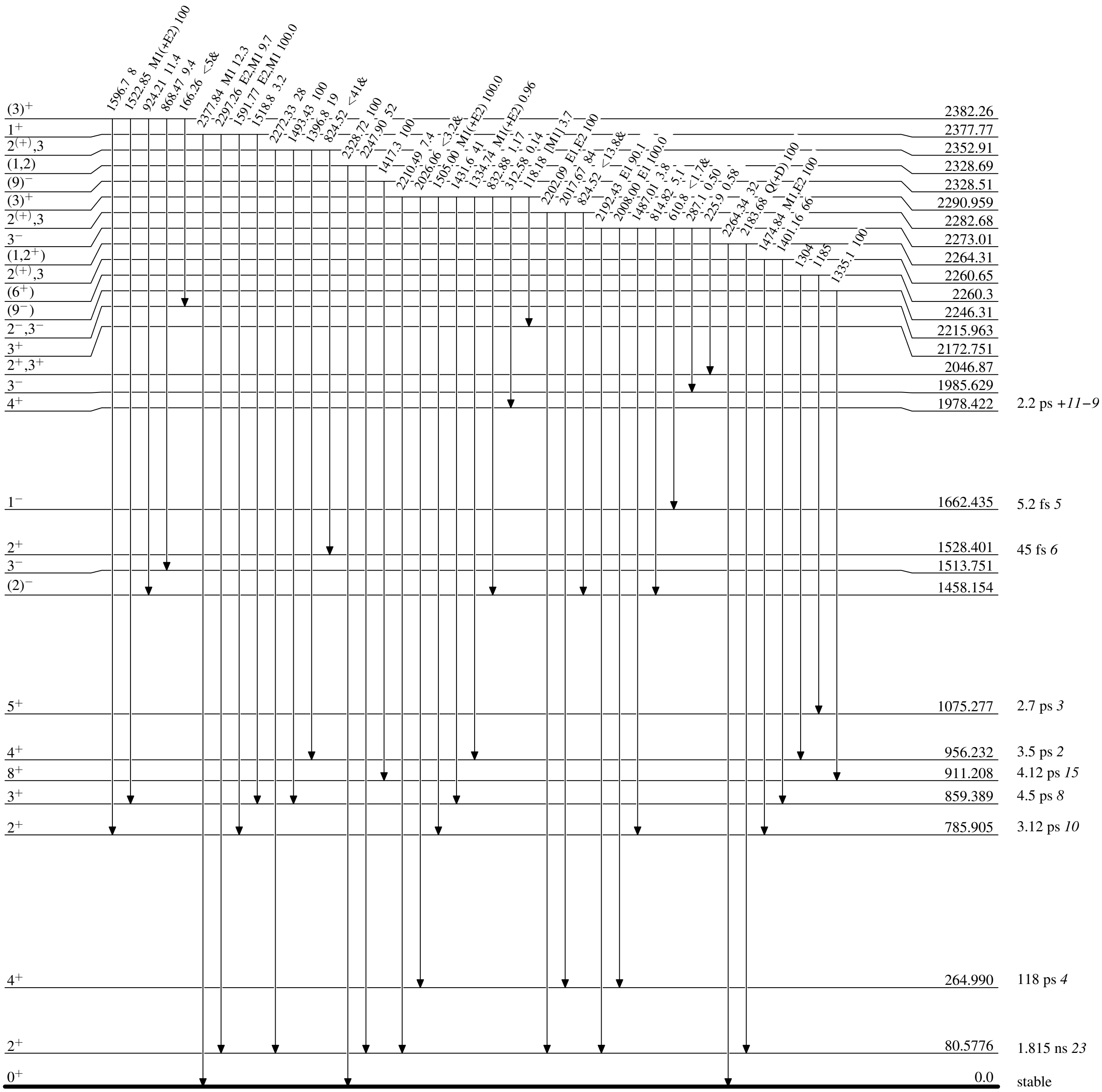
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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

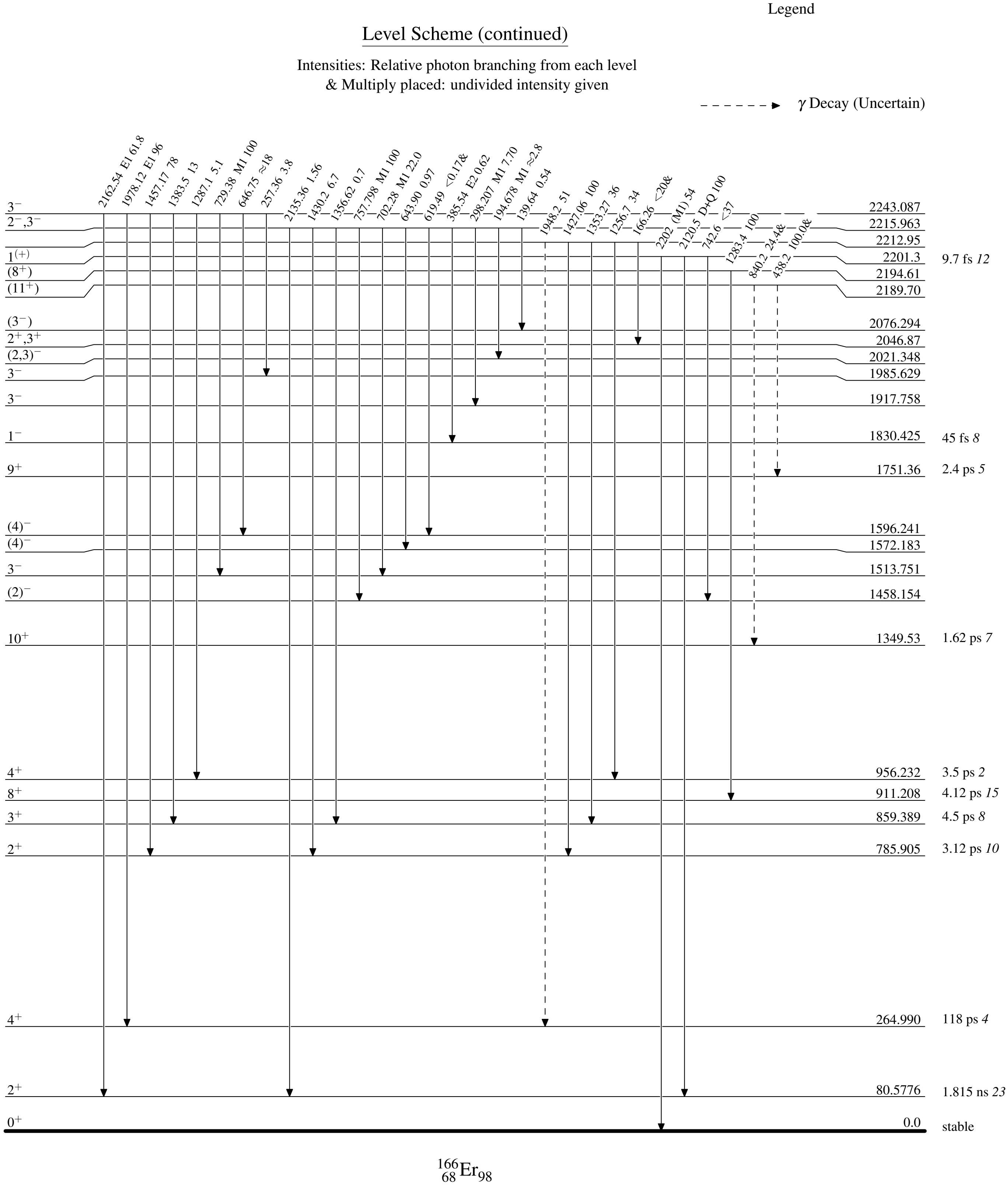


$^{166}_{68}Er_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

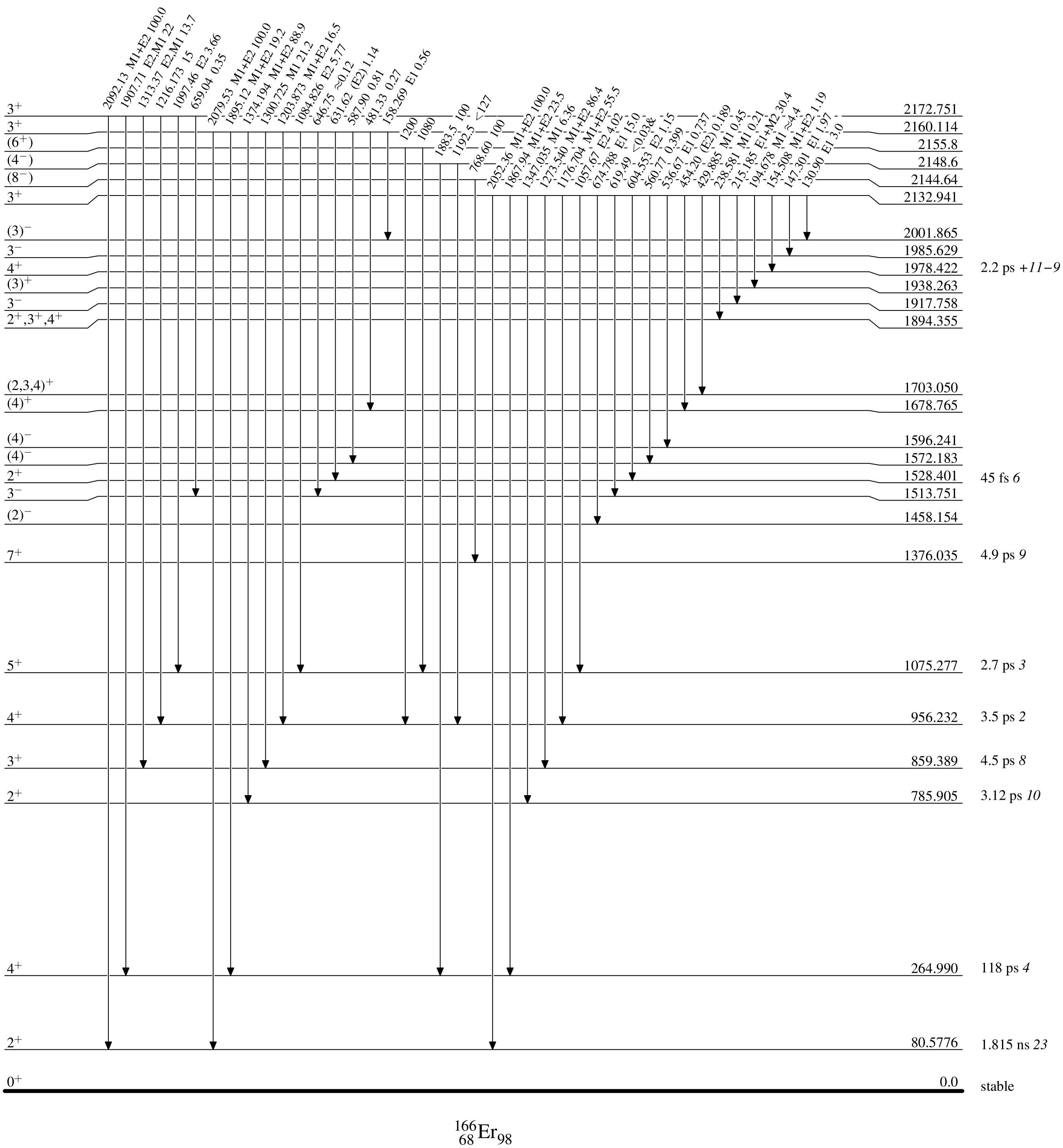
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



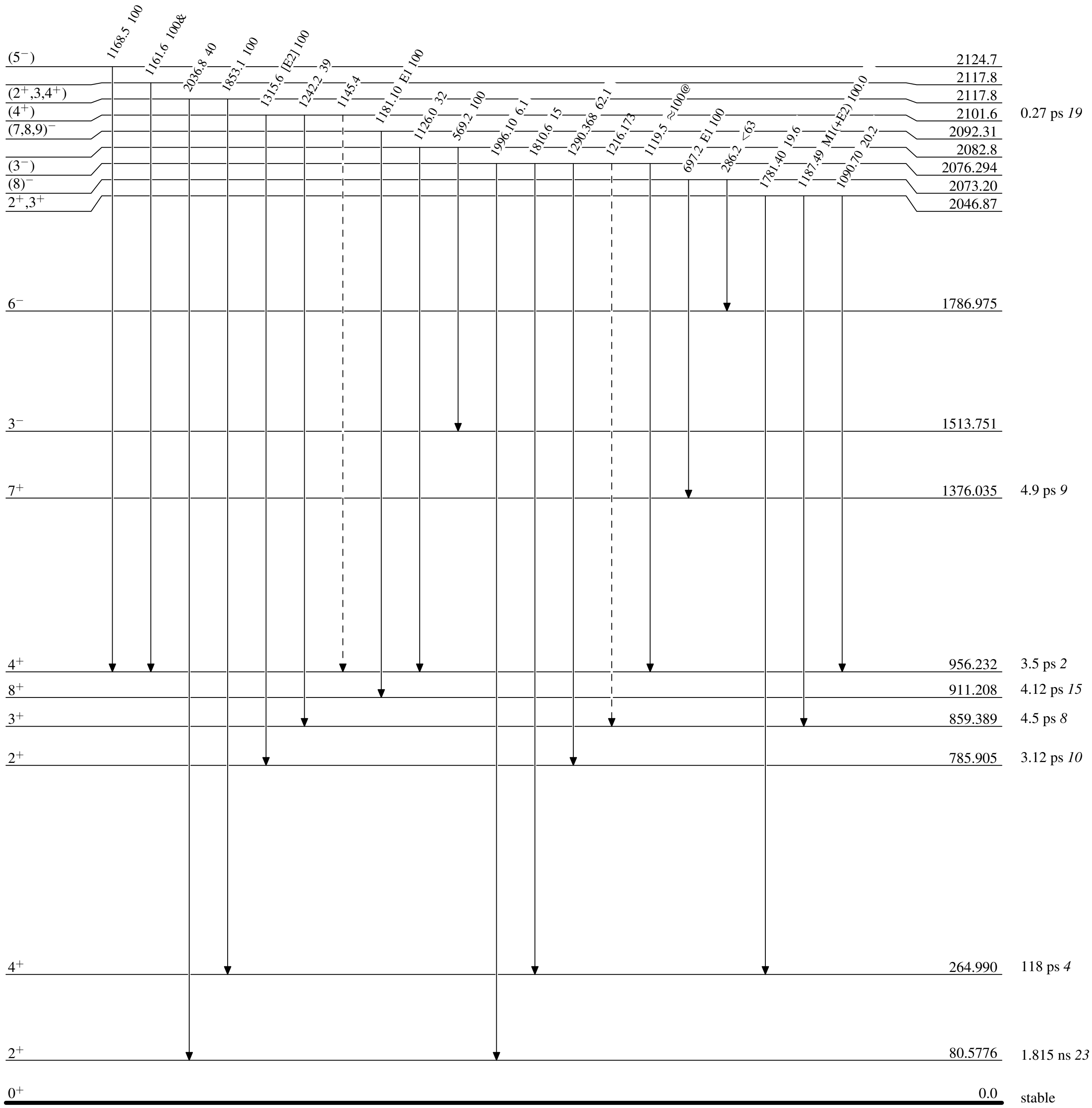
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

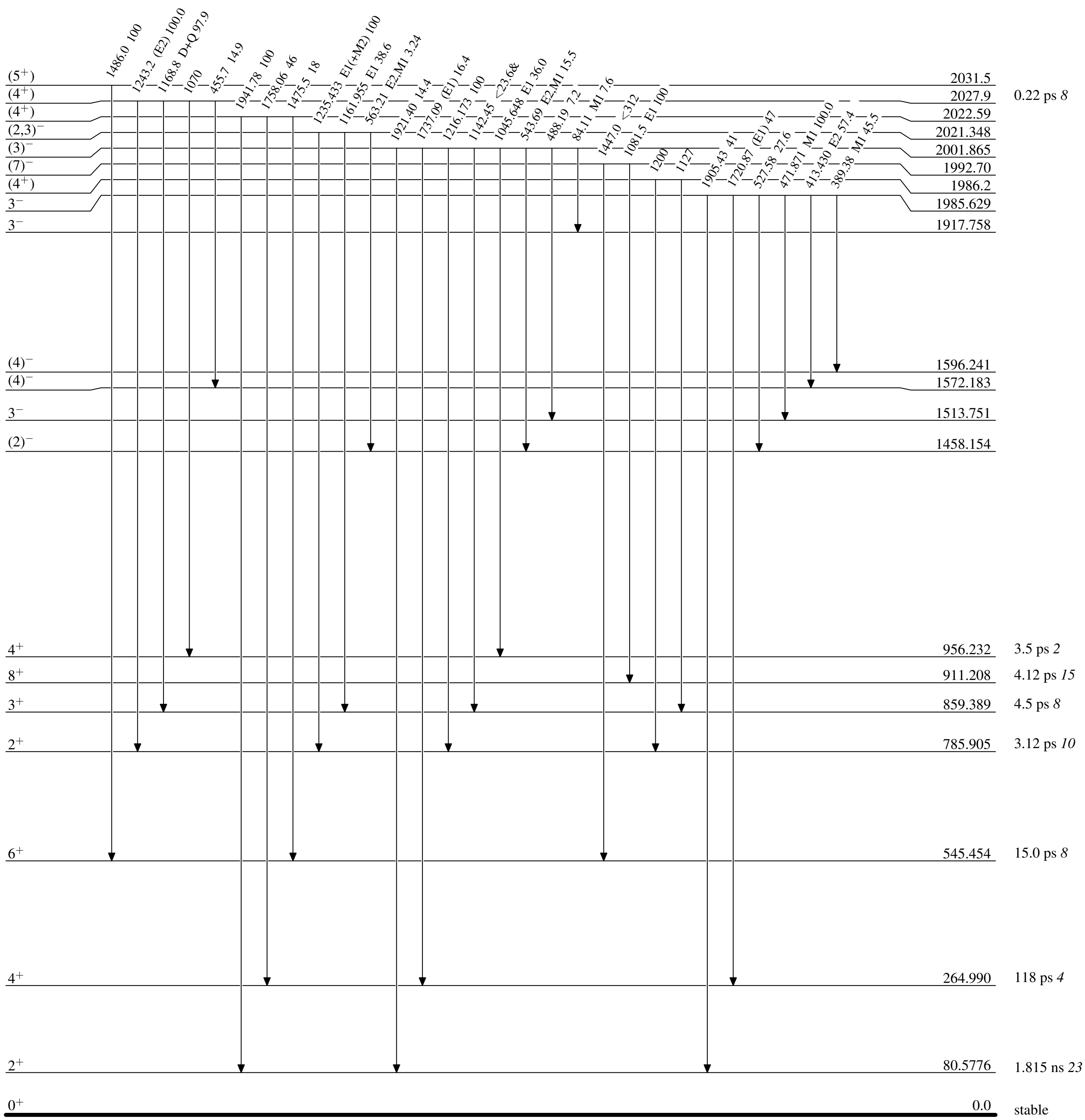


$^{166}_{68}Er_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

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

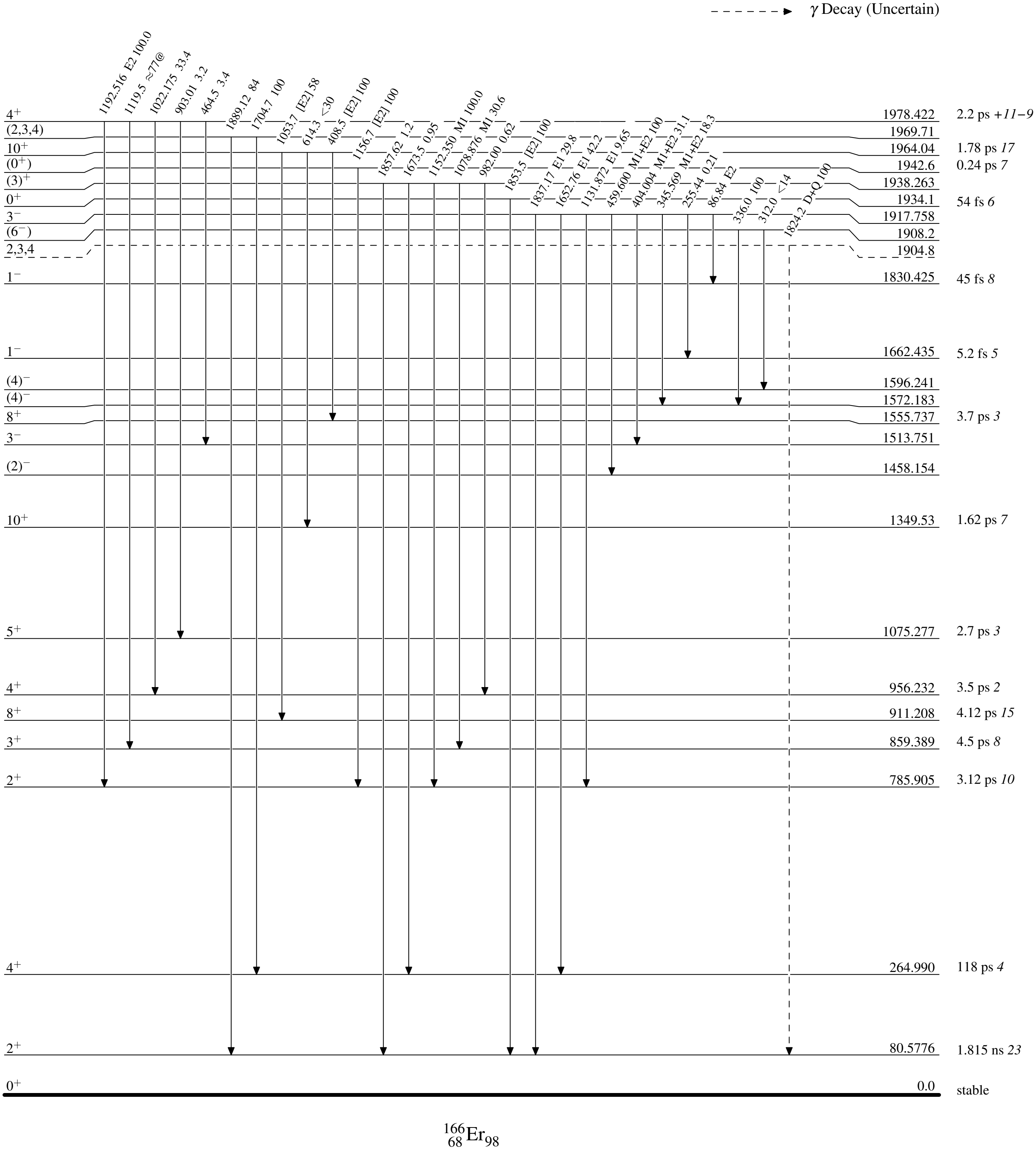


Adopted Levels, Gammas

Level Scheme (continued)

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

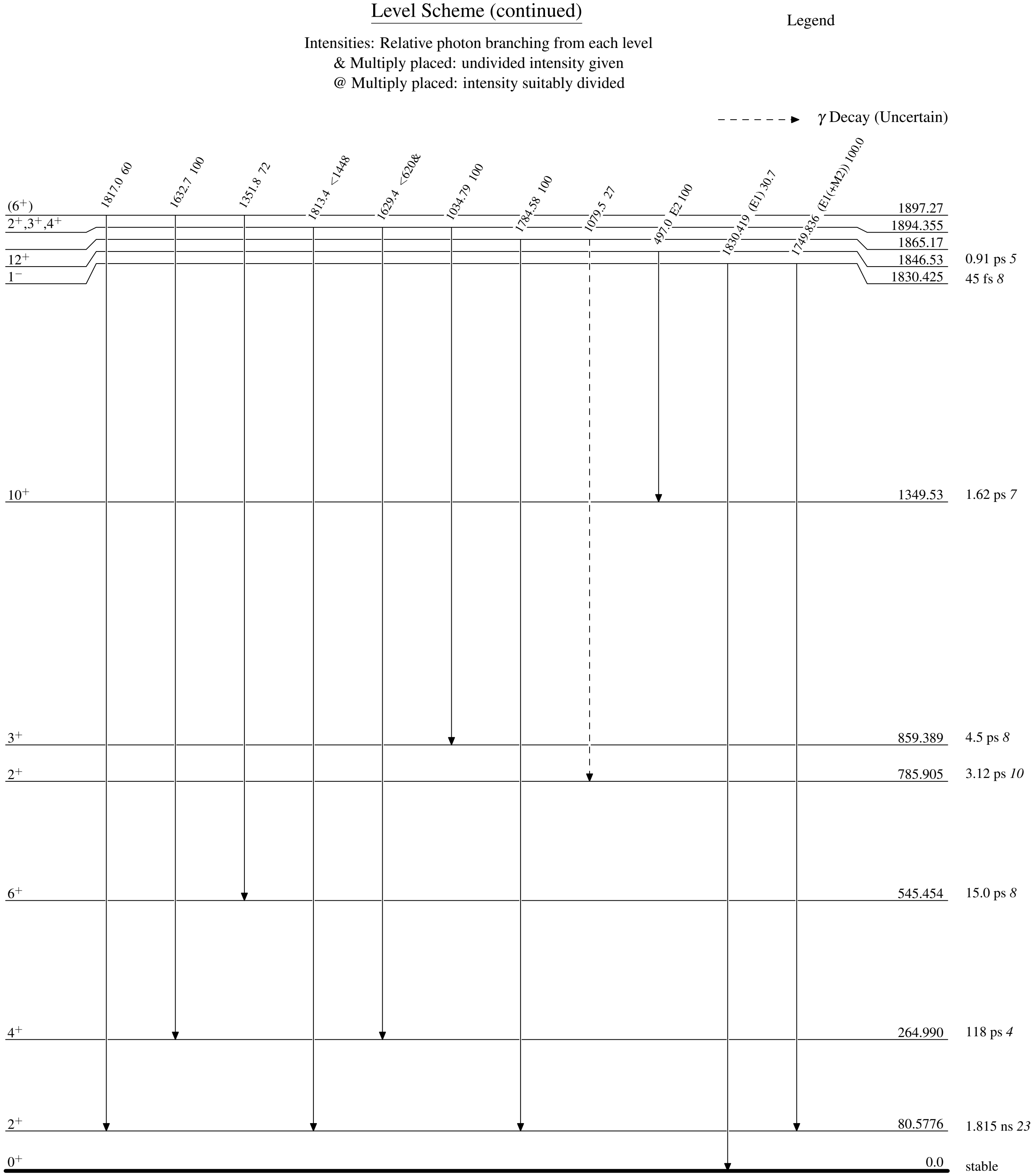
Legend



Adopted Levels, Gammas

Level Scheme (continued)

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



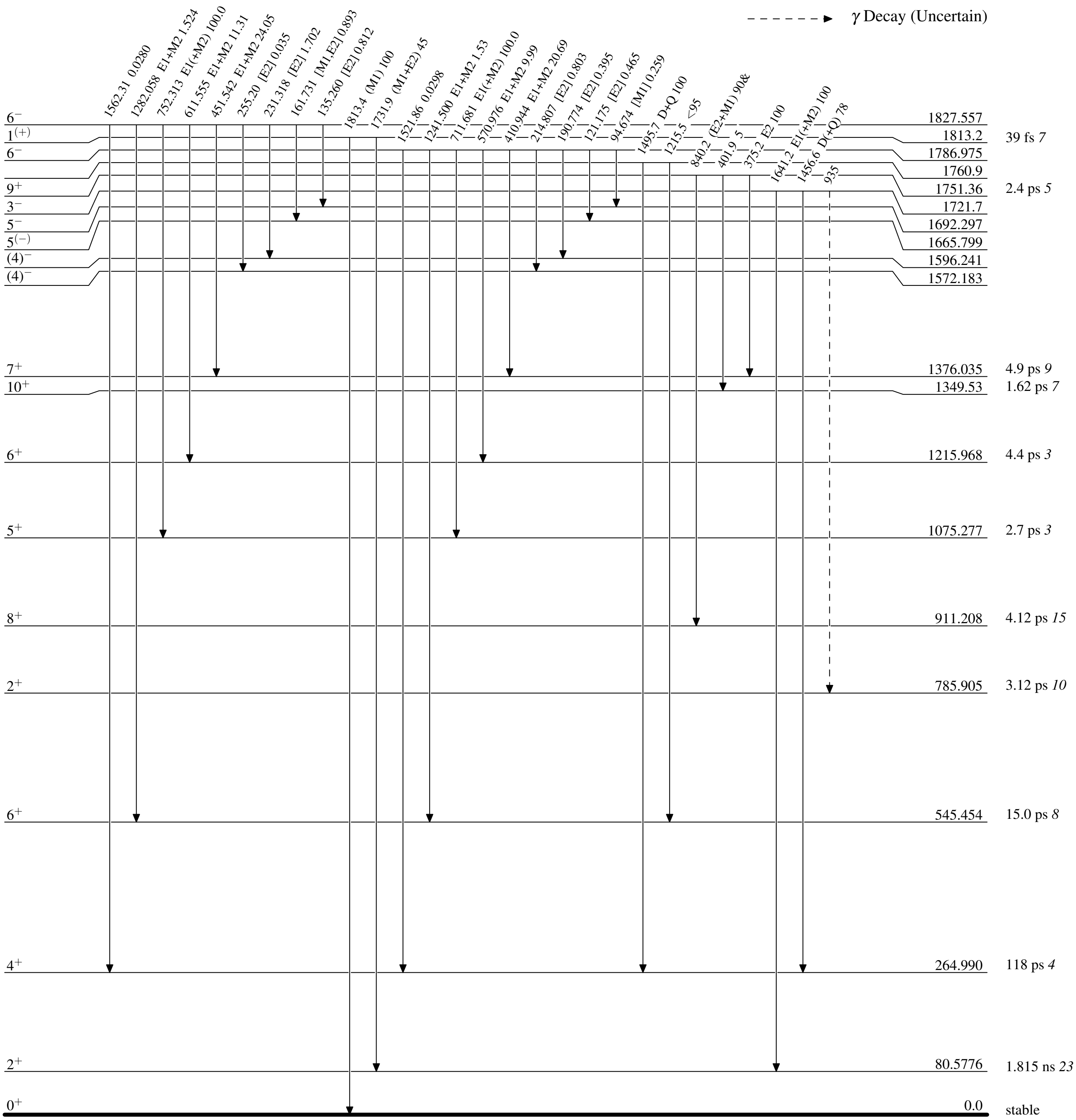
$^{166}_{68}Er_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

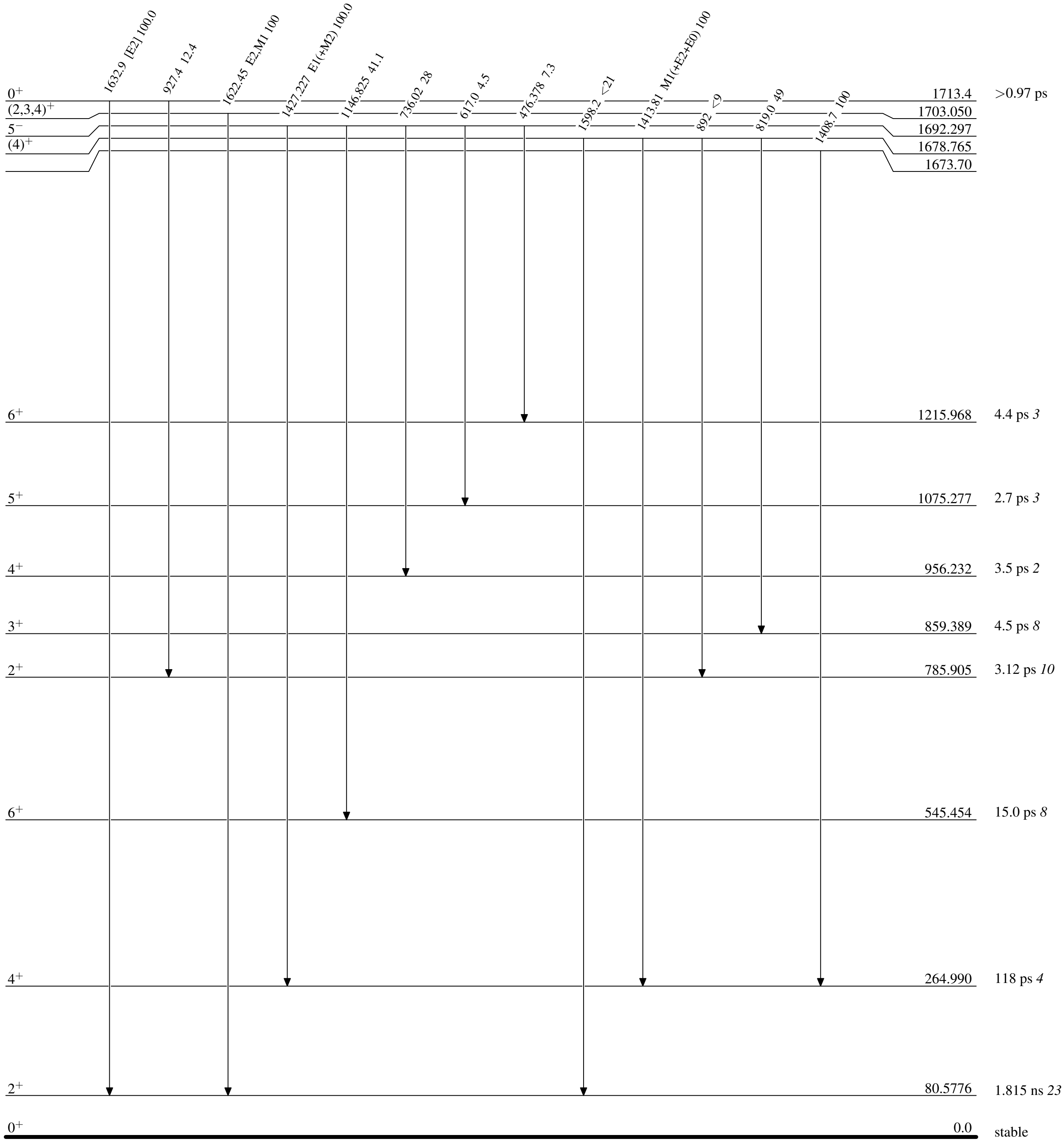


$^{166}_{68}Er_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

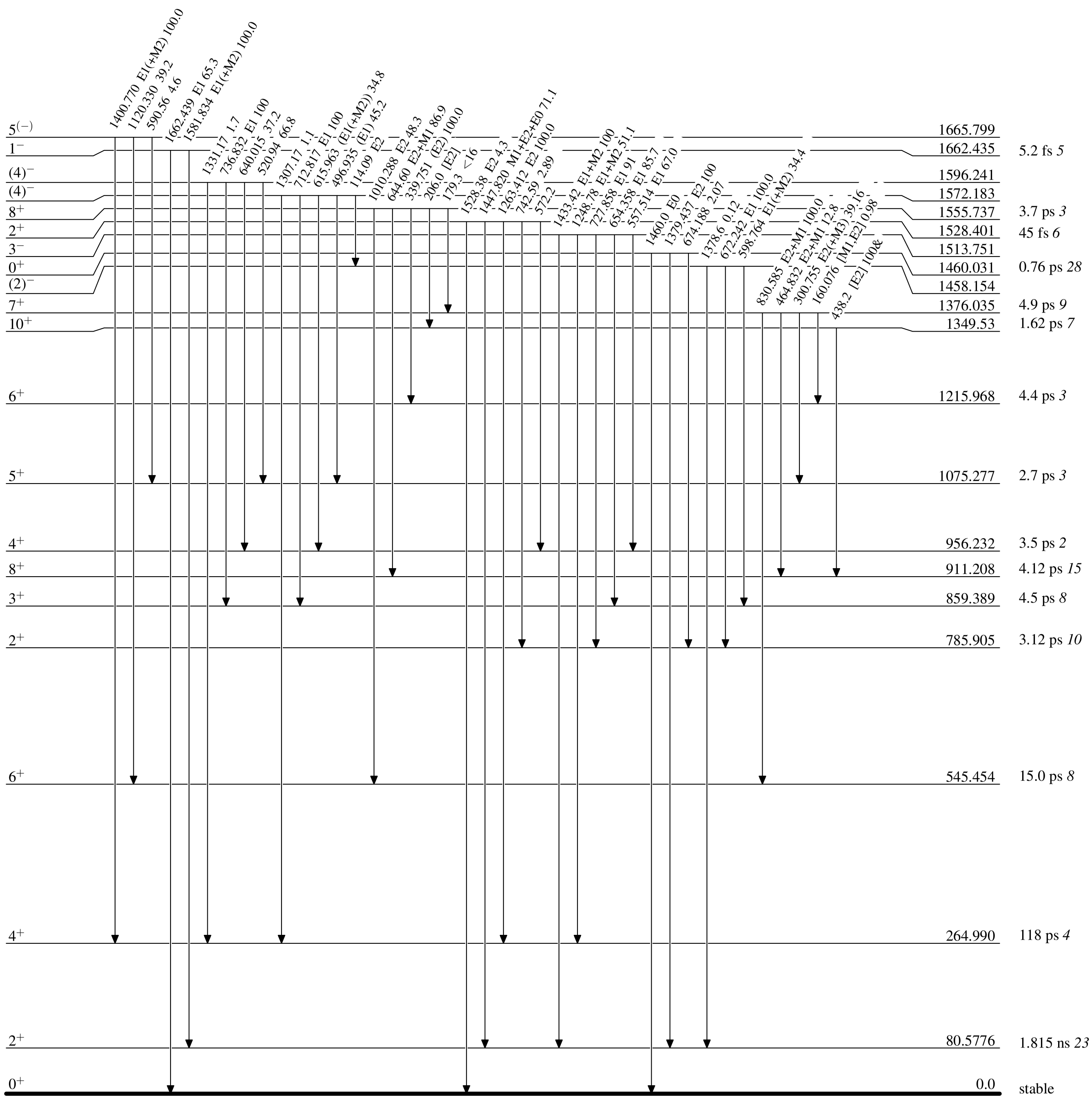
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

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

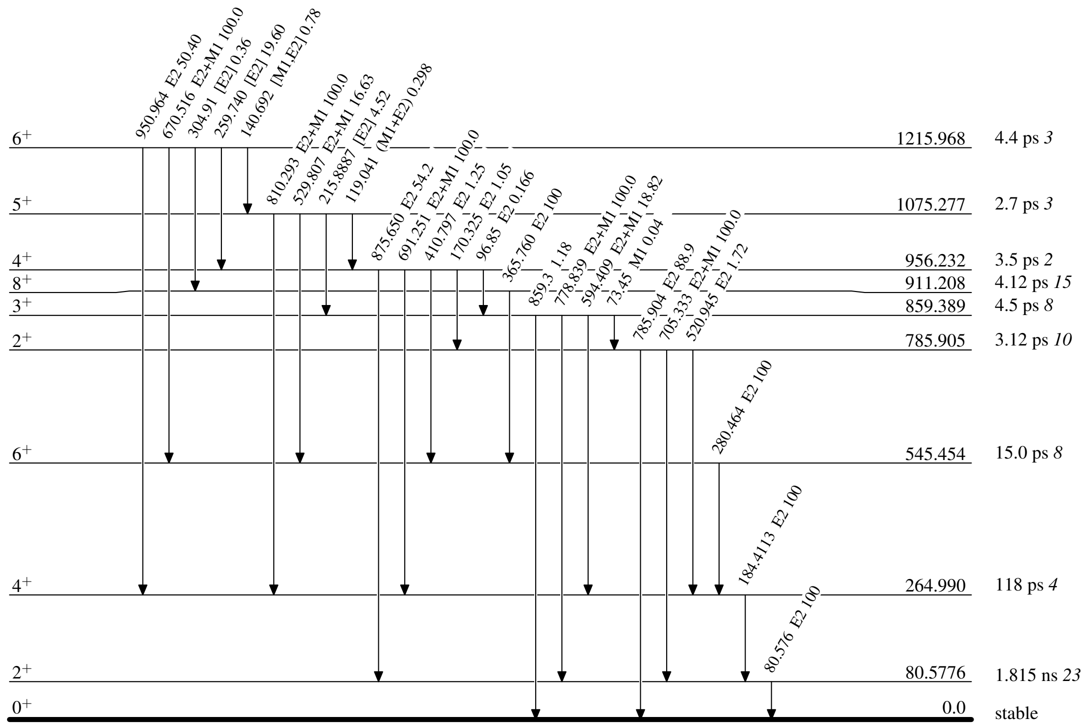


$^{166}_{68}Er_{98}$

Adopted Levels, Gammas

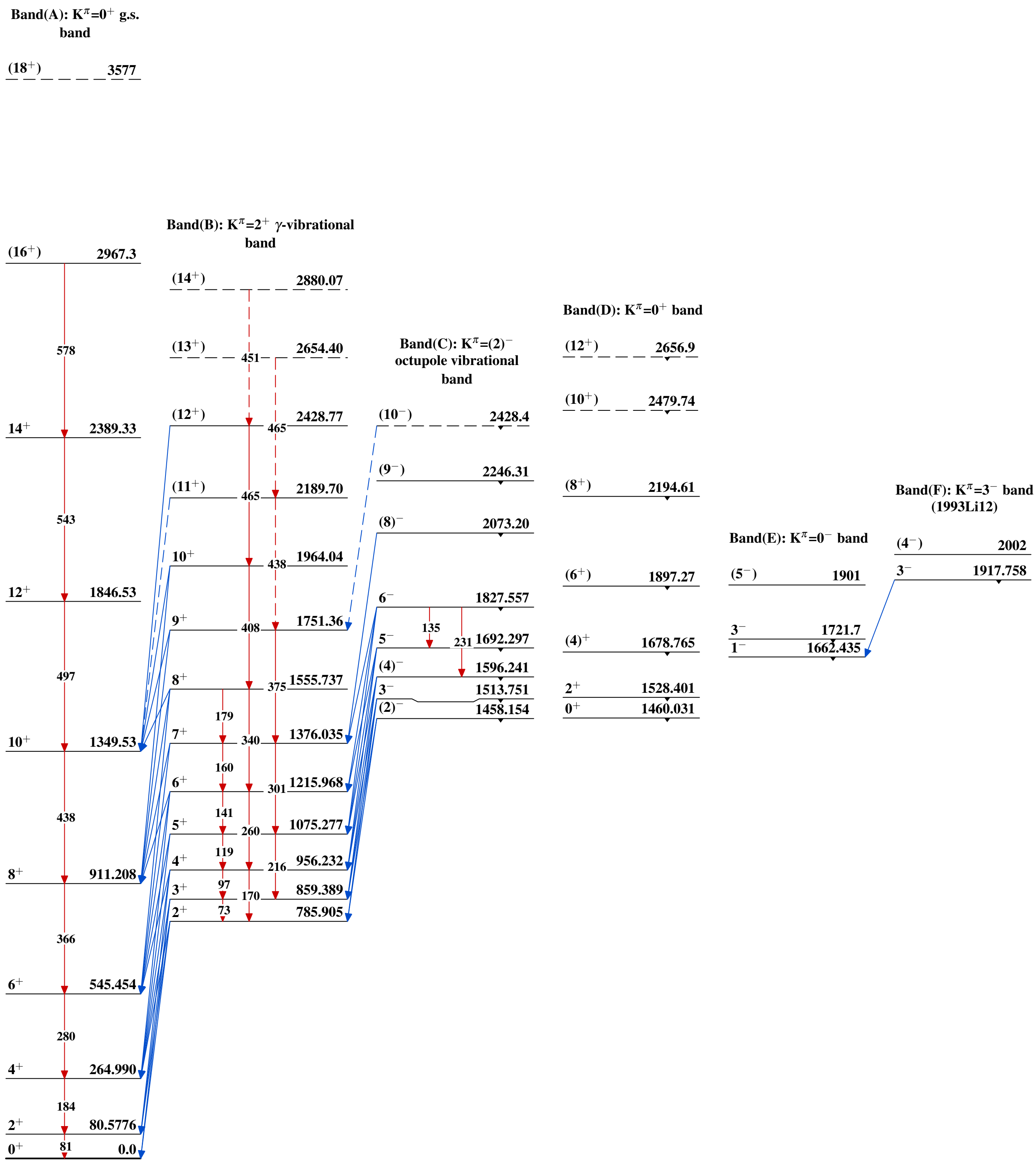
Level Scheme (continued)

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



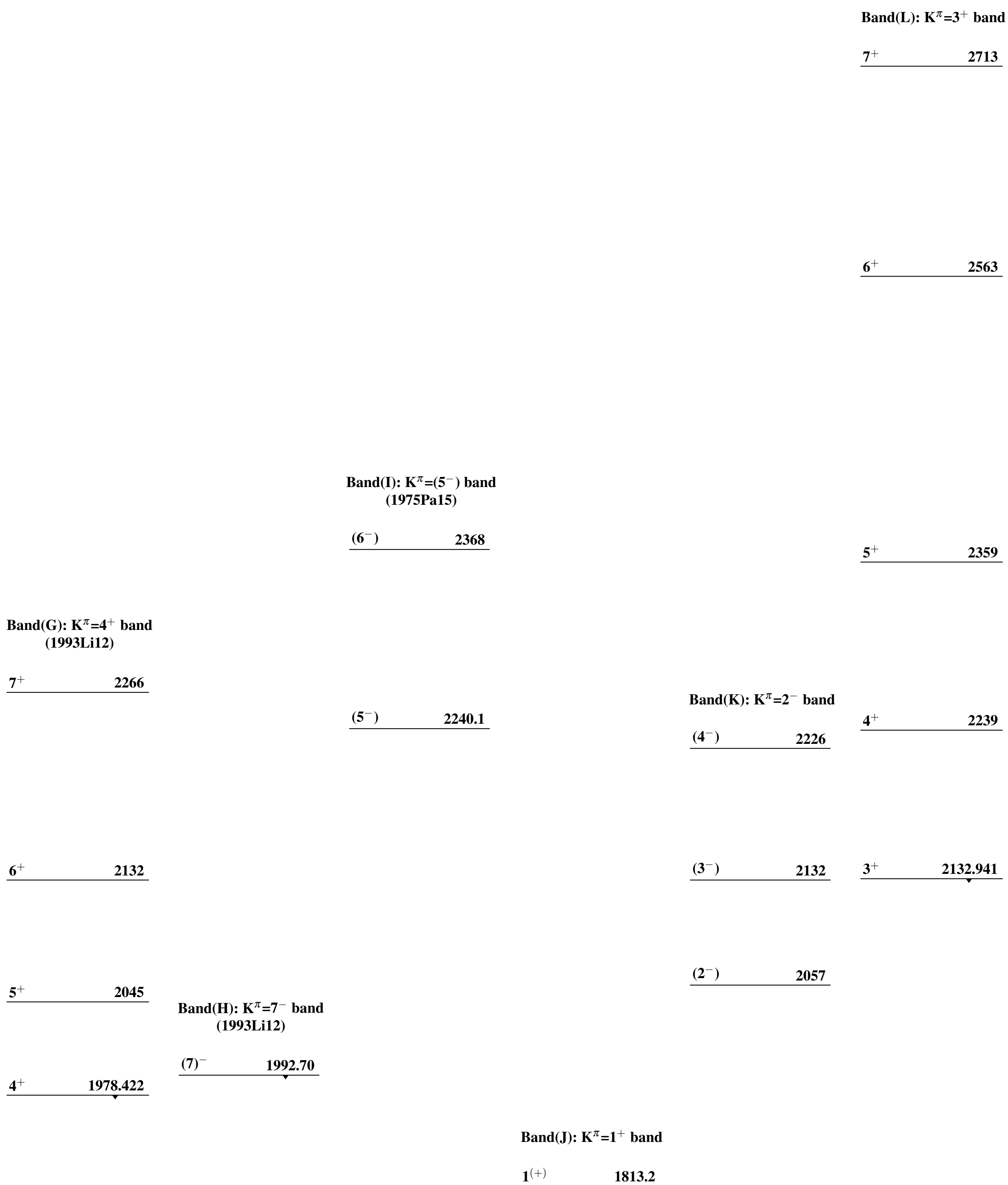
$^{166}_{68}Er_{98}$

Adopted Levels, Gammas



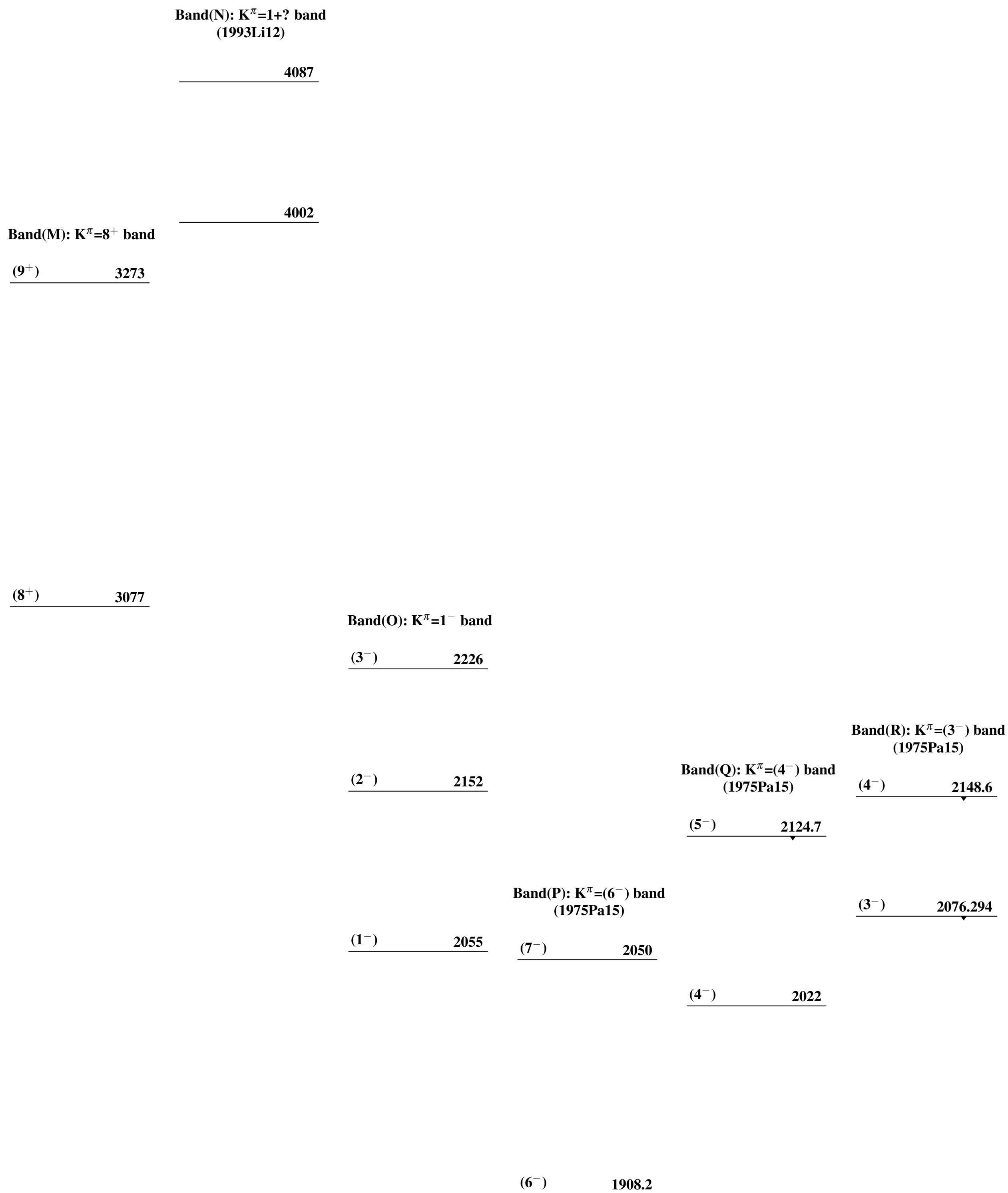
$^{166}_{68}Er_{98}$

Adopted Levels, Gammas (continued)



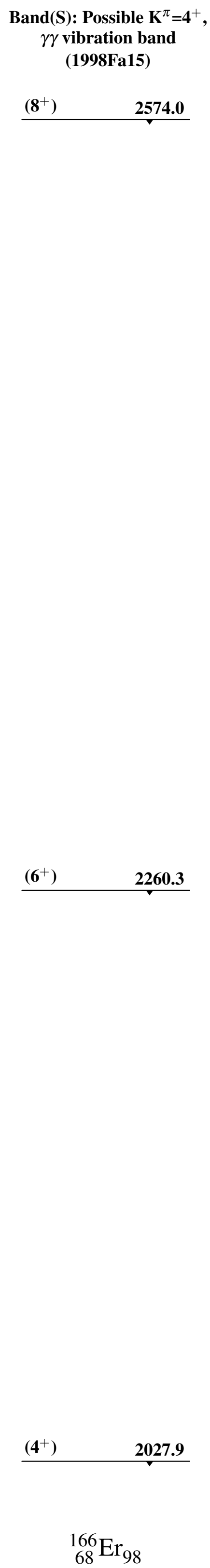
$^{166}_{68}Er_{98}$

Adopted Levels, Gammas (continued)



$^{166}_{68}Er_{98}$

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111,1807 (2010)	15-Jun-2010

Q(β^-)=−1677.4 *19*; S(n)=7771.31 *12*; S(p)=7999 *6*; Q(α)=551.0 *12* 2012Wa38
Note: Current evaluation has used the following Q record \$ −1678.9 *19*7771.32 *12*7999 5551.6 12 2003Au03,2009AuZZ.
Q(β^-): From 2009AuZZ; 1679.1 *19* from 2003Au03.
See 1983Pf01, 1985Be34, 1985Ne09, 1987Ah03, 1987Ok03, 1990Ji07, 1992Kr06, 2000As04 for recent hfs and/or isotope shift data.
Muonic x-ray data: see 1970Hi03 (deduced B(E2)↑=6.00 *12*).
For detailed discussion of band properties and interactions see, e.g., 2000Gr33, 2001Gu12, 2002Gr12.

^{168}Er Levels

E(j),J(j) From ^{168}Er(γ,γ), (γ,γ').

Cross Reference (XREF) Flags

A	^{168}Ho β^- decay	H	^{168}Er(γ,γ'), (γ,pol γ')	O	^{171}Yb(n,α)
B	^{168}Tm ε decay	I	^{168}Er(e,e′)	P	^{168}Er(pol p,p), (pol p,p′)
C	^{165}Ho(α,pγ)	J	Coulomb excitation	Q	^{168}Er(d,d), (d,d′)
D	^{166}Er(t,p)	K	^{168}Er(n,n′γ)	R	^{168}Er(^{238}U,^{238}U′γ)
E	^{167}Er(n,γ) E=thermal	L	^{168}Er(α,α')	S	^{170}Er(^{136}Xe,Xγ)
F	^{167}Er(n,γ) E=2, 24 keV	M	^{169}Tm(pol t,α), (t,α)		
G	^{167}Er(d,p), (t,d)	N	^{170}Er(p,t)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[i]	0+[d]	stable	ABCDEF HIJKLMNOP S	
79.804[i] *1*	2+[d]	1.853 ns *25*	ABCDEFG JKLMN P S	μ=+0.642 *12* μ: value adopted by 1989Do12; based on +0.54 *6* (IPAC, revision of datum from 1962Bo18), 0.69 *6* (recoil into gas/vacuum; 1967Ku07), 0.666 *16* (Mössbauer, 1968Mu01), +0.610 *20* (recoil into gas/vacuum, 1970Be36). Others: 0.66 *4* if g(^{166}Er, 81)=0.312 *10* (Mössbauer, 1967St17), +0.62 *6* (IPAC, 1980Fu03). $<r^2>^{1/2}$(charge)=5.267 *4* (2004An14). J$^\pi$: E2 80γ to 0$^+$ g.s.. T$_{1/2}$: unweighted average of 1.84 ns *6* (B(E2) in Coulomb excitation), 1.85 ns *3* (pulsed-beam in Coulomb excitation), 1.79 ns *6* (muonic x-ray data (see 1970Hi03)), and the following from ^{168}Tm ε decay: 1.72 ns *6*, 1.92 ns *2*, 1.92 ns *4*, 1.90 ns *6*, and 1.88 ns *5*. Weighted average is 1.883 ns *20*. μ: From g(^{166}Er 81)/g=0.960 *13* (1968Mu01; Mössbauer effect) if g(^{166}Er 81)=+0.641 *10*, the mean of +0.649 *10* (1981Ho31) and +0.632 *10* (1968Mu01). Other: +0.62 *6* (1980Fu03; IPAC) relative to ^{166}Er(265).
264.0888[i] *14*	4+[d]	114 ps *3*	ABCDEFG JKLMN P S	μ=+1.17 *12*; Q=−2.2 *10* μ: From 1996Br09 (transient field). Other: +1.26 *16* (1968De28; IMPAC), relative to ^{166}Er(265). Q: Coul. ex. reorientation (1989Ra17 from 1970McZQ). J$^\pi$: E2 intraband 184γ to 2$^+$ 80. T$_{1/2}$: weighted average of 117 ps *7* from B(E2) in Coulomb excitation and the following from ^{168}Tm ε decay: 106 ps *6*,

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				μ=+1.17 *12*; Q=−2.2 *10* μ: From 1996Br09 (transient field). Other: +1.26 *16* (1968De28; IMPAC), relative to ^{166}Er(265). Q: Coul. ex. reorientation (1989Ra17 from 1970McZQ). Jπ: E2 intraband 184γ to 2⁺ 80. $T_{1/2}$: weighted average of 117 ps *7* from B(E2) in Coulomb excitation and the following from ^{168}Tm ε decay: 106 ps *6*, 113 ps *13*, 121 ps *8*, and 119 ps *7*.
548.7470[i] *20*	6^{+}[d]	12.0 ps *5*	ABCDEFG JKLMN P S	μ=+1.81 *12* μ: From 1996Br09 (transient field). Others: +2.0 *3* (1989Do12; transient field IPAC) from g/g(^{168}Er, 549 level)=0.92 *7*; +2.10 *12* (1992Br07; transient field). Jπ: E2 intraband 285γ to 4⁺ 264; g.s. band member. 1⁺,6⁺ from average resonance capture. $T_{1/2}$: weighted average of 11.6 ps *7* (recoil distance) and 12.3 ps *7* (B(E2) and adopted 285γ properties) in Coulomb excitation.
821.1685[j] *16*	2^{+}[e]	2.80 ps *9*	AB DEFG JKLMN P S	μ=+0.72 *14*; Q=2.25 *23* μ: transient field IPAC (1989Do12); g/g(^{168}Er, 548.7 level)=1.10 *14*. Q: Coulomb excitation reorientation (1989Ra17 from 183hu01). Jπ: E2 821γ to 0⁺ g.s.. $T_{1/2}$: from B(E2)($0+_{g}$ to $2+_{\gamma}$) in Coulomb excitation. Other values: 3.5 ps *7* (recoil distance), 2.91 ps *+12−25* and 3.9 ps *+4−5* from measured B(E2) and adopted γ properties for 741γ and 557γ, respectively, in Coulomb excitation.
895.7947[j] *17*	3^{+}[e]	3.2 ps *+9−2*	AB EFG JK MNO S	Jπ: M1+E2 632γ to 4⁺ 264; M1+E2 816γ to 2⁺ 80. $T_{1/2}$: from B(E2)($2+_{g}$−$3+_{\gamma}$) in Coulomb excitation and adopted 816γ properties. Others: ≤120 ps from γγ(t) in ^{168}Tm ε decay (1991De24); 2.9 ps *13* and 3.3 ps *+11−8*, respectively, from adopted properties for 632γ and 75γ and measured B(E2) in Coulomb excitation.
928.3029[i] *25*	8^{+}[d]	3.56 ps *13*	C E G JKL S	μ=+2.44 *21* μ: From 1996Br09 (transient field). Others: +2.7 *5* (1989Do12; transient field) from g/g(^{168}Er, 549 level)=1.01 *13* and adopted μ(549 level); +2.40 *16* (1992Br07, superseded by 1996Br09). Jπ: E2 intraband 379γ to 6⁺ 549; 8⁺ member of g.s. band expected at 926.6, based on energies of 2⁺ and 6⁺ members. $T_{1/2}$: weighted average of 3.42 ps *26* (Doppler broadening), 3.67 ps *21* (recoil distance) and 3.53 ps *21* (B(E2) and adopted 380γ properties) in Coulomb excitation.
994.7474[j] *16*	4^{+}[e]	3.5 ps *7*	AB DEFG JKLMN P S	Jπ: E2 173γ to 2⁺ 821; M1+E2 731γ to 4⁺ 264; 446γ to 6⁺; member of γ band. 3⁺,4⁺ from average resonance capture. $T_{1/2}$: recoil distance in Coulomb excitation. However, adopted properties and measured B(E2) for 915γ, 731γ, 445γ and 174γ imply $T_{1/2}$=2.82 ps *18*, 2.89 ps *16*, 4.4 ps *+8−24* and 1.92 ps *15*, respectively, if 99γ branch is negligible.
1094.0383[k] *16*	4^{-}[f]	109.0 ns *7*	AB EFG JK M RS	μ=+0.96 *4* μ: From TDPAC (1989Ra17 from 1980Fu03).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
				Q/Q(2^+ 80 level)=0.69 *3* (2002Th14) from TDPAC. J^{π}: M2+E3 1014γ to 2^+ 80; E1+M2 830γ to 4^+ 264. $T_{1/2}$: weighted average of data from ^{168}Tm ε decay: 108.9 ns *7*, 120 ns *20*, 110 ns *15*, 107 ns *10*, 115.7 ns *33*, and 107.3 ns *22*. Other (from ^{167}Er(n,γ) E=thermal): 89 ns (1974Iv02).
1117.5703[j] *16*	5^{+}[e]	2.4 ps *+8−2*	AB EF JK	J^{π}: M1+E2 853γ to 4^+ 264; E1 75γ from 5^- 1193; β band member. 2^+,5^+ from average resonance capture. $T_{1/2}$: from measured B(E2)(853γ) in Coulomb excitation and adopted γ properties; measured B(E2) values for 222γ and 123γ imply similar $T_{1/2}$ (2.0 ps *+3−7* and 2.2 ps *6*).
1193.0251[k] *17*	5^{-}[f]	0.70 ns *7*	AB DEFG JKLMN RS	J^{π}: E1 644γ to 6^+ 549; E1 929γ to 4^+ 264. $T_{1/2}$: $\gamma\gamma$(t) in ^{167}Er(n,γ) E=thermal (1991Pe12). Other value: 0.6 ns *1* (1988Pe06; probably superseded by 1991Pe12).
1217.169[h] *14*	0^+		B DE JK N	J^{π}: L=0 in ^{166}Er(t,p).
1263.9047[j] *19*	6^{+}[e]	3.63 ps *26*	E JKL	J^{π}: M1+E2 146γ to 5^+ 1118; M1+E2 715γ to 6^+ 548; 336γ to 8^+ 928. $T_{1/2}$: from measured B(E2)(1000γ) and adopted γ properties. Others: 4.4 ps *9* from recoil distance in Coulomb excitation; 3.7 ps *4*, 5.2 ps *+14−39*, 4.5 ps *+15−10*, 2.65 ps *21*, respectively, from measured B(E2) for 715γ, 336γ 146γ and 269γ.
≈1266.07[a]			F	
1276.2716[h] *20*	2^+	2.0 ps *+21−7*	AB DEFG JK N	J^{π}: E2 1276γ to 0^+ g.s.. $T_{1/2}$: from lineshape broadening in (n,γ) (1998Le03).
1311.4606[k] *17*	6^{-}[f]		A E G JK M RS	J^{π}: E2 217γ to 4^- 1094; E2 118γ to 5^- 1193; band assignment.
1358.899[m] *5*	1^-		B DE G KL N	J^{π}: E1 1279γ to 2^+ 80; E2 469γ from 3^- 1828; 1359γ to 0^+ g.s..
1396.826[i] *5*	10^{+}[d]	1.45 ps *6*	C E J S	μ=+3.1 *4* μ: From 1996Br09 (transient field). Others: +3.2 *8* (1989Do12; transient field IPAC) from g/g(^{168}Er, 548.7 level)=0.98 *20*; +3.0 *4* (1992Br07; transient field). J^{π}: intraband 469γ to 8^+ 928. $T_{1/2}$: weighted average of 1.42 ps *8* (Doppler broadening), 1.66 ps *14* (recoil distance), 1.41 *8* (from B(E2)) in Coulomb excitation.
1403.7357[m] *23*	$(2)^-$		B EFG K	J^{π}: E1 1324γ to 2^+ 80; 508γ to 3^+ 896; 2^-,5^- from average resonance capture.
1411.0959[h] *18*	4^+	>0.83 ps	B dEFG JK	J^{π}: M1+E2 294γ to 5^+ 1118; E2 589γ to 2^+ 821. $T_{1/2}$: from lineshape broadening in (n,γ) (1998Le03).
1422.12[n] *3*	0^+		B dE K N	J^{π}: L=0 in ^{170}Er(p,t).
1431.466[m] *4*	3^-	41 ps	B dEFG KL N	J^{π}: E1 1167γ to 4^+ 264; E1 1352γ to 2^+ 80. $T_{1/2}$: from 1987Me04 (see ^{168}Tm ε decay).
1432.9508[j] *23*	7^{+}[e]		E JK	$T_{1/2}$: values deduced from measured B(E2) in Coulomb excitation and adopted properties for 169γ, 315γ and 884γ range from 0.6 ps *4* to 2.1 ps *+9−2*. J^{π}: M1+E2 884γ to 6^+ 549; M1 505γ to 8^+ 928.
1448.9555[k] *17*	7^{-}[f]		DE G K N RS	J^{π}: E2 137γ to 6^- 1311; E2 256γ to 5^- 1193; 520γ to 8^+ 928. Member of established $K^{\pi}=4^-$ band.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
1493.133[n] *5*	2^+		B DEFG K MN	J^{π}: E2 1493γ to 0^+ g.s..
1541.5564[l] *18*	3^-	8 ps	AB EfG KL	J^{π}: E1 547γ to 4^+ 995; E1 720γ to 2^+ 821. $T_{1/2}$: from 1987Me04 (see ^{168}Tm ε decay).
1541.7094[m] *24*	$(4)^-$		EfG K	J^{π}: E1 1278γ to 4^+ 264; E2 138γ to $(2)^-$ 1404; M1 213γ from 3^- 1828.
1569.4527[o] *25*	$(2)^-$	0.43 ps +*11*−*8*	AB dEFG K N	J^{π}: E1 748γ to 2^+ 821; E1 674γ to 3^+ 896; 1695γ to 0^+ g.s.; 2^-,5^- from average resonance capture. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1574.117[m] *4*	5^-		B dEFG KL N	J^{π}: E1 1025γ to 6^+ 549; E1 1310γ to 4^+ 264.
1605.8503[k] *23*	8^-[f]		E K R	J^{π}: E2 294γ to 6^- 1311; 157γ to 7^- 1449.
1615.3420[l] *18*	4^-		AB EFG K	J^{π}: M1 422γ to 5^- 1193; M1+E2 74γ to 3^- 1542.
1616.8060[h] *19*	6^+	>1.7 ps	E K	J^{π}: E2 206γ to 4^+ 1411; M1 1068γ to 6^+ 549; 689γ to 8^+ 928. $T_{1/2}$: from lineshape broadening in (n,γ) (1998Le03).
1624.507[j] *4*	8^+[e]	3.4 ps *7*	E J	J^{π}: E2 361γ to 6^+ 1264; γ to 10^+; member of established β band. $T_{1/2}$: recoil distance in Coulomb excitation. Note that $T_{1/2}$ values from B(E2) in Coulomb excitation and adopted properties for 1076γ and 361γ are inconsistent with this, however.
1629.698 *6*	4^-,5^-,6^-		E	J^{π}: M1 437γ to 5^- 1193.
1633.4627[o] *23*	3^-	0.35 ps +*11*−*8*	B DEFG JKLMN P	J^{π}: E1 639γ to 4^+ 995; E1 738γ to 3^+ 896; excitation in Coulomb excitation. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1653.5486[p] *21*	3^+[g]		AB dEF K	J^{π}: E1 560γ to 4^- 1094; M1 758γ to 3^+ 896; E1 84γ to $(2)^-$ 1569; member of band with established J^{π}.
1656.274[n] *5*	$(4)^+$		B dEF K N	J^{π}: M1 1392γ to 4^+ 264; E2 1107γ to 6^+ 549; 835γ to 2^+ 821.
1707.9929[l] *17*	5^-		DEFG K M	J^{π}: M1 614γ to 4^- 1094; M1 397γ to 6^- 1311.
1719.1786[o] *24*	4^-		EFG K	J^{π}: E1 602γ to 5^+ 1118; E1 823γ to 3^+ 896.
1736.6881[p] *20*	4^+[g]		DEF KL N	J^{π}: E1 544γ to 5^- 1193; E2 841γ to 3^+ 896; member of band with established J^{π}.
1760.760[m] *3*	$(6)^-$		E K	J^{π}: E1 643γ to 5^+ 1118; E1 1212γ to 6^+ 549; band assignment.
1764.0 *4*			G	
≈1768.17[a]			F	
1773.205[q] *3*	$(6)^-$		E G K S	J^{π}: M1 580γ to 5^- 1193; M1 462γ to 6^- 1311; band assignment.
1780.00[k] *15*	9^-[f]		RS	
1786.123[r] *14*	1^-	3.5 fs *4*	DE GH KL N	J^{π}: E1 1786γ to 0^+ g.s.. $T_{1/2}$: other value: 13 fs +*9*−*8* from from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1795.325[m] *11*	(7^-)		DE G K	J^{π}: 1247γ to 6^+ 549; 867γ to 8^+ 928; band assignment.
1812.5[b] *16*	$(2^+,3,4^+)$		E	J^{π}: 991γ to 2^+ 821; 818γ to 4^+ 995. E(level): level reported only in two-photon cascade data in (n,γ) E=thermal. One would expect such a low-lying level to have been observed in other experiments also.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	XREF	Comments
1820.1321[l] *18*	6^-		E g K mN	J^π: M1+E2 112γ to 5^- 1708; M1 371γ to 7^- 1449.
1820.476[o] *3*	5^-		EFg K mn	J^π: E1 557γ to 6^+ 1264; E1 826γ to 4^+ 995.
1828.0639[s] *20*	3^-	0.82 ps *+32−19*	EFG KLmn	J^π: E1 1007γ to 2^+ 821; E1 833γ to 4^+ 995. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1833.54[t] *11*	0^+		DE K mN	J^π: L=0 in ^{166}Er(t,p).
1839.3474[p] *20*	5^+[g]		EF K	J^π: M1 845γ to 4^+ 995; E1 528γ to 6^- 1311.
1848.354[u] *4*	2^+		A DEF K N	J^π: E2 1848γ to 0^+ g.s..
1881.82 *3*			E	J^π: 689γ to 5^- 1193.
1892.9346[s] *20*	$(4)^-$	177 fs *+17−15*	EFg K m	J^π: M1 700γ to 5^- 1193; M1 799γ to 4^- 1094; 3^-,4^- from average resonance capture. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1893.100[t] *6*	2^+		E g K mN	J^π: E2 676γ to 0^+ 1217.
1896.379[q] *3*	$(7)^-$		E g m S	J^π: M1+E2 123γ to $(6)^-$ 1773; band assignment.
1902.696[n] *7*	(6^+)		DE K m	J^π: 246γ to 4^+ 1656; 974γ to 8^+ 928.
1905.0922[v] *25*	$(4)^-$		EFG K m	J^π: M1 712γ to 5^- 1193; M1 811γ to 4^- 1094; 3^-,4^- from average resonance capture.
1913.92[r] *3*	3^-	<11 fs	EfG KL N	J^π: E1 1650γ to 4^+ 264; E1 1834γ to 2^+ 80. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1915.502[u] *4*	$(3)^+$		A Ef K	J^π: 1836γ to 2^+ 80; E2 921γ to 4^+ 995; 798γ to 5^+ 1118; 346γ to $(2)^-$ 1569.
1930.391[w] *4*	2^+		A EF K N	J^π: E2 1930γ to 0^+ g.s..
1936.596[x] *10*	1^-	0.24 ps *3*	E GH K	J^π: E1 1936γ to 0^+ g.s..
1947.3[i] *5*	12^+[d]	0.60 ps *3*	J	E(level): from Coulomb excitation. J^π: γ to 10^+; 12^+ member of established g.s. band. $T_{1/2}$: weighted and unweighted average of 0.62 ps *4* (Doppler broadening), 0.62 ps *14* (recoil distance), 0.58 ps *4* (B(E2) and adopted 547γ properties), all from Coulomb excitation.
1949.636[o] *3*	$(6)^-$		E K	J^π: 230γ to 4^- 1719; 517γ to 7^+ 1433; band assignment.
1950.8067[l] *20*	7^-		E G	J^π: M1 131γ to 6^- 1820; M1+E2 345γ to 8^- 1606.
1952.2[c] *7*	2^+		N	J^π: L(p,t)=2.
1961.3992[p] *20*	6^+[g]		DE K N	J^π: continuation of established band; 225γ to 4^+ 1737; 337γ to 8^+ 1625.
1972.314[x] *14*	$(2)^-$	0.13 ps *+8−4*	EF K	J^π: E1 1077γ to 3^+ 896; 2^-,5^- from average resonance capture. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1975.75[k] *20*	10^-[f]		RS	
1983.0398[s] *24*	5^-	0.29 ps *+8−5*	DEFG K M	J^π: M1 889γ to 4^- 1094; 672γ to 6^- 1311. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
1994.821[w] *4*	$(3)^+$		A EF K	J^π: E2 1915γ to 2^+ 80; E2 1731γ to 4^+ 264; band assignment.
1999.2239[y] *22*	$(3)^-$	0.44 ns *+12−8*	A dEFg KL	J^π: M1 430γ to $(2)^-$ 1569; M1 384γ to 4^- 1615. $T_{1/2}$: $\gamma\gamma$(t) in ^{167}Er(n,γ) E=thermal (1991Pe12).
2001.953[v] *4*	5^-		dEfg K m	J^π: M1 690γ to 6^- 1311; M1 908γ to 4^- 1094.
2002.465[u] *4*	$(4)^+$		dEfg K m	J^π: M1 1008γ to 4^+ 995; (E2) 1923γ to 2^+ 80; 163γ to 5^+ 1839; band assignment.
2022.358[x] *21*	$(3)^-$	105 fs *+37−25*	dEFG K	J^π: E1 1942γ to 2^+ 80; 264γ to 4^+ 264; band

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
				assignment. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
2031.097[t] *7*	(4)$^+$		dEFG K M	J^{π}: M1 1767γ to 4$^+$ 264; 1951γ to 2$^+$ 80; band assignment.
2038.66[q] *20*	(8$^-$)		G S	
2055.914[z] *8*	(4)$^+$	0.32 ps *16*	EF JKL	J^{π}: E1 962γ to 4$^-$ 1094; E2 1235γ to 2$^+$ 80; 863γ to 5$^-$ 1193. 3$^+$,4$^+$ from average resonance capture. $T_{1/2}$: γ-ray-induced Doppler broadening in ^{167}Er(n,γ) E=thermal (1991Bo18).
2059.9751[1] *20*	(4)$^-$		EFG K	J^{π}: M1 352γ to 5$^-$ 1708; M1 966γ to 4$^-$ 1094; 3$^-$,4$^-$ from average resonance capture.
2070.0[j] *10*	10$^+$[e]		J	E(level): from Coulomb excitation.
2080.457[w] *3*	(4)$^+$		DEF K N	J^{π}: M1 1816γ to 4$^+$ 264; E2 1259γ to 2$^+$ 821; band assignment.
2089.348[y] *3*	4$^-$		EFg K m	J^{π}: M1 548γ to 3$^-$ 1542; M1 381γ to 5$^-$ 1708.
2091.272[s] *5*	(6)$^-$		dE g m	J^{π}: M1 898γ to 5$^-$ 1193; 658γ to 7$^+$ 1433; band assignment.
2097.571[x] *6*	4$^-$	0.21 ps *+6−4*	dEF K	J^{π}: E1 979γ to 5$^+$ 1118; E1 1202γ to 3$^+$ 896. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
2100.361[p] *4*	7$^+$[g]		E G	J^{π}: 261γ to 5$^+$ 1839; 494γ to 8$^-$ 1606; continuation of established band.
2108.987[u] *4*	(5)$^+$		EFG K	J^{π}: E2 991γ to 5$^+$ 1118; 194γ to 3$^+$ 1916; 148γ to 6$^+$ 1961; 2$^+$,5$^+$ from average resonance capture.
2114.1[c] *4*	0$^+$		N	J^{π}: L(p,t)=0.
2118.791[v] *5*	(6)$^-$		E g K m	J^{π}: M1 926γ to 5$^-$ 1311; M1 807γ to 6$^-$ 1311; band assignment.
2122.428 *3*	(5,6,7)$^-$		E g m	XREF: g(2127.6). J^{π}: M1 349γ to (6)$^-$ 1773; 226γ to (7)$^-$ 1896. Possible bandhead for K^{π}=7$^-$ band (1991Da12, 1985Bu12).
2125.424 *7*			E g	XREF: g(2127.6). J^{π}: 472γ to 3$^+$ 1654.
2129.246[r] *21*	(5)$^-$		EFg KL	XREF: g(2127.6). J^{π}: E1 1865γ to 4$^+$ 264; 2$^-$,5$^-$ from average resonance capture.
2133.767[2] *15*	(1$^+$)		E g	XREF: g(2136). J^{π}: 2133γ to 0$^+$ g.s.; 641γ to 2$^+$ 1493; band assignment.
2135.9 *7*	1$^-$	57 fs *14*	H k	J^{π}: E1 2136γ to 0$^+$ g.s..
2137.08[3] *9*	(2)$^+$		EFg k	XREF: g(2136). J^{π}: M1 2057γ to 2$^+$ 80; 2137γ to 0$^+$ g.s.; 2$^+$,(3$^+$),(4$^+$),5$^+$ from average resonance capture.
2144.53 *3*			E	J^{π}: 539γ to 8$^-$ 1606.
2148.3685[1] *23*	5$^-$		EFG K M	J^{π}: M1+E2 1054γ to 4$^-$ 1094; M1 955γ to 5$^-$ 1193; 2$^-$,5$^-$ from average resonance capture.
2169.516[z] *12*	(5)$^+$	0.21 ps *14*	EF JK	J^{π}: E1 976γ to 5$^-$ 1193; E2 1274γ to 3$^+$ 896; 737γ to 7$^+$ 1433; band assignment. $T_{1/2}$: γ-ray-induced Doppler broadening in ^{167}Er(n,γ) E=thermal (1991Bo18).
2174.59 *8*			D K N	XREF: N(2174.0). J^{π}: 2095γ to 2$^+$ 80.
2177.79[2] *8*	(2$^+$)		E K	J^{π}: 2178γ to 0$^+$ g.s.; band assignment.
2182.80[k] *25*	11$^-$[f]		RS	

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
2185.11[x] 3	(5)$^-$	44 fs +25−16	dEfg K	XREF: g(2186). J^{π}: E1 1637γ to 6$^+$ 549; 271γ to 3$^-$ 1914; 2,3,4,5 from average resonance capture. $T_{1/2}$: from γ-induced broadening (GRID technique) in (n,γ) E=thermal (2000Ge14).
2186.741[4] 4	(3)$^+$		dEfg K	XREF: g(2186). J^{π}: M1 450γ to 4$^+$ 1737, M1 533γ to 3$^+$ 1654; band assignment.
2188.408[w] 10	(5$^+$)		dE g K	XREF: g(2186). J^{π}: 1640γ to 6$^+$ 549; 1924γ to 4$^+$ 264; 535γ to 3$^+$ 1654; band assignment.
2188.74 11	(2$^+$,3,4$^+$)		E K	J^{π}: 1194γ to 4$^+$ 995; 2109γ to 2$^+$ 80.
2193.19[5] 4	2$^+$		A dE k N	J^{π}: L(p,t)=2; M1 1372γ 2$^+$ 821; log ft=5.27 from 3$^+$.
2200.4193[y] 23	(5)$^-$		EFg k	XREF: g(2204). J^{π}: 2$^-$,5$^-$ from average resonance capture; M1 585γ to 4$^-$ 1615; M1 380γ to 5$^-$ 1820.
2200.5[q] 3	(9$^-$)		S	
2200.6[c] 4	0$^+$		N	J^{π}: L(p,t)=0.
2210.016[s] 6	(7$^-$)		E g	XREF: g(2204). J^{π}: 227γ to 5$^-$ 1983; 259γ to 7$^-$ 1951; band assignment.
2218.5[b] 16			E	
2221[&]			d G	
2230.30[6] 4	(2)$^-$		dEFG K	XREF: G(2230.76). J^{π}: M1 661γ to (2)$^-$ 1569; 2$^-$,5$^-$ from average resonance capture.
2238.179[7] 3	(4)$^+$		EFG K N	XREF: G(2239.5). J^{π}: E1 1144γ to 4$^-$ 1094; gammas to 5$^-$ and 5$^+$; band assignment.
2243.514[2] 19	(3)$^+$		EFG K	XREF: G(2244.3). J^{π}: E2 1979γ to 4$^+$ 264; 3$^+$,4$^+$ from average resonance capture; 2163γ to 2$^+$ 80; band assignment.
2246.530[t] 9	(6)$^+$		E K	J^{π}: M1 1698γ to 6$^+$ 549; band assignment.
2249.68 5			E	J^{π}: 938γ to 6$^-$ 1311.
2254.754 24	(2$^+$)		A E	J^{π}: 1038γ to 0$^+$ 1217; gammas to 3$^+$ 896 and 3$^-$ 1828.
2254.84[5] 5	(3)$^+$		A E g K m	J^{π}: 1434γ to 2$^+$ 821; log ft=5.8 from 3$^+$; band assignment.
2255.343[1] 3	(6)$^-$		E g K m	J^{π}: M1 944γ to 6$^-$ 1311; band assignment.
2262.691[8] 7	(3)$^-$		E K mn	J^{π}: E2 647γ to 4$^-$ 1615; 1441γ to 2$^+$ 821; band assignment.
2264 4	(0$^+$)		D n	E(level): from ^{166}Er(t,p). J^{π}: L=(0) in ^{166}Er(t,p).
2267.632 8	(3,4,5)$^+$		A E g K	J^{π}: E1 1174γ to 4$^-$ 1094; band assignment. Suggested bandhead for a K^{π}=5$^+$ band (1991Da12).
2269 5	3$^-$		g L n	E(level): from ^{168}Er(α,α′). J^{π}: angular distribution and isoscalar transition strength in ^{168}Er(α,α′).
2270.46 5			A E	J^{π}: 1176γ to 4$^-$ 1094.
2273.67 9	(2$^+$,3,4$^+$)		E g JK	J^{π}: 1453γ to 2$^+$ 821; 2010γ to 4$^+$ 264.
2279.630[4] 5	(4)$^+$		E g K N	J^{π}: M1 543γ to 4$^+$ 1737; M1 626γ to 3$^+$ 1654; band assignment.
2286 5			M	E(level): from ^{169}Tm(pol t,α), (t,α).
2294.0[&] 10			G	
2298.260 4	(4,5,6)$^+$		E K	J^{π}: E1 1105γ to 5$^-$ 1193. Suggested as bandhead for a

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
				$K^{\pi}=5^+$ band (1991Da12).
2302.666[6] *4*	$(3)^-$		E g K	XREF: g(2302.0). J^{π}: M1 733γ to $(2)^-$ 1569; M1 669γ to 3^- 1633; 154γ to 5^- 2148.
2303.10[x] *3*	$(6)^-$		E g	XREF: g(2302.0). J^{π}: 1039γ to 6^+ 1264; 729γ to 5^- 1574; band assignment.
2306.882[z] *24*	(6^+)		E J	J^{π}: 1042γ to 6^+ 1264; 1114γ to 5^- 1193; band assignment.
2311.07[3] *3*	$(4)^+$		DE G K	J^{π}: E2 2047γ to 4^+ 264; 1762γ to 6^+ 549; band assignment.
2322.2[c] *2*	2^+		g N	J^{π}: L(p,t)=2.
2323.01[9] *5*	3^-		E g KL N	J^{π}: 1501γ to 2^+ 821; 1328γ to 4^+ 995; $\sigma(\theta)$ and isoscalar transition strength in ^{168}Er(α,α').
2331.987[y] *3*	6^-		E G m	XREF: G(2330). J^{π}: M1 382γ to $(6)^-$ 1950; 381γ to 7^- 1951; 624γ to 5^- 1708; band assignment.
2336.26[5] *10*	4^+		dE g m	XREF: g(2336.7). J^{π}: 1440γ to 3^+ 896; 1118γ to 5^+ 1118; band assignment.
2337.100[!] *20*	3^-		dE g K m	XREF: g(2336.7). J^{π}: M1 1243γ to 4^- 1094; 1516γ to 2^+ 821; band assignment.
2341.78 *24*	1	0.11 ps *3*	H K	J^{π}: D 2342γ to 0^+ g.s.. $T_{1/2}$: from (γ,γ').
2346.20 *9*	$1^-,2^-,3^-$		dE g K	XREF: g(2347.1). J^{π}: E1 1524γ to 2^+ 821.
2348.581[8] *18*	4^-		dE g K	XREF: g(2347.1). J^{π}: possible M1 1156γ to 5^- 1193; 695γ to 3^+ 1654; band assignment.
2349.3 *3*			MN	E(level): from ^{170}Er(p,t). J^{π}: L(p,t)=2.
2361.40 *19*	1	108 fs *22*	H K	XREF: H(2363). $T_{1/2}$,J^{π}: from (γ,γ').
2365.196 *14*	$(5)^-$		E g K	XREF: g(2364.7). J^{π}: M1 1271γ to 4^- 1094; M1 1172γ to 5^- 1193; band assignment.
2365.33[|] *12*	(1^+)	94 fs *22*	E gH K	XREF: g(2364.7). J^{π}: (1) from ^{168}Er(γ,γ), (γ,γ'); π=+ from band assignment.
2366.2[c] *2*	0^+		N	J^{π}: L(p,t)=0.
2368.585[7] *9*	(5^+)		E K	J^{π}: γ's to 4^- and $(5)^+$; band assignment.
2373.657 *18*	2,3		E G	J^{π}: 1553γ to 2^+ 821; 401γ to $(2)^-$ 1972.
2378.12 *8*			E	J^{π}: 1284γ to 4^- 1094.
2382.587 *4*	$(2)^+$		E G K	J^{π}: E1 383γ to $(3)^-$ 1999; 2382γ to 0^+ g.s..
2392.1[c] *2*	(0^+)		g N	J^{π}: L(p,t)=(0).
2392.118 *7*	$(5,6^+)$		E g	J^{π}: 655γ to $(4)^+$ 1737; 1080γ to 6^- 1311; 1128γ to 6^+ 1264. If 1298γ is correctly placed, $J^{\pi}=6^+$ is very unlikely.
2392.927 *9*	$(3^-,4^+)$		E g K m	J^{π}: 1200γ to 5^- 1193; 900γ to 2^+ 1493. Level proposed by 1991Da12 as J=4 member of a $K^{\pi}=2^-$ band built on the 2230 level. This is incompatible with placement (supported by $\gamma\gamma$ coin data) of the M1 362γ from this level but consistent with placement of the E2 1200γ from the level.
2393.71[|] *9*	(2^+)		E g K m	J^{π}: 2393γ to 0^+ g.s.; 2129γ to 4^+ 264.
2398.52 *9*	$(3^+,4,5^+)$		E g K m	XREF: g(2400.1).

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				Jπ: 1281γ to 5+ 1118; 1503γ to 3+ 896.
2401.94 *24*	(1−)		E g K m	XREF: g(2400.1). Jπ: 1581γ to 2+ 821 is probably E1; 2402γ to 0+ g.s..
2402.29[9] *7*	(4)−		E g K m	XREF: g(2400.1). Jπ: E1 1506γ to 3+ 896; E1 1408γ to 4+ 995; band assignment.
2411.795 *25*	(5)+		dE G K	Jπ: M1 1417γ to 4+ 995; 1100γ to 6− 1311. Proposed by 1991Da12 as J=4 member of a possible $K^{\pi}=3^-$ band built on 2337 level but, if placement and multipolarity of 1417γ are correct, that band assignment is untenable.
2417.02 *20*	1(−)	20 fs *4*	d H K	D γ to 0+ g.s.; π based on K=0 (1996Ma18) from (γ,γ′).
2419.0[k] *3*	12−[f]		RS	
2423.25 *9*			E K n	Jπ: 2159γ to 4+ 264.
2424.91[l] *6*	(2)+		A dE K n	Jπ: log *ft*<5.9 from 3+; 2425γ to 0+ g.s..
2427.2 *6*			dE lm	
2434.659 *5*			E g lm	XREF: g(2434.9).
2440.054 *20*	(4+,5+)		E G K	Jπ: 1176γ to 6+ 1264; 445γ to (3)+ 1995.
2440.46 *5*	(2+)		E K	Jπ: 1446γ to 4+ 995; 1223γ to 0+ 1217.
2450.5?[c] *3*	2+		g N	XREF: g(2450). Jπ: L(p,t)=2.
2451.165[8] *24*	(5−)		E g K	XREF: g(2450.5). Jπ: 195γ to (6)− 2255; 1456γ to 4+ 995; 909γ to (4)− 1542; band assignment.
2455.96 *6*	(3+,4,5+)		E g K M	XREF: g(2458). Jπ: 1339γ to 5+ 1118; 1560γ to 3+ 896.
2458.7 *4*	1	0.17 ps *5*	gH K	XREF: g(2458).
2461.8[c] *2*	2+		N	Jπ: L(p,t)=2.
2468.8 *9*			dE g	XREF: g(2458).
2474.10 *6*	(6−)		dE g	XREF: g(2476.4). Jπ: 1041γ to 7+ 1433; 472γ to 5− 2002; band assignment.
2477.20 *6*	(5)−		dE g K m	XREF: g(2476.4). Jπ: M1 1166γ to 6− 1311; 1383γ to 4− 1094; possible bandhead for a $K^{\pi}=5^-$ band.
2478.08 *7*	(3)−		dE g K m	XREF: g(2476.4). Jπ: 1657γ to 2+ 821; E1 1484γ to 4+ 995. Proposed by 1991Da12 as J=3 member of a possible $K^{\pi}=1^+$ band built on 2365 level but, if placement and multipolarity of 1484γ are correct, that band assignment is untenable.
2484.52[l] *6*	(3+)		A dE g K m	XREF: g(2484.8). Jπ: log *ft*=5.91 from 3+; 2405γ to 2+ 80; 2221γ to 4+ 264; band assignment.
2486 *5*	3−		d g Lm	XREF: g(2484.8). E(level): from ^{168}Er(α,α′). Jπ: angular distribution and isoscalar transition strength in ^{168}Er(α,α′).
2493.5 *3*	1+	37 fs *4*	gH K	XREF: g(2497.8). K=1 (1996Ma18) from (γ,γ′).
2494.528 *15*	(3)−		E K	Jπ: E1 1673γ to 2+ 821; 512γ to 5− 1983.
2499.1 *5*			E g	XREF: g(2497.8).
2510.72 *24*	1(−)	59 fs *18*	GH K	π based on K=0 (1996Ma18) from (γ,γ′).
2513.67 *5*	(4)−		E G K	XREF: G(2510.8). Jπ: E1 1618γ to 3+ 896; E1 1519γ to 4+ 995; 1396γ to 5+ 1118. Proposed by 1991Da12 as J=5 member of a $K^{\pi}=3^-$ band, but multipolarity of 1519γ and 1618γ rule this out.
2517.48 *20*	(3+,4+)		E G K	XREF: G(2517.6).

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
				J^{π}: 1696γ to 2$^+$ 821; 408γ to 5$^+$ 2109.
2526.583[!] *12*	(5)$^-$		DE g K	XREF: g(2527.2). J^{π}: E2 1433γ to 4$^-$ 1094; 1532γ to 4$^+$ 995; band assignment.
2527.78 *7*			E g	XREF: g(2527). J^{π}: 1434γ to 4$^-$ 1094.
2528.80 *10*	(5)$^-$		E K	J^{π}: E1 1534γ to 4$^+$ 995; 1265γ to 6$^+$ 1264.
2538.1 *5*	2$^+$		E g LM	XREF: g(2539.3). J^{π}: L(p,t)=2.
2540.22 *5*	(3,4,5)$^+$		E g K	XREF: g(2539.3). J^{π}: E2 1644γ to 3$^+$ 896; 1423γ to 5$^+$ 1117.
2547.25[|] *7*	(4$^+$)		E	J^{π}: 1651γ to 3$^+$ 896; 1998γ to 6$^+$ 549; band assignment.
2551.48 *7*	(4,5)$^-$		E K	J^{π}: E1 1557γ to 4$^+$ 995; 443γ to 5$^+$ 2109.
2552.7 *4*	2$^+$		E G N	XREF: G(2553.1). J^{π}: L(p,t)=2.
2558.66 *5*	(5)$^-$		dE K	J^{π}: E1 γ from 3$^+$,4$^+$ in ^{167}Er(n,γ) E=thermal; 984γ to 5$^-$ 1574; 1294γ to 6$^+$ 1264; 235γ to 3$^-$ 2323.
2561.56[/] *5*	(4$^+$)		dE g K	XREF: g(2562.2). J^{π}: 2297γ to 4$^+$ 264; 2012γ to 6$^+$ 549; band assignment.
2563.5 *5*			dE g	XREF: g(2562.2).
2571.31 *5*			E G	XREF: G(2569.0). J^{π}: 1577γ to 4$^+$ 995; 1675γ to 3$^+$ 896, so J^{π}=(2$^+$,3,4,5$^+$).
2571.9[@i] *5*	14$^+$[d]	0.248 ps *+24−14*	J	$T_{1/2}$: from B(E2) in Coulomb excitation and adopted 625γ properties.
2572.0[@j] *calc*	(12$^+$)[e]		J	J^{π}: from band assignment in Coulomb excitation.
2572.5[c] *2*	0$^+$		N	J^{π}: L(p,t)=0.
2578.8 *5*			E	
2586.2 *6*			E G	XREF: G(2584.8).
2594.4[&] *10*			G	
2601.2 *4*			E G M	XREF: G(2603.7). J^{π}: π=− from E1 5170γ from 3$^+$,4$^+$ in ^{167}Er(n,γ) E=thermal; however, 2522γ to 2$^+$ 80 and 2052γ to 6$^+$ 549 favor 4$^+$.
2617.4 *2*	0$^+$		D N	E(level): from ^{166}Er(p,t). J^{π}: L(p,t)=0.
2626.3 *10*			G	
2628.57 *22*	(3$^+$,4,5$^+$)		E K	J^{π}: 1733γ to 3$^+$ 896; 1511γ to 5$^+$ 1118.
2629.2 *4*			E Kl	J^{π}: γ to 4$^+$ 264.
2637.2[&] *10*			G l	
2643.71 *13*	1$^{(+)}$	70 fs *15*	E H K	K=1 (1996Ma18) from (γ,γ').
2644.1 *6*	(0$^+$)		E G N	XREF: G(2646.2). E(level): from (p,t). J^{π}: L(p,t)=(0).
2651.9 *5*			E g	
2653.8[k] *4*	13$^-$[f]		RS	
2656.86 *5*			E g	XREF: g(2656.3). J^{π}: gammas to 2$^+$ 821 and 3$^+$ 896, so J^{π}=(1$^+$,2,3,4$^+$).
2657.66 *4*	(2,3,4)		E g m	XREF: g(2656.3).

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				Jπ: 1226γ to 3⁻ 1431; 1004γ to 3⁺ 1654; 1042γ to 4⁻ 1615.
2660.59 *7*	(3,4)⁺		E K m	Jπ: M1 1666γ to 4⁺ 995; 2580γ to 2⁺ 80; 1542γ to 5⁺ 1118.
2663.229[<] *20*	(4)⁺		E G K m	XREF: G(2663.1). Jπ: E2 1010γ to 3⁺ 1654; 1193γ to 5⁻ 1193; band assignment.
2672.1 *5*	(4⁺,5,6⁺)		E K	Jπ: 1677γ to 4⁺ 995; 1409γ to 6⁺ 1264.
2676.3 *4*	1⁺	27 fs *3*	GH K	Jπ: M1 2676γ to 0⁺ g.s.. K=1 (1996Ma18) from (γ,γ′).
2683.8 *3*	(2⁺)		E K N	Jπ: 2420γ to 4⁺ 264; 2684γ to 0⁺ g.s..
2689.0 *4*	(1,2⁺)		E G K	XREF: G(2691.8). Jπ: 2689γ to 0⁺ g.s.; 2609γ to 2⁺ 80.
2694	1⁽⁺⁾		H	$T_{1/2}$: 0.24 ps *5* if level deexcites to g.s. only.
2700.60 *20*			E	Jπ: 2436γ to 4⁺ 264.
2703.2 *10*			G	
2713.2 *6*			E G	XREF: G(2711.9).
2716.0[b] *16*	(2⁺,3,4⁺)		E	Jπ: 2636γ to 2⁺ 80; 2452γ to 4⁺ 264.
2727.77 *5*	(4,5)⁻		E g K	XREF: g(2727.9). Jπ: M1+E2 1112γ to 4⁻ 1615; 1611γ to 5⁺ 1118.
2728.43 *22*	1⁺	13.9 fs *24*	gH K	XREF: g(2727.9). Jπ: M1 2729γ to 0⁺ g.s..
2733.0 *12*			E	Jπ: 1837γ to 3⁺ 896, 2469γ to 4⁺ 264, so *J*π=(2⁺,3,4,5⁺).
2738.56 *4*			E g	XREF: g(2739.6). Jπ: 1031γ to 5⁻ 1708, 1123γ to 4⁻ 1615, so *J*π=(3⁻,4,5,6⁻).
2740.16 *15*	(4,5,6)⁺		E g K	XREF: g(2739.6). Jπ: 1476γ to 6⁺ 1264; E2 1746γ to 4⁺ 995.
2740.9 *3*	1	38 fs *6*	gH K	XREF: g(2739.6). Jπ: D γ to 0⁺.
2741.9[c] *4*	2⁺		N	Jπ: L(p,t)=2.
2746.6 *3*	(≤4)		E G K N	XREF: G(2746.3). Jπ: 2667γ to 2⁺ 80.
2751.9 *6*			E	
2757.3 *4*	(1,2⁺)		G K	Jπ: gammas to 0⁺ g.s. and 2⁺ 80.
2763.9 *8*	(1,2⁺)		E K	Jπ: gammas to 0⁺ g.s. and 2⁺ 80.
2768.55 *6*			E	Jπ: 1060γ to 5⁻ 1708, 1153γ to 4⁻ 1615, so *J*π=(3⁻,4,5,6⁻).
2769.81[<] *15*	(5⁺)		E K	Jπ: 1675γ to 4⁻ 1094; 1458γ to 6⁻ 1311; band assignment.
2778.03 *20*			E	Jπ: 2229γ to 6⁺ 549.
2782.9 *6*	(1,2⁺)		K	Jπ: 2783γ to 0⁺ g.s.; 2703γ to 2⁺ 80 level.
2786.80 *7*	(3,4⁺)		E m	Jπ: 2523γ to 4⁺ 264; 1965γ to 2⁺ 821; 385γ to (4)⁻ 2402.3.
2788.1 *16*			E m	Jπ: 2524γ to 4⁺ 264.
2789.2[c] *6*	0⁺		N	Jπ: L(p,t)=0.
2792.0 *4*	1⁺	24.5 fs *17*	H K m	Jπ: M1 2792γ to 0⁺ g.s.. K=1 (1996Ma18) from (γ,γ′).
2798.1 *3*	1⁺	25.6 fs *21*	H K	Jπ: M1 2798γ to 0⁺ g.s.. K=1 (1996Ma18) from (γ,γ′).
2806.5 *6*			E	
2810.9[b] *4*			E	Jπ: 2547γ to 4⁺ 264.
2817.0? *4*	(1,2⁺)		K	Jπ: 2817γ to 0⁺ g.s.; 2737γ to 2⁺ 80.
2819.7[b] *4*			E	Jπ: 2556γ to 4⁺ 264.
2825.0[c] *4*	2⁺		N	Jπ: L(p,t)=2.
2826.4 *3*	1⁽⁺⁾	38 fs *6*	H K	Jπ: D, Δπ=(no) γ to 0⁺. K=1 (1996Ma18) from (γ,γ′).
2833.7 *5*	1⁽⁻⁾		H K	Jπ: D, Δπ=(yes) γ to 0⁺.

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
				$T_{1/2}$: 127 fs *18* if level deexcites to g.s. only.
2842.1[c] *3*	0^+		E N	J^{π}: L(p,t)=0.
2849.60 *5*	(4^+)		E	J^{π}: 2770γ to 2^+ 80; 2301γ to 6^+ 549.
2850.3 *4*	1^-	31 fs *4*	H K	J^{π}: E1 2851γ to 0^+ g.s..
2852.0 *5*			E	
2854.6[b] *4*			E	
2856.5 *6*	(2^+)	28 fs *5*	H K	J^{π}: (Q) 2856γ to 0^+ in (γ,γ').
2863.6? *5*	$(1,2^+)$		K	J^{π}: 2864γ to 0^+ g.s.; 2783γ to 2^+ 80.
2872.2 *3*	0^+		E mN	E(level): from (p,t). J^{π}: L(p,t)=0.
2874.61 *3*	(3,4,5)		E m	J^{π}: 2611γ to 4^+ 264; 1781γ to 4^- 1094.
2878.9[c] *4*	2^+		N	J^{π}: L(p,t)=2.
2880.6[b] *3*			E m	
2890.65 *24*			E	J^{π}: 2342γ to 6^+ 549.
2896.7 *3*	$(3,4^+)$		E	J^{π}: 2815γ to 2^+ 80; 2631γ to 4^+ 264; 1281γ to 4^- 1615.
2901.6[b] *3*			E	
2906.0[c] *4*	2^+		N	J^{π}: L(p,t)=2.
2907.8[b] *3*			E	
2920.00[b] *24*			E	J^{π}: 2656γ to 4^+ 264.
2929.9 *4*	$1^{(+)}$	77 fs *12*	E H K	J^{π}: D, $\Delta\pi$=(no) γ to 0^+. K=1 (1996Ma18) from (γ,γ').
2933.44 *18*	2^+		E N	J^{π}: L(p,t)=2.
2934.0[k] *4*	14^-[f]		RS	
2942.9 *5*			E	
2946.6 *4*	$1^{(-)}$	10.0 fs *16*	H K	J^{π}: D γ to 0^+; π from K=0 (1996Ma18) in (γ,γ').
2947.4[c] *4*	0^+		N	J^{π}: L(p,t)=0.
2950.7[b] *3*			E	J^{π}: 2686γ to 4^+ 264.
2955.6 *8*	1		H K	J^{π}: D γ to 0^+. $T_{1/2}$: 0.20 ps *3* if level deexcites to g.s. only.
2959.1 *10*			E	
2961.2[c] *6*	2^+		N	J^{π}: L(p,t)=2.
2969.93 *6*	$3^+,4^+,5^+$		E K	J^{π}: E1 1876γ to 4^- 1094. Possible 2421γ to 6^+ 549 disfavors J=3.
2972.6[b] *7*	(≤4)		E	J^{π}: 2893γ to 2^+ 80.
2974.3 *5*	1	30 fs *6*	H K	J^{π}: D γ to 0^+.
2979.3[b] *3*	(≤4)		E	J^{π}: 2158γ to 2^+ 821.
2982.53 *10*	(3,4,5)		E	J^{π}: 1988γ to 4^+ 995; 1367γ to 4^- 1615.
2984.03[b] *23*			E	
2991.33[b] *23*	(≤4)		E	J^{π}: 2911γ to 2^+ 80.
2998.2 *4*	0^+		E N	E(level): from (n,γ) E=thermal. J^{π}: L(p,t)=0.
3002.4? *4*	$(1,2^+)$		E K	J^{π}: 3002γ to 0^+ g.s.; 2923γ to 2^+ 80.
3009.0[c] *3*	2^+		N	J^{π}: L(t,p)=2.
3011.77[b] *23*	(4^+)		E	J^{π}: 2932γ to 2^+ 80; 2462γ to 6^+ 549.
3019.6 *5*	2^+		E N	E(level): weighted average of 3019.1 *4* from (n,γ) E=thermal and 3020.0 *5* from (p,t). J^{π}: L(p,t)=2.
3026.02[b] *19*			E	J^{π}: 2477γ to 6^+ 549.
3028.6[c] *6*	0^+		N	J^{π}: L(p,t)=0.
3030.7[b] *5*			E	J^{π}: 2769γ to 4^+ 264.
3033.9 *5*	(≤4)		E	J^{π}: 2213γ to 2^+ 821.

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
3042.3[c] *4*	2^+		N	J^{π}: L(p,t)=2.
3042.8 *3*	$3^-,4^-,5^-$		E	J^{π}: M1 1949γ to 4^- 1094.
3044	1	69 fs *17*	H	K=1 (1996Ma18) from (γ,γ′).
3049.6 *4*	1^+	25 fs *3*	E H K	J^{π}: M1 γ to 0^+.
3049.9[c] *5*	2^+		N	J^{π}: L(p,t)=2.
3055.95[b] *23*	2^+		E N	E(level): other E: 3055.1 *5* from (p,t). J^{π}: L(p,t)=2.
3063.6[b] *3*			E	
3065.0[c] *7*	(0^+)		N	J^{π}: L(p,t)=(0).
3068.8[b] *3*			E	J^{π}: 2520γ to 6^+ 549.
3078.0 *14*			E	
3081.3[c] *6*	2^+		N	J^{π}: L(p,t)=2.
3082	1	35 fs *6*	H	
3082.8 *5*	(4^+)		E	J^{π}: 3003γ to 2^+ 80; 2533γ to 6^+ 549.
3087.8[b] *4*			E	
3095.9 *6*	$1^{(-)}$	27 fs *3*	H K	J^{π}: D, Δπ=(yes) γ to 0^+. K=1 (1996Ma18) from (γ,γ′).
3098.4[c] *6*	2^+		N	J^{π}: L(p,t)=2.
3099.42 *8*	(3^-)		E	J^{π}: (E1) 2205γ to 3^+ 896; 2278γ to 2^+ 821; 2105γ to 4^+ 995.
3106.0[b] *6*			E	
3111.24 *15*	$(2^+,3,4^+)$		E	J^{π}: 3031γ to 2^+ 80; 2116γ to 4^+ 995.
3116.4? *5*	(2^+)		K	J^{π}: 3037γ to 0^+ g.s.; 2853γ to 4^+ 264.
3116.8[c]			N	J^{π}: possibly 0^+ based on forward-peaking of σ(θ) in (p,t).
3118.1[b] *5*			E	
3124.40 *20*	(4^+)		E	J^{π}: 2575γ to 6^+ 549; 2303γ to 2^+ 821.
3124.5 *7*	1^+	31 fs *4*	H K	J^{π}: M1 3124γ to 0^+ g.s.. K=1 (1996Ma18) in (γ,γ′).
3127.93[b] *25*	$(4^+,5,6^+)$		E	J^{π}: 2579γ to 6^+ 549; 2864γ to 4^+ 264.
3131.9[b] *5*			E	
3137.6[b] *6*			E	
3139.6[c] *6*	2^+		N	J^{π}: L(p,t)=2.
3142.7[b] *5*			E	
3147.2[c]			N	J^{π}: possibly 0^+ based on forward-peaking of σ(θ) in (p,t).
3151.9[b] *16*	(≤4)		E	J^{π}: 2331γ to 2^+ 821.
3157.5[c] *7*	0^+		N	J^{π}: L(p,t)=0.
3158.3[b] *16*			E	
3172.5[c] *7*	2^+		N	J^{π}: L(p,t)=2.
3181.1 *6*	1^-	77 fs *11*	H K	J^{π}: E1 3181γ to 0^+ g.s.. K=0 (1996Ma18) in (γ,γ′).
3183.7[c] *8*	2^+		N	J^{π}: L(p,t)=2.
3187.9[k] *4*	15^-[f]		RS	
3190	1^-	21 fs *3*	H	
3194.4[c] *8*	2^+		N	J^{π}: L(p,t)=2.
3198.0[b] *16*	(≤4)		E	J^{π}: 3118γ to 2^+ 80.
3205.2[b] *16*			E	J^{π}: 2941γ to 4^+ 264.
3208.0 *8*	$1^{(+)}$		H K	J^{π}: D, Δπ=(no) γ to 0^+. $T_{1/2}$: 152 fs *25* if level deexcites to g.s. only.
3220	1		H	$T_{1/2}$: 175 fs *34* if level deexcites to g.s. only.
3223.2[b] *16*	(4^+)		E	J^{π}: 2402γ to 2^+ 821; 2675γ to 6^+ 549.
3237.2[c] *8*	2^+		N	J^{π}: L(p,t)=2.

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
3238.0[b] *16*			E	Jπ: 2974γ to 4+ 264.
3242.6 *8*	1		H K	$T_{1/2}$: 0.18 ps *4* if level deexcites to g.s. only.
3259.5[@i] *10*	16+[d]	0.195 ps *+59−16*	J	$T_{1/2}$: from B(E2) in Coulomb excitation and adopted 688γ properties.
3269.4[c] *8*	2+		N	Jπ: L(p,t)=2.
3285.1[b] *16*	(4+)		E	Jπ: 3205γ to 2+ 80; 2736γ to 6+ 549.
3286.8[c] *8*	2+		N	Jπ: L(p,t)=2.
3300.0 *7*	1		H K	$T_{1/2}$: 0.17 ps *4* if level deexcites to g.s. only.
3312.8[c]			N	Jπ: possibly 0+ based on forward-peaking of σ(θ) in (p,t).
3327.3[b] *16*	(≤4)		E	Jπ: 3248γ to 2+ 80, so Jπ=1,2,3,4+.
3335.0[b] *16*	(4+,5+)		E	Jπ: 2439γ to 3+ 896; 2786γ to 6+ 549.
3338.2 *6*	(2+)	73 fs *25*	H K	Jπ: (Q) γ to 0+ in (γ,γ′).
3342.0 *10*	1(+)		H K	Jπ: D, Δπ=(no) γ to 0+. $T_{1/2}$: 123 fs *30* if level deexcites to g.s. only.
3342.9[c] *10*	2+		N	Jπ: L(p,t)=2.
3347.7[b] *16*			E	Jπ: 2353γ to 4+ 995.
3358.7 *6*	1+	5.4 fs *4*	HI K	Jπ: M1 3359γ to 0+ g.s..
3361.9[c] *10*	2+		N	Jπ: L(p,t)=2.
3370.9 *7*	(2+)	55 fs *11*	H K	Jπ: (Q) γ to 0+ in (γ,γ′).
3376.6[b] *16*	(4+)		E	Jπ: 3297γ to 2+ 80; 2828γ to 6+ 549.
3391 *1*	1+	2.79 fs *22*	HI	K=1 (1996Ma18).
3394.5[b] *16*			E	Jπ: 2300γ to 4− 1094.
3399.3[b] *16*	(≤4)		E	Jπ: 3320γ to 2+ 80.
3409.7 *9*	1+	9.3 fs *12*	H K	Jπ: M1 γ to 0+.
3415.5[b] *16*	(≤4)		E	Jπ: 3336γ to 2+ 80.
3429.2[c] *10*	2+		N	Jπ: L(p,t)=2.
3432.0[b] *16*	(4+)		E	Jπ: 23352 to 2+ 80; 2883γ to 6+ 549.
3439.6 *9*	1(−)	19 fs *4*	H K	Jπ: D, Δπ=(yes) γ to 0+. K=0 (1996Ma18) from (γ,γ′).
3441.7[c] *10*	2+		N	Jπ: L(p,t)=2.
3449	1		H	$T_{1/2}$: 43 fs *9* if level deexcites to g.s. only.
3451.6[c] *10*	2+		N	Jπ: L(p,t)=2.
3458 *2*	1+	5.9 fs *5*	HI	K=1 (1996Ma18) from (γ,γ′).
3459.9[c] *10*	2+		N	Jπ: L(p,t)=2.
3469 *2*	1−	10.2 fs *13*	H	K=(1) (1996Ma18) in (γ,γ′).
3471.6[c] *10*	2+		N	Jπ: L(p,t)=2.
3475.7[b] *16*	(≤4)		E	Jπ: 3396γ to 2+ 80.
3481 *2*	1−	3.0 fs *4*	H	K=0 (1996Ma18) in (γ,γ′).
3482.6[c] *10*	2+		N	Jπ: L(p,t)=2.
3487.3[b] *16*			E	Jπ: 2592γ to 3+ 896.
3493.3[c] *10*	2+		N	Jπ: L(p,t)=2.
3496.4[b] *16*	(4+)		E	Jπ: 3417γ to 2+ 80; 2950γ to 6+ 549.
3499.3[b] *16*			E	Jπ: 2405γ to 4− 1094.
3504.2 *9*	1−	22 fs *8*	H K	D γ to 0+; π=− based on K=0 (1996Ma18) in (γ,γ′).
3506.3[c] *10*	2+		N	Jπ: L(p,t)=2.
3507.8[b] *16*	(≤4)		E	Jπ: 3428γ to 2+ 80.
3513.9[b] *16*			E	Jπ: 2965γ to 6+ 549.
3515.7[c] *12*	2+		N	Jπ: L(p,t)=2.
3516	1−	13.1 fs *24*	H	

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Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
3521.1[b] *16*	(≤4)		E	J^{π}: 3441γ to 2^+ 80.
3529	1		H	$T_{1/2}$: 120 fs *25* if level deexcites to g.s. only.
3529.0[c]			N	J^{π}: possibly 0^+ based on forward-peaking of $\sigma(\theta)$ in (p,t).
3560.0[b] *16*			E	J^{π}: 3011γ to 6^+ 549.
3561.9[c] *12*	2^+		N	J^{π}: L(p,t)=2.
3566	1		H	$T_{1/2}$: 0.14 ps *3* if level deexcites to g.s. only.
3569.4[c] *10*	0^+		N	J^{π}: L(p,t)=0.
3570.9[b] *16*	(4^+)		E	J^{π}: 2750γ to 2^+ 821; 3022γ to 6^+ 549.
3581.1[c]			N	J^{π}: possibly 0^+ based on forward-peaking of $\sigma(\theta)$ in (p,t).
3586.3[c] *10*	0^+		N	J^{π}: L(p,t)=0.
3588.0[b] *16*			E	J^{π}: 2593γ to 4^+ 995.
3591	$1^{(+)}$	33 fs *6*	H	K=1 (1996Ma18) from (γ,γ′).
3598	1	17 fs *3*	H	K=(1) (1996Ma18) from (γ,γ′).
3606.8[b] *16*	(≤4)		E	J^{π}: 3527γ to 2^+ 80.
3617.6[c] *12*	2^+		E N	J^{π}: L(p,t)=2.
3627	1		H	$T_{1/2}$: 152 fs *25* if level deexcites to g.s. only.
3629.9[c] *12*	2^+		N	J^{π}: L(p,t)=2.
3634	$1^{(-)}$		H	$T_{1/2}$: 76 fs *16* if level deexcites to g.s. only.
3643.1[b] *16*	(≤4)		E	J^{π}: 2822γ to 2^+ 821.
3657	$1^{(+)}$	8.9 fs *11*	H	K=1 (1996Ma18) from (γ,γ′).
3660.9[b] *16*	(≤4)		E	J^{π}: 2840γ to 2^+ 821.
3663.9[c] *10*	0^+		N	J^{π}: L(p,t)=0.
3680.1[b] *16*	(2^+,3,4^+)		E	J^{π}: 2859γ to 2^+ 821; 2685γ to 4^+ 995.
3682.5[c]			N	J^{π}: possibly 0^+ based on forward-peaking of $\sigma(\theta)$ in (p,t).
3696	1	35 fs *8*	H	K=(1) (1996Ma18) from (γ,γ′).
3696.7[c]			N	J^{π}: possibly 0^+ based on forward-peaking of $\sigma(\theta)$ in (p,t).
3702.5[b] *16*	(≤4)		E	J^{π}: 3623γ to 2^+ 80.
3703	1^-	5.1 fs *9*	H	π=− based on K=0 (1996Ma18) in (γ,γ′).
3714.9[c] *10*	(0^+)		N	J^{π}: L(p,t)=(0).
3715.2[b] *16*			E	J^{π}: 2819γ to 3^+ 896.
3719	$1^{(-)}$	9.3 fs *24*	H	
3720.0[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3725.2[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3734.4[c] *10*	0^+		N	J^{π}: L(p,t)=0.
3737	1		H	$T_{1/2}$: 60 fs *17* if level deexcites to g.s. only.
3739.0[b] *16*	(2^-,3,4^+)		E	J^{π}: 2918γ to 2^+ 821; 2645γ to 4^- 1094.
3740.4[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3745	$1^{(-)}$	5.3 fs *8*	H	K=(0) (1996Ma18) from (γ,γ′).
3755.4[b] *16*			E	J^{π}: 2860γ to 3^+ 896.
3760.1[c] *10*	0^+		N	J^{π}: L(p,t)=0.
3761.6[b] *16*	(≤4)		E	J^{π}: 2940γ to 2^+ 821.
3776	$1^{(+)}$	27 fs *5*	H	K=1 (1996Ma18) from (γ,γ′).
3781.7[b] *16*	(4^+,5,6^+)		E	J^{π}: 3518γ to 4^+ 264; 3233γ to 6^+ 549.
3789	1		H	$T_{1/2}$: 29 fs *7* if level deexcites to g.s. only.
3789.5[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3799.4[b] *16*			E	J^{π}: 3251γ to 6^+ 549.
3800	$1^{(-)}$	12 fs *3*	H	K=0 (1996Ma18) from (γ,γ′).
3806	1^+	7.0 fs *11*	H	K=1 (1996Ma18).
3808.5[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3814	$1^{(-)}$	10.3 fs *19*	H	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
3817.0[b] *16*	(≤4)		E	J^{π}: 2996γ to 2^+ 821.
3819.4[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3835.2[b] *16*			E	J^{π}: 3571γ to 4^+ 264.
3861.9[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3868.7[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3869	1		H	$T_{1/2}$: 48 fs *9* if level deexcites to g.s. only.
3876.3[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3888.4[b] *16*			E	J^{π}: 2993γ to 3^+ 896.
3895.2[b] *16*			E	J^{π}: 3631γ to 4^+ 264.
3908.3[b] *16*			E	J^{π}: 3644γ to 4^+ 264.
3912	1		H	$T_{1/2}$: 44 fs *9* if level deexcites to g.s. only.
3921	$1^{(-)}$	22 fs *5*	H N	K=1 (1996Ma18) from (γ,γ′).
3928.9[c] *10*	0^+		N	J^{π}: L(p,t)=0.
3933.0[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3960[c]			N	E(level): from (p,t).
3964.9[c] *15*	2^+		N	J^{π}: L(p,t)=2.
3993[c]			N	E(level): from (p,t).
4033.5[c] *15*	2^+		N	J^{π}: L(p,t)=2.
4055.9[c] *15*	2^+		N	J^{π}: L(p,t)=2.
4069[c]			N	E(level): from (p,t).
4075.6[c] *15*	2^+		N	J^{π}: L(p,t)=2.

[†] From least-squares fit to Eγ, except where noted, omitting questionably- or multiply-placed transitions unless all gammas deexciting a given level are of that character. The 154.120γ, 511.8γ, 1029.45γ and 1875.69γ were also excluded because their Eγ fits their placement particularly poorly. Nevertheless, 24 of the remaining Eγ data differ from their expected values by at least 3σ (5 of those by at least 5σ), so presumably some incorrect placements remain. The reduced χ-squared for the fit is 2.4.

[‡] Nilsson analysis of angular distributions and configuration strengths in ^{167}Er(d,p), (t,d), except where noted.

[#] From radiative widths in ^{168}Er(γ,γ), (γ,γ′), except where noted. $T_{1/2}$ for E(level)=2363 and higher may be upper limits since $\Gamma_{\gamma 0}/\Gamma$ includes only the branch to the 79.8 level in addition to the g.s. branch.

[@] From Coulomb excitation.

[&] From ^{167}Er(d,p), (t,d).

[a] From ^{167}Er(n,γ) E=2, 24 keV.

[b] From Eγ for primary γ feeding level in (n,γ) E=thermal.

[c] From (p,t).

[d] Based on established $J^{\pi}=0^+$ for the bandhead, mult=E2 for the 80γ connecting the J=2 and J=0 band members and the uniform progression of level energies, definite J^{π} is assigned to members of the 0^+ g.s. band.

[e] Based on established $J^{\pi}=2^+$ for the bandhead, mult=M1+E2 for the 75γ connecting the J=3 and J=2 band members and the uniform progression of level energies, definite J^{π} is assigned to J≤10 members of the K+2 γ vibration band.

[f] Based on established $J^{\pi}=5^-$ for the J=5 member, mult=E2 for the 217γ connecting the J=6 and J=4 band members and the uniform progression of level energies, definite J^{π} is assigned to all members of the $K^{\pi}=4^-$ band built on the 1094 level.

[g] Based on established $J^{\pi}=5^+$ for the J=5 member, mult=E2 for the 186γ connecting the J=5 and J=3 band members and the uniform progression of level energies, definite J^{π} is assigned to all members of the $K^{\pi}=3^+$ band built on the 1654 level.

[h] Band(A): $K^{\pi}=0^+$ band (2). A=9.9, B=−8.3 (J=0, 2, 4, 6 levels).

[i] Band(B): $K^{\pi}=0^+$ g.s. band. A=13.3, B=−6.3 (J=0, 2, 4, 6 levels).

[j] Band(C): $K^{\pi}=2^+$ K+2 γ-vibration band. A=12.5, B=−4.9 (J=2, 3, 4, 5 levels).

[k] Band(D): K^{π}=4- 2-quasineutron band (2003Wu07). Primarily (ν 7/2[633])+(ν 1/2[521]) with 25% admixture of (π 7/2[523])+(π 1/2[411]) (1985Bu18). A=9.9, B=−1.6 (J=4, 5, 6, 7 levels).

[l] Band(E): $K^{\pi}=3^-$ band (1). A=9.2, B=3.1 (J=3, 4, 5, 6 levels). Configuration: (ν 7/2[633])-(ν 1/2[521]) (1985Bu12).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Er Levels (continued)

[m] Band(F): K$^{\pi}$=1^{-} band (1). Octupole. A=7.0 (J=1, 2, 3 levels). Configuration: (ν 7/2[633])-(ν 5/2[512]) (1985Bu12); probably heavily mixed with K^{π}=3^{-} (ν 7/2[633])-(ν 1/2[521]).

[n] Band(G): K$^{\pi}$=0^{+} band (3). A=12.0, B=−12.0 (J=0, 2, 4, 6 levels).

[o] Band(H): K$^{\pi}$=2^{-} octupole band. A=11.0, B=−19.9 (J=2, 3, 4, 5 levels). Configuration: principal contributions from (ν 7/2[633])-(ν 3/2[521]) and (ν 7/2[523])-(ν 3/2[411]) (1987Me04).

[p] Band(I): K$^{\pi}$=3^{+} band (1). A=10.5, B=−5.3 (J=3, 4, 5, 6 levels).

[q] Band(J): K$^{\pi}$=6^{-} band (1) (2010Dr02). A=8.70, B=+3.5 (J=6, 7, 8 levels). Configuration: (ν 7/2[633)]+(ν 5/2[512]) (1985Bu12).

[r] Band(K): K$^{\pi}$=0^{-} band (1). Octupole vibration. A=12.8 (J=1, 3 levels). Configuration: principal contributions from (ν 7/2[633])-(ν 7/2[514]) and (ν 7/2[523])-(ν 7/2[404]) (1987Me04).

[s] Band(L): K$^{\pi}$=3^{-} band (2). A=8.1, B=19.3 (J=3, 4, 5, 6 levels). Configuration: (ν 7/2[633])-(ν 1/2[510]) (1985Bu12).

[t] Band(M): K$^{\pi}$=0^{+} (π 1/2[411])-(π 1/2[411]) band. A=9.9 (J=0, 2, 4 levels).

[u] Band(N): K$^{\pi}$=2^{+} band (2). A=11.0 (J=2, 3, 4 levels).

[v] Band(O): K$^{\pi}$=4^{-} (π 7/2[523]) +(π 1/2[411]) band. A=9.7 (J=4, 5 levels).

[w] Band(P): K$^{\pi}$=2^{+} band (3). A=10.7 (J=2, 3, 4 levels).

[x] Band(Q): K$^{\pi}$=1^{-} band (2). A=8.2, B=35.5 (J=1, 2, 3, 4 levels).

[y] Band(R): K$^{\pi}$=3^{-} (π 7/2[523]) -(π 1/2[411]) band. A=11.2 (J=3, 4, 5 levels).

[z] Band(S): K$^{\pi}$=4^{+} $\gamma\gamma$ band. A=11.4 (J=4, 5 levels).

[1] Band(T): K$^{\pi}$=4^{-} band (3). A=8.8 (J=4, 5 levels). Configuration: (ν 7/2[633])+(ν 1/2[510]) (1985Bu12).

[2] Band(U): K$^{\pi}$=1^{+} band (1). A=11.0 (J=1, 2 levels).

[3] Band(V): K$^{\pi}$=0^{+} band (5). Bandhead undetermined.

[4] Band(W): K$^{\pi}$=(3)$^{+}$ band (2).

[5] Band(X): K$^{\pi}$=(2)$^{+}$ (π 3/2[411])+(π 1/2[411]) band. A=10.3 (J=2, 3 levels).

[6] Band(Y): K$^{\pi}$=2^{-} band (2). A=12.1 (J=2, 3 levels).

[7] Band(Z): K$^{\pi}$=4^{+} band (2).

[8] Band(b): K$^{\pi}$=(3)$^{-}$ band (4). A=10.7 (J=3, 4 levels).

[9] Band(c): K$^{\pi}$=3^{-} band (5) ?. A=9.9 (J=3, 4 levels).

[!] Band(d): K$^{\pi}$=3^{-} band (6). A=9.3 (J=3, 4 levels).

Band(a): K$^{\pi}$=(5)$^{-}$ band (1).

[|] Band(f): K$^{\pi}$=(1^{+}) (π 3/2[411])-(π 1/2[411]) band. A=9.5 (J=1, 2 levels).

[/] Band(g): K$^{\pi}$=2^{+} band (5). A=9.9 (J=2, 3 levels).

[<] Band(e): K$^{\pi}$=(4)$^{+}$ band (3).

$\gamma(^{168}$Er)

E$_i$(level)	J$_i^\pi$	E$_\gamma$[†]	I$_\gamma$[‡]	E$_f$	J$_f^\pi$	Mult.[†]	δ[†]	α[f]	Comments
79.804	2$^+$	79.804 *1*	100	0.0	0$^+$	E2		7.04	B(E2)(W.u.)=213 *4*
264.0888	4$^+$	184.285 *1*	100	79.804	2$^+$	E2		0.331	B(E2)(W.u.)=319 *9*
548.7470	6$^+$	284.655 *2*	100	264.0888	4$^+$	E2		0.0811	B(E2)(W.u.)=424 *18*
821.1685	2$^+$	557.079 *3*	1.74[d] *8*	264.0888	4$^+$	E2[c]		0.01252	B(E2)(W.u.)=0.61 *4*
		741.356 *3*	100[d] *2*	79.804	2$^+$	E2+M1[b]	>25[b#]	0.00639 *9*	B(M1)(W.u.)<1.6×10^{-5}; B(E2)(W.u.)>8.0
		821.164 *5*	93.6[d] *4*	0.0	0$^+$	E2		0.00510 *8*	B(E2)(W.u.)=4.68 *16*
895.7947	3$^+$	74.626 *3*	0.04 *1*	821.1685	2$^+$	M1+E2	+1.42 *+4−5*	8.35 *13*	B(M1)(W.u.)=0.0018 *+5−7*; B(E2)(W.u.)=3.1×10^2 *+8−12* δ: sign from $\gamma\gamma(\theta)$ (1996Al31) in ε decay; magnitude from L1/L3 in (n,γ) E=thermal (1980Sc15).
		631.703 *3*	18.1[d] *2*	264.0888	4$^+$	M1+E2	−4.8[@] *2*	0.00965 *14*	B(M1)(W.u.)=0.000172 *+18−51*; B(E2)(W.u.)=4.6 *+3−14*
		815.990 *4*	100[d] *2*	79.804	2$^+$	M1+E2	+17.7[&] *23*	0.00518 *8*	B(M1)(W.u.)=3.4×10^{-5} *+9−13*; B(E2)(W.u.)=7.4 *+5−21*
928.3029	8$^+$	379.545 *3*	100	548.7470	6$^+$	E2		0.0346	B(E2)(W.u.)=354 *13*
994.7474	4$^+$	(98.95)		895.7947	3$^+$				B(E2)(W.u.)=505 *+122−40* B(E2)(W.u.): From measured B(E2) in Coulomb excitation. E$_\gamma$: from level energy difference. Existence implied in Coulomb excitation; possibly obscured in (n,γ) E=thermal by 99γ from 1193 level.
		173.577 *1*	0.80[d] *5*	821.1685	2$^+$	E2		0.406	B(E2)(W.u.)=92 *20*
		445.995 *4*	1.1[d] *1*	548.7470	6$^+$	[E2]		0.0222	B(E2)(W.u.)=1.13 *25*
		730.660 *2*	100[d] *2*	264.0888	4$^+$	M1+E2	+13 *+16−3*	0.00664 *10*	B(M1)(W.u.)=6.E−5 *+15−6*; B(E2)(W.u.)=8.6 *18* Mult.,δ: D+Q from $\gamma(\theta)$ in (n,n′γ); $\Delta\pi$ from ce data in (n,γ).
		914.944 *6*	59.1[d] *3*	79.804	2$^+$	E2		0.00404 *6*	B(E2)(W.u.)=1.7 *4*
1094.0383	4$^-$	99.289 *2*	7.77[d] *8*	994.7474	4$^+$	E1+M2[b]	−0.06[b] *5*	0.43 *23*	B(E1)(W.u.)=1.2×10^{-7} *3*; B(M2)(W.u.)=0.20 *+34−20*
		198.241 *1*	100[d] *2*	895.7947	3$^+$	E1+M2[b]	−0.12[b] *3*	0.084 *18*	B(E1)(W.u.)=1.94×10^{-7} *8*; B(M2)(W.u.)=0.33 *17*
		272.876 *2*	0.17[d] *1*	821.1685	2$^+$	M2		0.754	B(M2)(W.u.)=0.0079 *6*
		829.958 *7*	12.8[d] *1*	264.0888	4$^+$	E1+M2[b]	−0.05[b] *3*	0.00201 *10*	B(E1)(W.u.)=3.43×10^{-10} *10*; B(M2)(W.u.)=6×10^{-6} *+7−6*
		1014.11 *4*	0.135[d] *5*	79.804	2$^+$	M2+E3[b]	−0.55[b] *2*	0.01304 *21*	B(M2)(W.u.)=6.8×10^{-6} *4*; B(E3)(W.u.)=0.00142 *11*
1117.5703	5$^+$	122.821 *1*	0.38 *6*	994.7474	4$^+$	M1+E2	1.57 *+7−9*	1.434 *21*	B(M1)(W.u.)=0.0044 *+9−17*; B(E2)(W.u.)=3.4×10^2 *+7−13*
		221.775 *2*	3.6 *3*	895.7947	3$^+$	E2		0.179	B(E2)(W.u.)=2.4×10^2 *+4−9*
		568.821 *6*	16.2 *8*	548.7470	6$^+$	E2+M1	3.6 *3*	0.01284 *25*	B(M1)(W.u.)=0.00047 *+10−18*; B(E2)(W.u.)=8.9 *+11−31*
		853.473 *6*	100 *9*	264.0888	4$^+$	M1+E2	3.6 *+24−8*	0.00500 *21*	B(M1)(W.u.)=0.0009 *+11−9*; B(E2)(W.u.)=7.2 *+13−27*
1193.0251	5$^-$	75.466 *7*	0.28 *8*	1117.5703	5$^+$	E1		0.682	B(E1)(W.u.)=4.4×10^{-7} *15* Mult.: from α(K)exp in ε decay.
		98.982 *2*	100 *15*	1094.0383	4$^-$	E2		3.06	B(E2)(W.u.)=330 *80* E$_\gamma$,I$_\gamma$: possibly includes contribution from an expected γ from 995 level.

$^{168}_{68}$Er$_{100}$-18

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f	Mult.†	δ†	α[f]	Comments
1193.0251	5−	644.277 *5*	11.0 *13*	548.7470	6+	E1		0.00324 *5*	B(E1)(W.u.)=2.8×10^{-8} *6* Other Iγ: 8.2 *14* in ε decay.
		928.935 *5*	53.0 *20*	264.0888	4+	E1		1.57×10^{-3}	B(E1)(W.u.)=4.5×10^{-8} *8* Other Iγ: 41.8 *11* in ε decay, 40 *5* in β$^-$ decay.
1217.169	0+	1137.357 *16*	100	79.804	2+	E2		0.00259 *4*	
		1217.1		0.0	0+	E0			Eγ,Mult.: from ε decay.
1263.9047	6+	146.331 *7*	0.78 *16*	1117.5703	5+	M1+E2	1.9 *+4−3*	0.784 *19*	B(M1)(W.u.)=0.0019 *8*; B(E2)(W.u.)=1.5×10^2 *4*
		269.161 *2*	17.8 *13*	994.7474	4+	E2		0.0964	B(E2)(W.u.)=202 *22*
		335.589 *3*	0.77 *14*	928.3029	8+	[E2]		0.0494	B(E2)(W.u.)=2.9 *6*
		715.163 *6*	100 *4*	548.7470	6+	M1+E2	3.0 *+16−6*	0.00720 *19*	B(M1)(W.u.)=0.0009 *9*; B(E2)(W.u.)=7.7 *11* Other δ: −1.7 *+3−9* or −50 *+150−20* from (n,n′γ).
		999.827 *11*	54 *3*	264.0888	4+	E2		0.00336 *5*	B(E2)(W.u.)=0.87 *9*
1276.2716	2+	(59.17)	0.15 *8*	1217.169	0+	[E2]		24.4	Eγ,Iγ: Eγ from level energy difference. Unobserved γ needed for intensity balance at the 1217 level in ε decay.
		380.479 *5*	2.7 *6*	895.7947	3+				
		455.096 *3*	5.4 *8*	821.1685	2+				
		1012.190 *10*	100 *4*	264.0888	4+	E2		0.00328 *5*	B(E2)(W.u.)=2.2 *+8−22*
		1196.513 *20*	57 *3*	79.804	2+	M1+E2(+E0)	−5.0 *+19−26*		B(M1)(W.u.)=0.0016 *+6−16* Other Iγ: 38 *10* from β$^-$ decay. Mult.,δ: D+Q with δ=−5.0 *+19−26* from (n,n′γ). α(K)exp in (n,γ) and ε decay is consistent with pure M1 but allows small E0 component; 1999Wo07 estimate ρ^2=0.8×10^{-3} *8*.
		1276.27 *3*	54 *7*	0.0	0+	E2		0.00208 *3*	B(E2)(W.u.)=0.37 *+14−37*
1311.4606	6−	118.437 *1*	27.8 *13*	1193.0251	5−	E2		1.568	Iγ: weighted average of 28.7 *19* from ^{170}Er(^{136}Xe,Xγ), 28.2 *22* from 1991DaZT in (n,γ) E=thermal and 25 *3* from (n,n′γ). Other: 20.6 *8* (2007ChZX, Budapest data) in (n,γ) E=thermal.
		193.888 *1*	1.8 *3*	1117.5703	5+				
		217.422 *1*	100 *4*	1094.0383	4−	E2		0.191	
		762.75 *4*	0.50 *17*	548.7470	6+				
1358.899	1−	537.76 *6*	0.88 *18*	821.1685	2+				Eγ,Iγ: from ε decay.
		1279.100 *23*	100[d] *6*	79.804	2+	E1			Eγ,Iγ: from ε decay.
		1358.904 *14*	28.8 *15*	0.0	0+				Eγ,Iγ: from ε decay.
1396.826	10+	468.529 *5*	100	928.3029	8+	[E2]		0.0195	B(E2)(W.u.)=308 *13*

$^{168}_{68}$Er$_{100}$-19

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[‡]	E_f	J^{π}_f	Mult.[†]	δ[†]	α[f]	Comments
1403.7357	$(2)^-$	507.936 3	3.2 4	895.7947	3^+				
		582.567 3	31.9 20	821.1685	2^+	E1		0.00401 6	
		1323.913 20	100 4	79.804	2^+	E1			δ(D,Q)=+0.05 +11−6 from (n,n′γ).
1411.0959	4^+	134.824 1	5.8 13	1276.2716	2^+				
		293.523 2	1.05 21	1117.5703	5^+	M1+E2	1.4 +14−5	0.097 16	B(M1)(W.u.)<0.0030; B(E2)(W.u.)<23
		416.352 4	14.1 11	994.7474	4^+	M1+E2	1.7 +11−5	0.034 5	B(M1)(W.u.)<0.0089; B(E2)(W.u.)<47
		515.303 2	19.7 23	895.7947	3^+	E2		0.01522	B(E2)(W.u.)<23
		589.913 8	3.2 5	821.1685	2^+	E2		0.01088	B(E2)(W.u.)<1.9
		862.355 11	81 4	548.7470	6^+	E2		0.00459 7	B(E2)(W.u.)<7.2
		1146.998 9	67 4	264.0888	4^+	M1		0.00443 7	B(M1)(W.u.)<0.0040
		1331.324 15	100 8	79.804	2^+	E2		0.00193 3	B(E2)(W.u.)<1.0
1422.12	0^+	205.1		1217.169	0^+	E0			E_γ,Mult.: from ε decay.
		1342.44 7	100	79.804	2^+	E2		0.00190 3	
		1422.2		0.0	0^+	E0			E_γ,Mult.: from ε decay.
1431.466	3^-	535.642[g] 21	<0.41[g]	895.7947	3^+	[E1]		0.00480 7	B(E1)(W.u.)=3.62×10^{-8}
		1167.396 15	100 8	264.0888	4^+	E1		1.04×10^{-3}	B(E1)(W.u.)=1.70×10^{-6}
		1351.54 4	99 4	79.804	2^+	E1		8.93×10^{-4}	B(E1)(W.u.)=1.09×10^{-6}
		1431.7[d] 4	0.50[d] 18	0.0	0^+	[E3]		0.00328 5	B(E3)(W.u.)=3.58 B(E3)(W.u.)=3.7 5 from measured B(E3)=0.043 6 in Coulomb excitation (1978Mc02).
1432.9508	7^+	169.043 3	1.07 21	1263.9047	6^+	M1+E2	1.5 +4−2	0.505 20	B(E2)(W.u.)=198 +87−183 δ: estimate from (n,γ) E=thermal based on Alaga rule. B(E2)↓: From measured B(E2) in Coulomb excitation.
		315.383 3	37.2 24	1117.5703	5^+	E2		0.0594	B(E2)(W.u.)=380 +14−176 B(E2)↓: From measured B(E2) in Coulomb excitation.
		504.644 4	14.1 17	928.3029	8^+	M1+E2	<0.22	0.0337 7	B(E2)(W.u.)=17 +14−7 Mult.,δ: α(K)exp in (n,γ) E=thermal implies δ<0.22, but measured B(E2) requires nonzero E2 component. B(E2)↓: From measured B(E2) in Coulomb excitation.
		884.219 9	100 10	548.7470	6^+	M1+E2	1.3 +8−4	0.0058 8	B(E2)(W.u.)=12 +7−5 B(E2)↓: From measured B(E2) in Coulomb excitation.
1448.9555	7^-	137.494 1	14.0 22	1311.4606	6^-	E2		0.916	I_γ: unweighted average of 11.5 14 from 1991DaZT in (n,γ) E=thermal and 16.1 13 from ^{170}Er(^{136}Xe,Xγ). Other Iγ: 16.2 25 (2007ChZX) from (n,γ) E=thermal for probable doublet.

$^{168}_{68}Er_{100}$-20

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	δ[†]	α[f]	Comments
1448.9555	7⁻	185.056 5	0.72 16	1263.9047	6⁺				
		255.929 1	100 4	1193.0251	5⁻	E2		0.1130	
		520.667 9	1.6 3	928.3029	8⁺				
		900.206 15	13.5 18	548.7470	6⁺				
1493.133	2⁺	70.9		1422.12	0⁺	(E2)		11.35	E_γ,Mult.: from L2/L3 in ε decay.
		498.46 6	1.4 5	994.7474	4⁺				
		597.327 7	5.5 10	895.7947	3⁺				
		671.961 9	6.7 12	821.1685	2⁺				
		1229.080 15	100 7	264.0888	4⁺	E2		0.00223 4	
		1413.317 23	84 6	79.804	2⁺	M1+E2	+0.7 4	0.00241 25	Mult.,δ: α(K)exp consistent with M1 in (n,γ); D+Q from (n,n′γ) with δ=+0.7 4.
		1493.09 8	22 4	0.0	0⁺	E2		1.59×10^{-3}	
1541.5564	3⁻	110.2[i]		1431.466	3⁻	M1(+E2)		2.10 7	E_γ,Mult.: from ε decay.
		348.523 2	1.48[d] 3	1193.0251	5⁻	E2		0.0442	B(E2)(W.u.)=2.02
		447.515 3	100[d] 2	1094.0383	4⁻	M1+E2[b]	−0.09[b] 1	0.0463	B(M1)(W.u.)=0.0167; B(E2)(W.u.)=0.31 7
		546.802 5	11.1[d] 2	994.7474	4⁺	E1(+M2)[b]	+0.007[b] 23	0.00460 10	B(E1)(W.u.)=1.03×10^{-5}; B(M2)(W.u.)=0.008 +51−8
		645.775 15	6.26[d] 6	895.7947	3⁺	E1		0.00323 5	B(E1)(W.u.)=3.53×10^{-6} Other Iγ: 8.2 11 from β^- decay, 17 3 from (n,γ) E=thermal.
		720.392 5	51.0[d] 5	821.1685	2⁺	E1+M2[b]	−0.012[b] 10	0.00259 4	B(E1)(W.u.)=2.07×10^{-5}; B(M2)(W.u.)=0.03 +5−3
		1277.451[d] 5	7.04[d] 7	264.0888	4⁺	E1+M2[b]	−0.040[b] 18	9.47×10^{-4} 19	B(E1)(W.u.)=5.1×10^{-7}; B(M2)(W.u.)=0.0023 21
		1461.750[d] 4	1.03[d] 1	79.804	2⁺	[E1]		8.66×10^{-4} 13	B(E1)(W.u.)=5.0×10^{-8}
		1541.46 25	0.0096[d] 5	0.0	0⁺	[E3]		0.00282 4	B(E3)(W.u.)=0.230
1541.7094	(4)⁻	110.245 4	0.31 6	1431.466	3⁻				
		137.974 4	1.6 3	1403.7357	(2)⁻	E2		0.904	
		546.960 5	28 6	994.7474	4⁺	[E1]			
		645.939 11	17 3	895.7947	3⁺	[E1]			
		1277.592 20	100 13	264.0888	4⁺	E1		9.35×10^{-4} 13	
1569.4527	(2)⁻	27.80		1541.5564	3⁻	M1,E2		5×10^{2} 5	E_γ,Mult.: from ε decay.
		165.3		1403.7357	(2)⁻	M1(+E2)		0.58 11	E_γ,Mult.: from ε decay.
		673.666 4	38[d] 2	895.7947	3⁺	E1		0.00296 5	B(E1)(W.u.)=0.00046 +9−13
		748.281 4	100[d] 2	821.1685	2⁺	E1		0.00239 4	B(E1)(W.u.)=0.00089 +17−23
		1489.66[d] 3	0.50[d] 3	79.804	2⁺				
		1569.5[d] 4	0.005[d] 2	0.0	0⁺	[M2]			B(M2)(W.u.)=0.009 +4−5
1574.117	5⁻	1025.377 11	58 4	548.7470	6⁺	E1		1.31×10^{-3}	

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Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	δ[†]	α[f]	Comments
1574.117	5^-	1310.030 *8*	100 *4*	264.0888	4^+	E1		9.14×10^{-4} *13*	
1605.8503	8^-	156.884 *4*	7.1 *8*	1448.9555	7^-				I_γ: weighted average of 7.4 *9* from $^{170}Er(^{136}Xe,X\gamma)$ and 4.9 *24* from (n,γ) E=thermal.
		294.390 *2*	100	1311.4606	6^-	E2		0.0731	
1615.3420	4^-	73.784 *3*	3.6 *8*	1541.5564	3^-	M1+E2	0.11 *+3−2*	6.87	
		303.878 *4*	0.93 *15*	1311.4606	6^-				
		422.318 *4*	100 *4*	1193.0251	5^-	M1		0.0540	
		497.768 *6*	17.9 *23*	1117.5703	5^+	E1		0.00564 *8*	
		521.303 *3*	13.9 *19*	1094.0383	4^-	M1+E2	1.1 *+9−5*	0.022 *5*	
		620.590 *17*	3.6 *5*	994.7474	4^+				
		719.550 *5*	72 *8*	895.7947	3^+	E1+M2	−0.007 *4*	0.00259 *4*	δ: from $\gamma\gamma(\theta)$ in ε decay.
		1351.2[d]	≈3.9[d]	264.0888	4^+				
1616.8060	6^+	205.710 *1*	27 *4*	1411.0959	4^+	E2		0.229	
		352.900 *3*	7.7 *9*	1263.9047	6^+	M1+E2		0.065 *22*	
		499.233 *3*	15.2 *18*	1117.5703	5^+	M1+E2	1.0 *+9−5*	0.026 *6*	B(M1)(W.u.)<0.0072; B(E2)(W.u.)<13
		622.059 *5*	7.0 *9*	994.7474	4^+	E2		0.00958 *14*	B(E2)(W.u.)<2.2
		688.538 *20*	8.0 *23*	928.3029	8^+	[E2]			B(E2)(W.u.)<1.5
		1068.079 *13*	100 *16*	548.7470	6^+	M1		0.00526 *8*	B(M1)(W.u.)<0.0050
		1352.53 *13*	≈38	264.0888	4^+	E2		0.00187 *3*	B(E2)(W.u.)<0.24 I_γ: estimate from $I\gamma(1351.2\gamma)/I\gamma(422.3\gamma)$ for 1615.3 level in ^{168}Tm ε decay and $I\gamma(1352.5\gamma)/I\gamma(1068.1\gamma)$ for 1616.8 level in $^{167}Er(n,\gamma)$ E=thermal.
1624.507	8^+	191.555 *10*	1.4 *7*	1432.9508	7^+	[M1,E2]		0.37 *9*	B(E2)(W.u.)=27 *+15−27* B(E2)(W.u.) from measured B(E2) in Coulomb excitation.
		227.705 *10*	3.9 *10*	1396.826	10^+	[E2]		0.1643	B(E2)(W.u.)=120 *50* Other B(E2)(W.u.): 1.7 *+7−17* from measured B(E2) in Coulomb excitation.
		360.599 *4*	24 *5*	1263.9047	6^+	E2		0.0401	B(E2)(W.u.)=70 *30*
		696.132 *28*	32 *10*	928.3029	8^+	[M1,E2]		0.011 *4*	B(E2)(W.u.)=7.0 *+5−9* B(E2)(W.u.) from measured B(E2) in Coulomb excitation.
		1075.64 *8*	100 *31*	548.7470	6^+	[E2]		0.00290 *4*	B(E2)(W.u.)=1.3 *6* Other B(E2)(W.u.): 0.43 *+4−3* from measured B(E2) in Coulomb excitation.
1629.698	$4^-,5^-,6^-$	436.672 *5*	100 *22*	1193.0251	5^-	M1		0.0495	
		535.642[g] *21*	<30[g]	1094.0383	4^-				
1633.4627	3^-	64.0		1569.4527	$(2)^-$	(E2)		17.36	E_γ: from ε decay. Mult.: from L2/L3 in ε decay.

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
1633.4627	3^-	638.710 *8*	79 *9*	994.7474	4^+	E1	0.00330 *5*	B(E1)(W.u.)=0.00072 +*19*−*25*
		737.686 *4*	100 *5*	895.7947	3^+	E1	0.00246 *4*	B(E1)(W.u.)=0.00059 +*15*−*19*
		812.287 *11*	89 *11*	821.1685	2^+			
		1553.5[d] *7*	0.4[d] *2*	79.804	2^+			
		(1633.46)		0.0	0^+			B(E3)↓=4.3 *9* B(E3)↓: From measured B(E3)=0.050 *10* in Coulomb excitation.
1653.5486	3^+	84.096 *3*	0.69 *19*	1569.4527	$(2)^-$	E1	0.514	
		111.985 *13*	0.070 *25*	1541.5564	3^-			
		249.809 *3*	0.26 *5*	1403.7357	$(2)^-$			
		559.510 *4*	100 *4*	1094.0383	4^-	E1	0.00437	
		757.84 *3*	0.94 *25*	895.7947	3^+	M1	0.01220	
		832.36 *4*	10.1 *19*	821.1685	2^+			
1656.274	$(4)^+$	163.137[g] *2*	<1.06[g]	1493.133	2^+			
		538.68[g] *3*	<1.9[g]	1117.5703	5^+			Mult.: E2 from α(K)exp in (n,γ) E=thermal for doubly-placed γ.
		661.523 *7*	2.8 *5*	994.7474	4^+	M1	0.01713	
		760.54 *9*	1.4 *3*	895.7947	3^+			
		835.14 *3*	2.3 *9*	821.1685	2^+			
		1107.495 *19*	37 *3*	548.7470	6^+	E2	0.00273 *4*	
		1392.209 *13*	100 *5*	264.0888	4^+	M1	0.00283 *4*	
		1576.58[g] *8*	<11.3[g]	79.804	2^+			
1707.9929	5^-	92.652 *1*	14.0 *21*	1615.3420	4^-	M1	3.54	
		166.434 *1*	3.1 *6*	1541.5564	3^-			
		259.034 *5*	0.50 *10*	1448.9555	7^-			
		396.530 *3*	100 *6*	1311.4606	6^-	M1	0.0637	
		444.086 *4*	11.5 *17*	1263.9047	6^+			
		514.970 *2*	18.1 *19*	1193.0251	5^-			
		590.415 *12*	3.1 *6*	1117.5703	5^+			
		613.951 *4*	16.0 *25*	1094.0383	4^-	M1	0.0207	
		713.257 *6*	95 *5*	994.7474	4^+	E1	0.00263 *4*	
1719.1786	4^-	601.603 *5*	56 *5*	1117.5703	5^+	E1	0.00374 *6*	
		724.432 *5*	38 *3*	994.7474	4^+	E1	0.00255 *4*	
		823.386 *8*	100 *7*	895.7947	3^+	E1	0.00198 *3*	
1736.6881	4^+	83.138 *2*	1.6 *3*	1653.5486	3^+	E2	5.99	
		103.228 *4*	0.89 *22*	1633.4627	3^-			
		194.992 *8*	0.09 *3*	1541.7094	$(4)^-$			
		305.219 *5*	0.46 *6*	1431.466	3^-			
		543.667 *7*	100 *4*	1193.0251	5^-	E1	0.00465 *7*	
		642.629 *20*	2.0 *6*	1094.0383	4^-			
		741.0 *16*		994.7474	4^+			
		840.890 *8*	1.11 *22*	895.7947	3^+	E2	0.00484 *7*	
		1472.81 *11*	6.7 *15*	264.0888	4^+			

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	δ[†]	α[f]	Comments
1736.6881	4+	1656.84[g] 9	<7.4[g]	79.804	2+				
1760.760	(6)−	186.644 3	1.5 3	1574.117	5−				
		219.050 2	17.4 23	1541.7094	(4)−				
		496.858 4	11.9 16	1263.9047	6+				
		643.181 8	37 4	1117.5703	5+	E1		0.00325 5	
		1212.045 20	100 13	548.7470	6+	E1		9.92×10^{-4} 14	
1773.205	(6)−	324.256 14	1.39 21	1448.9555	7−				
		461.739 3	33 5	1311.4606	6−	M1		0.0429	
		580.176 4	100 6	1193.0251	5−	M1		0.0239	
		679.180 5	73 7	1094.0383	4−				
1780.00	9−	173.9 2	<10	1605.8503	8−				E_γ,I_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
		331.3 2	100	1448.9555	7−				E_γ,I_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
1786.123	1−	1706.37 8	100 14	79.804	2+	E1		8.86×10^{-4} 13	B(E1)(W.u.)=0.0091 20
		1786.20 8	41 9	0.0	0+	E1		9.06×10^{-4} 13	B(E1)(W.u.)=0.0032 9
1795.325	(7−)	867.014 11	88 12	928.3029	8+				
		1246.70 5	100 29	548.7470	6+				
1812.5	(2+,3,4+)	817.7[e]		994.7474	4+				
		916.7[e]		895.7947	3+				
		991.3[e]		821.1685	2+				
1820.1321	6−	112.139 1	28 3	1707.9929	5−	M1+E2		1.98 8	
		204.790 1	11 3	1615.3420	4−				
		371.173 3	100 8	1448.9555	7−	M1		0.0757	
		387.191 6	7.5 17	1432.9508	7+				
		508.679 5	13.9 23	1311.4606	6−				
		627.104 6	32 5	1193.0251	5−				
		702.576 6	50 8	1117.5703	5+	E1		0.00271 4	
		726.16 4	4.1 12	1094.0383	4−				
1820.476	5−	187.01 3	0.27 7	1633.4627	3−				
		556.571 4	40 7	1263.9047	6+	E1		0.00442 7	
		702.914 6	21.3 25	1117.5703	5+				
		825.729 7	100 8	994.7474	4+	E1		0.00197 3	
1828.0639	3−	212.720 2	2.4 4	1615.3420	4−	M1		0.339	B(M1)(W.u.)=0.030 +9−13
		286.509 4	21.2 17	1541.5564	3−	M1		0.1509	B(M1)(W.u.)=0.11 +3−5
		424.329[g] 4	<7.9[g]	1403.7357	(2)−				
		469.168 5	13.2 13	1358.899	1−	E2		0.0194	B(E2)(W.u.)=32 +9−13
		833.294 9	59 9	994.7474	4+	E1		0.00193 3	B(E1)(W.u.)=0.00012 +4−6
		932.269 9	100 5	895.7947	3+	E1		1.56×10^{-3} 2	B(E1)(W.u.)=0.00015 +4−6
		1006.91 3	22 4	821.1685	2+	E1		1.35×10^{-3} 2	B(E1)(W.u.)=2.6×10^{-5} +8−12
1833.54	0+	1753.73 11	100	79.804	2+	E2		1.30×10^{-3} 2	
1839.3474	5+	102.659 1	3.8 7	1736.6881	4+	M1+E2	1.3 +10−5	2.65	

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f	Mult.†	δ†	α[f]	Comments
1839.3474	5+	120.170 *8*	1.28 *20*	1719.1786	4−				
		185.797 *2*	4.5 *8*	1653.5486	3+	E2		0.322	
		265.233 *6*	0.22 *7*	1574.117	5−				
		297.640 *3*	0.83 *15*	1541.7094	(4)−				
		527.884 *3*	100 *5*	1311.4606	6−	E1		0.00496 *7*	
		721.71 *3*	4.7 *13*	1117.5703	5+				
		745.293 *10*	9.8 *15*	1094.0383	4−				
		844.614 *15*	11.0 *12*	994.7474	4+	M1		0.00933 *13*	
		1575.11 *17*	8 *3*	264.0888	4+				
1848.354	2+	194.821 *7*	0.62 *17*	1653.5486	3+				
		214.865 *17*	0.67 *17*	1633.4627	3−				
		278.860 *23*	0.88 *21*	1569.4527	(2)−				
		355.215 *8*	2.0 *3*	1493.133	2+				
		572.068 *14*	4.6 *13*	1276.2716	2+				
		952.611 *15*	29 *6*	895.7947	3+	M1+E2	0.8 *+9−6*	0.0057 *12*	
		1027.11 *7*	17 *3*	821.1685	2+				
		1768.49 *7*	92 *13*	79.804	2+	E2		1.29×10^{-3} *2*	
		1848.31 *7*	100 *21*	0.0	0+	E2		1.24×10^{-3} *2*	
1881.82		688.79[g] *3*	100[g]	1193.0251	5−				
1892.9346	(4)−	277.589 *3*	0.49 *9*	1615.3420	4−				
		699.921 *6*	7.9 *9*	1193.0251	5−	M1		0.01487	B(M1)(W.u.)=0.026 *4*
		775.378 *13*	1.4 *5*	1117.5703	5+				
		798.890 *7*	100 *4*	1094.0383	4−	M1		0.01070	B(M1)(W.u.)=0.220 *+23−25*
1893.100	2+	616.827 *5*	26 *5*	1276.2716	2+	M1		0.0204	
		675.96 *3*	3.2 *7*	1217.169	0+	E2		0.00788 *11*	
		997.24 *3*	13.6 *23*	895.7947	3+	E2		0.00338 *5*	
		1071.74 *13*	5.5 *16*	821.1685	2+				
		1813.29 *5*	100 *10*	79.804	2+	M1		1.74×10^{-3} *3*	
1896.379	(7)−	123.174 *1*	100	1773.205	(6)−	M1+E2	0.25 *2*	1.556	
1902.696	(6+)	246.422 *4*	33 *5*	1656.274	(4)+				
		974.42 *4*	100 *22*	928.3029	8+				
		1353.7[i] *3*		548.7470	6+				Eγ and placement from (n,n′γ).
1905.0922	(4)−	289.72 *3*	0.14 *3*	1615.3420	4−				
		363.540 *6*	0.31 *7*	1541.5564	3−				
		712.079 *7*	6.0 *10*	1193.0251	5−	M1		0.01425	
		811.043 *8*	100 *8*	1094.0383	4−	M1		0.01031	
1913.92	3−	1018.33 *17*	5.0 *14*	895.7947	3+				
		1649.77 *6*	100 *12*	264.0888	4+	E1		8.75×10^{-4} *13*	B(E1)(W.u.)>0.0022
		1834.05 *9*	95 *19*	79.804	2+	E1		9.21×10^{-4} *13*	B(E1)(W.u.)>0.0016
1915.502	(3)+	178.829 *23*	0.34 *9*	1736.6881	4+				
		282.043 *4*	0.43 *13*	1633.4627	3−				

$^{168}_{68}$Er$_{100}$-25

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f	Mult.†	δ†	α[f]	Comments
1915.502	(3)+	346.054 10	0.94 21	1569.4527	(2)−				
		797.94 10	4.3 13	1117.5703	5+				
		920.78 4	21 9	994.7474	4+	E2		0.00399 6	
		1019.57 7	11.3 17	895.7947	3+				
		1094.43 10	>23	821.1685	2+				I_γ: from $I\gamma$=27 4 relative to 1835γ doublet in (n,γ) E=thermal.
		1651.37 21	14.7 22	264.0888	4+	[M1]		0.00202 3	E_γ,I_γ: from β^- decay.
		1835.4 5	100 4	79.804	2+			1.24×10^{-3}	E_γ,I_γ: from β^- decay. Mult.: E2 from α(K)exp in (n,γ) E=thermal for doubly-placed γ.
1930.391	2+	276.843 3	2.5 6	1653.5486	3+				
		1034.49 4	19 4	895.7947	3+	E2		0.00314	
		1109.36 8	16 5	821.1685	2+				
		1850.46 10	100 13	79.804	2+	E2		1.23×10^{-3}	
		1930.49 12	69 8	0.0	0+	E2		1.20×10^{-3}	
1936.596	1−	150.480 10	0.30 10	1786.123	1−				
		577.690 9	1.7 5	1358.899	1−				
		1936.40 13	100 10	0.0	0+	E1		9.56×10^{-4} 14	B(E1)(W.u.)=0.000125 24
1947.3	12+	551.1[a] 7	100	1396.826	10+	[E2]		0.01309	B(E2)(W.u.)=345 18 E_γ: from level-energy difference. $E\gamma$=547.1 5 reported in Coulomb excitation.
1949.636	(6)−	230.461 4	0.90 25	1719.1786	4−				
		516.683 2	37 5	1432.9508	7+				
		685.760 15	14.0 25	1263.9047	6+				
		832.05 4	100 20	1117.5703	5+				
1950.8067	7−	130.675 1	26 5	1820.1321	6−	M1		1.326	
		242.811 3	21 5	1707.9929	5−				
		344.954 3	58 11	1605.8503	8−	M1+E2	1.9 +22−6	0.056 8	
		639.24 4	100 24	1311.4606	6−				
1961.3992	6+	122.049 2	7.2 14	1839.3474	5+				
		140.929 6	1.2 4	1820.476	5−				
		224.712 1	20 3	1736.6881	4+				
		336.881 14	3.5 6	1624.507	8+				
		512.441 2	100 12	1448.9555	7−				
		768.368 11	36 7	1193.0251	5−				
		843.83 5	9 4	1117.5703	5+				
1972.314	(2)−	430.731 20	0.44 15	1541.5564	3−				
		1076.524 23	52 11	895.7947	3+	E1		1.19×10^{-3}	B(E1)(W.u.)=0.00040 +16−27
		1151.19 4	24 7	821.1685	2+				
		1892.63 9	100 11	79.804	2+				
1975.75	10−	369.9 2	100	1605.8503	8−				E_γ: from $^{170}Er(^{136}Xe,X\gamma)$.

$\gamma(^{168}$Er) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[†]	α[f]	Comments
1983.0398	5⁻	90.104[g] *5*	<0.60[g]	1892.9346	(4)⁻			
		275.046 *3*	0.90 *15*	1707.9929	5⁻			
		671.589 *8*	12.9 *17*	1311.4606	6⁻	M1	0.01649	B(M1)(W.u.)=0.025 *+6−8*
		719.17 *10*	2.6 *13*	1263.9047	6⁺			
		790.001 *5*	100 *5*	1193.0251	5⁻	M1	0.01100	B(M1)(W.u.)=0.117 *+22−34*
		889.006 *10*	13.5 *26*	1094.0383	4⁻	M1	0.00822 *12*	B(M1)(W.u.)=0.011 *+3−4*
1994.821	(3)⁺	146.472 *5*	1.29 *24*	1848.354	2⁺			
		258.130 *3*	2.2 *6*	1736.6881	4⁺			
		338.547 *17*	1.21 *24*	1656.274	(4)⁺			
		718.57 *8*	3.5 *15*	1276.2716	2⁺			
		1730.89 *7*	62 *9*	264.0888	4⁺	E2	0.00132 *2*	
		1914.97 *8*	100 *9*	79.804	2⁺	E2	0.00120 *2*	
1999.2239	(3)⁻	171.158 *2*	1.3 *3*	1828.0639	3⁻	[M1,E2]	0.52 *10*	
		280.048 *6*	1.17 *22*	1719.1786	4⁻	[M1,E2]	0.12 *4*	
		345.669 *7*	0.95 *16*	1653.5486	3⁺	[E1]	0.01312	B(E1)(W.u.)=6.2×10^{-8} *+16−20*
		365.763 *2*	14.5 *13*	1633.4627	3⁻	M1	0.0787	B(M1)(W.u.)=8.0×10^{-5} *+17−23* I_γ: weighted average from β^- decay and (n,γ) E=thermal.
		383.875 *6*	16.5 *13*	1615.3420	4⁻	M1	0.0693	B(M1)(W.u.)=7.8×10^{-5} *+16−23* I_γ: weighted average from β^- decay and (n,γ) E=thermal.
		429.779 *5*	42 *3*	1569.4527	(2)⁻	M1	0.0516	B(M1)(W.u.)=0.00014 *+3−4* I_γ: weighted average from β^- decay and (n,γ) E=thermal.
		457.664 *5*	100.0 *26*	1541.5564	3⁻	M1	0.0438	B(M1)(W.u.)=0.00028 *+6−8* I_γ: weighted average from β^- decay and (n,γ) E=thermal.
2001.953	5⁻	690.494 *6*	11.3 *23*	1311.4606	6⁻	M1	0.01539	
		808.910 *13*	100 *9*	1193.0251	5⁻	M1	0.01038	
		907.927 *25*	19.4 *25*	1094.0383	4⁻	M1	0.00781 *11*	
2002.465	(4)⁺	163.137[g] *2*	<2.8[g]	1839.3474	5⁺			
		346.197 *8*	1.7 *3*	1656.274	(4)⁺			
		348.94[g] *3*	<2.0[g]	1653.5486	3⁺			
		369.006 *8*	2.7 *6*	1633.4627	3⁻			
		591.402 *20*	6.1 *9*	1411.0959	4⁺			
		1007.57 *6*	23 *5*	994.7474	4⁺	M1	0.00606 *9*	
		1106.65 *5*	21 *6*	895.7947	3⁺			
		1738.34 *6*	100 *12*	264.0888	4⁺	E2	0.00131 *2*	
		1922.64 *9*	82 *15*	79.804	2⁺	(E2)	0.00120 *2*	
2022.358	(3)⁻	236.216 *18*	0.23 *8*	1786.123	1⁻			
		480.619[g] *5*	5.8[g] *8*	1541.7094	(4)⁻			
		1758.47 *8*	31 *4*	264.0888	4⁺			
		1942.69 *8*	100 *7*	79.804	2⁺	E1	9.58×10^{-4}	B(E1)(W.u.)=0.00021 *+6−8*
2031.097	(4)⁺	619.990 *8*	55 *7*	1411.0959	4⁺	M1	0.0202	
		1036.38 *6*	8 *3*	994.7474	4⁺	E2	0.00312 *5*	

$^{168}_{68}$Er$_{100}$-27

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
2031.097	(4)+	1135.39 7	5.0 21	895.7947	3+			
		1766.99 5	100 12	264.0888	4+	M1	0.00180 3	
		1950.94 15	14 5	79.804	2+			
2038.66	(8−)	142.3 2	100	1896.379	(7)−			E_γ,I_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
		(265.4)	<25	1773.205	(6)−			E_γ: rounded value from level energy difference; γ expected but not observed. I_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
2055.914	(4)+	792.11[g] 6	<8.6[g]	1263.9047	6+	[E2]	0.00551 8	B(E2)(W.u.)=1.5 +17−15
		862.98 6	26 7	1193.0251	5−	[E1]	0.00181 3	B(E1)(W.u.)=9×10^{-5} 6
		938.22[g] 5	<6.0[g]	1117.5703	5+	[M1,E2]	0.0055 17	
		961.875 8	100 9	1094.0383	4−	E1	0.00147 2	B(E1)(W.u.)=0.00026 14
		1061.13 5	23 5	994.7474	4+	[M1,E2]	0.0042 12	
		1160.077 20	46 10	895.7947	3+	E2	0.00249 4	B(E2)(W.u.)=2.4 13
		1234.760 23	93 8	821.1685	2+	E2	0.00221 3	B(E2)(W.u.)=3.5 18
2059.9751	(4)−	154.884 2	4.2 9	1905.0922	(4)−	E2	0.602	
		167.040 1	5.1 7	1892.9346	(4)−	M1	0.664	
		231.911 1	3.5 7	1828.0639	3−			
		351.970 7	1.14 18	1707.9929	5−	M1	0.0871	
		444.638 5	4.6 9	1615.3420	4−			
		518.405 9	2.3 5	1541.5564	3−			
		965.937 6	100 5	1094.0383	4−	M1	0.00671 10	
2070.0	10+	445.5[a]	100	1624.507	8+	[E2]	0.0223	B(E2)(W.u.)=225 +44−13 B(E2)↓: From measured B(E2) in Coulomb excitation.
2080.457	(4)+	150.083 18	0.21 8	1930.391	2+			
		241.109 2	1.8 3	1839.3474	5+			
		669.34 4	8.3 17	1411.0959	4+			
		986.40 4	25 5	1094.0383	4−			
		1259.27 5	52 10	821.1685	2+	E2	0.00213 3	
		1816.34 6	100 11	264.0888	4+	M1	0.00173 3	
		2000.56 15	40 11	79.804	2+			
2089.348	4−	90.104[g] 5	<1.15[g]	1999.2239	(3)−			
		196.409 6	1.4 3	1892.9346	(4)−			
		268.880 7	2.0 3	1820.476	5−			
		370.170 6	26 4	1719.1786	4−	M1	0.0763	
		381.349 3	20 3	1707.9929	5−	M1	0.0705	
		455.899 8	35 4	1633.4627	3−			
		474.004 5	100 10	1615.3420	4−	M1	0.0400	
		547.805 7	75 12	1541.5564	3−	M1	0.0276	
		1825.0 16		264.0888	4+			
2091.272	(6)−	140.457 8	1.2 4	1950.8067	7−			
		642.324 18	17 5	1448.9555	7−			

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f	Mult.†	α[f]	Comments
2091.272	(6)$^-$	658.393 *24*	12 *3*	1432.9508	7$^+$			
		779.806 *6*	100 *14*	1311.4606	6$^-$			
		898.32 *3*	47 *8*	1193.0251	5$^-$	M1	0.00802 *12*	
		973.70 *3*	27 *6*	1117.5703	5$^+$			
2097.571	4$^-$	523.480 *18*	0.97 *18*	1574.117	5$^-$			
		555.866 *17*	2.1 *8*	1541.7094	(4)$^-$			
		666.10 *4*	2.1 *8*	1431.466	3$^-$			
		979.996 *6*	66 *9*	1117.5703	5$^+$	E1	0.00142 *2*	B(E1)(W.u.)=0.00029 *+8−10*
		1102.80 *5*	16 *4*	994.7474	4$^+$			
		1201.757 *21*	68 *8*	895.7947	3$^+$	E1	1.00×10^{-3}	B(E1)(W.u.)=0.00016 *+4−6*
		1833.43 *10*	100 *21*	264.0888	4$^+$			
2100.361	7$^+$	138.956 *8*	9 *3*	1961.3992	6$^+$			
		261.017 *3*	45 *12*	1839.3474	5$^+$			
		494.480 *10*	100 *17*	1605.8503	8$^-$			
2108.987	(5)$^+$	106.524 *3*	1.3 *4*	2002.465	(4)$^+$			
		147.583 *10*	0.28 *8*	1961.3992	6$^+$			
		193.502 *7*	1.5 *4*	1915.502	(3)$^+$			
		288.497 *11*	2.5 *5*	1820.476	5$^-$			
		389.804 *4*	1.8 *4*	1719.1786	4$^-$			
		991.388 *21*	35 *6*	1117.5703	5$^+$	E2	0.00342 *5*	
		1844.75 *7*	100 *12*	264.0888	4$^+$			
2118.791	(6)$^-$	669.835 *11*	12.0 *17*	1448.9555	7$^-$			
		807.30 *4*	100 *11*	1311.4606	6$^-$	M1	0.01043	
		925.762 *15*	29 *5*	1193.0251	5$^-$	M1	0.00745 *11*	
2122.428	(5,6,7)$^-$	226.048 *1*	100 *16*	1896.379	(7)$^-$			
		349.229 *3*	40 *8*	1773.205	(6)$^-$	M1	0.0890	
2125.424		471.874[g] *6*	100[g]	1653.5486	3$^+$			
2129.246	(5)$^-$	215.35 *3*	0.29 *9*	1913.92	3$^-$			
		865.329 *23*	19.3 *26*	1263.9047	6$^+$			
		1580.72[g] *8*	<117[g]	548.7470	6$^+$			Mult.: E1 from α(K)exp for doubly-placed γ.
		1865.10 *10*	100 *9*	264.0888	4$^+$	E1		
2133.767	(1$^+$)	240.658 *14*	1.7 *4*	1893.100	2$^+$			
		640.567[g] *20*	<15[g]	1493.133	2$^+$			
		711.666 *24*	15 *5*	1422.12	0$^+$			
		2133.94 *10*	100 *20*	0.0	0$^+$			
2135.9	1$^-$	2056	82 *12*	79.804	2$^+$			
		2136	100	0.0	0$^+$	E1	1.03×10^{-3}	B(E1)(W.u.)=0.00022 *6*
2137.08	(2)$^+$	1873.12 *13*	100 *30*	264.0888	4$^+$	[E2]	1.22×10^{-3}	B(E2)(W.u.)=12 *9*
		2057.20 *20*	70 *20*	79.804	2$^+$	M1	1.50×10^{-3} *2*	B(M1)(W.u.)=0.04 *4*
		2136.89 *16*	100 *30*	0.0	0$^+$	[E2]	1.13×10^{-3}	B(E2)(W.u.)=5 *5*

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γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f	Mult.†	δ†	α[f]	Comments
2144.53		538.68[g] *3*	100[g]	1605.8503	8⁻				Mult.: E2 from α(K)exp in (n,γ) E=thermal for doubly-placed γ.
2148.3685	5⁻	88.392 *3*	1.9 *5*	2059.9751	(4)⁻	M1+E2	1.2 *+7−4*	4.45 *15*	
		146.420 *5*	7.4 *15*	2001.953	5⁻	M1		0.961	
		165.326 *2*	2.3 *6*	1983.0398	5⁻				
		255.436 *2*	11.9 *19*	1892.9346	(4)⁻	M1		0.206	
		440.391 *12*	5.2 *7*	1707.9929	5⁻				
		955.339 *11*	100 *11*	1193.0251	5⁻	M1		0.00689 *10*	
		1054.297 *19*	41 *9*	1094.0383	4⁻	M1+E2	1.1 *+8−4*	0.0041 *6*	
		1883.47 *14*	26 *7*	264.0888	4⁺				
2169.516	(5)⁺	736.56 *6*	9 *3*	1432.9508	7⁺	[E2]		0.00648 *9*	B(E2)(W.u.)=7 *6*
		858.063 *23*	25 *5*	1311.4606	6⁻	[E1]		0.00183 *3*	B(E1)(W.u.)=0.00015 *11*
		905.30 *15*	6 *2*	1263.9047	6⁺	[M1,E2]		0.0060 *19*	
		976.498 *14*	65 *12*	1193.0251	5⁻	E1		1.43×10^{-3} *2*	B(E1)(W.u.)=0.00026 *19*
		1051.86 *7*	27 *12*	1117.5703	5⁺	[M1,E2]		0.0042 *13*	B(M1)(W.u.)=0.004 *4*; B(E2)(W.u.)=1.8 *15*
		1174.56 *7*	51 *13*	994.7474	4⁺	E2		0.00243 *4*	B(E2)(W.u.)=4 *3*
		1273.74 *9*	100 *47*	895.7947	3⁺	E2		0.00209 *3*	B(E2)(W.u.)=5 *5*
2174.59		2094.77 *8*	100	79.804	2⁺				E_γ: from (n,n′γ).
2177.79	(2⁺)	684.654[g] *15*	<30[g]	1493.133	2⁺				
		755.66 *8*	21 *5*	1422.12	0⁺				Other $I\gamma$: 65 *15* from (n,n′γ).
		2177.80 *15*	100 *25*	0.0	0⁺				
2182.80	11⁻	402.8 *2*	100	1780.00	9⁻				E_γ: from ^{170}Er(^{136}Xe,Xγ).
2185.11	(5)⁻	271.189 *4*	1.6 *3*	1913.92	3⁻				
		424.329[g] *4*	<15[g]	1760.760	(6)⁻				
		1636.60 *10*	43 *7*	548.7470	6⁺	E1		8.7×10^{-4}	B(E1)(W.u.)=0.00033 *+14−20*
		1921.11 *10*	100 *18*	264.0888	4⁺				
2186.741	(3)⁺	450.048 *3*	8.1 *15*	1736.6881	4⁺	M1		0.0458	
		533.202 *5*	100 *8*	1653.5486	3⁺	M1		0.0296	
		571.428 *19*	1.8 *6*	1615.3420	4⁻				
		645.21 *3*	6.2 *12*	1541.5564	3⁻				
		1192.7 *5*	15 *4*	994.7474	4⁺				
2188.408	(5⁺)	226.98[g] *3*	<0.70[g]	1961.3992	6⁺				
		348.94[g] *3*	<1.9[g]	1839.3474	5⁺				
		451.68 *3*	1.1 *4*	1736.6881	4⁺				
		534.793 *15*	3.6 *6*	1653.5486	3⁺				
		877.072 *17*	12.7 *27*	1311.4606	6⁻				
		995.306 *25*	36 *5*	1193.0251	5⁻				
		1639.73 *10*	32 *9*	548.7470	6⁺				
		1924.36 *13*	100 *23*	264.0888	4⁺				
2188.74	(2⁺,3,4⁺)	1194.08 *16*	42 *13*	994.7474	4⁺				
		2108.85 *15*	100 *27*	79.804	2⁺				

$\gamma(^{168}Er)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult. †	α f	Comments
2193.19	2^+	1297.32 *6*	23.0 *9*	895.7947	3^+			I_γ: from β^- decay. Other I(1297γ):I(1372γ)=44 *13*:100 *14* from (n,γ) E=thermal.
		1372.05 *4*	100 *4*	821.1685	2^+	M1	0.00292 *4*	I_γ: from β^- decay.
2200.4193	$(5)^-$	111.068 *9*	7.4 *13*	2089.348	4^-	M1	2.11	
		201.160 *17*	0.9 *3*	1999.2239	$(3)^-$			
		250.784 *4*	2.8 *6*	1949.636	$(6)^-$			
		307.481 *5*	2.3 *5*	1892.9346	$(4)^-$			
		379.954 *8*	27 *4*	1820.476	5^-	M1	0.0712	
		380.286 *6*	20 *4*	1820.1321	6^-			
		481.239 *3*	34 *5*	1719.1786	4^-	M1	0.0385	
		492.427 *3*	62 *8*	1707.9929	5^-			
		585.066 *5*	100 *10*	1615.3420	4^-	M1	0.0234	
		1651.5 *16*		548.7470	6^+			
		1936.4 *16*		264.0888	4^+			
2200.5	(9^-)	161.8 *2*	100	2038.66	(8^-)			E_γ,I_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
		(304.1)	<31	1896.379	$(7)^-$			E_γ: rounded value from level energy difference; γ expected but not observed. I_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
2210.016	(7^-)	226.98 g *3*	<5.2 g	1983.0398	5^-			
		259.209 *5*	100 *24*	1950.8067	7^-			
2218.5		1322.7 e	100	895.7947	3^+			
2230.30	$(2)^-$	614.996 g *24*	<26 g	1615.3420	4^-			
		660.85 *4*	15 *3*	1569.4527	$(2)^-$	M1	0.01718	
		688.79 g *3*	<20 g	1541.5564	3^-			
		1409.15 g *4*	100 g *31*	821.1685	2^+			
2238.179	$(4)^+$	333.086 *4*	33 *5*	1905.0922	$(4)^-$			
		345.247 *7*	25 *5*	1892.9346	$(4)^-$			
		398.829 *3*	16 *3*	1839.3474	5^+			
		501.506 *10*	100 *13*	1736.6881	4^+			
		1045.31 *7*	76 *26*	1193.0251	5^-			
		1144.112 i *11*	1.11×10^3 *18*	1094.0383	4^-	E1		
2243.514	$(3)^+$	587.253 *19*	1.7 *8*	1656.274	$(4)^+$			
		1979.36 *9*	67 *14*	264.0888	4^+	E2	1.18×10^{-3}	
		2163.44 *9*	100 *15*	79.804	2^+			
2246.530	$(6)^+$	629.724 *9*	50 *9*	1616.8060	6^+			
		813.46 *5*	42 *9*	1432.9508	7^+			
		982.64 *4*	18 *5*	1263.9047	6^+			
		1697.86 *7*	100 *16*	548.7470	6^+	M1	0.00192 *3*	
2249.68		938.22 g *5*	100 g	1311.4606	6^-			
2254.754	(2^+)	426.66 *3*	10.2 *13*	1828.0639	3^-			
		1037.88 *18*	20 *8*	1217.169	0^+			

$^{168}_{68}Er_{100}$-31

$\gamma(^{168}Er)$ (continued)

E_i(level)	J_i^{π}	E_γ[†]	I_γ[‡]	E_f	J_f^{π}	Mult.[†]	α[f]	Comments
2254.754	(2^+)	1358.99 *4*	100 *33*	895.7947	3^+			E_γ: from β^- decay. I_γ: doublet in (n,γ) E=thermal; intensity suitably divided.
2254.84	$(3)^+$	1137.2 *3*	25 *8*	1117.5703	5^+			E_γ,I_γ: from β^- decay.
		1260.09 *5*	100 *7*	994.7474	4^+			I_γ: from β^- decay.
		1433.67 *7*	84 *19*	821.1685	2^+			E_γ,I_γ: from β^- decay. Other $I\gamma$: 60 *16* from (n,γ) E=thermal for doubly-placed γ. Mult.: α(K)exp=0.0013 *4*, mult=E2 for doubly-placed γ.
2255.343	$(6)^-$	106.974 *3*	8.0 *16*	2148.3685	5^-			
		136.552 *4*	8.0 *20*	2118.791	$(6)^-$			
		253.387 *4*	2.7 *7*	2001.953	5^-			
		272.306 *3*	20 *4*	1983.0398	5^-			
		943.892 *25*	100 *16*	1311.4606	6^-	M1	0.00710 *10*	
2262.691	$(3)^-$	263.421 *18*	3.0 *6*	1999.2239	$(3)^-$			
		609.164 *9*	22 *3*	1653.5486	3^+			
		629.184 *20*	40 *10*	1633.4627	3^-			
		647.344 *15*	34 *6*	1615.3420	4^-	E2	0.00872 *13*	
		1267.83 *10*	100 *30*	994.7474	4^+			
		1366.914[g] *20*	<289[g]	895.7947	3^+			
		1441.41[gi] *7*	<210[g]	821.1685	2^+			
2267.632	$(3,4,5)^+$	362.547 *15*	5.7 *8*	1905.0922	$(4)^-$	E1	0.01170	
		374.683[g] *4*	<6.0[g]	1892.9346	$(4)^-$			
		428.295 *13*	1.9 *4*	1839.3474	5^+			
		1074.50 *17*	12 *4*	1193.0251	5^-			
		1173.557 *20*	100 *6*	1094.0383	4^-	E1	1.04×10^{-3}	
2270.46		1176.42[g] *5*	100[g]	1094.0383	4^-			Mult.: α(K)exp=0.0039 *5*, mult=M1 for doubly-placed γ.
2273.67	$(2^+,3,4^+)$	1452.50 *11*	70 *30*	821.1685	2^+			
		2009.56 *16*	100 *20*	264.0888	4^+			
2279.630	$(4)^+$	219.63 *3*	1.0 *3*	2059.9751	$(4)^-$			
		440.264 *16*	11.5 *23*	1839.3474	5^+			
		542.939 *6*	92 *11*	1736.6881	4^+	M1	0.0283	
		626.086 *7*	40 *7*	1653.5486	3^+	M1	0.0197	
		1086.62 *3*	100 *24*	1193.0251	5^-			
2298.260	$(4,5,6)^+$	458.910 *3*	5.8 *10*	1839.3474	5^+	M1	0.0435	
		986.94 *5*	16.6 *3*	1311.4606	6^-			
		1105.260 *16*	100 *8*	1193.0251	5^-	E1	1.14×10^{-3}	
		1304.1 *3*	10 *3*	994.7474	4^+			
2302.666	$(3)^-$	154.120 *6*	1.7 *5*	2148.3685	5^-			
		474.636 *17*	4.9 *9*	1828.0639	3^-			
		649.087 *9*	16 *4*	1653.5486	3^+			
		669.221 *20*	41 *7*	1633.4627	3^-	M1	0.01664	
		687.30 *3*	68 *12*	1615.3420	4^-			

$^{168}_{68}Er_{100}$-32

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult. [†]	α [f]	Comments
2302.666	$(3)^-$	733.231 10	34 8	1569.4527	$(2)^-$	M1	0.01324	
		761.11 5	21 5	1541.5564	3^-			
		1309.0[i] 16	150 45	994.7474	4^+			E_γ,I_γ: seen only in (n,γ) E=thermal two-photon cascade data. Placement shown as uncertain because such a strong branch should have been seen in other studies but was not.
		1406.93 7	70.0 20	895.7947	3^+			
		1481.71 13	100 20	821.1685	2^+			
2303.10	$(6)^-$	542.35 4	18 6	1760.760	$(6)^-$			
		729.00 5	50 21	1574.117	5^-			
		1038.73 16	100 35	1263.9047	6^+			
2306.882	(6^+)	995.420 25	100 16	1311.4606	6^-			
		1042.35[g] 21	<38[g]	1263.9047	6^+			
		1113.84 7	96 17	1193.0251	5^-			
2311.07	$(4)^+$	654.79 3	1.00 20	1656.274	$(4)^+$			
		1762.19[g] 18	<38[g]	548.7470	6^+			
		2047.03 10	100 10	264.0888	4^+	E2	1.15×10^{-3}	
2323.01	3^-	1328.57 21	92 38	994.7474	4^+			
		1427.40 11	100 50	895.7947	3^+			
		1501.92 18	<450	821.1685	2^+			
2331.987	6^-	131.566 2	9.0 20	2200.4193	$(5)^-$			
		381.181 14	10.3 12	1950.8067	7^-			
		382.346 9	13.3 26	1949.636	$(6)^-$	M1	0.0701	
		624.005 5	38 5	1707.9929	5^-			
		1020.70 8	100 13	1311.4606	6^-			
2336.26	4^+	1218.68[g] 7	<64[g]	1117.5703	5^+			
		1341.58 14	100 27	994.7474	4^+			
		1440.41 12	91 27	895.7947	3^+			
2337.100	3^-	1243.072 20	93.5 23	1094.0383	4^-	M1	0.00366 6	
		1441.41[g] 7	<131[g]	895.7947	3^+			
		1515.98[g] 6	<341[g]	821.1685	2^+			
		2256.73 12	100 18	79.804	2^+			
2341.78	1	2262.0 3	67 11	79.804	2^+			E_γ,I_γ: from (n,n$'\gamma$).
		2341.7 4	100 18	0.0	0^+	D		E_γ,I_γ: from (n,n$'\gamma$).
2346.20	$1^-,2^-,3^-$	1449.26 12	97 22	895.7947	3^+			
		1524.18 13	100 33	821.1685	2^+	E1	8.63×10^{-4} 12	
2348.581	4^-	612.0 5	100 71	1736.6881	4^+			
		629.397 20	70 17	1719.1786	4^-			
		640.567[g] 20	<33[g]	1707.9929	5^-			
		695.04 4	13 4	1653.5486	3^+			
		1155.56[i] 3	89 20	1193.0251	5^-	M1	0.00435 6	
		1231.04 9	57 3	1117.5703	5^+			

$^{168}_{68}Er_{100}$-33

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
2348.581	4$^-$	1353.78 *10*	<600	994.7474	4$^+$			E_γ,I_γ,Mult.: for doubly-placed γ. Undivided Iγ given. Mult=E2 for doublet.
2361.40	1	2281.5 *5*	21 *7*	79.804	2$^+$			I_γ: from (n,n$'\gamma$). Other 25 *16* in (γ,γ').
		2361.4 *2*	100 *14*	0.0	0$^+$	D		Mult.: from (γ,γ').
2365.196	(5)$^-$	460.100 *15*	1.8 *4*	1905.0922	(4)$^-$			
		472.218[g] *12*	<3.2[g]	1892.9346	(4)$^-$			
		1172.30 *8*	14 *6*	1193.0251	5$^-$	M1	0.00420 *6*	
		1247.78 *13*	8 *3*	1117.5703	5$^+$			
		1271.13 *4*	100 *10*	1094.0383	4$^-$	M1	0.00347 *5*	
2365.33	(1$^+$)	2285.6 *3*	54 *15*	79.804	2$^+$	[M1,E2]	0.00125 *14*	
		2365.30 *12*	100 *23*	0.0	0$^+$	[M1]	1.37×10^{-3}	B(M1)(W.u.)=0.011 *5*
2368.585	(5$^+$)	100.953 *5*	1.3 *3*	2267.632	(3,4,5)$^+$			
		220.27 *4*	0.37 *16*	2148.3685	5$^-$			
		463.485 *14*	1.5 *3*	1905.0922	(4)$^-$			
		1175.53 *7*	41 *11*	1193.0251	5$^-$			
		1274.53 *12*	100 *37*	1094.0383	4$^-$			
2373.657	2,3	401.343 *11*	4.2 *10*	1972.314	(2)$^-$			
		480.619[g] *5*	<67[g]	1893.100	2$^+$			
		1552.55 *25*	100 *33*	821.1685	2$^+$			
2378.12		1284.08[g] *8*	100[g]	1094.0383	4$^-$			Mult.: M1,E2 from α(K)exp in (n,γ) E=thermal for doubly-placed γ.
2382.587	(2)$^+$	351.422 *14*	1.8 *3*	2031.097	(4)$^+$			
		383.366 *3*	44 *4*	1999.2239	(3)$^-$	E1	0.01025	
		1486.78 *8*	100 *27*	895.7947	3$^+$			
		2303.22 *20*	<104	79.804	2$^+$			E_γ,I_γ: for doubly-placed γ; intensity not divided.
		2382.22 *24*	40 *13*	0.0	0$^+$			
2392.118	(5,6$^+$)	552.771 *6*	58 *9*	1839.3474	5$^+$			
		655.39 *3*	22 *4*	1736.6881	4$^+$			
		1080.4 *2*	53 *13*	1311.4606	6$^-$			
		1128.27 *8*	100 *22*	1263.9047	6$^+$			
		1298.40[i] *9*	163 *51*	1094.0383	4$^-$			
2392.927	(3$^-$,4$^+$)	361.834 *5*	7.8 *17*	2031.097	(4)$^+$			Mult.: M1 from α(K)exp in (n,γ) E=thermal, however, see comment on 1200γ.
		684.654[g] *15*	<13.3[g]	1707.9929	5$^-$			
		899.85 *5*	12 *5*	1493.133	2$^+$			
		1199.61 *4*	43 *11*	1193.0251	5$^-$			Note that mult=E2 from (n,γ) E=thermal is in conflict with placement of the M1 362γ from the same level.
		1275.32 *9*	100 *39*	1117.5703	5$^+$			
		1398.05 *6*	88 *14*	994.7474	4$^+$			
2393.71	(2$^+$)	1497.94 *22*	36 *14*	895.7947	3$^+$			
		1572.41 *15*	29 *7*	821.1685	2$^+$			

$^{168}_{68}$Er$_{100}$-34

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
2393.71	(2^+)	2129.46 *20*	43 *14*	264.0888	4^+			
		2314.49 *20*	100 *21*	79.804	2^+			
		2393.47 *18*	57 *14*	0.0	0^+			
2398.52	(3^+,4,5^+)	1281.03[g] *7*	100[g] *30*	1117.5703	5^+			α(K)exp for doubly-placed γ consistent with α(K)(M1).
		1302.0 *16*		1094.0383	4^-			
		1502.73 *9*	<220	895.7947	3^+			I_γ: for 1501.9γ+1502.7γ.
		1850.0 *16*		548.7470	6^+			
2401.94	(1^-)	1580.72[g] *8*	100[g] *8*	821.1685	2^+			Mult.: E1 from α(K)exp for doubly-placed γ.
		2401.92 *24*	21 *5*	0.0	0^+			E_γ: absent in (n.n$'\gamma$).
2402.29	$(4)^-$	1308.0 *16*	48 *13*	1094.0383	4^-			Branching from two-photon cascade data in (n,γ) E=thermal.
		1407.67 *9*	39 *7*	994.7474	4^+	E1		Branching from two-photon cascade data in (n,γ) E=thermal.
		1506.49 *12*	100 *20*	895.7947	3^+	E1		E_γ: for doubly-placed γ. Branching from two-photon cascade data in (n,γ) E=thermal.
2411.795	$(5)^+$	1100.11 *15*	11 *4*	1311.4606	6^-			
		1218.68[g] *7*	<82[g]	1193.0251	5^-			
		1294.053[g] *25*	<171[g]	1117.5703	5^+			
		1317.56[i] *10*	<41	1094.0383	4^-			E_γ,I_γ: for undivided doublet.
		1417.053 *25*	100 *14*	994.7474	4^+	M1	0.00272 *4*	
		1515.98[gi] *6*	<285[g]	895.7947	3^+			
		2147.34 *20*	44 *13*	264.0888	4^+			
2417.02	$1^{(-)}$	2337.2 *2*	100 *10*	79.804	2^+			E_γ: from (n,n$'\gamma$). I_γ: from (γ,γ').
		2417	56	0.0	0^+	D		E_γ,I_γ,Mult.: from (γ,γ').
2419.0	12^-	443.2 *2*	100	1975.75	10^-			E_γ: from ^{170}Er(^{136}Xe,Xγ).
2423.25		2159.15 *9*	100	264.0888	4^+			Mult.: α(K)exp=0.00053 *13*, mult=E1,E2.
2424.91	$(2)^+$	511.860 *7*	17 *3*	1913.92	3^-			
		1208.30[g] *9*	<39[g]	1217.169	0^+			
		1529.12 *13*	19.1 *20*	895.7947	3^+			From β^- decay. Other Eγ (Iγ): 1530.1 *3* (22 *3*) from (n,n$'\gamma$), 1529.67 *17* (20 *7*) from (n,γ) E=thermal. Placement questioned in (n,γ) E=thermal but branching is consistent with that in β^- decay and (n,n$'\gamma$).
		1603.72 *8*	56 *3*	821.1685	2^+			From β^- decay. Other Eγ (Iγ): 1603.8 *2* (58 *13*)from (n,n$'\gamma$), 1604.09 *18* (34 *14*) from (n,γ) E=thermal.
		2345.08 *12*	100 *3*	79.804	2^+			From β^- decay. Other Eγ (Iγ): 2345.6 *4* (100 *25*) from (n,n$'\gamma$), 2345.58 *17* (100 *20*) from (n,γ) E=thermal. Placement questioned in (n,γ) E=thermal but branching is consistent with that in β^- decay and (n,n$'\gamma$).
		2424.92 *14*	44.2 *20*	0.0	0^+			E_γ,I_γ: from β^- decay. Other Eγ (Iγ): 2425.1 *2* (44 *2*) from (n,n$'\gamma$), but 2425.35 *20* (100 *18*) from (n,γ) E=thermal. Possibly transition is a doublet in (n,γ) E=thermal.
2434.659		374.683[g] *4*	100[g]	2059.9751	$(4)^-$			

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
2440.054	(4+,5+)	445.234 *20*	11.5 *25*	1994.821	(3)+			
		1029.45 *5*	50 *11*	1411.0959	4+			
		1176.42[g] *5*	<146[g]	1263.9047	6+			Mult.: M1 from α(K)exp in (n,γ) E=thermal for doubly-placed γ.
		1322.6 *2*	100 *50*	1117.5703	5+			
		1445.26 *8*	50 *25*	994.7474	4+			
2440.46	(2+)	1223.00 *7*	100 *40*	1217.169	0+			
		1446.00 *7*	80 *40*	994.7474	4+			
2451.165	(5−)	195.836 *25*	0.9 *3*	2255.343	(6)−			
		909.41 *9*	15 *5*	1541.7094	(4)−			
		1333.44[g] *15*	<149[g]	1117.5703	5+			
		1358.0 *16*		1094.0383	4−			
		1456.15 *12*	100 *23*	994.7474	4+			
2455.96	(3+,4,5+)	1338.67 *15*	20 *10*	1117.5703	5+			
		1461.13 *8*	37 *9*	994.7474	4+			
		1560.16 *8*	100 *11*	895.7947	3+			
		2189.7[i] *3*		264.0888	4+			E_γ: from (n,n′γ) alone; possibly misplaced.
2458.7	1	2378.6 *7*	12 *6*	79.804	2+			E_γ,I_γ: from (n,n′γ).
		2458.8 *5*	100 *16*	0.0	0+	D		E_γ,I_γ,Mult.: from (n,n′γ).
2474.10	(6−)	472.218[g] *12*	<28[g]	2001.953	5−			
		653.88 *7*	9 *4*	1820.1321	6−			
		1041.35 *11*	100 *31*	1432.9508	7+			
2477.20	(5)−	1165.65 *10*	33 *11*	1311.4606	6−	M1	0.00426 *6*	
		1284.08[g] *8*	<63[g]	1193.0251	5−	M1,E2		Mult.: M1,E2 from α(K)exp in (n,γ) E=thermal for doubly-placed γ. Other Eγ: 1283.5 *2* from (n,n′γ).
		1383.36 *9*	31 *13*	1094.0383	4−			
		1928.21 *12*	100 *19*	548.7470	6+	(E1)		
2478.08	(3)−	1484.46 *8*	100 *13*	994.7474	4+	E1	8.64×10^{-4}	
		1582.95 *20*	55 *18*	895.7947	3+			
		1656.84[g] *9*	<61[g]	821.1685	2+			
		2214.47 *20*	79 *18*	264.0888	4+			
		2398.25[i] *15*	94 *15*	79.804	2+			
2484.52	(3+)	1208.30[g] *9*	<43[g]	1276.2716	2+			
		1489.8 *2*	31 *15*	994.7474	4+			
		1588.75 *10*	33 *15*	895.7947	3+			
		1663.21 *10*	38 *15*	821.1685	2+			
		2220.70 *21*	100 *23*	264.0888	4+			
		2404.84 *20*	62 *15*	79.804	2+			
2493.5	1+	2414.4 *5*	34 *5*	79.804	2+			E_γ: from (n,n′γ) for doublet. I_γ: from (γ,γ′).
		2493.2 *3*	100	0.0	0+	M1	1.35×10^{-3}	B(M1)(W.u.)=0.029 *4*

$^{168}_{68}$Er$_{100}$-36

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
								E_γ: from (n,n′γ). I_γ,Mult.: from (γ,γ').
2494.528	(3)$^-$	511.504 *15*	8.4 *16*	1983.0398	5$^-$			
		1672.84 *9*	100 *16*	821.1685	2$^+$	E1	8.79×10^{-4}	
		2229.27[g] *20*	<37[g]	264.0888	4$^+$			
		2414.33 *19*	42 *11*	79.804	2$^+$			
2510.72	1$^{(-)}$	2430.9 *3*	100 *25*	79.804	2$^+$			E_γ,I_γ: from (n,n′γ).
		2510.7 *4*	63	0.0	0$^+$	(E1)		B(E1)(W.u.)=9.E−5 *4* Mult.: D from $\gamma(\theta)$ in (n,n′γ); π=(−) from K=0 in (γ,γ'). E_γ,I_γ: from (n,n′γ).
2513.67	(4)$^-$	1396.13 *6*	96 *35*	1117.5703	5$^+$			
		1518.95 *16*	79 *26*	994.7474	4$^+$	E1	8.62×10^{-4}	
		1617.75 *10*	100 *16*	895.7947	3$^+$	E1	8.70×10^{-4}	
2517.48	(3$^+$,4$^+$)	408.457[g,i] *8*	8.7[g] *20*	2108.987	(5)$^+$			
		1696.30 *20*	100 *22*	821.1685	2$^+$			
2526.583	(5)$^-$	466.603 *12*	4.3 *10*	2059.9751	(4)$^-$			
		1333.44[g] *15*	<141[g]	1193.0251	5$^-$			
		1432.64 *7*	100 *38*	1094.0383	4$^-$	E2	1.70×10^{-3}	
		1532.18 *21*	38 *13*	994.7474	4$^+$			
2527.78		1433.74 *7*	100	1094.0383	4$^-$			Mult.: α(K)exp=0.0013 *4*, mult=E2 for doubly-placed γ.
2528.80	(5)$^-$	614.996[g] *24*	<16[g]	1913.92	3$^-$			
		1265.0[i] *2*	8 *4*	1263.9047	6$^+$			
		1534.05 *10*	100 *19*	994.7474	4$^+$	E1		
2540.22	(3,4,5)$^+$	1422.58 *8*	31 *15*	1117.5703	5$^+$			
		1644.45 *6*	100 *23*	895.7947	3$^+$	E2	1.40×10^{-3}	
2547.25	(4$^+$)	1651.49 *7*	≤225	895.7947	3$^+$	[M1]	0.00202 *3*	Eγ and undivided Iγ for doubly-placed γ.
		1997.9 *3*	75 *52*	548.7470	6$^+$			
		2282.8 *5*	100 *52*	264.0888	4$^+$			
2551.48	(4,5)$^-$	313.420[i] *14*	0.78 *19*	2238.179	(4)$^+$			
		442.593[i] *20*	2.2 *7*	2108.987	(5)$^+$			
		814.77 *7*	5.9 *19*	1736.6881	4$^+$			
		1556.84 *15*	100 *15*	994.7474	4$^+$	E1		
2558.66	(5)$^-$	235.652 *18*	1.5 *5*	2323.01	3$^-$			
		984.42 *8*	15 *3*	1574.117	5$^-$			
		1294.053[g] *25*	<182[g]	1263.9047	6$^+$			γ not reported in (n,n′γ), so branching probably small.
		1441.41[g] *7*	<156[g]	1117.5703	5$^+$			
		1563.85 *9*	100 *16*	994.7474	4$^+$			
2561.56	(4$^+$)	944.79 *6*	10 *3*	1616.8060	6$^+$			
		1444.06 *14*	17 *9*	1117.5703	5$^+$			

$^{168}_{68}$Er$_{100}$-37

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[†]	α[f]	Comments
2561.56	(4+)	2012.34 *21*	22 *9*	548.7470	6+			
		2297.43 *10*	100 *13*	264.0888	4+			
2571.31		1576.58[h] *8*	100[h] *36*	994.7474	4+			
		1675.49[g] *6*	<138[g]	895.7947	3+			
2571.9	14+	624.6 *7*	100	1947.3	12+	[E2]	0.00961 *14*	B(E2)(W.u.)=432 *+25−42* B(E2)↓: From measured B(E2) in Coulomb excitation. E_{γ}: from level energy difference. γ seen in Coulomb excitation but Eγ not stated.
2572.0	(12+)	502	100	2070.0	10+	[E2]	0.01628	B(E2)(W.u.)=336 *+20−69* B(E2)↓: From measured B(E2) in Coulomb excitation.
2601.2		2052.0 *16*		548.7470	6+			
		2337.1 *4*	100 *25*	264.0888	4+			
		2522.0 *16*		79.804	2+			
2628.57	(3+,4,5+)	1511.1 *3*	100 *67*	1117.5703	5+			
		1633.7 *3*	100 *33*	994.7474	4+			
		1732.76[g] *16*	<400[g]	895.7947	3+			
2629.2		2365.1 *4*	100	264.0888	4+			E_{γ}: from (n,n′γ).
2643.71	1(+)	2564.0 *2*	27 *7*	79.804	2+	[M1]		B(M1)(W.u.)=0.0040 *14* E_{γ}: from (n,n′γ). I_{γ}: weighted average of 47 *14* from (γ,γ') and 24 *5* from (n,n′γ).
		2643.62 *16*	100	0.0	0+	(M1)	1.34×10^{-3}	B(M1)(W.u.)=0.013 *3* E_{γ}: from (n,n′γ). Mult.: $\Delta\pi$=(no) (1996Ma18) from (γ,γ') for D γ.
2653.8	13−	471.0 *2*	100	2182.80	11−			E_{γ}: from $^{170}Er(^{136}Xe,X\gamma)$.
2656.86		1762.19[g] *18*	30[g] *4*	895.7947	3+			
		1835.68 *5*	100 *13*	821.1685	2+			Eγ and undivided Iγ are for doubly-placed γ.
2657.66	(2,3,4)	1004.11 *4*	100 *22*	1653.5486	3+			
		1042.35[g] *21*	<93[g]	1615.3420	4−			
		1226.0 *5*	16 *8*	1431.466	3−			
2660.59	(3,4)+	471.874[g] *6*	<15[g]	2188.408	(5+)			
		1542.94 *25*	75 *25*	1117.5703	5+			
		1665.74 *8*	100 *25*	994.7474	4+	M1	0.00199 *3*	
		1765.02 *12*	<150	895.7947	3+	E2	1.29×10^{-3}	I_{γ},E_{γ}: 1763.4γ and 1765.0γ unresolved in (n,γ).
		2395.0 *16*	39 *15*	264.0888	4+			
		2580.0 *16*	89 *15*	79.804	2+			
2663.229	(4)+	408.457[g] *8*	<4.6[g]	2254.754	(2+)			
		537.76 *6*	0.6 *9*	2125.424				Eγ is for doubly-placed γ; Iγ has been suitably divided.
		1009.675 *21*	100 *14*	1653.5486	3+	E2	0.00329 *5*	
		1470.40 *17*	24 *10*	1193.0251	5−			

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ †	I_γ ‡	E_f	J^π_f	Mult. †	δ †	α f	Comments
2663.229	(4)$^+$	1569.30 *11*	43 *10*	1094.0383	4$^-$				Other Iγ: 76 *19* in (n,n$'\gamma$).
2672.1	(4$^+$,5,6$^+$)	1409.15[g] *4*	<810[g]	1263.9047	6$^+$				
		1677.2 *5*	100 *33*	994.7474	4$^+$				
		2410.0 *16*		264.0888	4$^+$				
2676.3	1$^+$	2596.5 *4*	30 *3*	79.804	2$^+$				Eγ: from (n,n$'\gamma$). Iγ: from (γ,γ').
		2676 *4*	100	0.0	0$^+$	M1		1.34×10^{-3}	B(M1)(W.u.)=0.033 *4* Eγ,Iγ,Mult.: from (γ,γ').
2683.8	(2$^+$)	2420.0 *16*		264.0888	4$^+$				Eγ: absent in (n,n$'\gamma$).
		2604.0 *3*	100 *20*	79.804	2$^+$				Eγ,Iγ: from (n,n$'\gamma$).
		2684.0[g] *4*	<141[g]	0.0	0$^+$				Eγ,Iγ: from (n,n$'\gamma$).
2689.0	(1,2$^+$)	2608.9 *5*	100 *25*	79.804	2$^+$				Eγ,Iγ: from (n,n$'\gamma$).
		2689.3 *5*	70 *15*	0.0	0$^+$				Eγ,Iγ: from (n,n$'\gamma$).
2694	1$^{(+)}$	2694	100	0.0	0$^+$	(M1)		1.35×10^{-3}	Eγ,Mult.: from (γ,γ'); D, $\Delta\pi$=(no) γ (1996Ma18).
2700.60		2436.49 *20*	100	264.0888	4$^+$				
2716.0	(2$^+$,3,4$^+$)	2451.9[e]		264.0888	4$^+$				
		2636.2[e]		79.804	2$^+$				
2727.77	(4,5)$^-$	1112.41 *5*	100 *20*	1615.3420	4$^-$	M1+E2	1.2 *+14−5*	0.0036 *6*	
		1611.4 *5*	53 *27*	1117.5703	5$^+$				
		1732.76[g] *16*	<160[g]	994.7474	4$^+$				
2728.43	1$^+$	2648.4 *3*	91 *4*	79.804	2$^+$				Eγ: from (n,n$'\gamma$). Iγ: from (γ,γ'); other Iγ: 125 *20* in (n,n$'\gamma$).
		2728.6 *3*	100	0.0	0$^+$	M1		1.35×10^{-3}	B(M1)(W.u.)=0.041 *7* Eγ: from (n,n$'\gamma$). Iγ,Mult.: from (γ,γ').
2733.0		1837.0 *16*	56 *21*	895.7947	3$^+$				
		2469.0 *16*	100 *23*	264.0888	4$^+$				
2738.56		1030.50 *5*	95 *20*	1707.9929	5$^-$				
		1123.30 *6*	100 *20*	1615.3420	4$^-$				
2740.16	(4,5,6)$^+$	1476.0 *3*	9 *4*	1263.9047	6$^+$				
		1622.0 *5*	29 *14*	1117.5703	5$^+$				
		1745.58 *18*	100 *29*	994.7474	4$^+$	E2		1.30×10^{-3}	
		2475.0 *16*		264.0888	4$^+$				
2740.9	1	2661.2 *3*	100 *14*	79.804	2$^+$				Eγ: from (n,n$'\gamma$). Iγ: from (γ,γ').
		2740.5 *5*	91	0.0	0$^+$	D			Eγ: from (n,n$'\gamma$). Iγ,Mult.: from (γ,γ'). Other Iγ: 51 *9* in (n,n$'\gamma$).
2746.6	($\leq$4)	1925.0 *16*		821.1685	2$^+$				Eγ: absent in (n,n$'\gamma$).
		2666.8 *3*		79.804	2$^+$				Eγ: from (n,n$'\gamma$).
2757.3	(1,2$^+$)	2678.1 *4*	<263	79.804	2$^+$				Eγ,Iγ: from (n,n$'\gamma$) for doubly-placed γ.
		2756.0 *6*	100 *21*	0.0	0$^+$				Eγ,Iγ: from (n,n$'\gamma$).

Adopted Levels, Gammas (continued)

γ(^{168}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
2763.9	(1,2$^+$)	2684.0[g] *4*	<390[g]	79.804	2$^+$			E_γ,I_γ: from (n,n′γ).
		2763.9 *8*	100 *33*	0.0	0$^+$			E_γ,I_γ: from (n,n′γ).
2768.55		1060.06 *13*	100 *38*	1707.9929	5$^-$			
		1153.31 *6*	100 *29*	1615.3420	4$^-$			
2769.81	(5$^+$)	1458.34 *15*	38 *16*	1311.4606	6$^-$			
		1576.58[g] *8*	<53[g]	1193.0251	5$^-$			
		1675.49[g] *6*	100[g] *11*	1094.0383	4$^-$			
2778.03		2229.27[g] *20*	100[g]	548.7470	6$^+$			
2782.9	(1,2$^+$)	2703.1 *6*	100 *27*	79.804	2$^+$			E_γ,I_γ: from (n,n′γ).
		2783.0[g] *5*	<91[g]	0.0	0$^+$			E_γ,I_γ: from (n,n′γ).
2786.80	(3,4$^+$)	384.510 *9*	2.3 *5*	2402.29	(4)$^-$			
		1890.9 *4*	18 *9*	895.7947	3$^+$			
		1965.19 *15*	32 *9*	821.1685	2$^+$			
		2523.2 *4*	100 *18*	264.0888	4$^+$			
2788.1		2524.0 *16*	100	264.0888	4$^+$			
2792.0	1$^+$	2712	24 *3*	79.804	2$^+$			E_γ,I_γ: from (γ,γ′).
		2792.0 *4*	100	0.0	0$^+$	M1	1.35×10^{-3}	B(M1)(W.u.)=0.0333 *25* E_γ: from (n,n′γ). I_γ,Mult.: from (γ,γ′).
2798.1	1$^+$	2719.9 *8*	10.1 *18*	79.804	2$^+$			E_γ: from (n,n′γ). I_γ: from (γ,γ′). Other Iγ: 15 *7* in (n,n′γ).
		2797.8 *3*	100	0.0	0$^+$	M1	1.35×10^{-3}	B(M1)(W.u.)=0.036 *3* E_γ: from (n,n′γ). I_γ,Mult.: from (γ,γ′).
2810.9		2547.0 *16*	100	264.0888	4$^+$			
2817.0?	(1,2$^+$)	2737.0 *9*	80 *40*	79.804	2$^+$			E_γ,I_γ: from (n,n′γ).
		2817.0 *4*	100 *30*	0.0	0$^+$			E_γ,I_γ: from (n,n′γ).
2819.7		2556.0 *16*	100	264.0888	4$^+$			
2826.4	1$^{(+)}$	2745.7 *5*	51 *6*	79.804	2$^+$			E_γ: from (n,n′γ). I_γ: from (γ,γ′). Other Iγ: 32 *11* in (n,n′γ).
		2826.7 *3*	100	0.0	0$^+$	(M1)	1.36×10^{-3}	B(M1)(W.u.)=0.017 *3* E_γ: from (n,n′γ). I_γ,Mult.: from (γ,γ′): D, Δπ=(no) γ (1996Ma18).
2833.7	1$^{(-)}$	2833.7 *5*	100	0.0	0$^+$	(E1)	1.33×10^{-3}	E_γ: from (n,n′γ). Mult.: D, Δπ=(yes) (1996Ma18) from (γ,γ′).
2849.60	(4$^+$)	1141.47 *7*	10 *4*	1707.9929	5$^-$			
		1585.89 *24*	15 *6*	1263.9047	6$^+$			
		1756.0 *16*	31 *8*	1094.0383	4$^-$			
		1855.6 *3*	9 *3*	994.7474	4$^+$			
		1954.0 *16*	21 *7*	895.7947	3$^+$			
		2029.78 *18*	21 *6*	821.1685	2$^+$	(E2)		Mult.: E1,E2 from α(K)exp in (n,γ) E=thermal; Δπ=no from level scheme.

From ENSDF

$\gamma(^{168}$Er) (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f	Mult.†	α[f]	Comments
2849.60	(4$^+$)	2300.63 *9*	100 *18*	548.7470	6$^+$			
		2586.0 *16*	20 *4*	264.0888	4$^+$			
		2770.0 *16*	10 *4*	79.804	2$^+$			
2850.3	1$^-$	2769	71 *8*	79.804	2$^+$			E_γ,I_γ: from (γ,γ').
		2850.5 *4*	100	0.0	0$^+$	E1	1.34×10^{-3}	B(E1)(W.u.)=0.000181 *25* E_γ: from (n,n$'\gamma$). I_γ,Mult.: from (γ,γ').
2852.0		792.11[g] *6*	<65[g]	2059.9751	(4)$^-$			
		1734.4 *5*	100 *50*	1117.5703	5$^+$			Possible multiplet.
2856.5	(2$^+$)	2776.8 *6*	100 *11*	79.804	2$^+$			E_γ: from (n,n$'\gamma$). I_γ: from (γ,γ').
		2856	40	0.0	0$^+$	(Q)		E_γ,I_γ,Mult.: from (γ,γ').
2863.6?	(1,2$^+$)	2783.0[g] *5*	<83[g]	79.804	2$^+$			E_γ,I_γ: from (n,n$'\gamma$).
		2863.6 *5*	100 *25*	0.0	0$^+$			E_γ,I_γ: from (n,n$'\gamma$).
2874.61	(3,4,5)	969.51 *3*	47 *11*	1905.0922	(4)$^-$			
		1780.51 *8*	100 *29*	1094.0383	4$^-$			
		1880.47 *20*	43 *14*	994.7474	4$^+$			
		2611.0 *16*	54 *14*	264.0888	4$^+$			
2890.65		2341.89 *24*	100	548.7470	6$^+$			
2896.7	(3,4$^+$)	1281.03[g] *7*	<19[g]	1615.3420	4$^-$			α(K)exp for doubly-placed γ consistent with α(K)(M1).
		1355.3 *3*	100 *12*	1541.5564	3$^-$			
		2631.0 *16*		264.0888	4$^+$			
		2815.0 *16*		79.804	2$^+$			
2920.00		2656.0 *16*	100	264.0888	4$^+$			
2929.9	1$^{(+)}$	2850.5 *4*	46 *7*	79.804	2$^+$			E_γ: from (n,n$'\gamma$). I_γ: from (γ,γ').
		2929.2 *5*	100	0.0	0$^+$	(M1)	1.37×10^{-3}	B(M1)(W.u.)=0.0078 *13* E_γ: from (n,n$'\gamma$). I_γ,Mult.: from (γ,γ'); D, $\Delta\pi$=(no) γ (1996Ma18).
2933.44	2$^+$	1839.0[i] *16*	260 *50*	1094.0383	4$^-$			May Be misplaced; placement requires mult=M2.
		1938.69 *18*	90 *36*	994.7474	4$^+$			
		2669.0 *16*	100 *20*	264.0888	4$^+$			
		2853.0 *16*	54 *24*	79.804	2$^+$			
2934.0	14$^-$	515.0 *2*	100	2419.0	12$^-$			E_γ: from ^{170}Er(^{136}Xe,Xγ).
2946.6	1$^{(-)}$	2866.7 *5*	100 *6*	79.804	2$^+$			E_γ: from (n,n$'\gamma$). I_γ: from (γ,γ').
		2946.7 *6*	57	0.0	0$^+$	D		E_γ: from (n,n$'\gamma$). I_γ,Mult.: from (γ,γ'). Other Iγ: 108 *23* in (n,n$'\gamma$).
2950.7		2686.0 *16*	100	264.0888	4$^+$			
2955.6	1	2955.6 *8*	100	0.0	0$^+$	D		E_γ: from (n,n$'\gamma$). I_γ,Mult.: from (γ,γ').

From ENSDF

$^{168}_{68}$Er$_{100}$-41

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[†]	α[f]	Comments
2969.93	$3^+,4^+,5^+$	1317.42 *6*	<40	1653.5486	3^+			I_{γ}: undivided Iγ for doublet from (n,γ) E=thermal.
		1875.69 *12*	56 *13*	1094.0383	4^-	E1	9.35×10^{-4}	
		1975.1 *3*	56 *13*	994.7474	4^+			
		2420.71[i] *24*	100 *25*	548.7470	6^+			
2972.6	(≤4)	2893.0 *16*	100	79.804	2^+			
2974.3	1	2895	100 *14*	79.804	2^+			I_{γ},E_{γ}: from (γ,γ').
		2974.2 *5*	78	0.0	0^+	D		E_{γ}: from (n,n$'\gamma$). I_{γ},Mult.: from (γ,γ').
2979.3	(≤4)	2158.0 *16*		821.1685	2^+			
2982.53	(3,4,5)	1366.914[g] *20*	<580[g]	1615.3420	4^-			
		1987.77 *10*	100 *40*	994.7474	4^+			
2991.33	(≤4)	2911.0 *16*	100	79.804	2^+			
2998.2	0^+	2734.0 *16*	100	264.0888	4^+			
3002.4?	$(1,2^+)$	2922.6 *5*	100 *20*	79.804	2^+			E_{γ},I_{γ}: from (n,n$'\gamma$).
		3002.3 *4*	73 *20*	0.0	0^+			E_{γ},I_{γ}: from (n,n$'\gamma$).
3011.77	(4^+)	2189.0 *16*	28 *12*	821.1685	2^+			
		2462.0 *16*	100 *20*	548.7470	6^+			
		2747.0 *16*	80 *14*	264.0888	4^+			
		2932.0 *16*	58 *14*	79.804	2^+			
3026.02		2477.3 *16*	100	548.7470	6^+			
3030.7		2769.0 *16*	100	264.0888	4^+			
3033.9	(≤4)	2212.7 *5*	100	821.1685	2^+			
3042.8	$3^-,4^-,5^-$	1948.73 *25*	100	1094.0383	4^-	M1		
3044	1	2964	60 *15*	79.804	2^+			
		3044	100	0.0	0^+	D		
3049.6	1^+	2229.27[h] *20*	55[h] *20*	821.1685	2^+			E_{γ}: for multiply-placed γ. I_{γ}: from I(2229γ):I(2970γ) in two-photon cascade experiment in (n,γ) E=thermal and 2970γ branching here.
		2969.8 *5*	70 *6*	79.804	2^+			E_{γ}: from (n,n$'\gamma$). I_{γ}: from (γ,γ'). Other Iγ: 106 *22* in (n,n$'\gamma$).
		3049.5 *7*	100	0.0	0^+	M1	1.39×10^{-3}	B(M1)(W.u.)=0.0138 *21* E_{γ}: from (n,n$'\gamma$). I_{γ},Mult.: from (γ,γ').
3068.8		2520.0 *16*	100	548.7470	6^+			
3082	1	3002	81 *11*	79.804	2^+			
		3082	100	0.0	0^+	D		
3082.8	(4^+)	2533.0 *16*	74 *28*	548.7470	6^+			
		2819.0 *16*	100 *35*	264.0888	4^+			
		3003.0 *16*	60 *35*	79.804	2^+			
3095.9	$1^{(-)}$	3015.1 *7*	55 *6*	79.804	2^+			E_{γ}: from (n,n$'\gamma$). Other Iγ: 62 *23* in (n,n$'\gamma$).
		3096.6 *6*	100	0.0	0^+	(E1)	1.44×10^{-3}	B(E1)(W.u.)=0.000179 *21*

From ENSDF

$^{168}_{68}Er_{100}$-42

$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[f]	Comments
								E_γ: from (n,n′γ). Mult.: D, Δπ=(yes) (1996Ma18) from (γ,γ′).
3099.42	(3^-)	2104.67 *15*	42 *11*	994.7474	4^+			
		2203.65 *9*	100 *21*	895.7947	3^+	(E1)		
		2277.97 *22*	32 *11*	821.1685	2^+			
3111.24	$(2^+,3,4^+)$	2116.48 *15*	69 *15*	994.7474	4^+			
		2214.47[g] *20*	100[g] *23*	895.7947	3^+			
		2290.0 *16*	53 *14*	821.1685	2^+			
		3031.0 *16*	41 *11*	79.804	2^+			
3116.4?	(2^+)	2853.0 *7*	100 *20*	264.0888	4^+			E_γ,I_γ: from (n,n′γ).
		3036.5 *7*	40 *15*	79.804	2^+			E_γ,I_γ: from (n,n′γ).
		3115.4 *9*	60 *15*	0.0	0^+			E_γ,I_γ: from (n,n′γ).
3124.40	(4^+)	2303.22 *20*	50 *10*	821.1685	2^+			E_γ,I_γ: for doubly-placed γ; divided Iγ given.
		2575.0 *16*	100 *62*	548.7470	6^+			
3124.5	1^+	3045	46 *5*	79.804	2^+			
		3124.2 *10*	100	0.0	0^+	M1	1.40×10^{-3}	B(M1)(W.u.)=0.0159 *22* E_γ: from (n,n′γ).
3127.93	$(4^+,5,6^+)$	2579.0 *16*	100 *27*	548.7470	6^+			
		2864.0 *16*	61 *7*	264.0888	4^+			
3151.9	(≤4)	2330.7[e]	100	821.1685	2^+			
3158.3		3077.6[e]	100	79.804	2^+			
3181.1	1^-	3102.3 *6*	100 *6*	79.804	2^+			E_γ: from (n,n′γ).
		3181	56	0.0	0^+	E1	1.48×10^{-3}	B(E1)(W.u.)=3.2×10^{-5} *5*
3187.9	15^-	534.1 *2*	100	2653.8	13^-			E_γ: from $^{170}Er(^{136}Xe,X\gamma)$.
3190	1^-	3110	62 *6*	79.804	2^+			
		3190	100	0.0	0^+	E1	1.48×10^{-3}	B(E1)(W.u.)=0.00020 *3*
3198.0	(≤4)	3118.2[e]	100	79.804	2^+			
3205.2		2941.1[e]	100	264.0888	4^+			
3208.0	$1^{(+)}$	3208.0 *8*	100	0.0	0^+	(M1)	1.42×10^{-3}	E_γ: from (n,n′γ). Mult.: D, Δπ=(no) (1996Ma18) from (γ,γ′).
3220	1	3220	100	0.0	0^+	D		
3223.2	(4^+)	2402.0[e]		821.1685	2^+			
		2674.5[e]		548.7470	6^+			
		2959.1[e]		264.0888	4^+			
3238.0		2973.9[e]	100	264.0888	4^+			
3242.6	1	3242.6 *8*	100	0.0	0^+	D		E_γ: from (n,n′γ).
3259.5	16^+	687.6 *11*	100	2571.9	14^+	[E2]		B(E2)(W.u.)=3.4×10^2 *+3−11* E_γ: from level energy difference. Other Eγ: 687.6 from level energy difference in Coulomb excitation.

$^{168}_{68}Er_{100}$-43

Adopted Levels, Gammas (continued)

$\gamma(^{168}$Er) (continued)

E_i(level)	J^π_i	E_γ [†]	I_γ [‡]	E_f	J^π_f	Mult. [†]	α [f]	Comments
3285.1	(4$^+$)	2736.4 [e]		548.7470	6$^+$			
		3021.0 [e]		264.0888	4$^+$			
		3205.3 [e]		79.804	2$^+$			
3300.0	1	3300.0 *7*	100	0.0	0$^+$	D		E_γ: from (n,n$'\gamma$).
3327.3	(≤4)	3247.5 [e]	100	79.804	2$^+$			
3335.0	(4$^+$,5$^+$)	2439.2 [e]		895.7947	3$^+$			
		2786.3 [e]		548.7470	6$^+$			
3338.2	(2$^+$)	3258.4 *6*	100 *27*	79.804	2$^+$			E_γ: from (n,n$'\gamma$).
		3338.0 *10*	67	0.0	0$^+$	(Q)		E_γ: from (n,n$'\gamma$). Other Iγ: 89 *45* in (n,n$'\gamma$).
3342.0	1$^{(+)}$	3342.0 *10*	100	0.0	0$^+$	(M1)	1.45×10^{-3}	E_γ: from (n,n$'\gamma$). Mult.: D, $\Delta\pi$=(no) (1996Ma18) from (γ,γ').
3347.7		2352.9 [e]	100	994.7474	4$^+$			
3358.7	1$^+$	3278	66.9 *19*	79.804	2$^+$			
		3358.7 *6*	100	0.0	0$^+$	M1	1.46×10^{-3}	B(M1)(W.u.)=0.064 *5* E_γ: from (n,n$'\gamma$).
3370.9	(2$^+$)	3291.9 *9*	100 *16*	79.804	2$^+$			E_γ: from (n,n$'\gamma$).
		3370.9 *7*	87	0.0	0$^+$	(Q)		E_γ: from (n,n$'\gamma$). Other Iγ: 89 *33* in (n.n$'\gamma$).
3376.6	(4$^+$)	2555.4 [e]		821.1685	2$^+$			
		2827.9 [e]		548.7470	6$^+$			
		3296.8 [e]		79.804	2$^+$			
3391	1$^+$	3311	44.7 *9*	79.804	2$^+$			
		3391	100	0.0	0$^+$	M1	1.46×10^{-3}	B(M1)(W.u.)=0.140 *11* Other B(M1)(W.u.): 0.30 *7* from (e,e$'$).
3394.5		2300.2 [e]	100	1094.0383	4$^-$			
3399.3	(≤4)	3319.5 [e]	100	79.804	2$^+$			
3409.7	1$^+$	3330	62 *4*	79.804	2$^+$			E_γ,I_γ: from (γ,γ').
		3409.7 *9*	100	0.0	0$^+$	M1	1.47×10^{-3}	B(M1)(W.u.)=0.037 *5* E_γ: from (n,n$'\gamma$). Mult.,I_γ: from (γ,γ').
3415.5	(≤4)	3335.7 [e]	100	79.804	2$^+$			
3432.0	(4$^+$)	2883.3 [e]		548.7470	6$^+$			
		3352.2 [e]		79.804	2$^+$			
3439.6	1$^{(-)}$	3361	100 *17*	79.804	2$^+$			E_γ,I_γ: from (γ,γ').
		3439.6 *9*	56	0.0	0$^+$	(E1)	1.57×10^{-3}	B(E1)(W.u.)=0.000103 *25* E_γ: from (n,n$'\gamma$). I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) from (γ,γ').
3449	1	3449	100	0.0	0$^+$	D		E_γ,Mult.: from (γ,γ').

Adopted Levels, Gammas (continued)

$\gamma(^{168}Er)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult. †	α f	Comments
3458	1^+	3378	48.7 *19*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3458	100	0.0	0^+	M1	1.48×10^{-3}	B(M1)(W.u.)=0.061 *6* E_γ,I_γ,Mult.: from (γ,γ').
3469	1^-	3389	61 *7*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3469	100	0.0	0^+	E1	1.58×10^{-3}	B(E1)(W.u.)=0.00032 *5* E_γ,I_γ,Mult.: from (γ,γ').
3475.7	(≤4)	3395.9[e]	100	79.804	2^+			
3481	1^-	3401	100 *5*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3481	54	0.0	0^+	E1	1.59×10^{-3}	B(E1)(W.u.)=0.00062 *9* E_γ,I_γ,Mult.: from (γ,γ').
3487.3		2591.5[e]	100	895.7947	3^+			
3496.4	(4^+)	2947.7[e]		548.7470	6^+			
		3416.6[e]		79.804	2^+			
3499.3		2405.3[e]	100	1094.0383	4^-			
3504.2	1^-	3424.4 *9*	100 *29*	79.804	2^+			E_γ: from $(n,n'\gamma)$. I_γ: from (γ,γ').
		3505	59	0.0	0^+	D		E_γ,I_γ,Mult.: from (γ,γ').
3507.8	(≤4)	3428.0[e]	100	79.804	2^+			
3513.9		2965.2[e]	100	548.7470	6^+			
3516	1^-	3436	75 *8*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3516	100	0.0	0^+	E1	1.60×10^{-3}	B(E1)(W.u.)=0.00022 *5* E_γ,I_γ,Mult.: from (γ,γ').
3521.1	(≤4)	3441.3[e]	100	79.804	2^+			
3529	1	3529	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3560.0		3011.3[e]	100	548.7470	6^+			
3566	1	3566	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3570.9	(4^+)	2675.1[e]		895.7947	3^+			
		2749.7[e]		821.1685	2^+			
		3022.2[e]		548.7470	6^+			
3588.0		2593.2[e]	100	994.7474	4^+			
3591	$1^{(+)}$	3511	48 *8*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3591	100	0.0	0^+	(M1)	1.51×10^{-3}	B(M1)(W.u.)=0.0097 *19* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(no) (1996Ma18) in (γ,γ').
3598	1	3518	62 *9*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3598	100	0.0	0^+	D		E_γ,I_γ,Mult.: from (γ,γ').
3606.8	(≤4)	3527.0[e]	100	79.804	2^+			
3617.6	2^+	2623.0[e]		994.7474	4^+			
		2796.6[e]		821.1685	2^+			

From ENSDF

$^{168}_{68}Er_{100}$-45

$\gamma(^{168}Er)$ (continued)

E_i(level)	J_i^π	E_γ†	I_γ‡	E_f	J_f^π	Mult.†	αf	Comments
3617.6	2^+	3538.0e		79.804	2^+			
3627	1	3627	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3634	$1^{(-)}$	3634	100	0.0	0^+	(E1)	1.65×10^{-3}	E_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) in (γ,γ').
3643.1	(≤4)	2821.9e	100	821.1685	2^+			
3657	$1^{(+)}$	3577	40 *3*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3657	100	0.0	0^+	(M1)	1.53×10^{-3}	B(M1)(W.u.)=0.036 *5* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(no) (1996Ma18) in (γ,γ').
3660.9	(≤4)	2839.7e	100	821.1685	2^+			
3680.1	$(2^+,3,4^+)$	2685.3e		994.7474	4^+			
		2858.9e		821.1685	2^+			
3696	1	3616	75 *15*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3696	100	0.0	0^+	D		E_γ,I_γ,Mult.: from (γ,γ').
3702.5	(≤4)	3622.7e	100	79.804	2^+			
3703	1^-	3623	100 *9*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3703	44	0.0	0^+	E1	1.67×10^{-3}	B(E1)(W.u.)=0.00026 *5* E_γ,I_γ,Mult.: from (γ,γ').
3715.2		2819.4e	100	895.7947	3^+			
3719	$1^{(-)}$	3639	100 *18*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3719	84	0.0	0^+	(E1)	1.68×10^{-3}	B(E1)(W.u.)=0.00021 *6* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) from (γ,γ').
3737	1	3737	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3739.0	$(2^-,3,4^+)$	2645.0e		1094.0383	4^-			
		2917.8e		821.1685	2^+			
3745	$1^{(-)}$	3665	100 *6*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3745	64	0.0	0^+	(E1)	1.69×10^{-3}	B(E1)(W.u.)=0.00031 *5* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) in (γ,γ').
3755.4		2859.6e	100	895.7947	3^+			
3761.6	(≤4)	2940.4e	100	821.1685	2^+			
3776	$1^{(+)}$	3696	47 *8*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3776	100	0.0	0^+	(M1)	1.56×10^{-3}	B(M1)(W.u.)=0.0103 *20* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(no) (1996Ma18) in (γ,γ').
3781.7	$(4^+,5,6^+)$	2786.9e		994.7474	4^+			
		3233.0e		548.7470	6^+			
		3517.6e		264.0888	4^+			

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$\gamma(^{168}Er)$ (continued)

E_i(level)	J^π_i	E_γ [†]	I_γ [‡]	E_f	J^π_f	Mult. [†]	α [f]	Comments
3789	1	3789	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3799.4		3250.7 [e]	100	548.7470	6^+			
3800	$1^{(-)}$	3720	190 *40*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3800	100	0.0	0^+	(E1)	1.71×10^{-3}	B(E1)(W.u.)=0.00012 *4* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) in (γ,γ').
3806	1^+	3726	53 *4*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3806	100	0.0	0^+	M1	1.57×10^{-3}	B(M1)(W.u.)=0.037 *6* E_γ,I_γ,Mult.: from (γ,γ').
3814	$1^{(-)}$	3734	74 *10*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3814	100	0.0	0^+	(E1)	1.72×10^{-3}	B(E1)(W.u.)=0.00022 *5* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) in (γ,γ').
3817.0	(≤4)	2995.8 [e]	100	821.1685	2^+			
3835.2		3571.1 [e]	100	264.0888	4^+			
3869	1	3869	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3888.4		2992.6 [e]	100	895.7947	3^+			
3895.2		3631.1 [e]	100	264.0888	4^+			
3908.3		3644.2 [e]	100	264.0888	4^+			
3912	1	3912	100	0.0	0^+	D		E_γ,Mult.: from (γ,γ').
3921	$1^{(-)}$	3841	42 *8*	79.804	2^+			E_γ,I_γ: from (γ,γ').
		3921	100	0.0	0^+	(E1)	1.75×10^{-3}	B(E1)(W.u.)=0.00012 *3* E_γ,I_γ: from (γ,γ'). Mult.: D, $\Delta\pi$=(yes) (1996Ma18) in (γ,γ').

† From ^{167}Er(n,γ) E=thermal, except where noted.

‡ Relative photon branching from each level; values are from ^{167}Er(n,γ) E=thermal, except where noted. Upper limits are given for photon branchings affected by multiple placement.

<-91 or $>+200$, or +32 *+24−9* (1998Al15), −28 *+6−12* (1981Iw04), −28 *+9−23* (1975Be43), +64 *+135−26* (1971La11 from $\gamma\gamma(\theta)$) in ε decay; $\geq$29 (1972Do01) and $\leq$−25 (1978Mc02) from Coulomb excitation; +26 *+27−8* from (n,n$'\gamma$). Data are inconsistent, but M1 admixture (if any) clearly is small. Evaluator adopts a magnitude of 25 as a lower limit for δ(741).

@ From $\gamma\gamma(\theta)$ (1981Iw04) in ^{168}Tm ε decay. Other δ: δ=5.1 *+56−13* from ce data in Er(n,γ) E=thermal; −4.9 *3* (1975Be43) in ε decay; however $\delta>71$ (1975Ab06) in ε decay and δ=−12.0 *+16−23* from $\gamma(\theta)$ in (n,n$'\gamma$).

& Weighted average of +20 *4* (1981Iw04), +17 *3* (1975Be43), +13 *+9−3* (1975Ab06) from $\gamma\gamma(\theta)$ in ^{168}Tm ε decay. Other δ: 1/(+0.005 *15*) (i.e., $\delta<-100$ or $\delta>+50$) (1998Al15) from 816γ-80$\gamma(\theta)$ in ε decay; 5.1 *+12−7* from sub-shell ratios in Er(n,γ) E=thermal; −70 *+40−570* from $\gamma(\theta)$ in (n,n$'\gamma$).

[a] From Coulomb excitation.

[b] From $\gamma\gamma(\theta)$ in ^{168}Tm ε decay.

$^{168}_{68}Er_{100}$-47

$\gamma(^{168}Er)$ (continued)

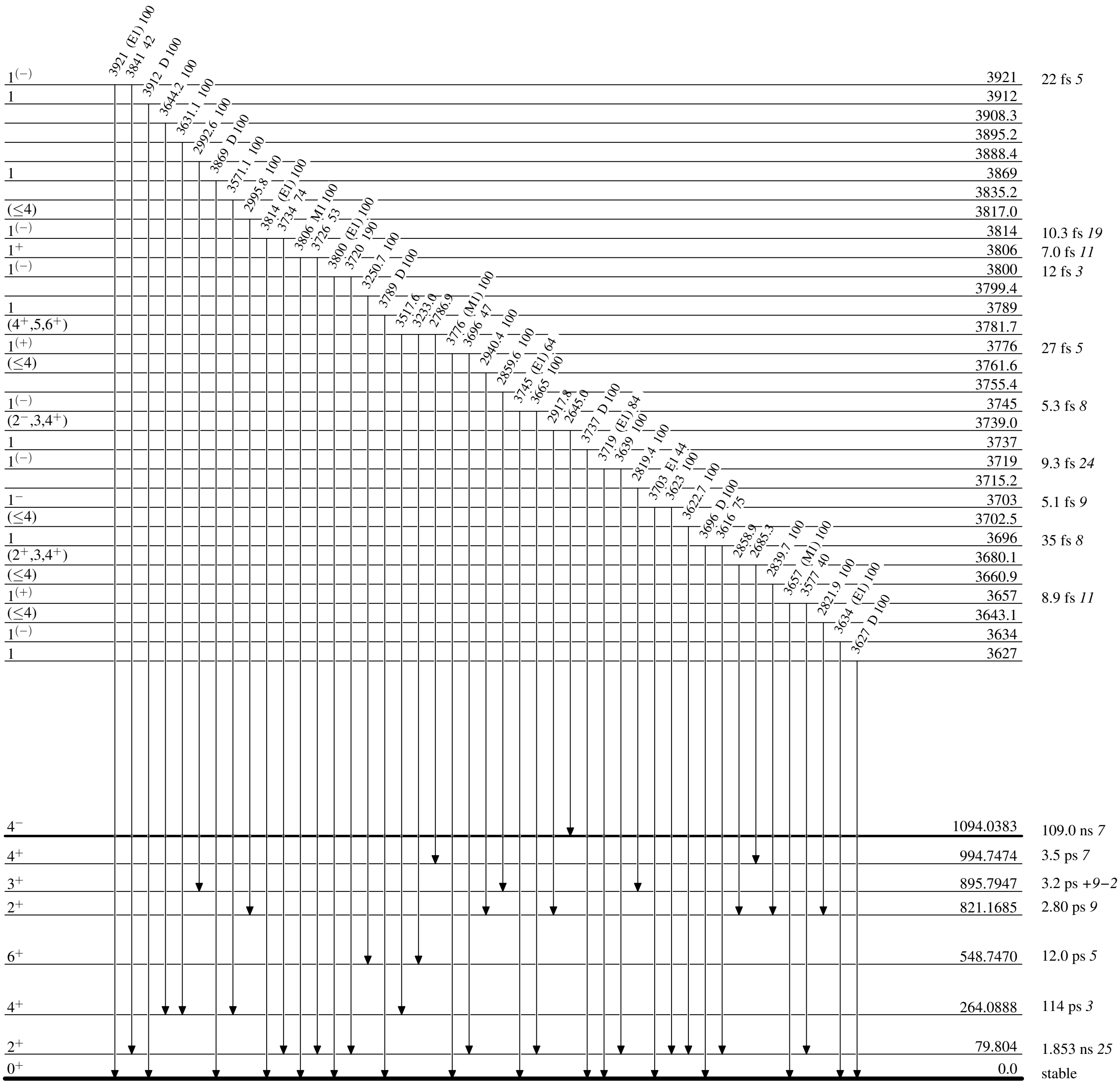
[c] From ce data in ^{168}Tm ε decay.
[d] From ^{168}Tm ε decay.
[e] From level energy difference in (n,γ) E=thermal.
[f] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[g] Multiply placed with undivided intensity.
[h] Multiply placed with intensity suitably divided.
[i] Placement of transition in the level scheme is uncertain.

$^{168}_{68}Er_{100}$-48

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

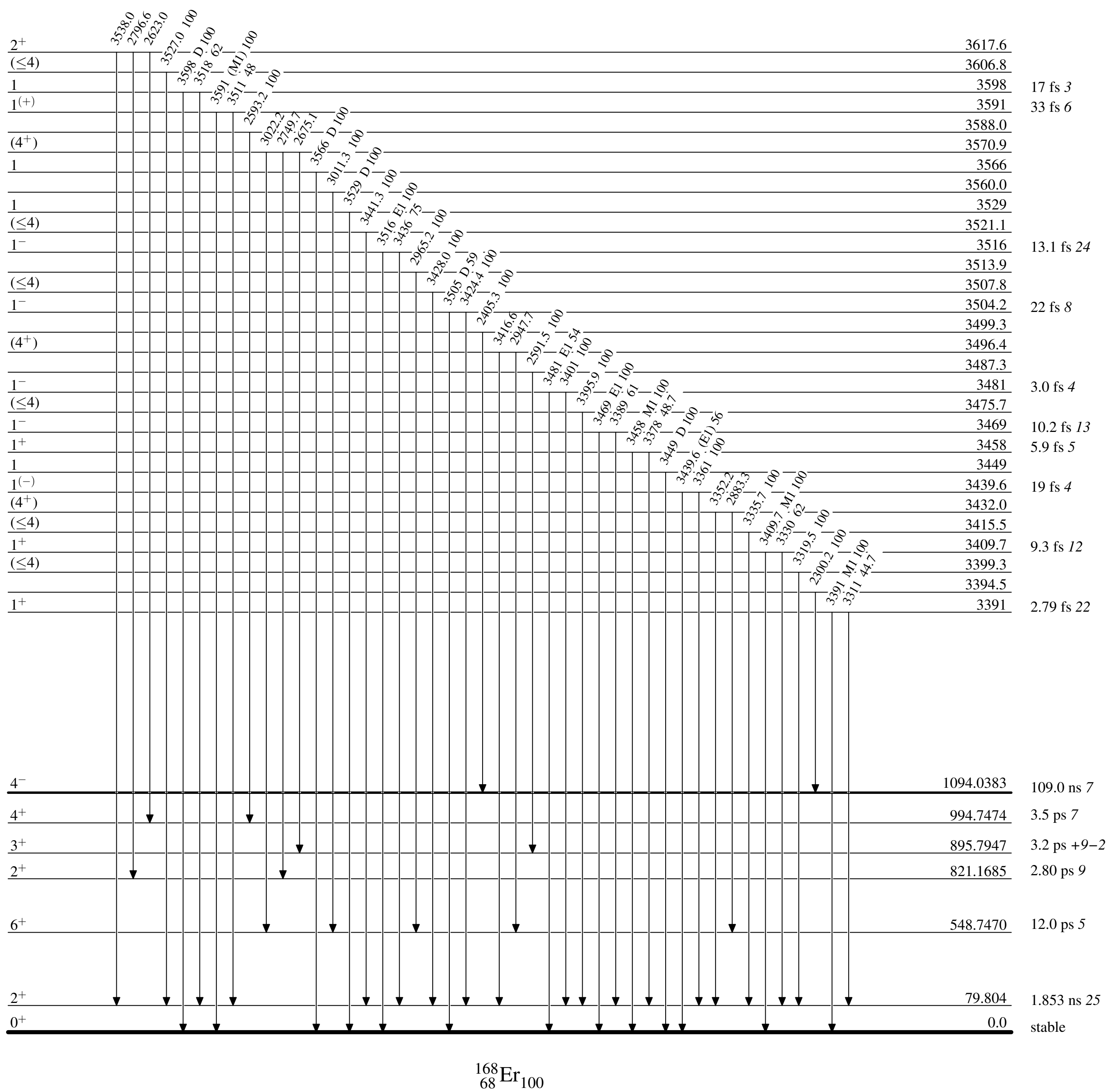


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

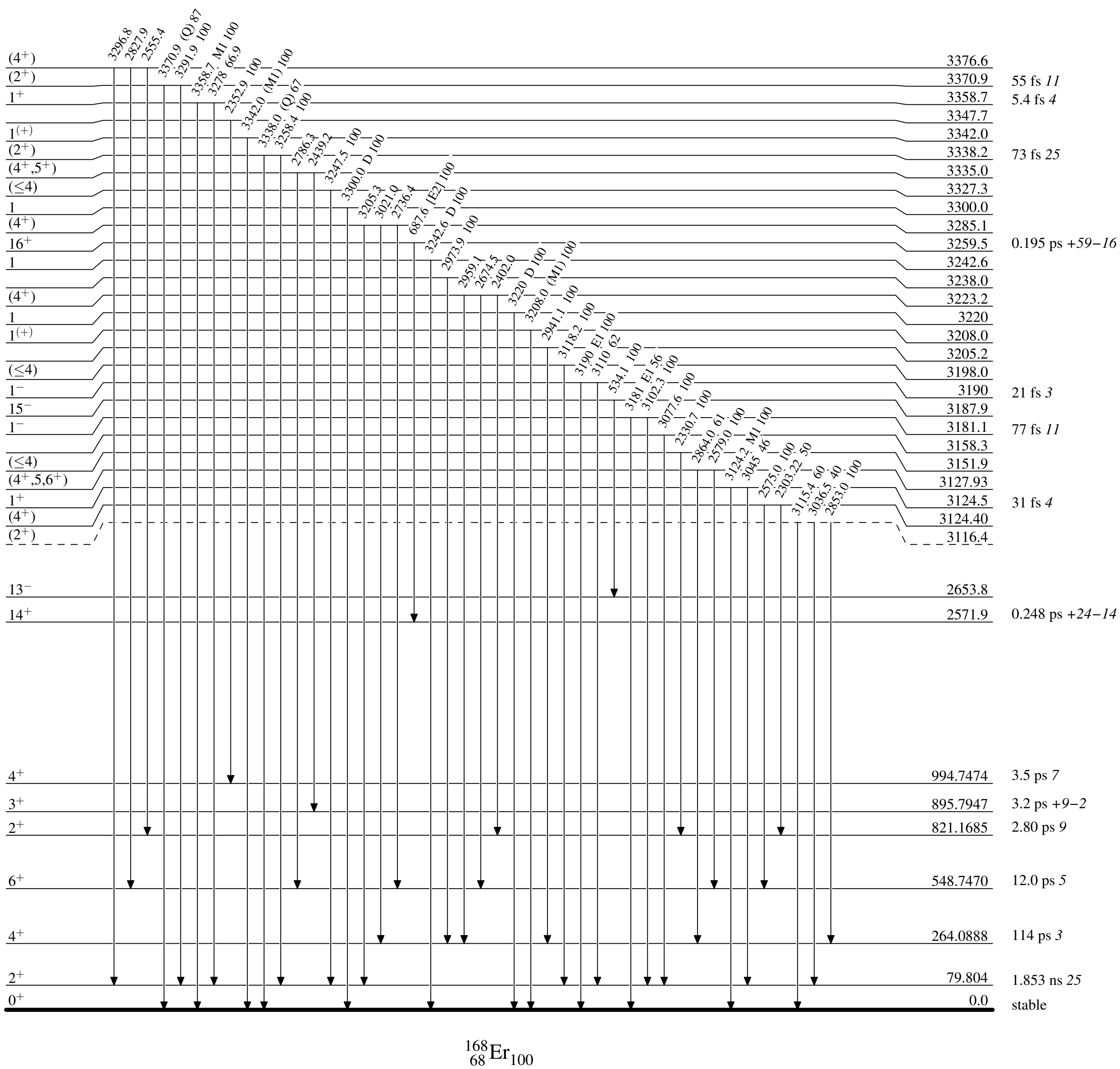
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



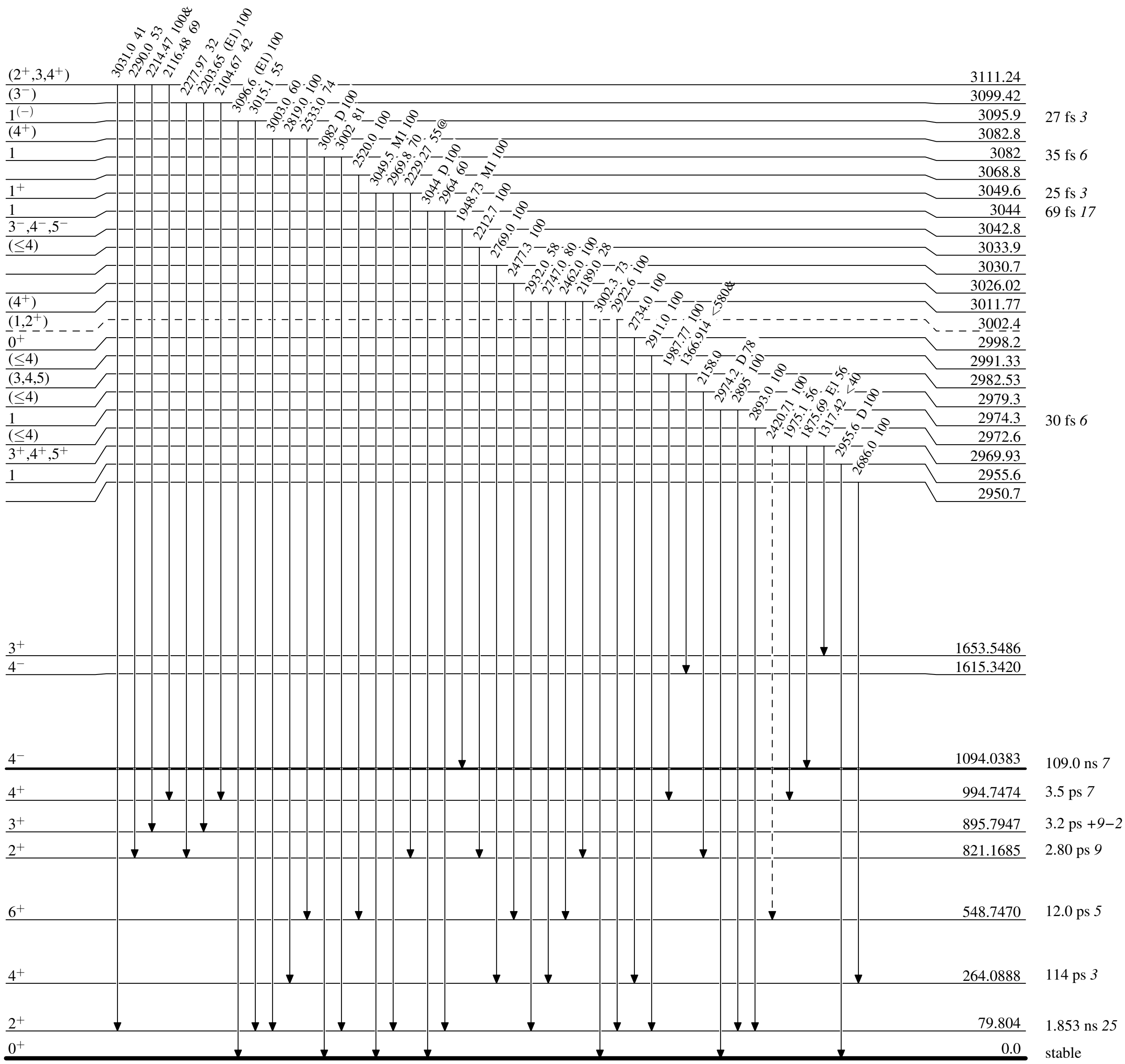
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

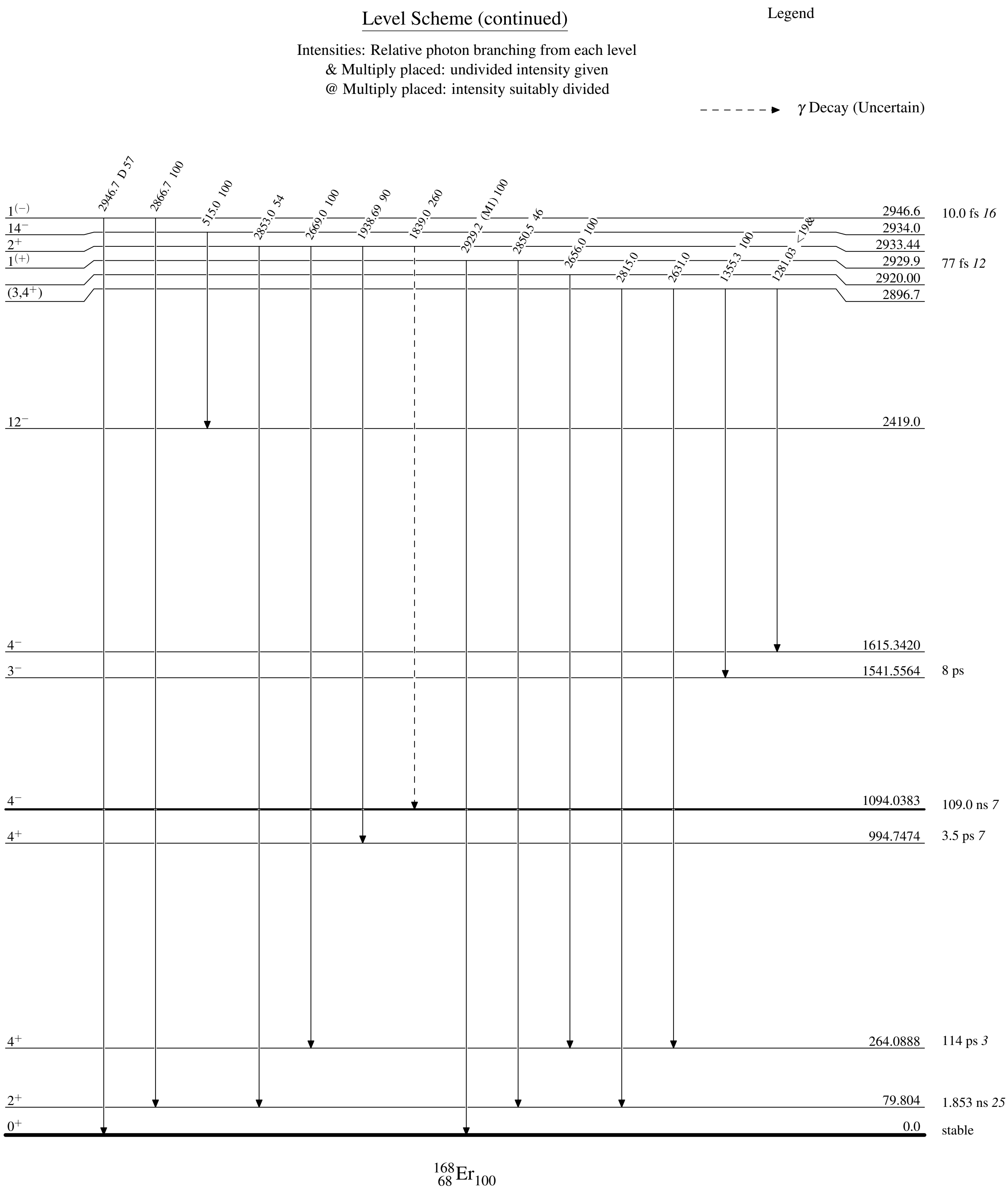


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

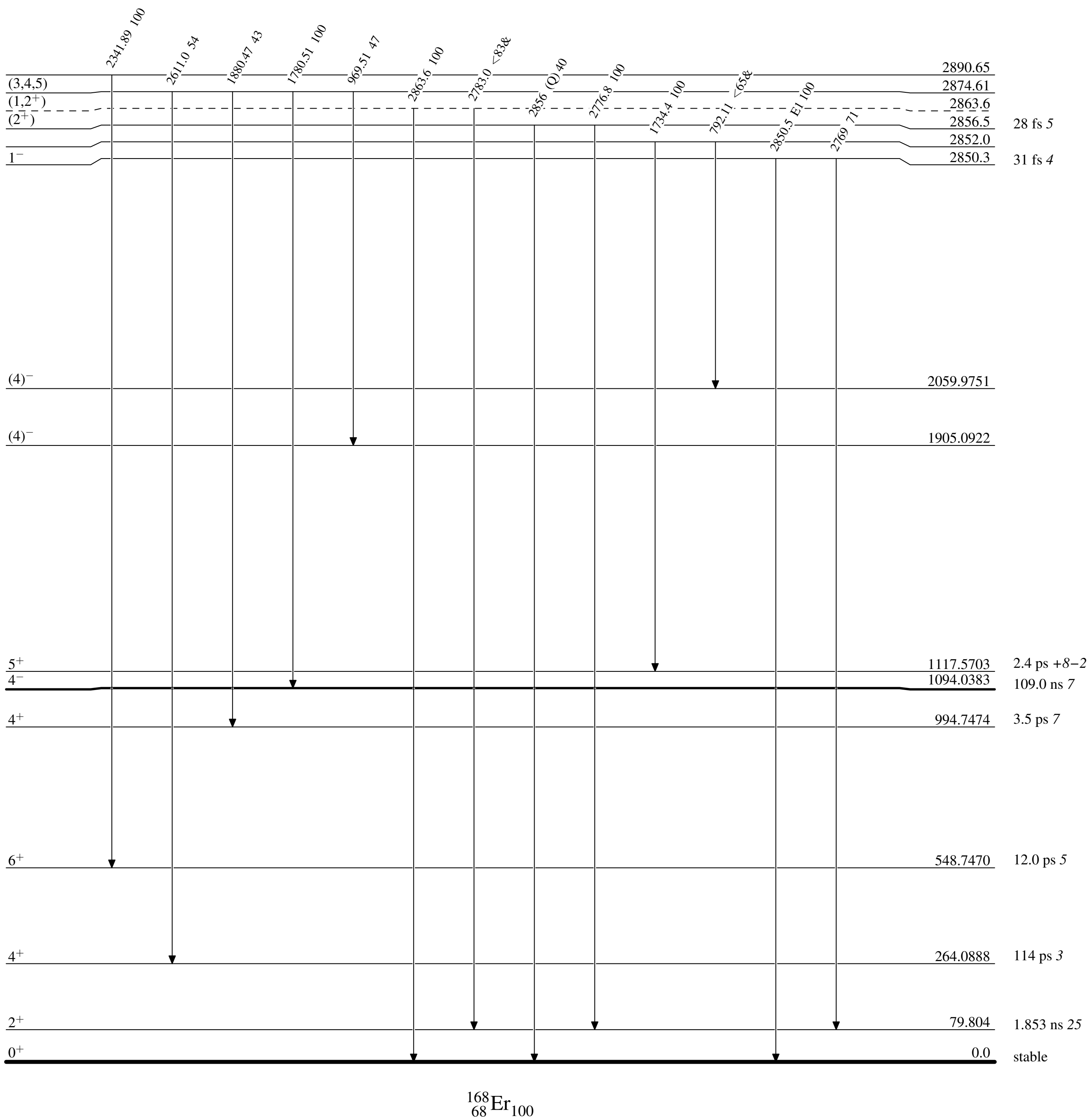
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

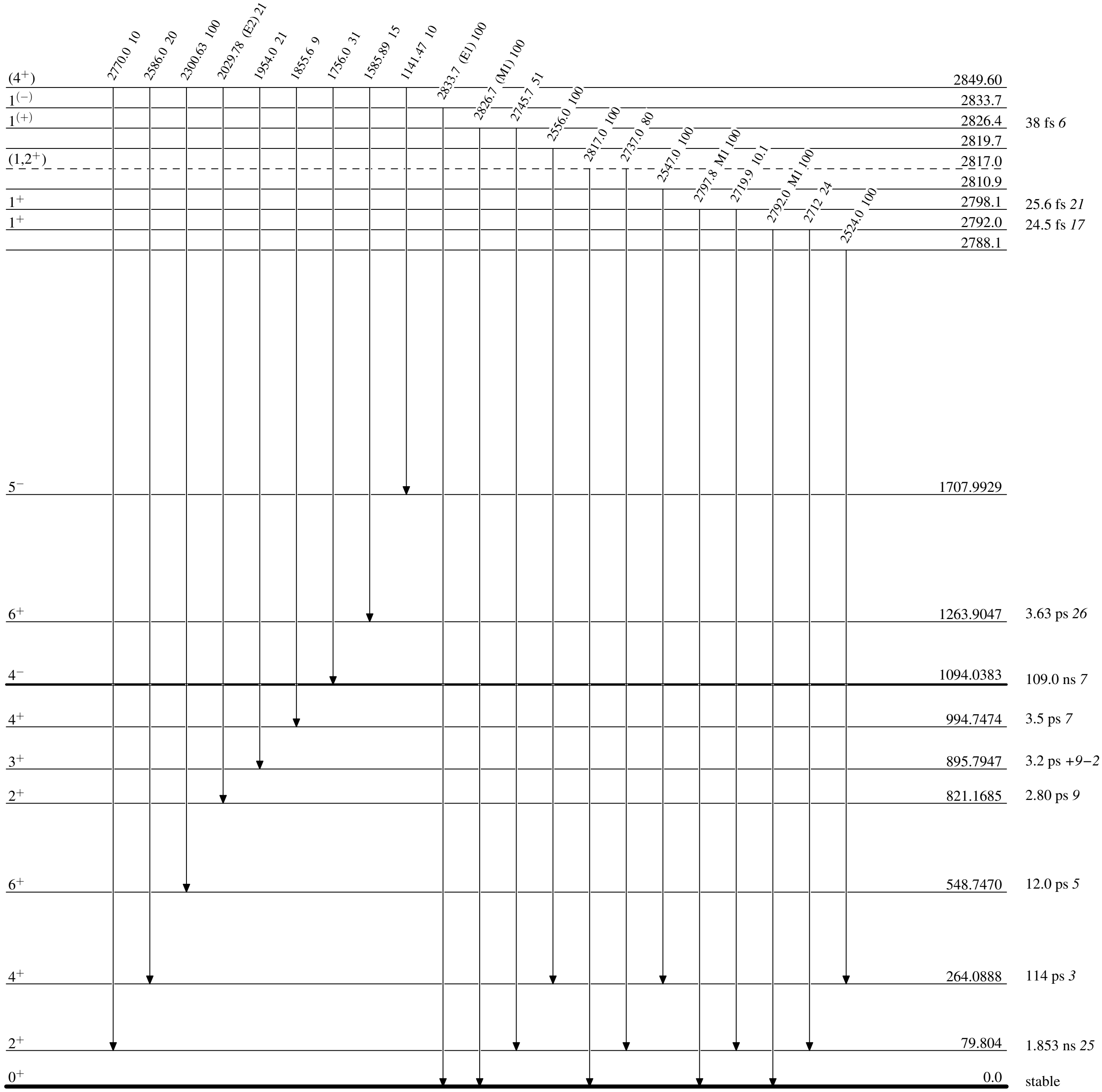
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

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

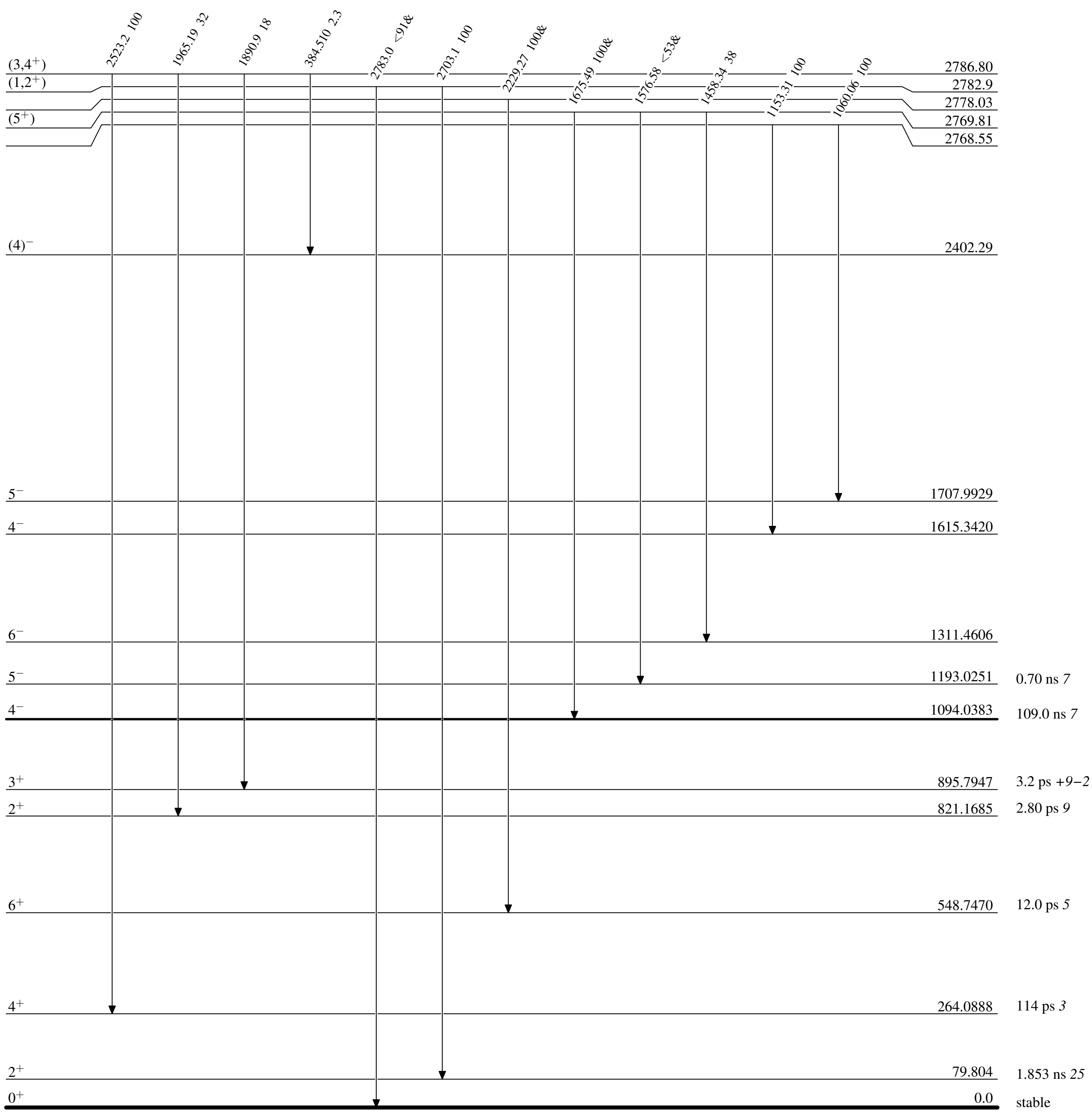


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

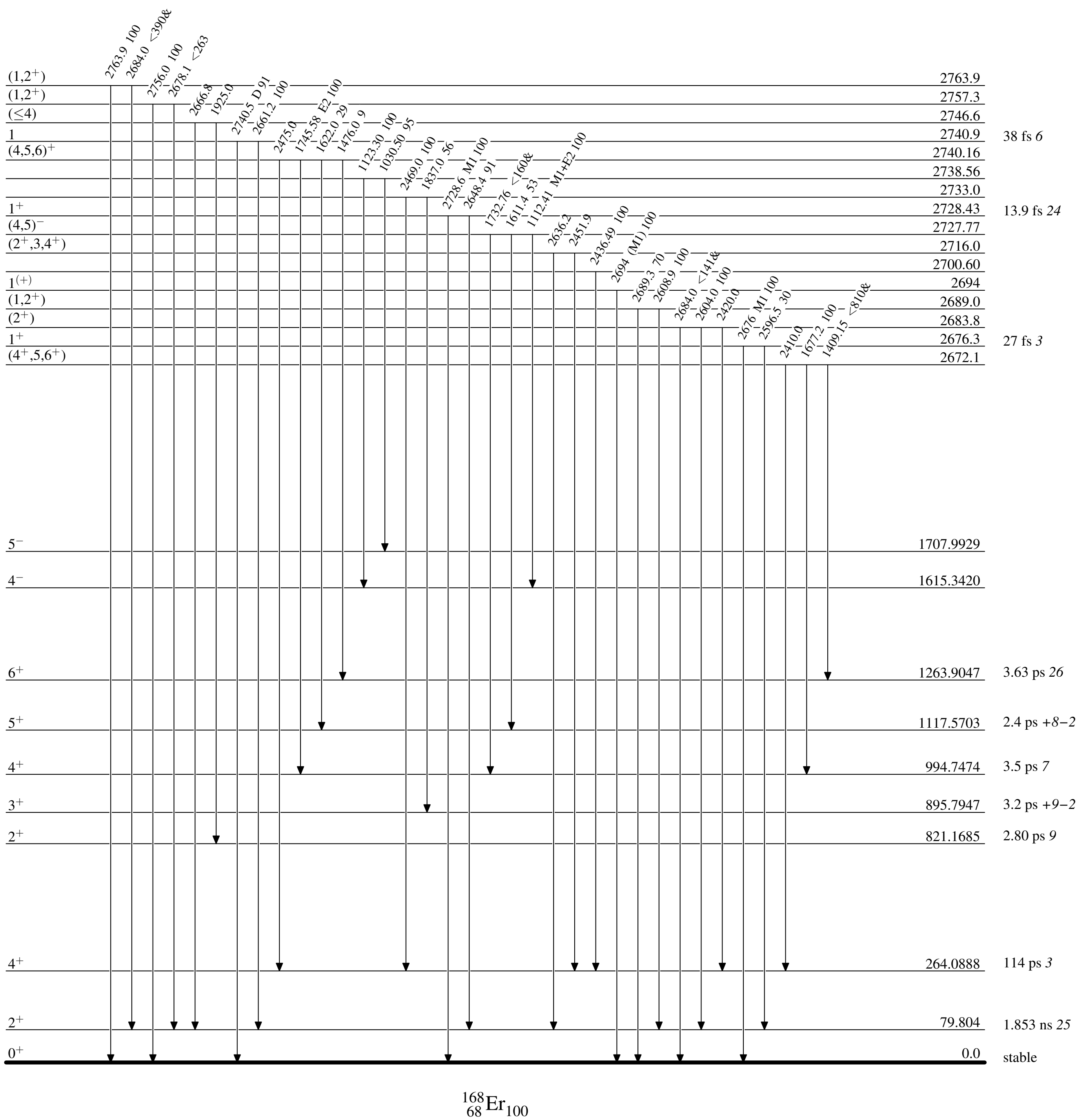


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

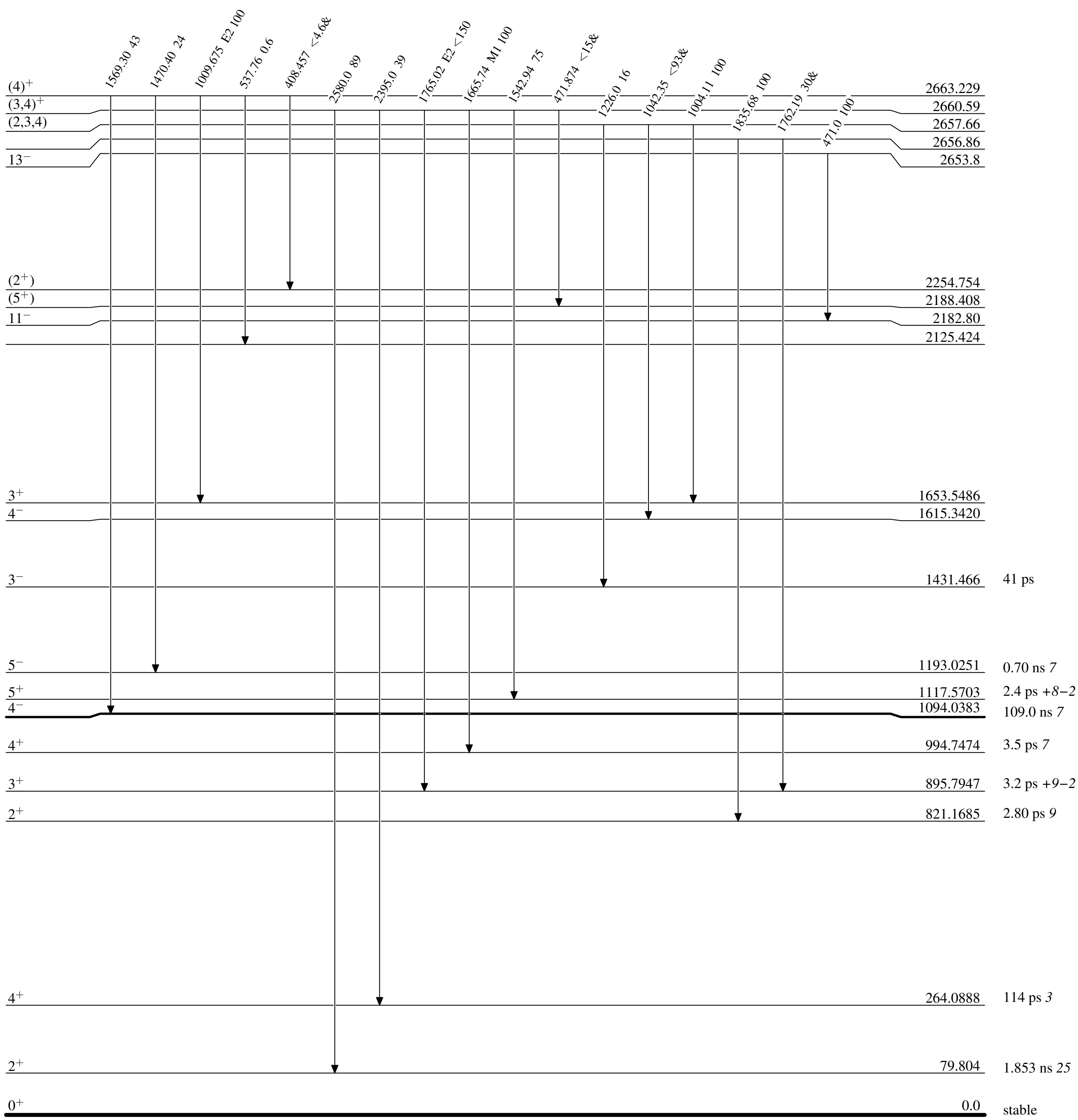
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

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

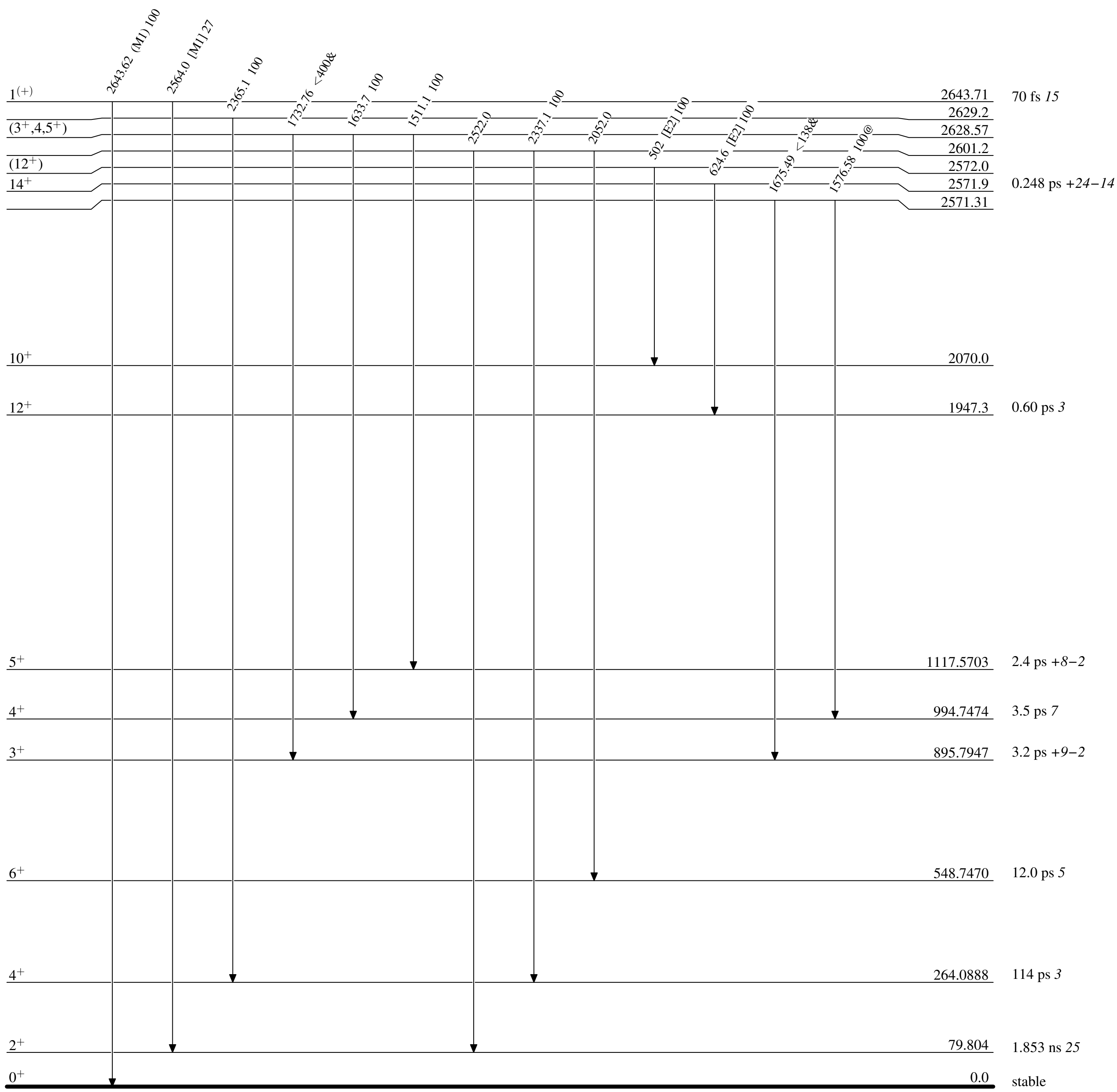


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

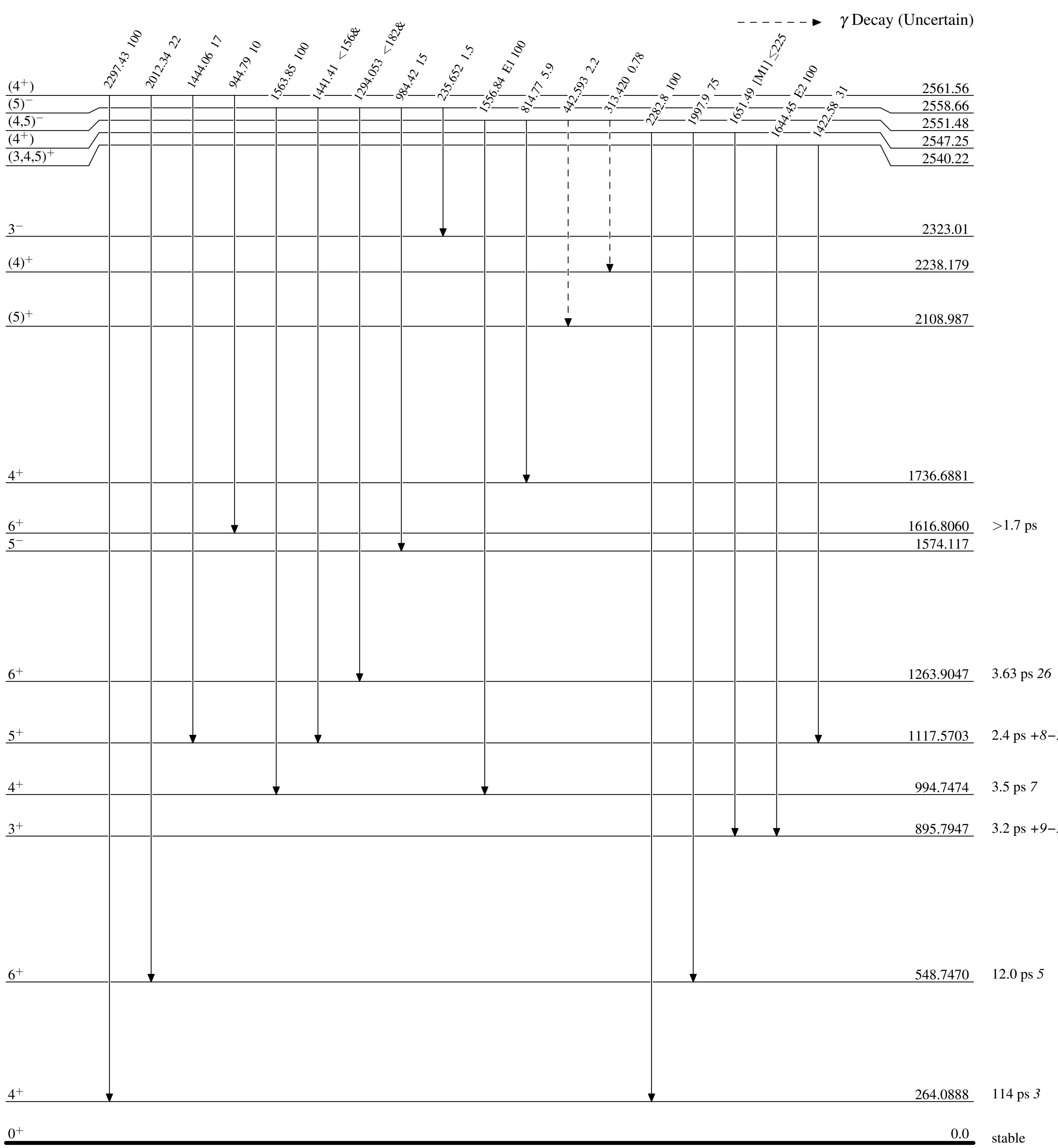


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

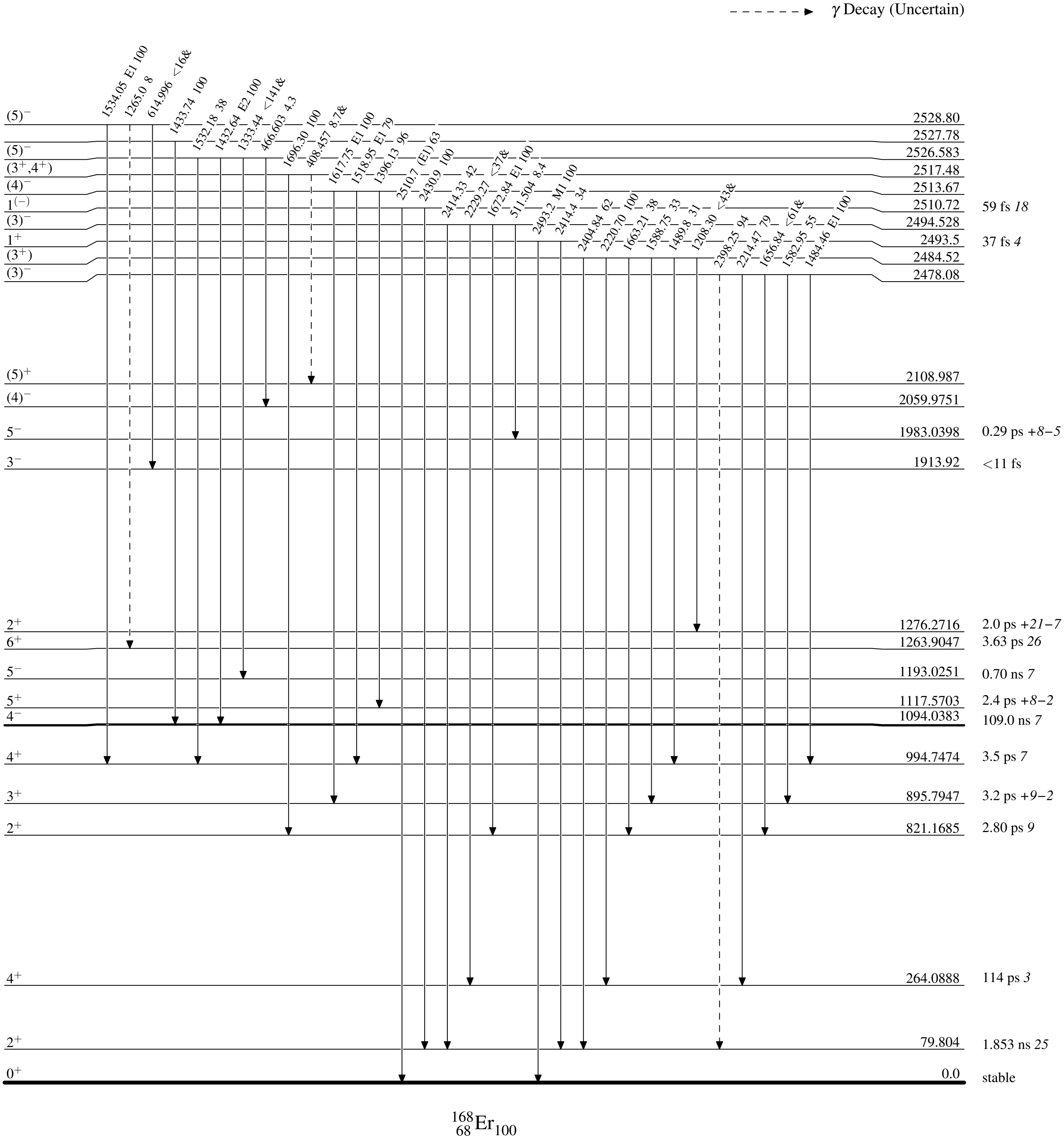


Adopted Levels, Gammas

Level Scheme (continued)

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

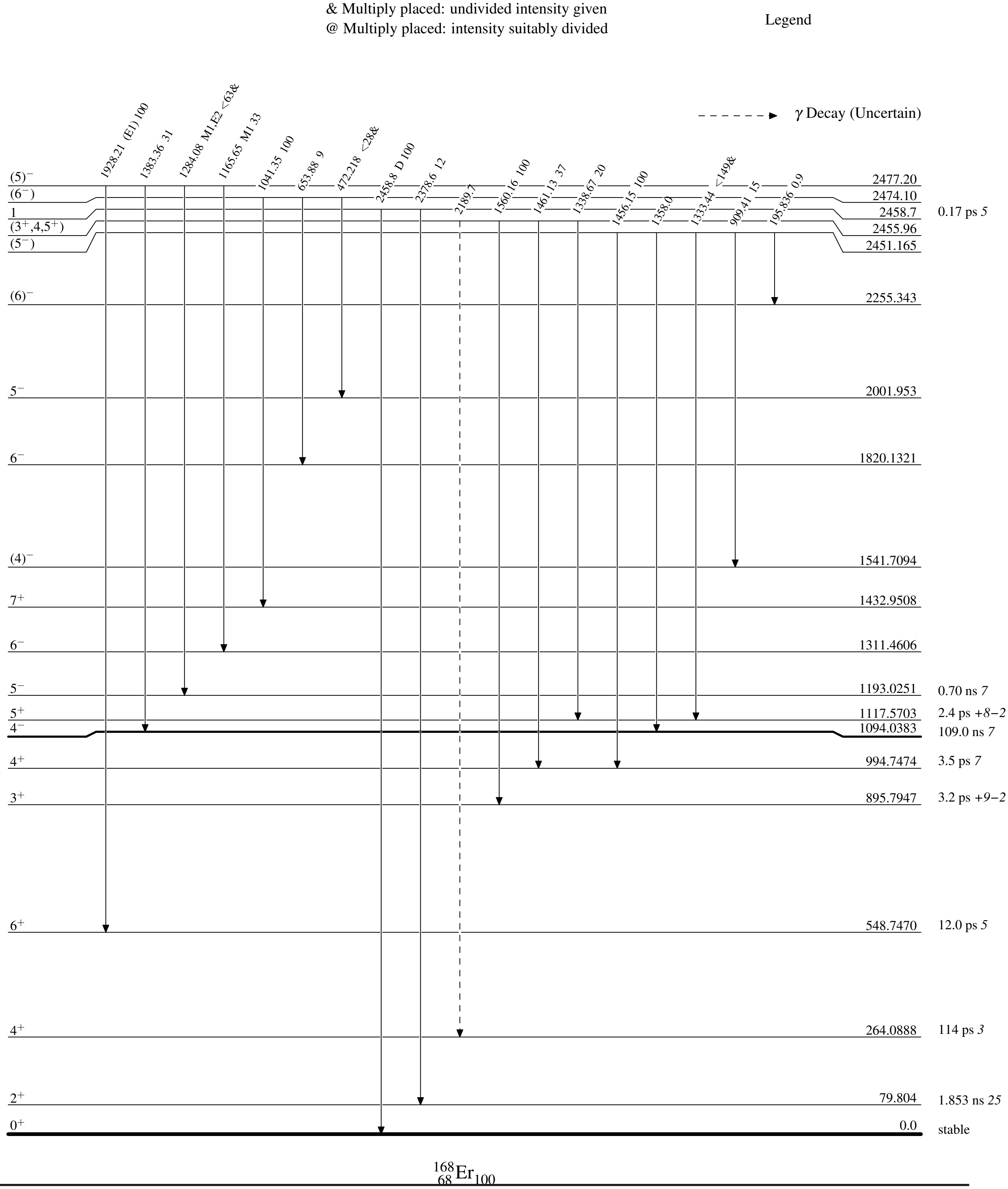
Legend



Adopted Levels, Gammas

Level Scheme (continued)

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



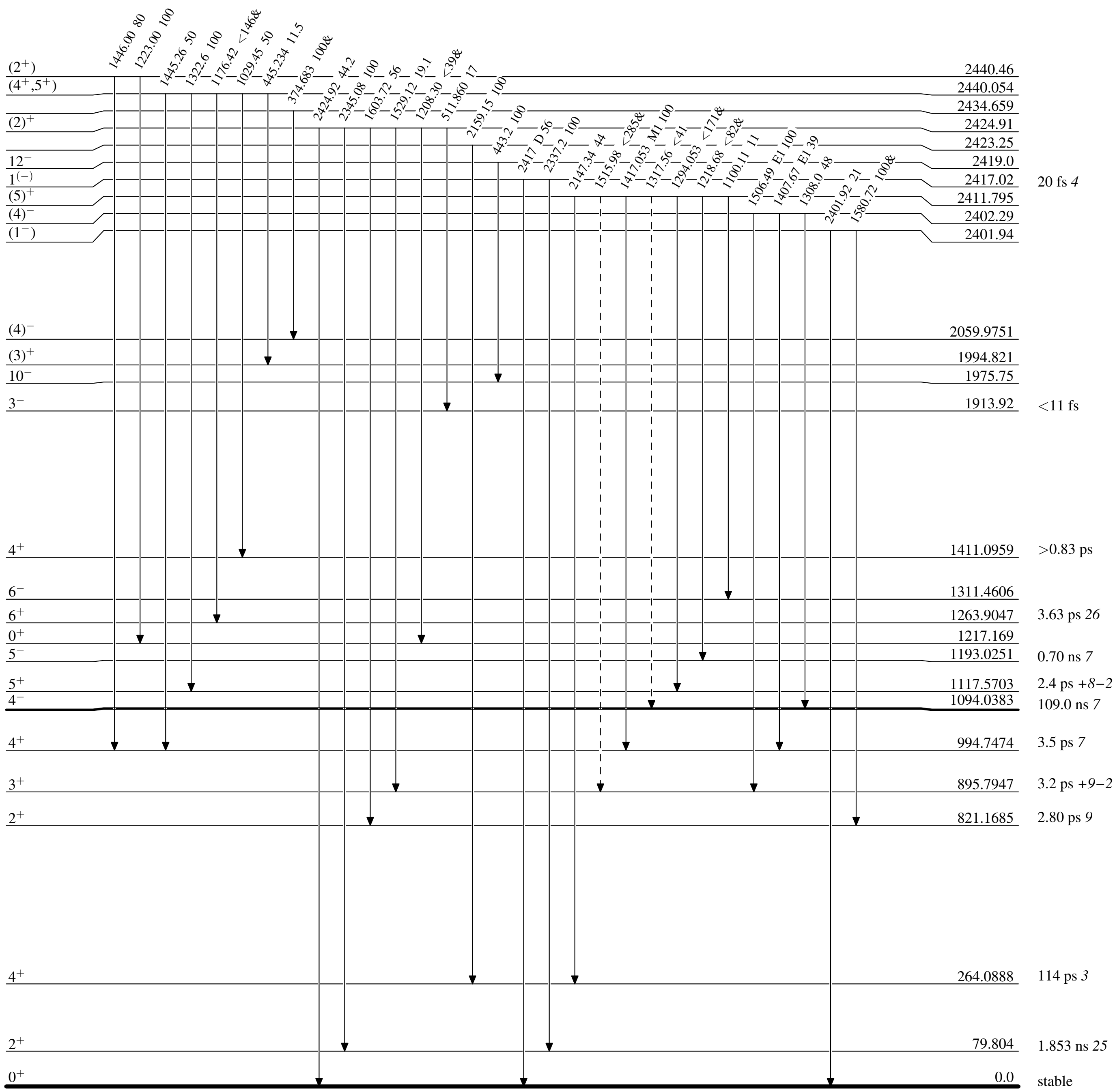
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

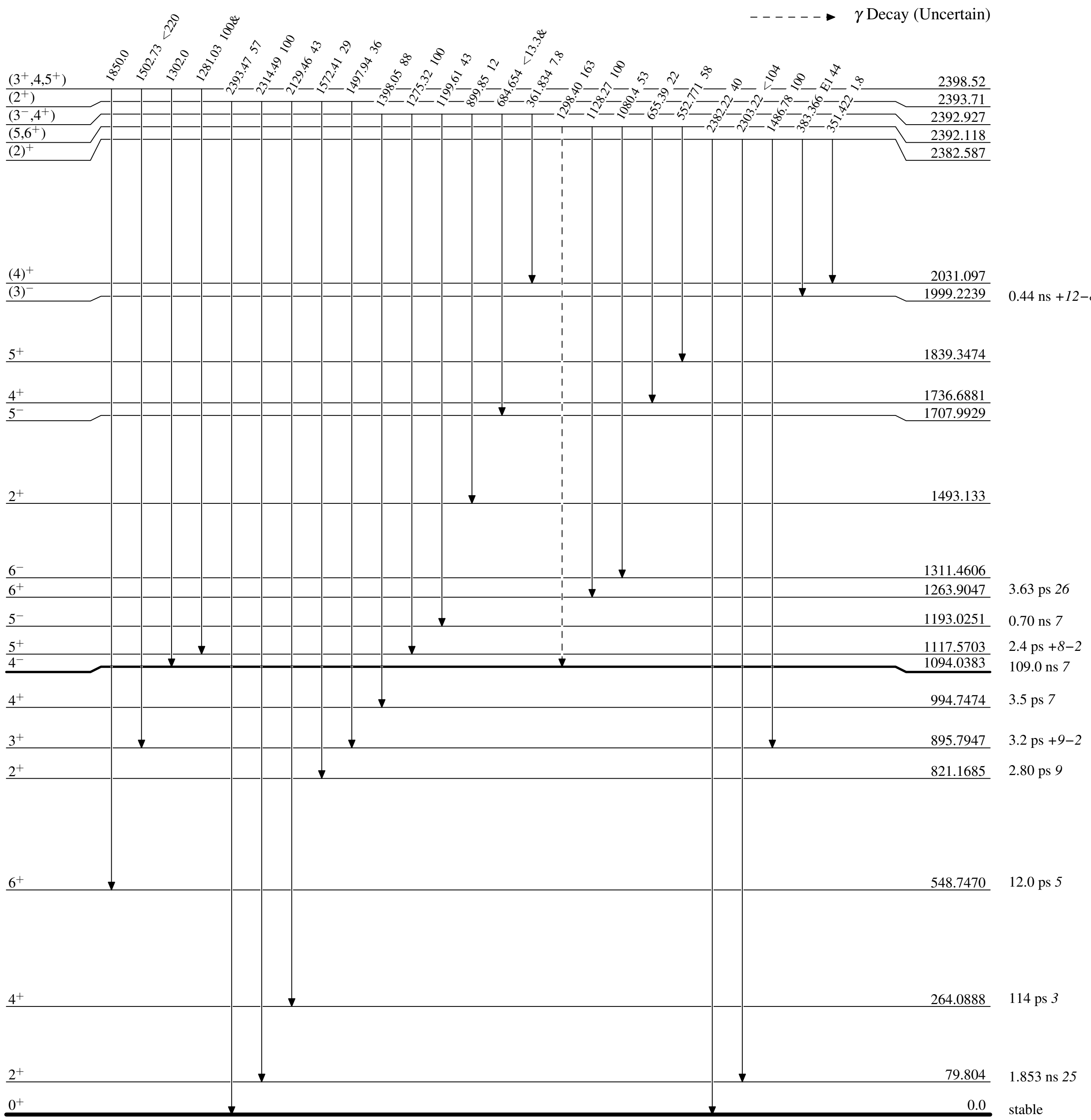


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{168}_{68}Er_{100}$

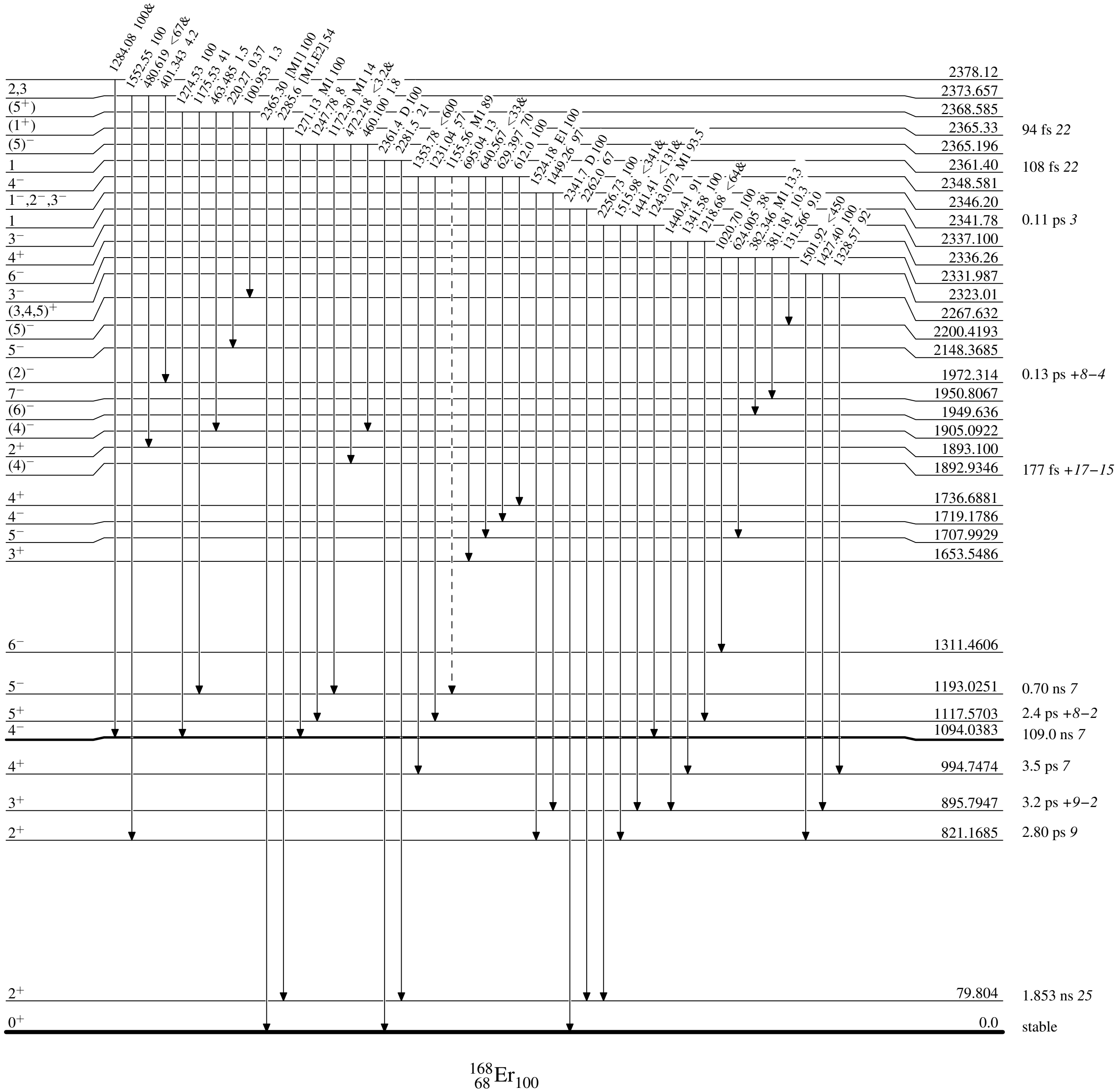
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

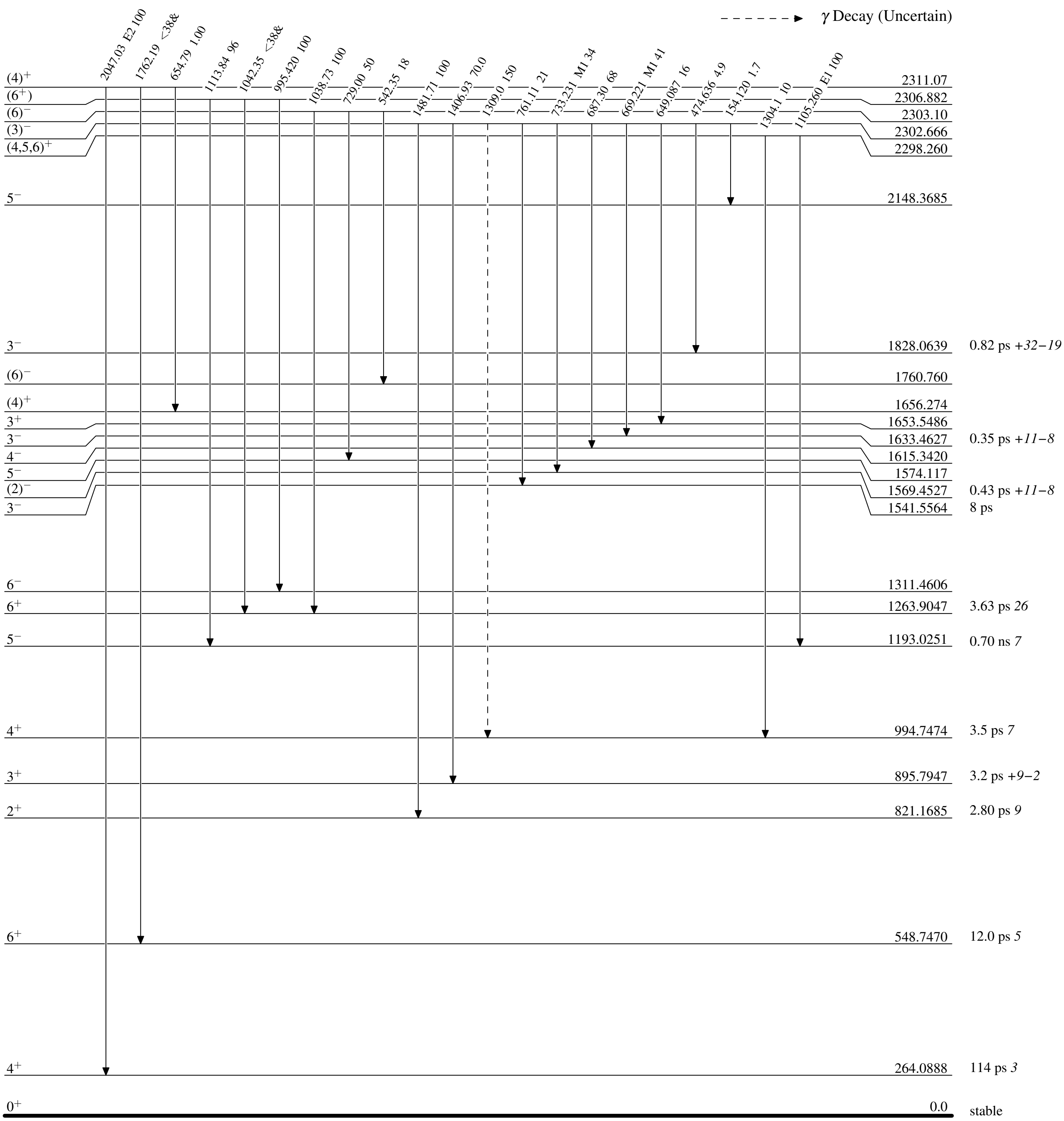


Adopted Levels, Gammas

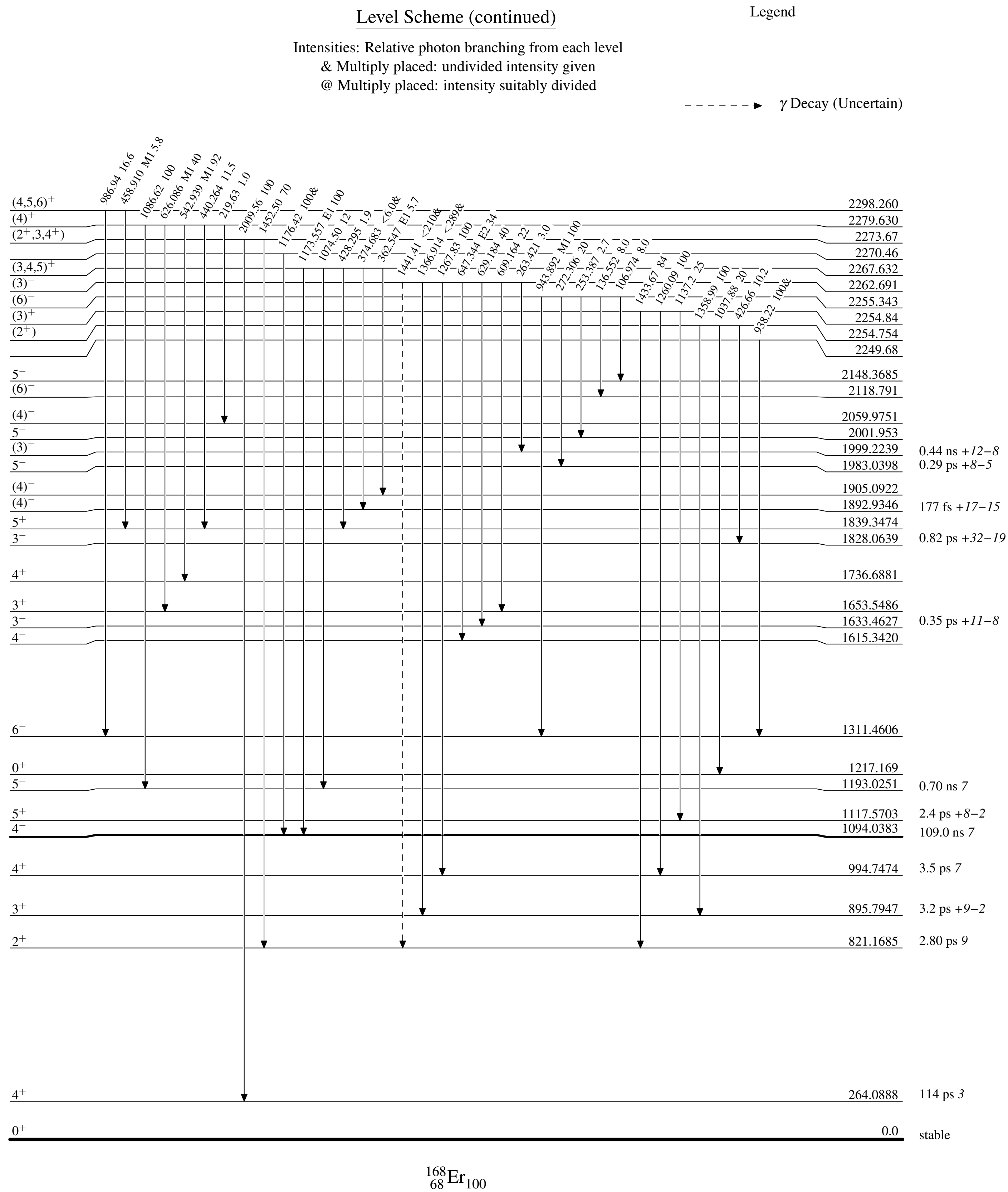
Level Scheme (continued)

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

Legend



Adopted Levels, Gammas

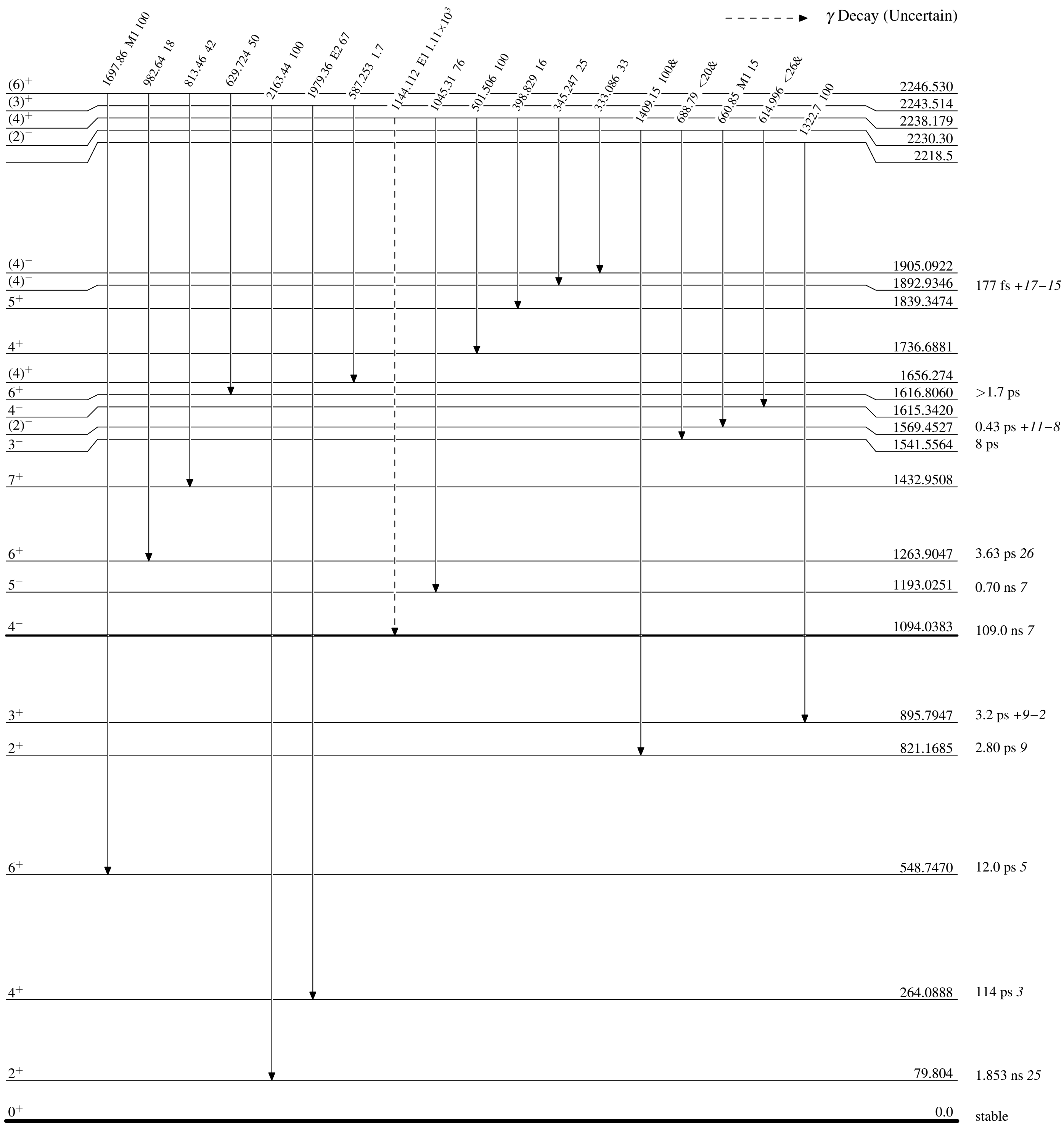


Adopted Levels, Gammas

Level Scheme (continued)

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

Legend



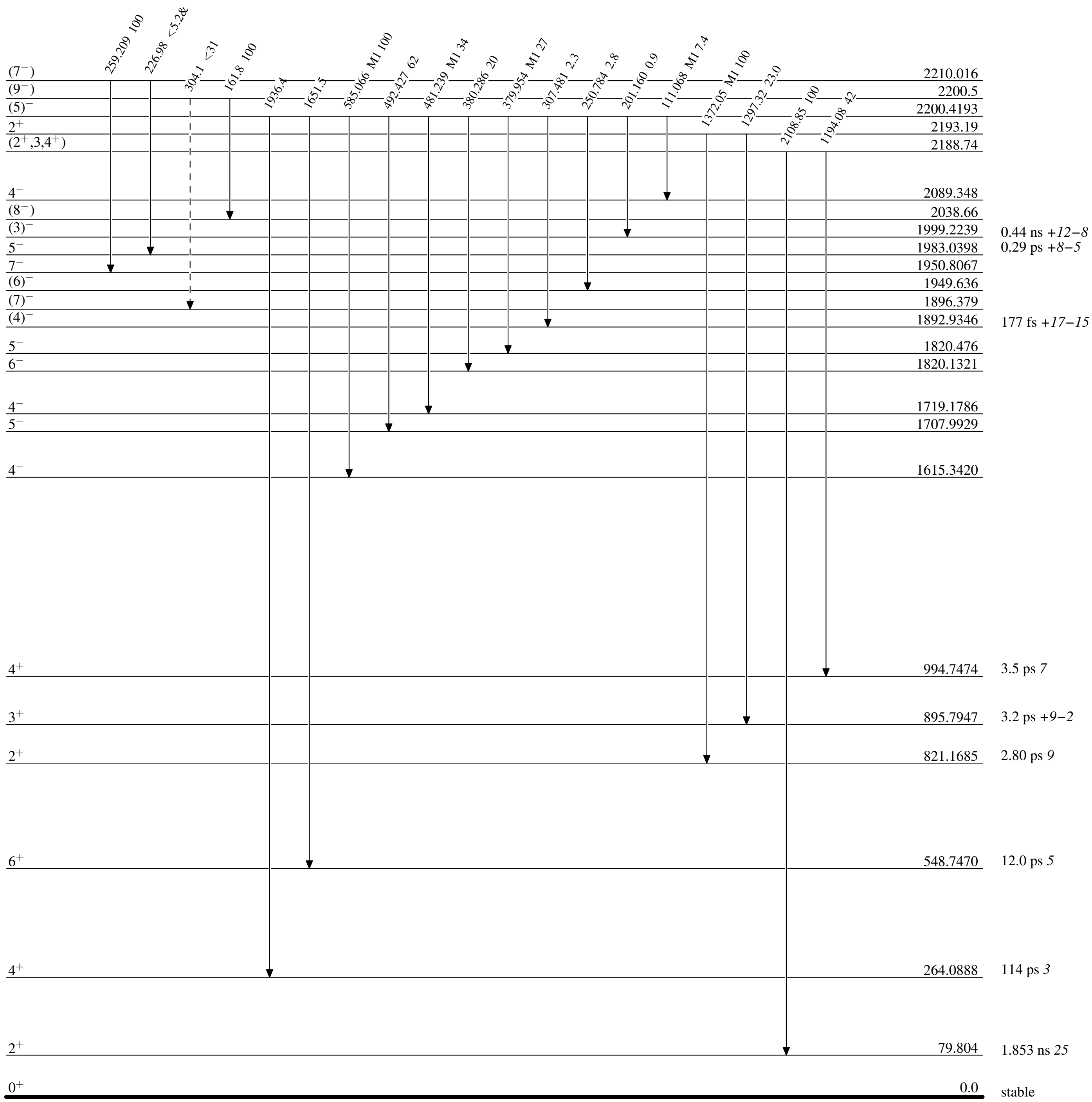
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

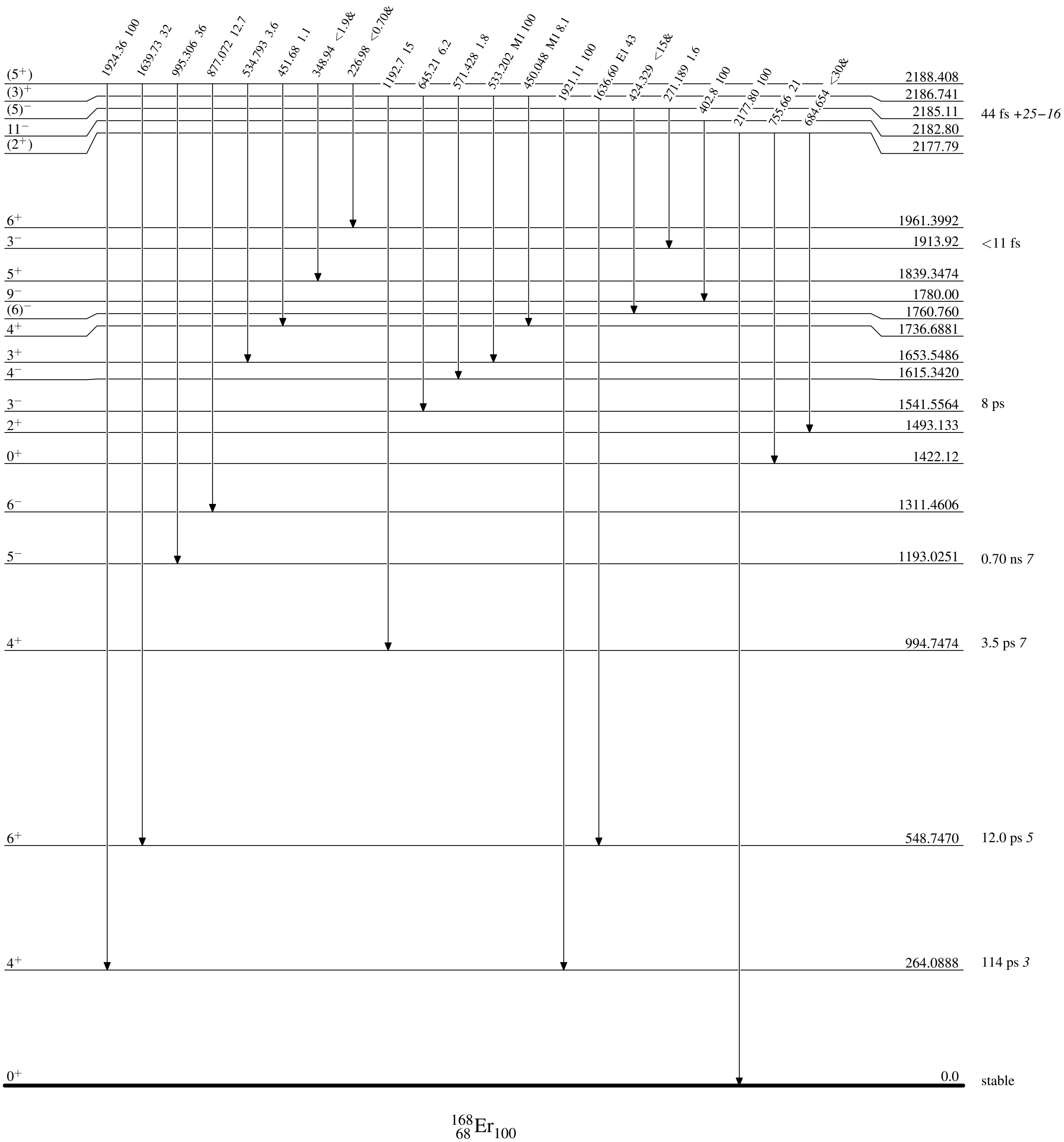


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

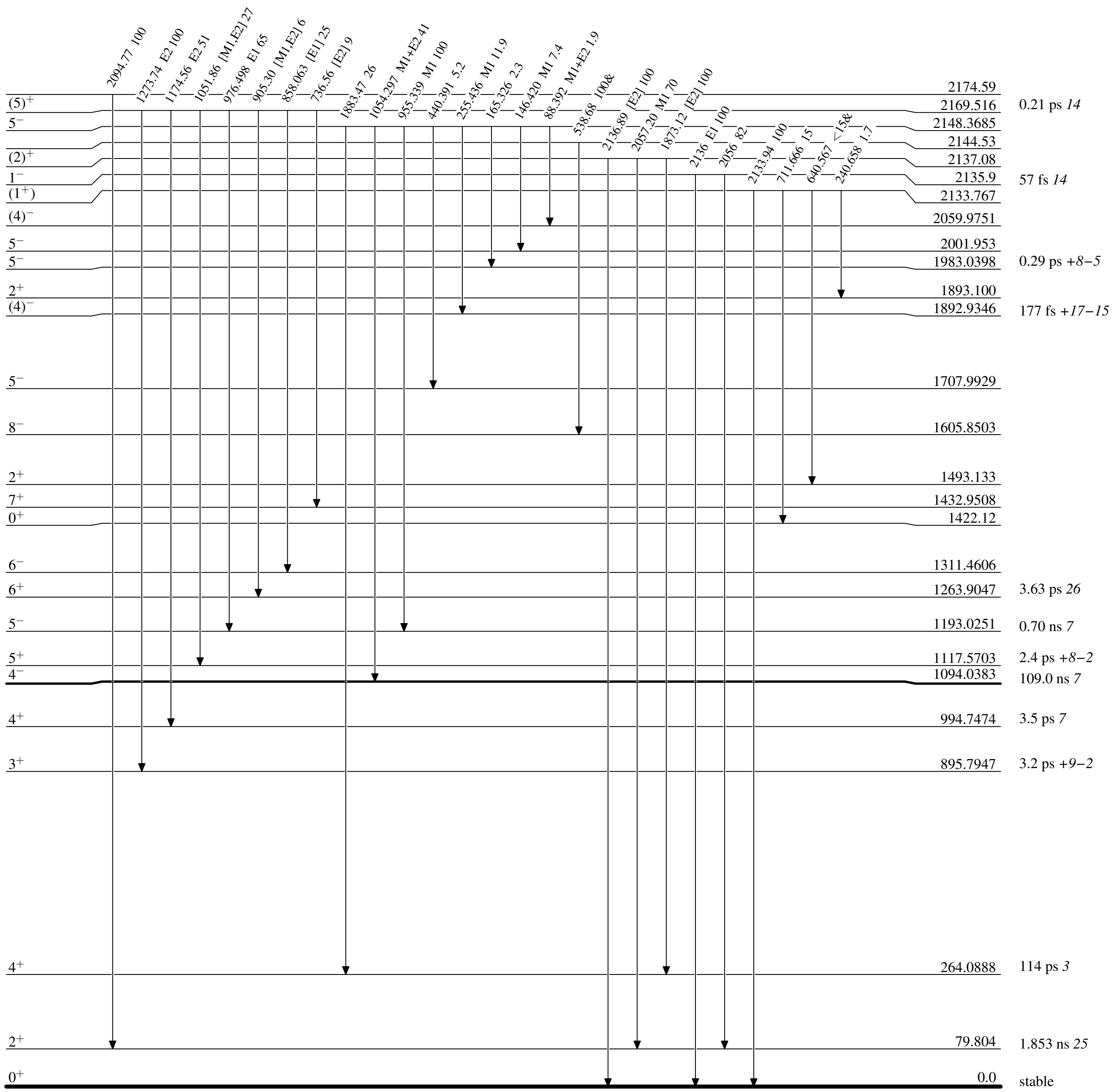
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

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

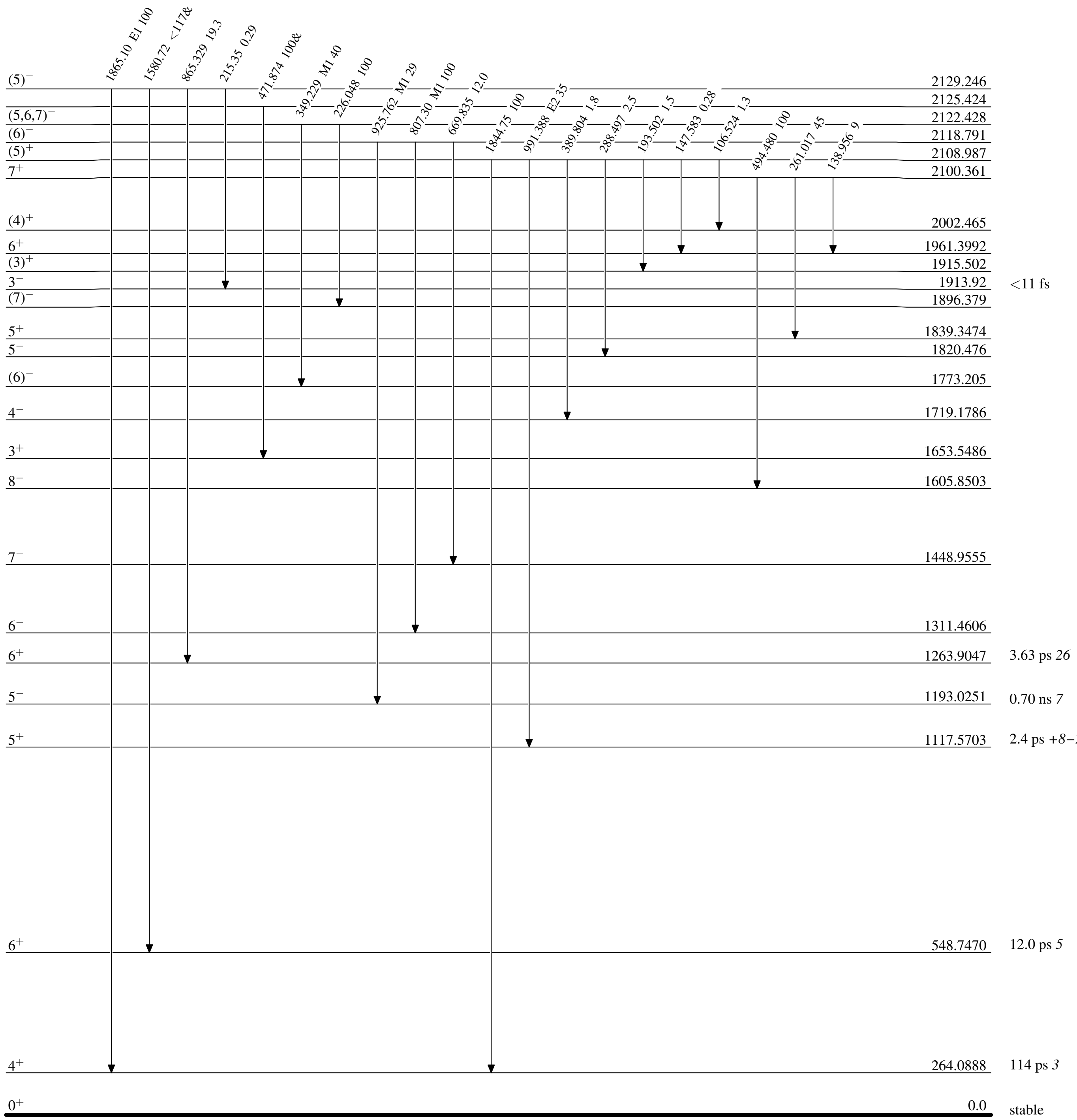


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

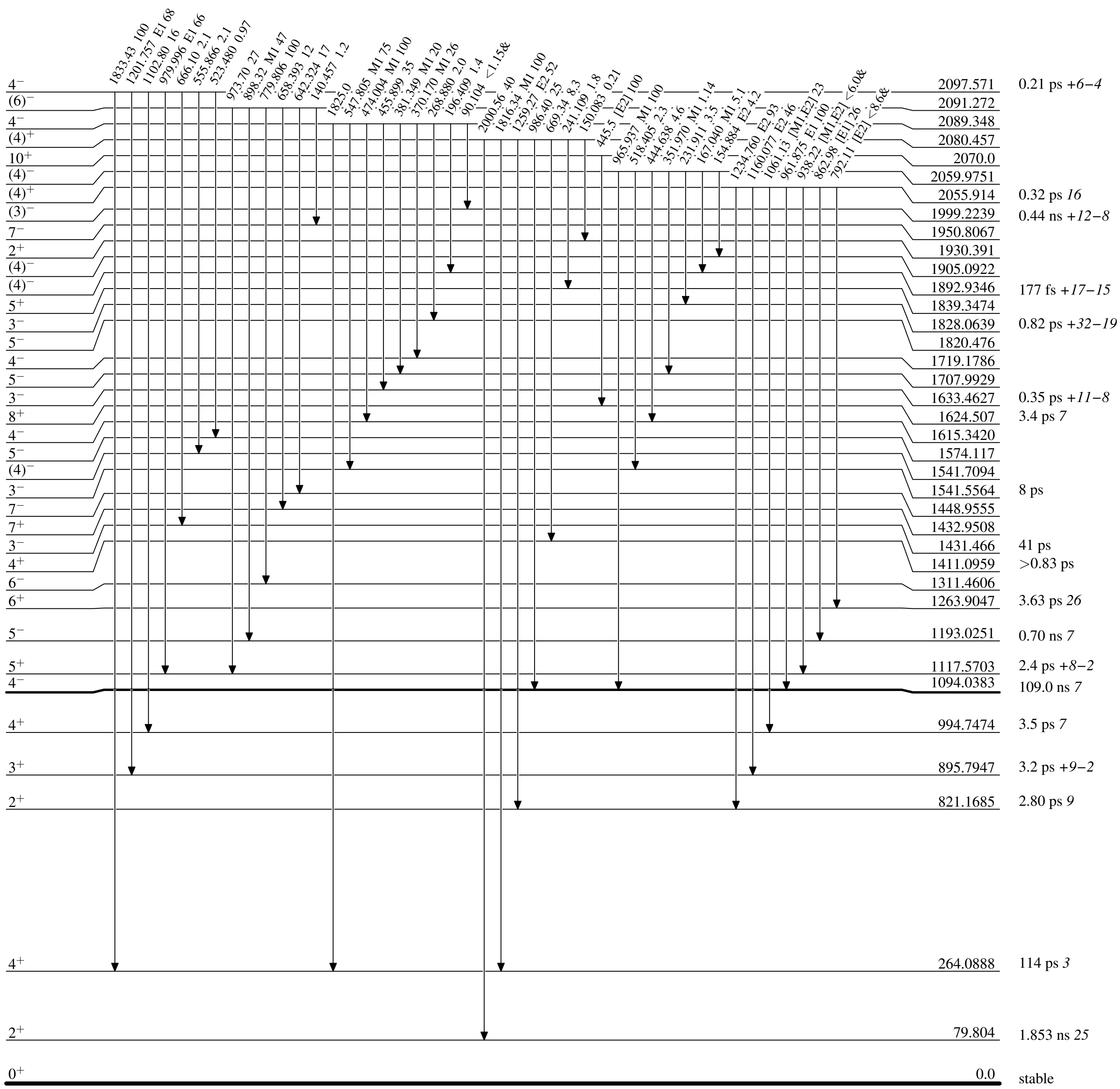


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{168}_{68}Er_{100}$

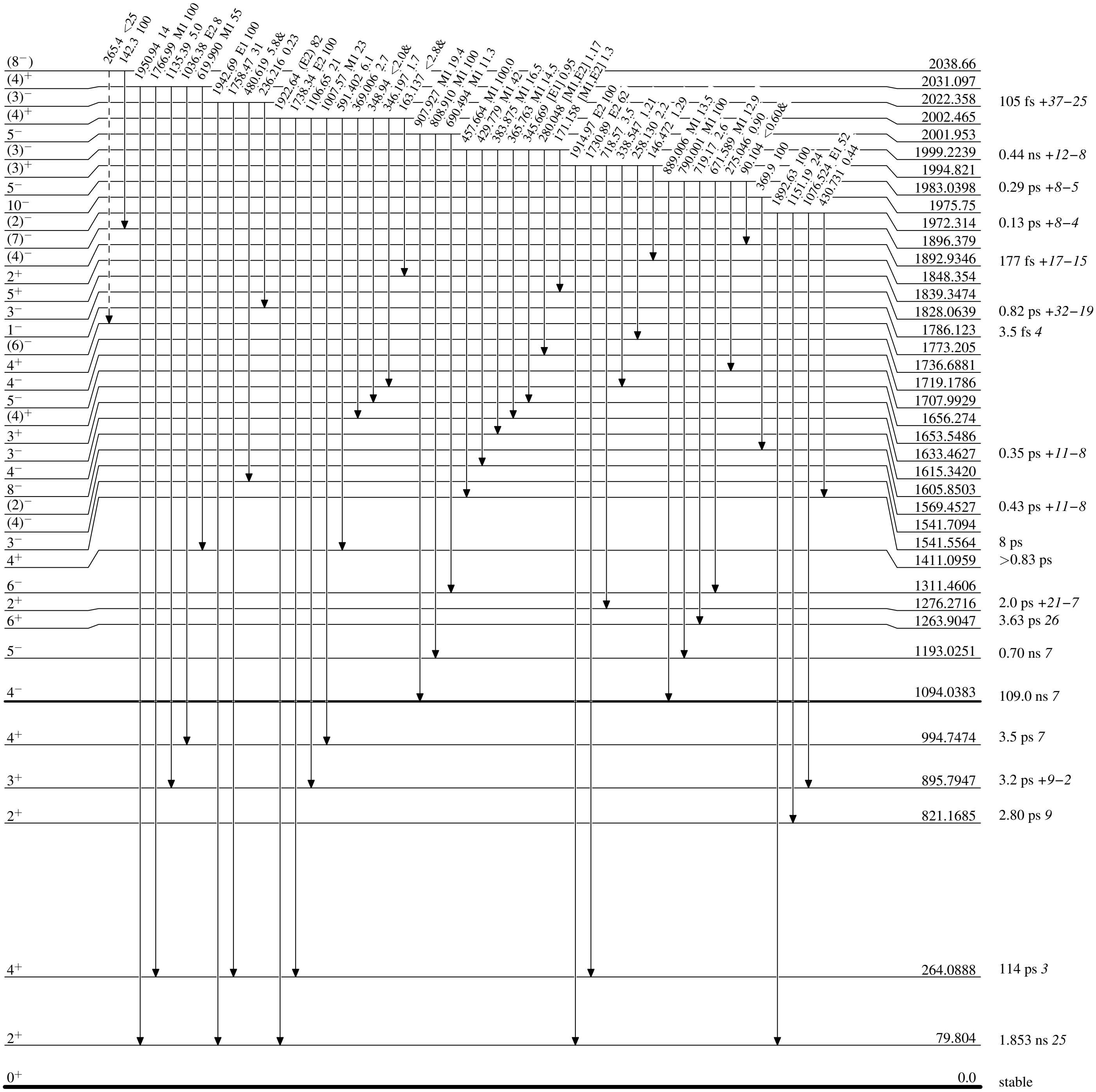
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

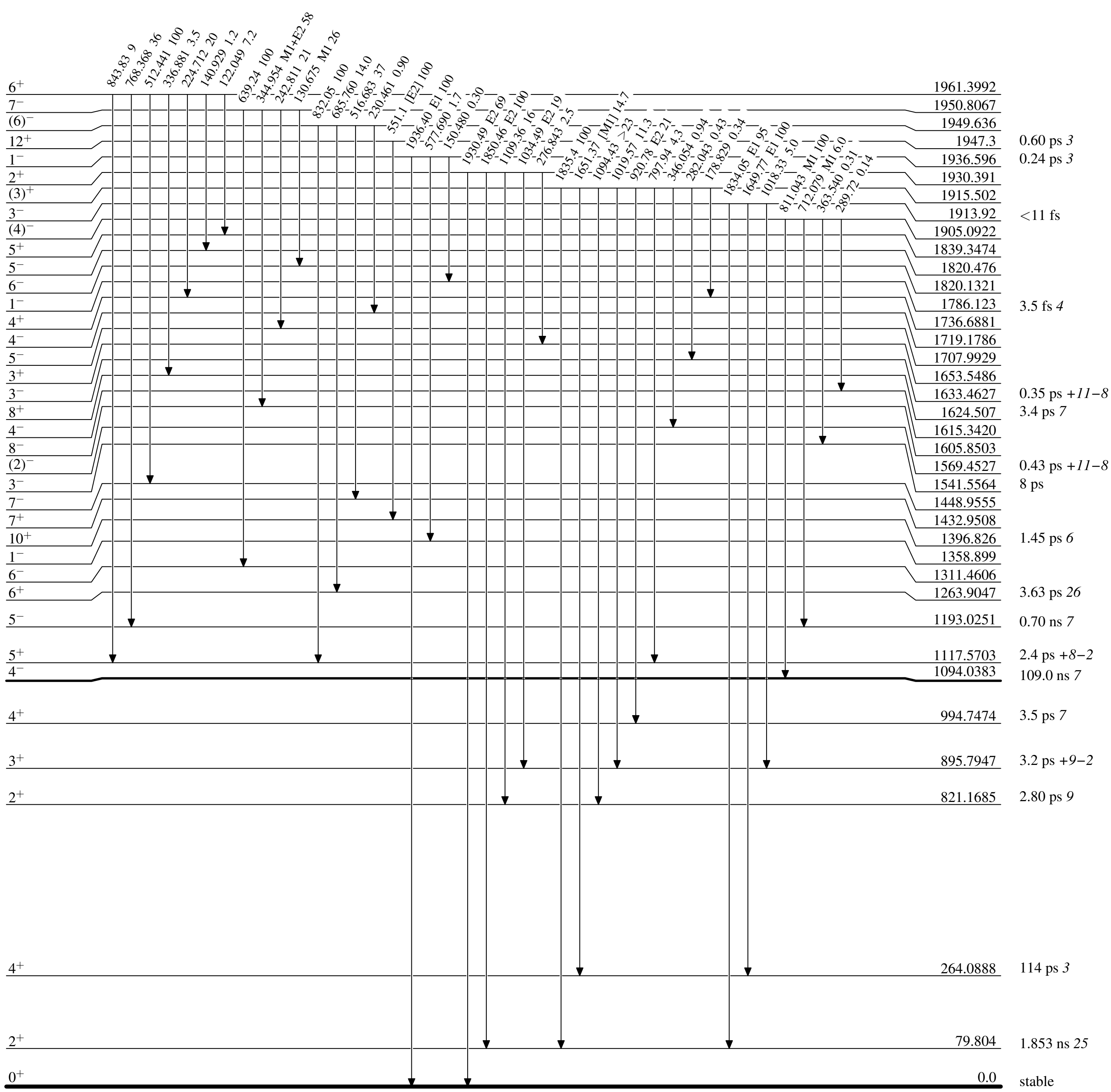


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{168}_{68}Er_{100}$

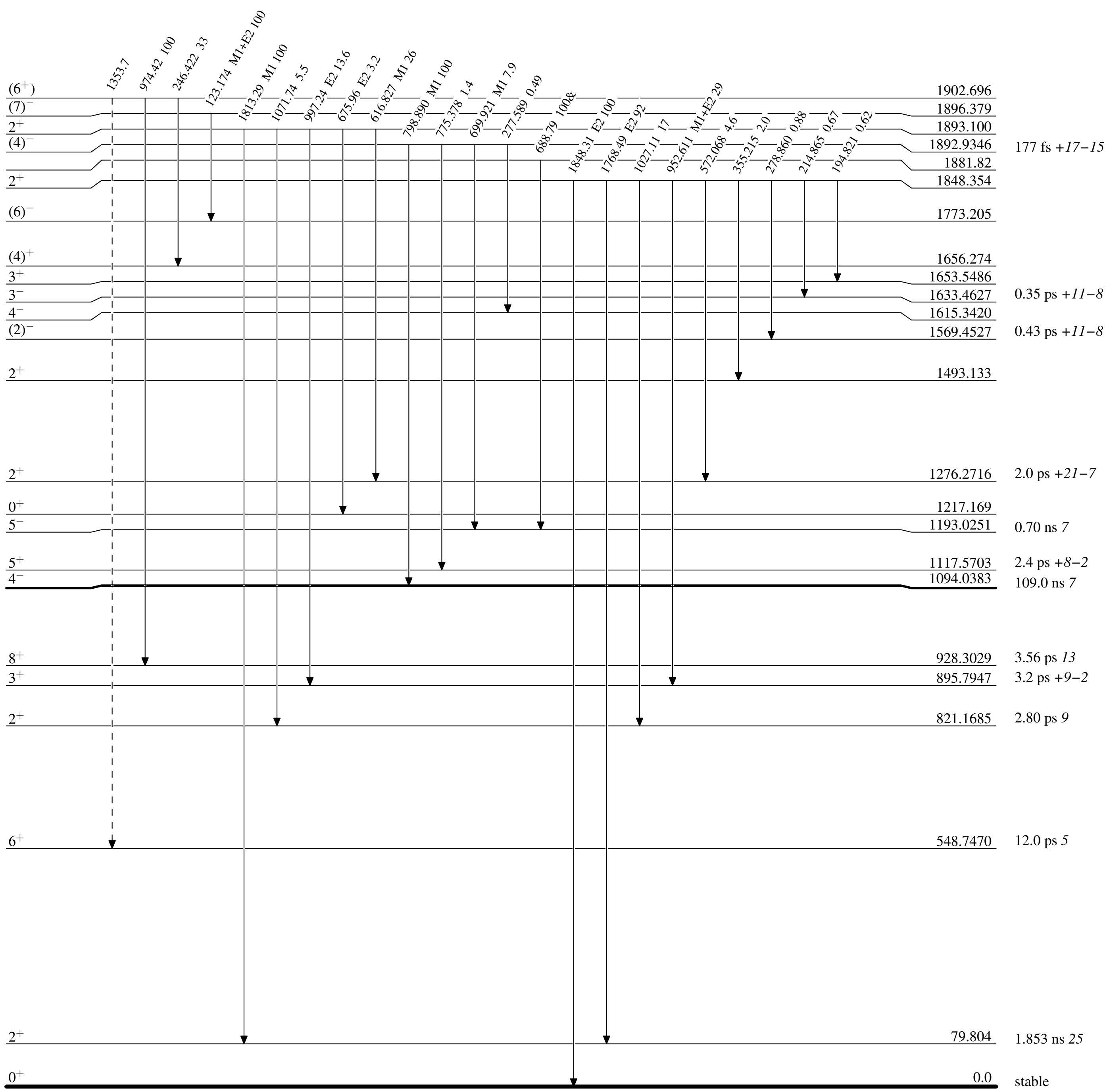
Adopted Levels, Gammas

Level Scheme (continued)

Legend

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

γ Decay (Uncertain)

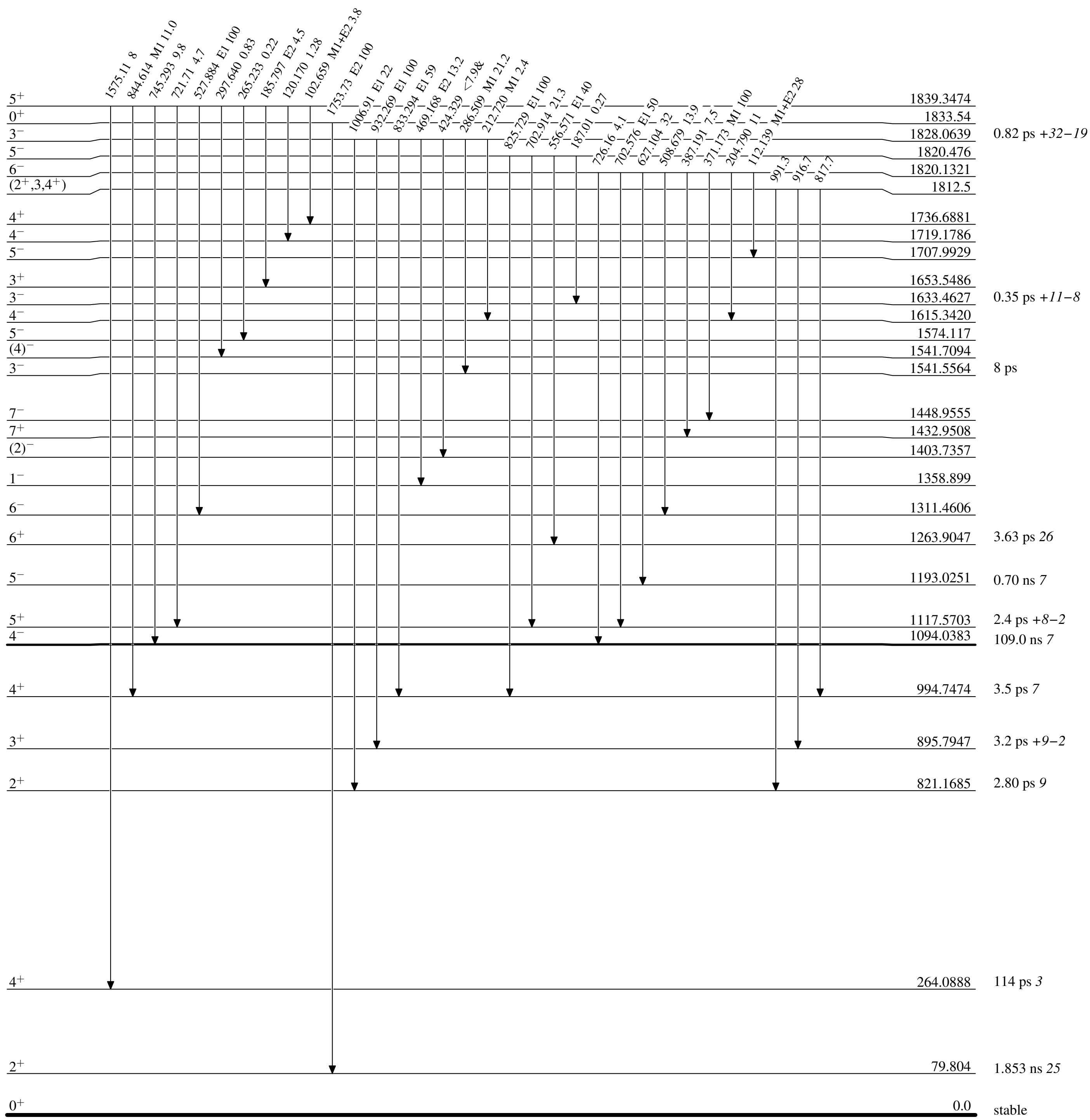


$^{168}_{68}$Er$_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

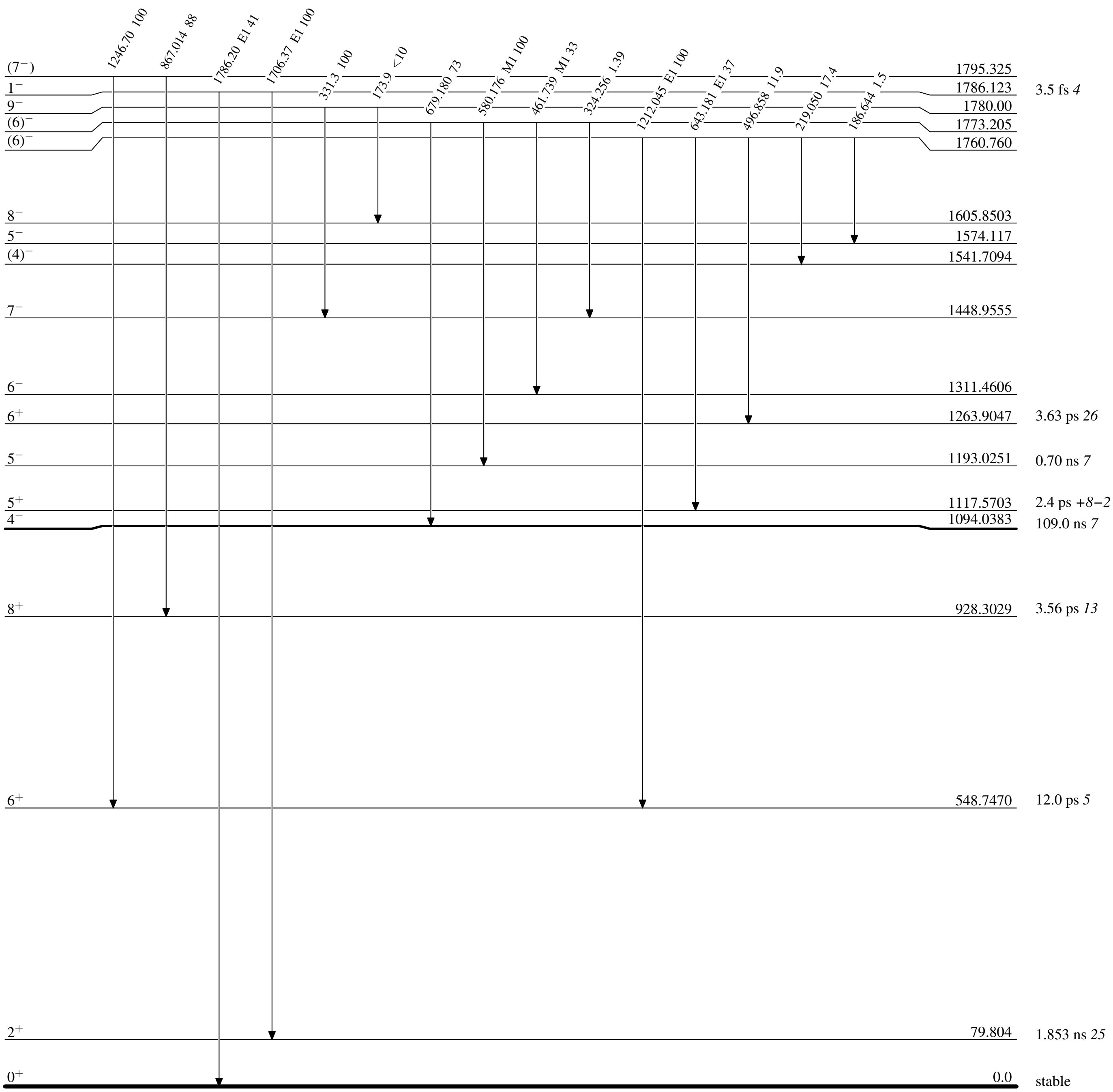


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{168}_{68}Er_{100}$

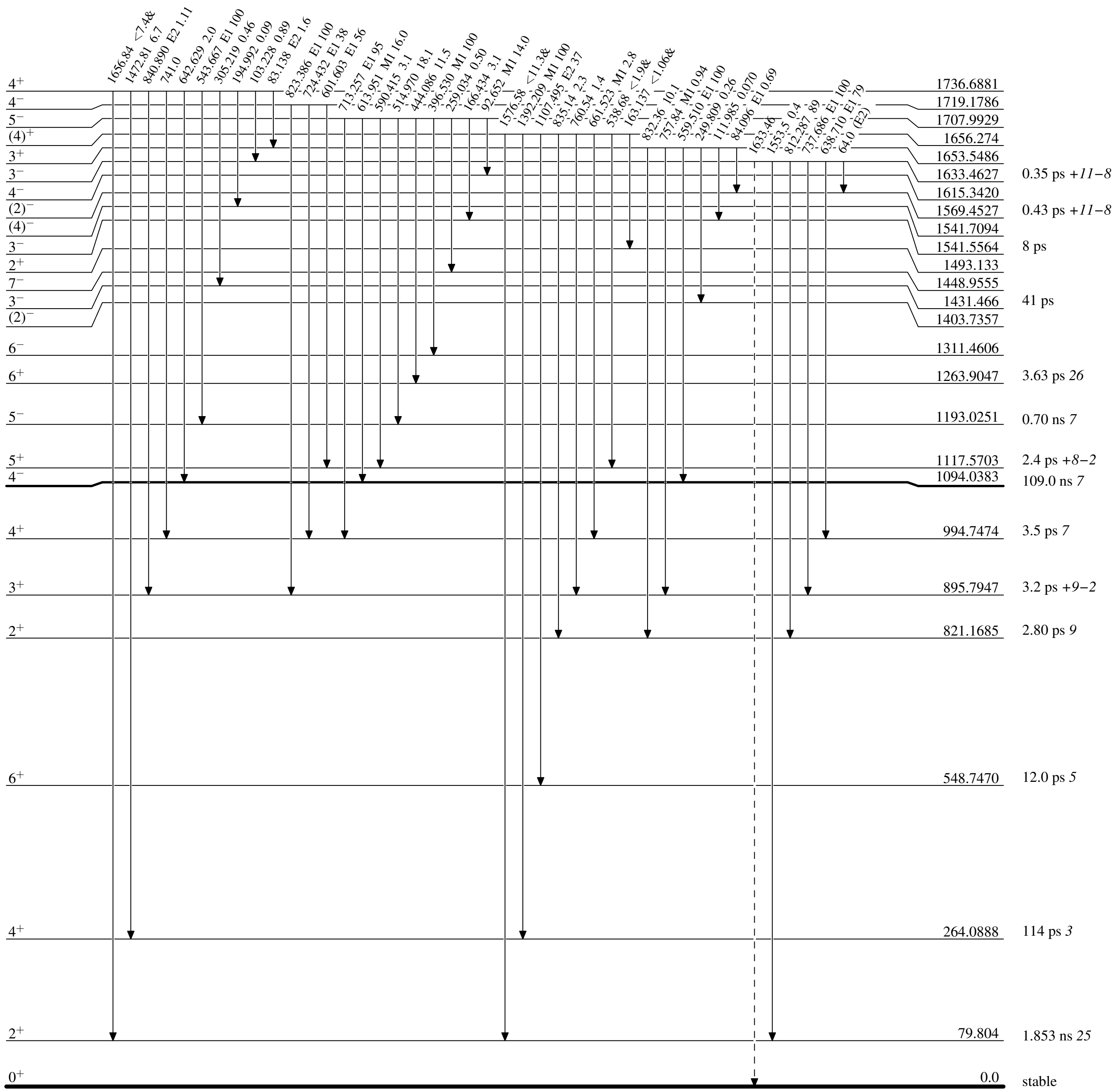
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

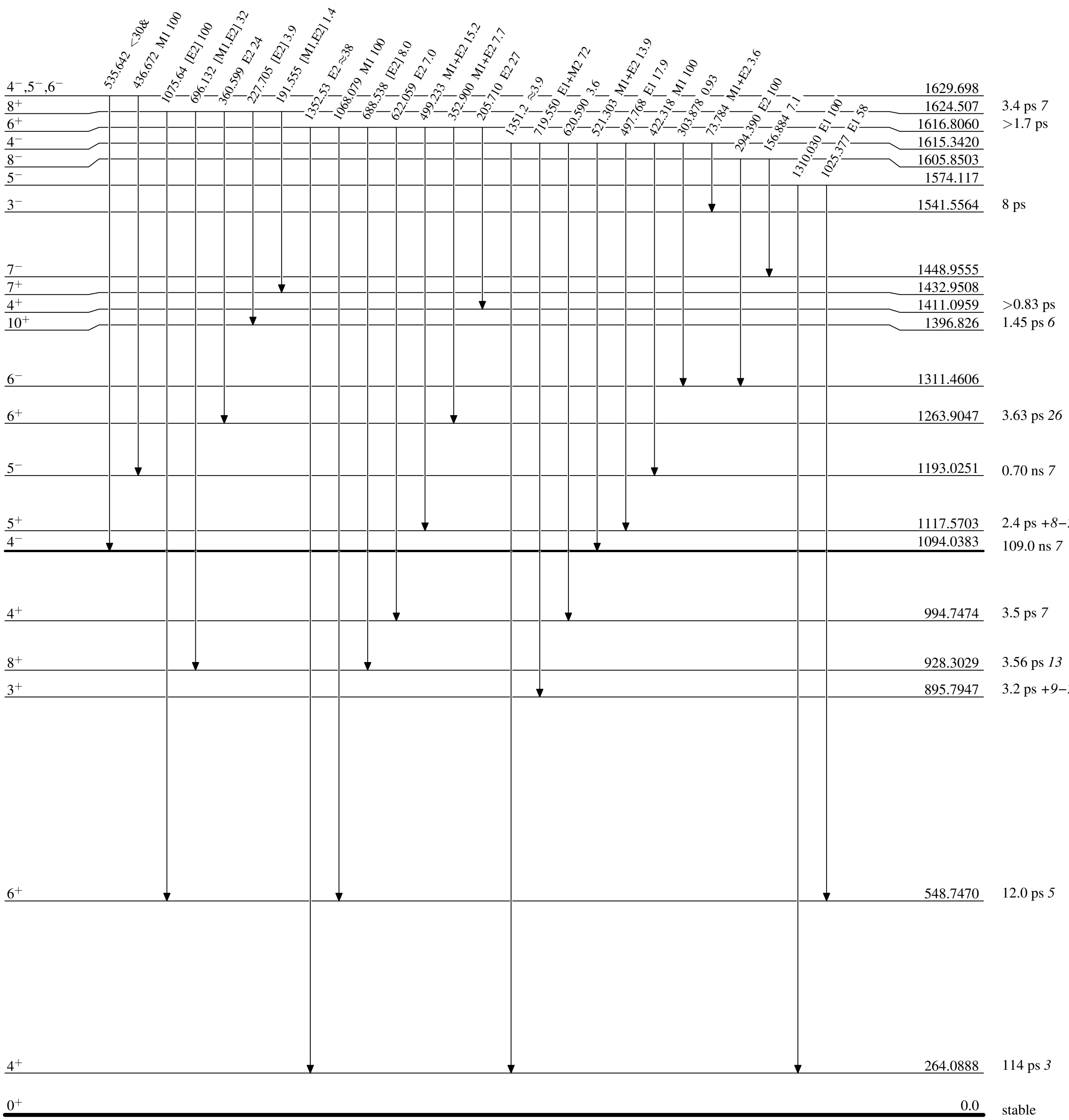


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

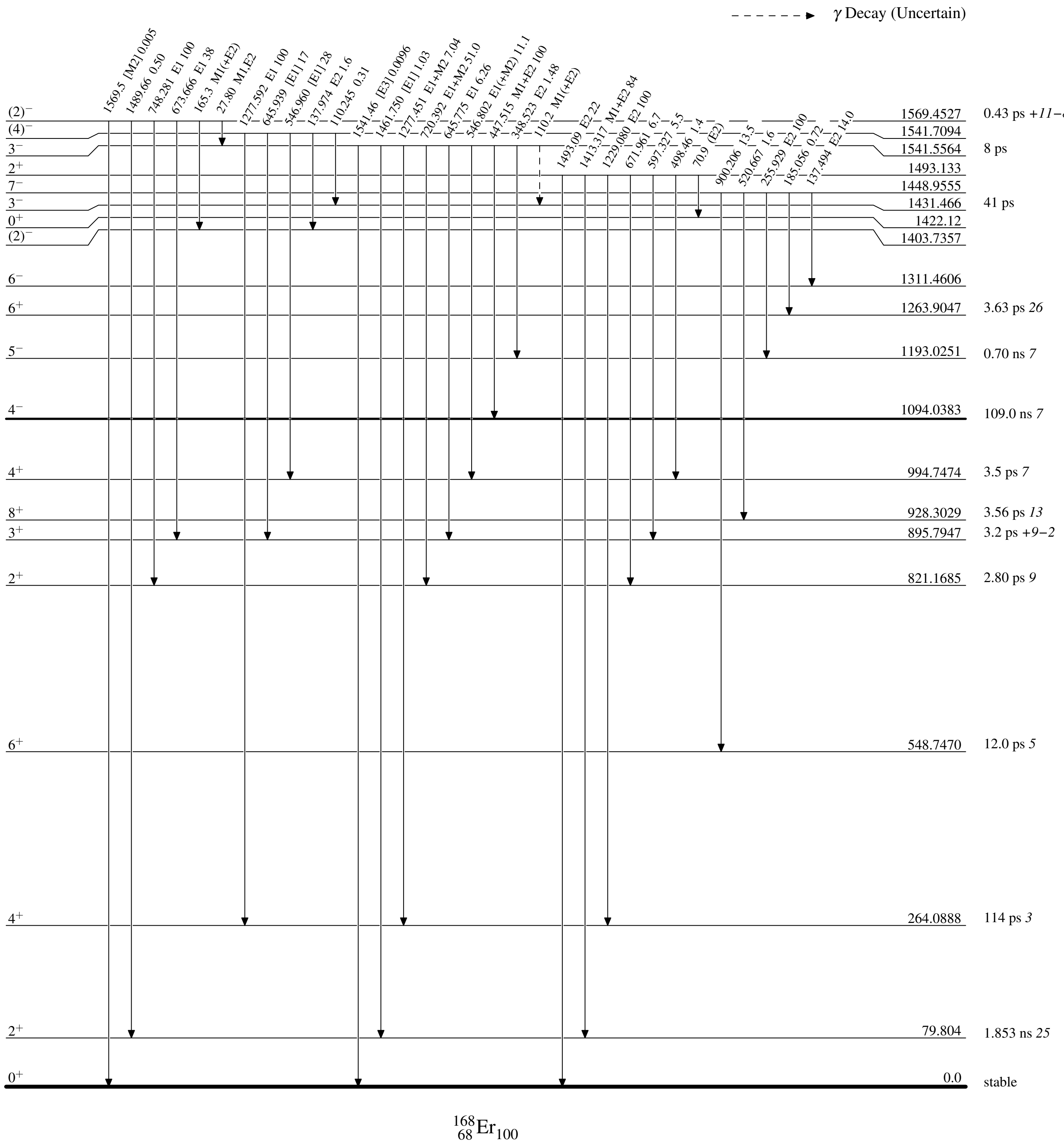


$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

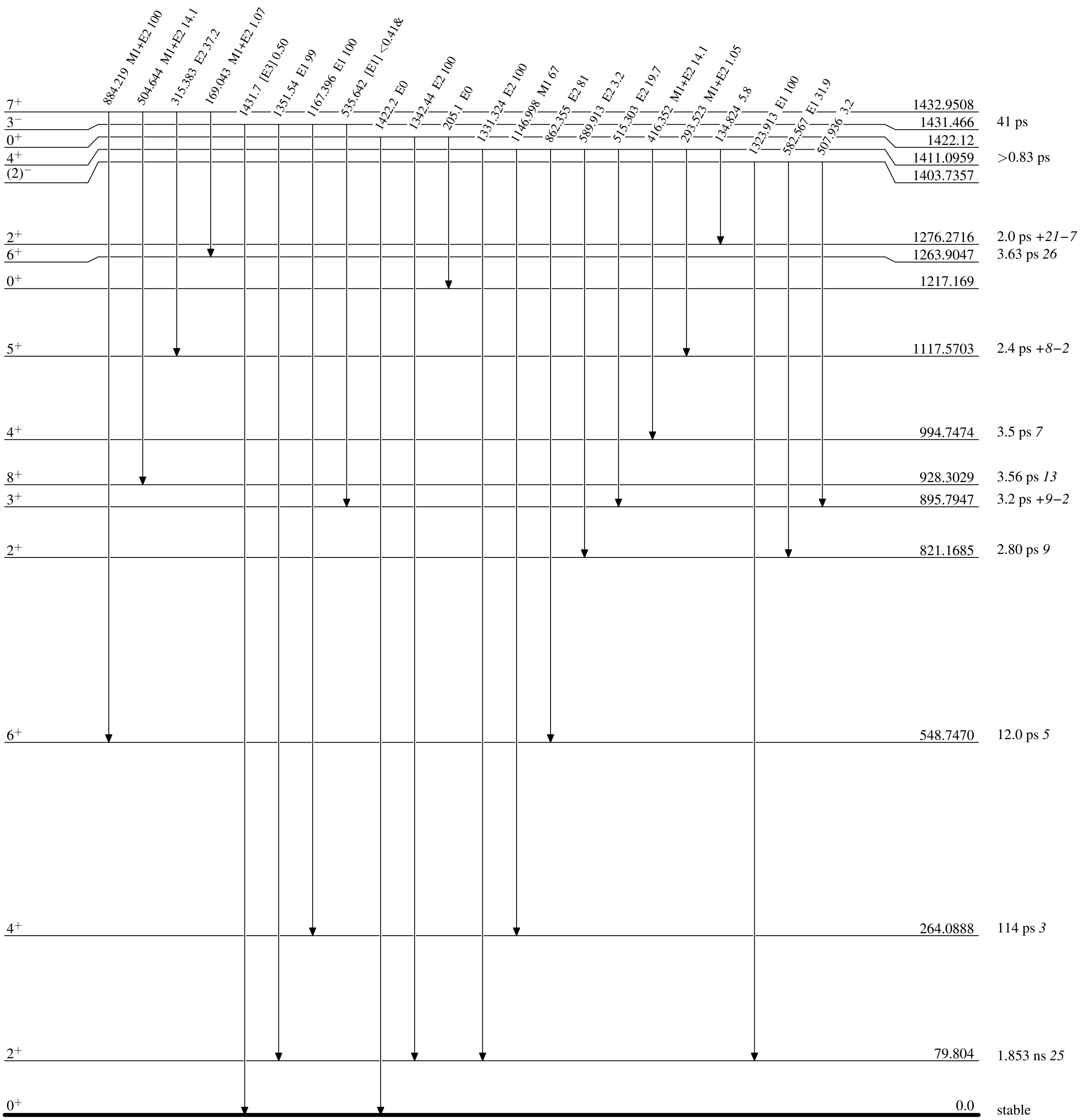
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

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



$^{168}_{68}Er_{100}$

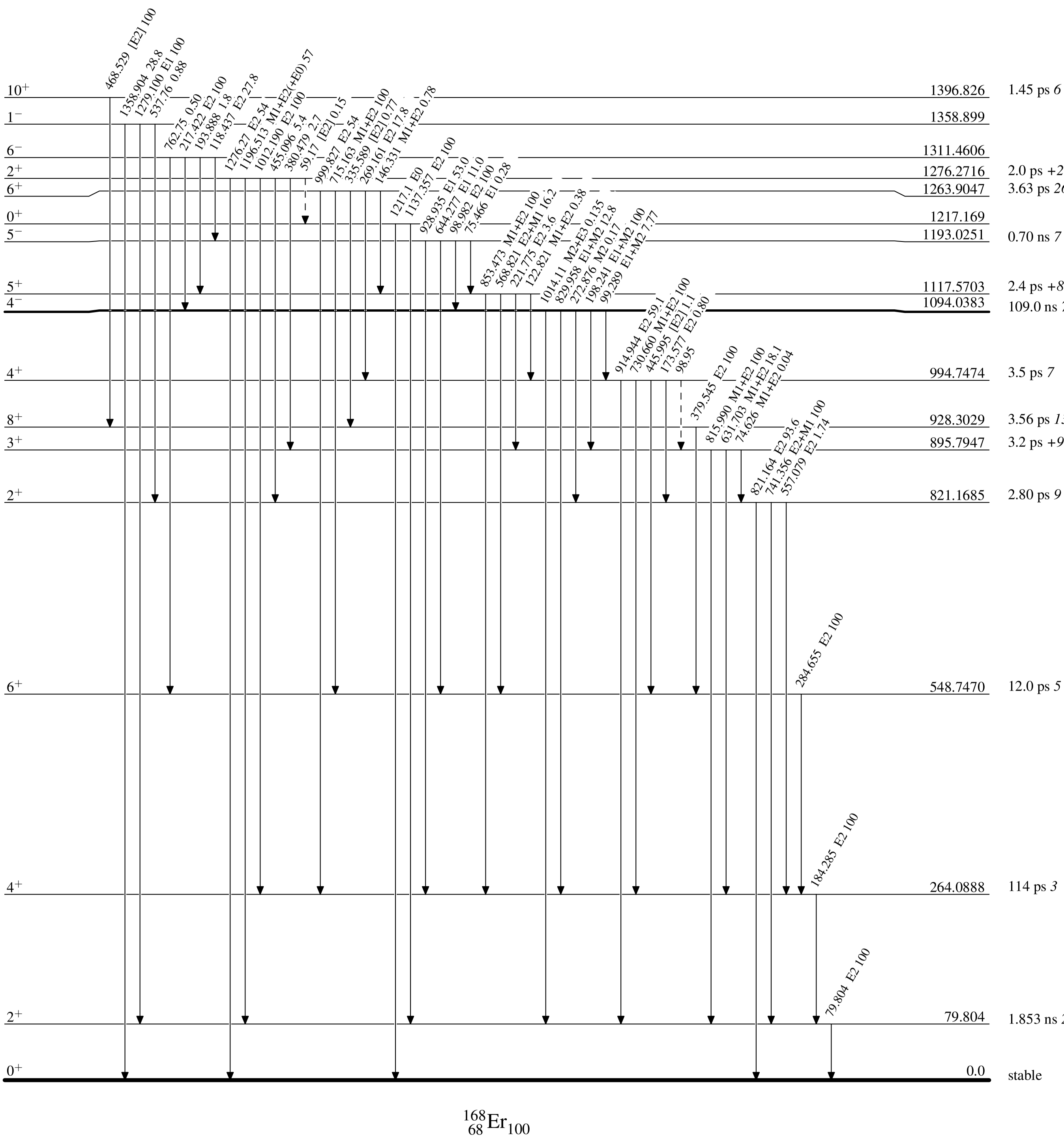
Adopted Levels, Gammas

Level Scheme (continued)

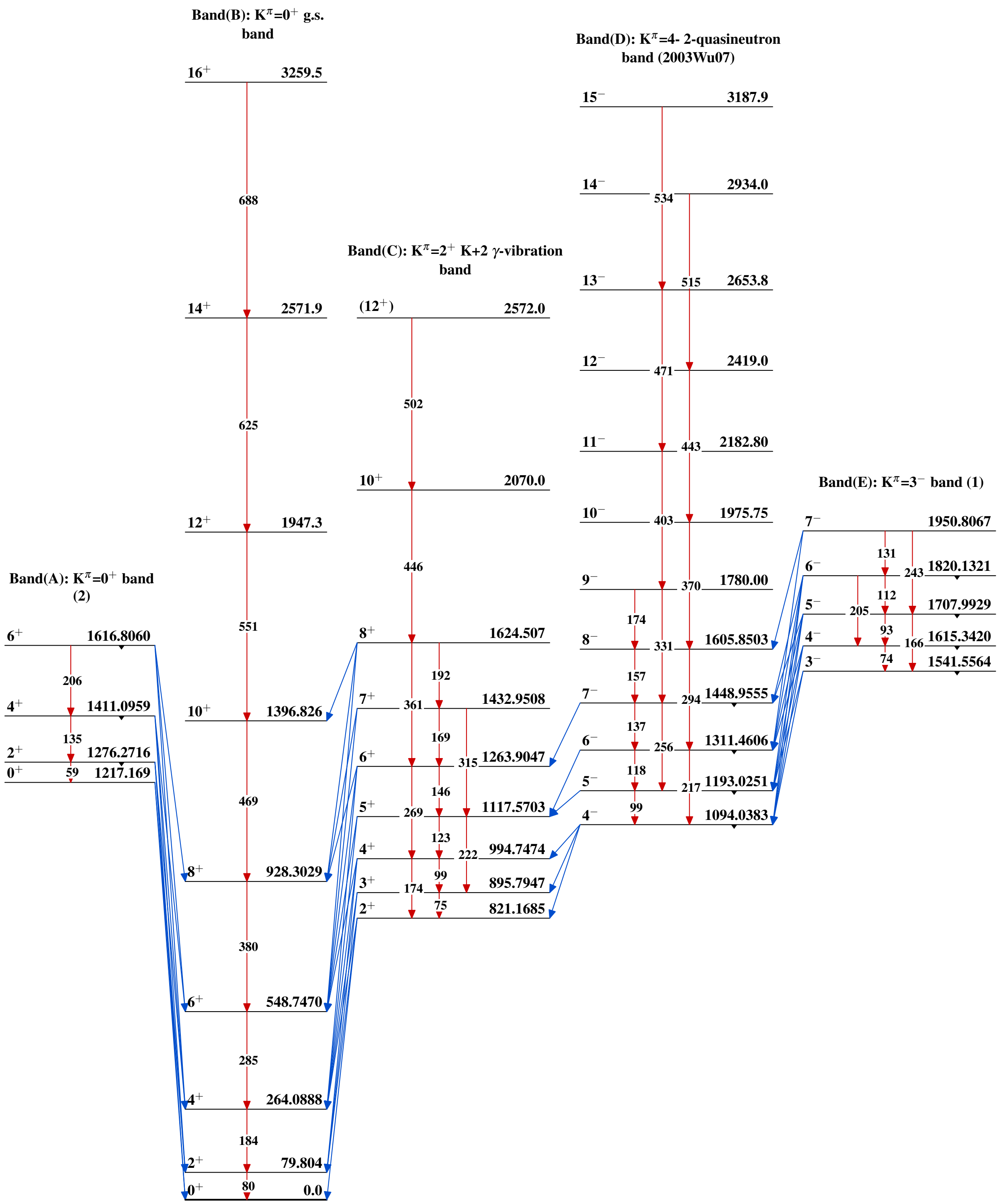
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend

- - - - - -► γ Decay (Uncertain)

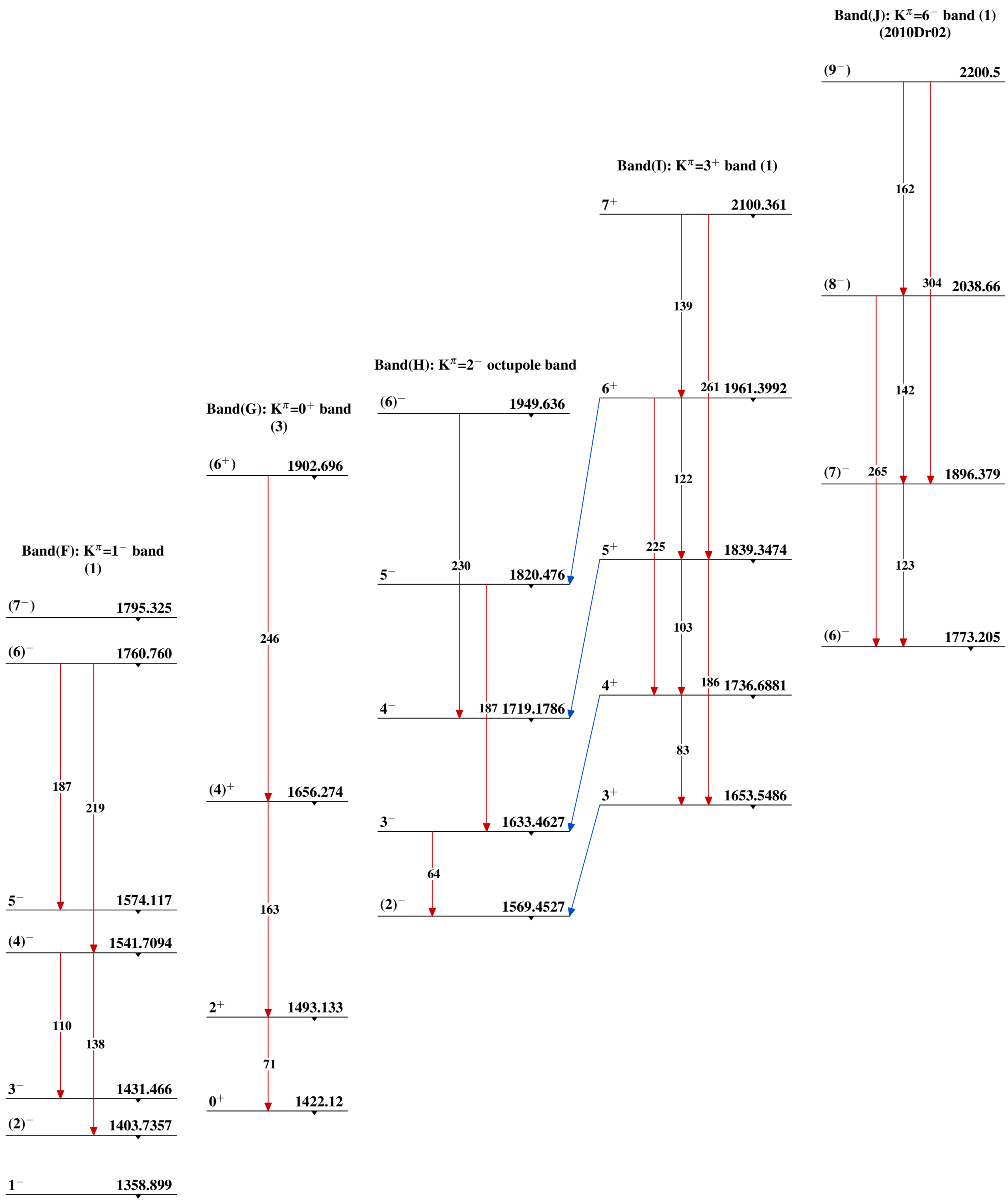


Adopted Levels, Gammas



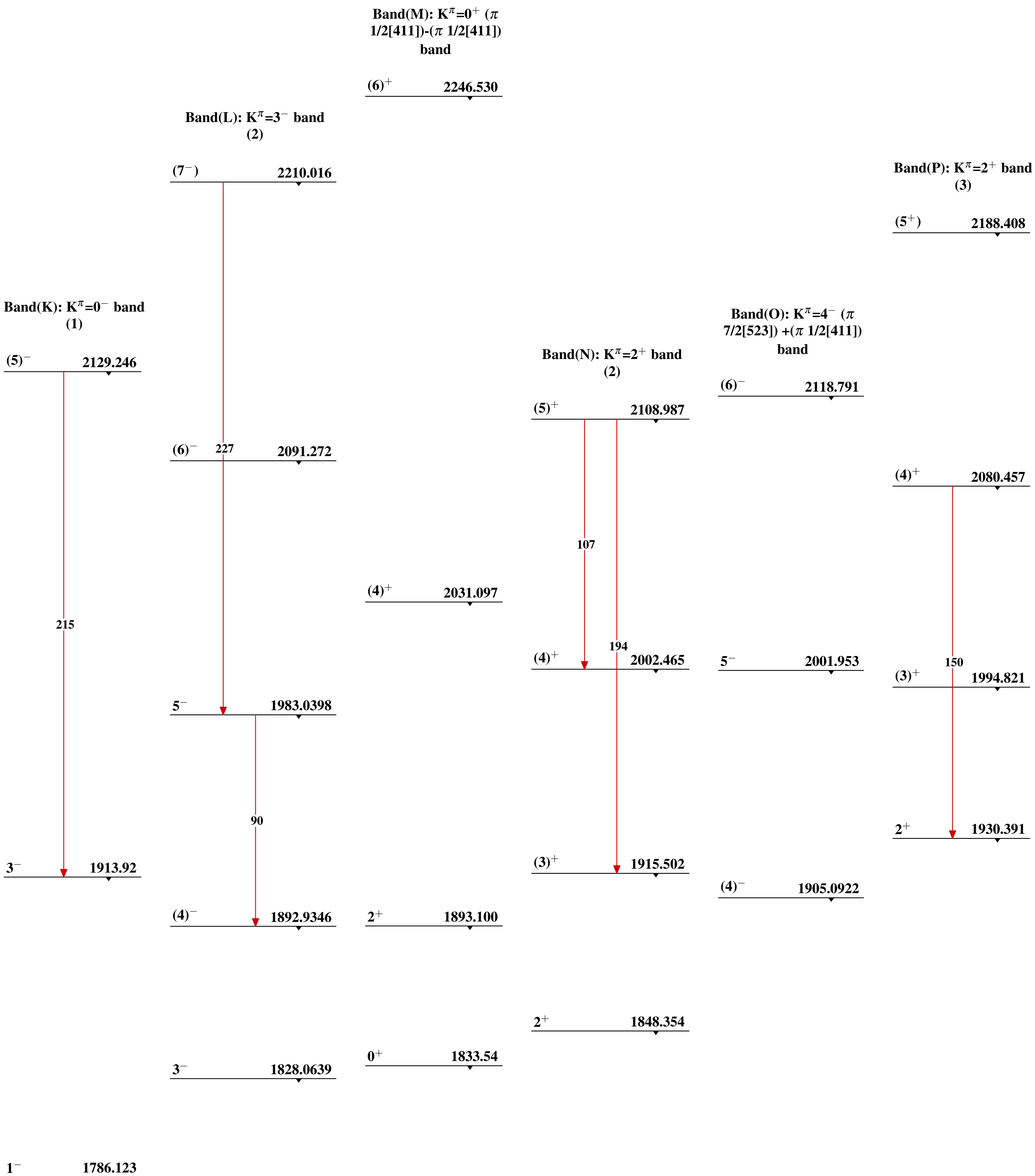
$^{168}_{68}Er_{100}$

Adopted Levels, Gammas (continued)



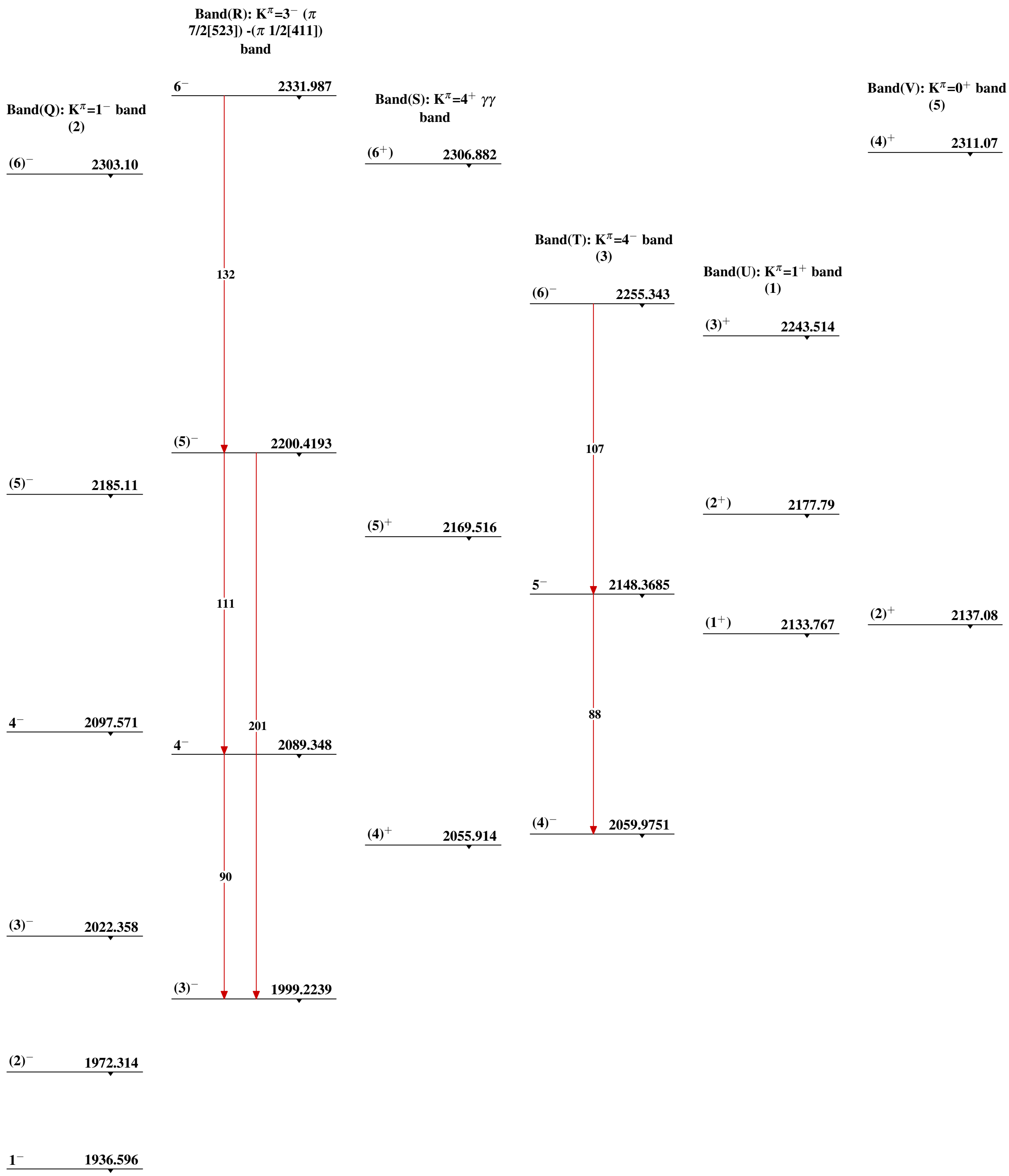
$^{168}_{68}Er_{100}$

Adopted Levels, Gammas (continued)



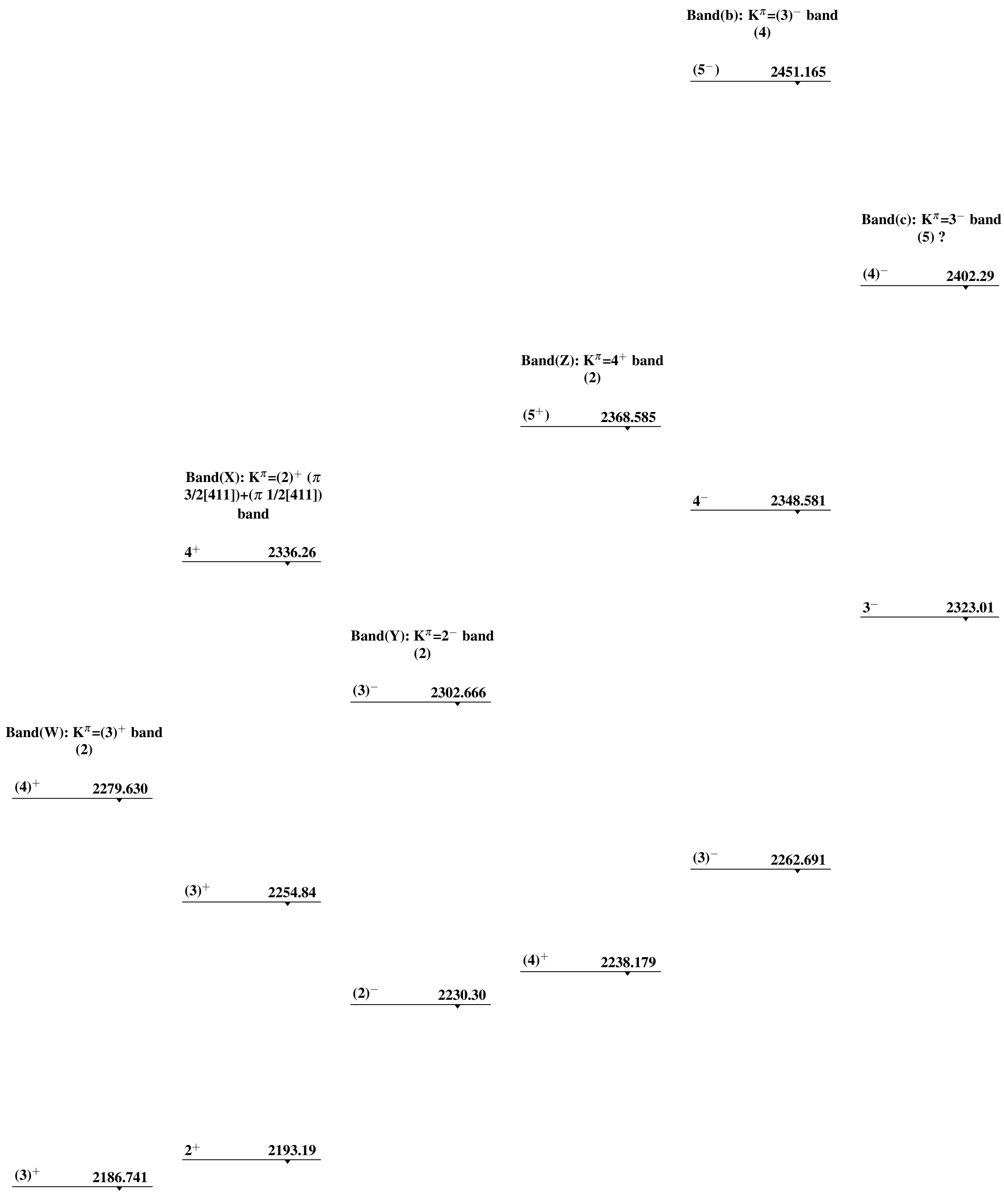
$^{168}_{68}Er_{100}$

Adopted Levels, Gammas (continued)



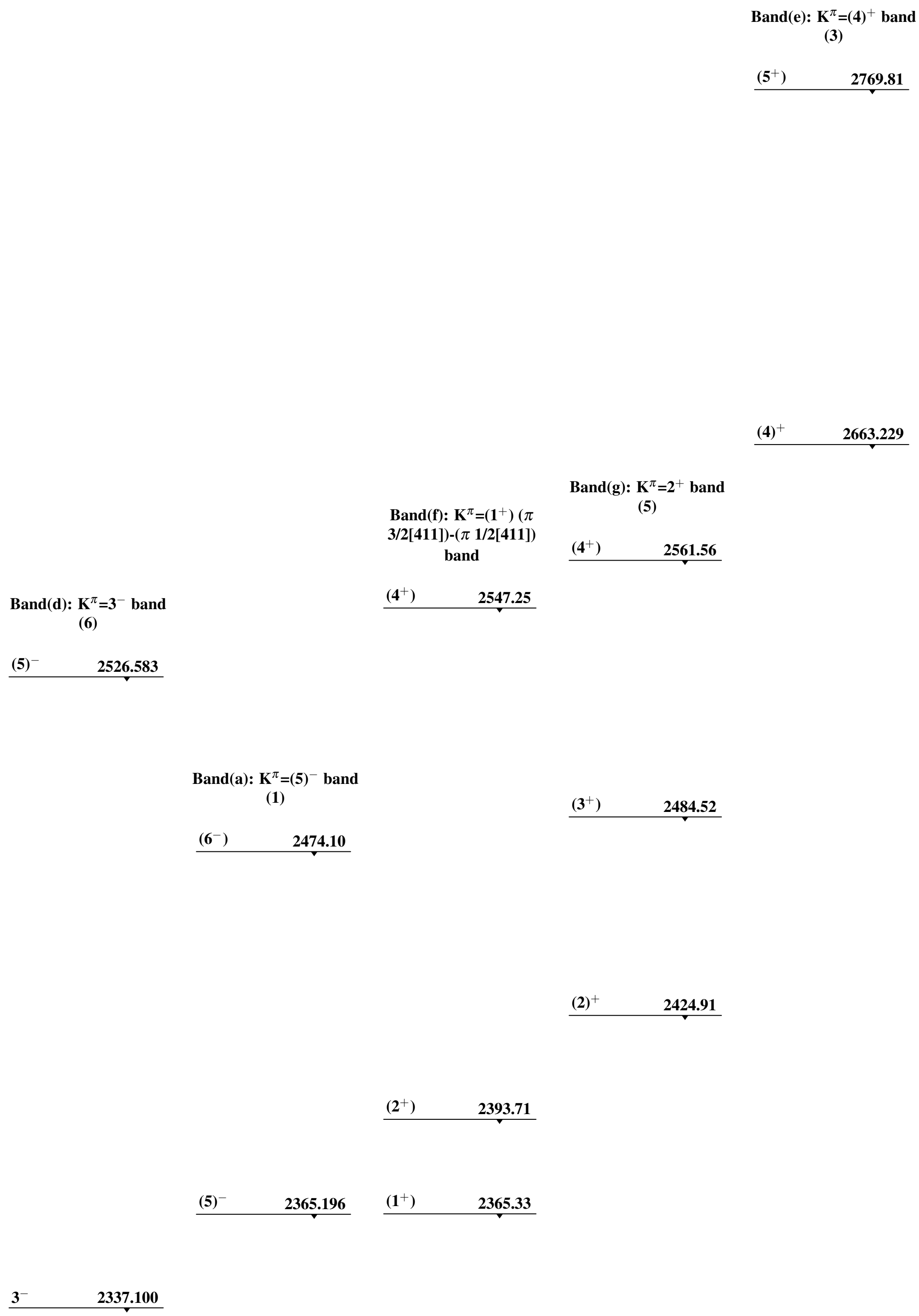
$^{168}_{68}Er_{100}$

Adopted Levels, Gammas (continued)



$^{168}_{68}Er_{100}$

Adopted Levels, Gammas (continued)



$^{168}_{68}Er_{100}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

Q(β^-)=−312.8 *18*; S(n)=7257.9 *15*; S(p)=8600 *20*; Q(α)=51.2 *17* 2017Wa10
S(2n)=13260.1 *15*; S(2p)=16127 *140*; Q($2\beta^-$)=655.2 *16* (2017Wa10).
Other Reactions:
Muonic atoms: 1970Hi03; Measured muonic x ray spectra; deduced isotope shift and intrinsic Q=7.75 *10* (which implies Q(79 level)=2.21 *3* based on rotational model).
Isotope shift measurements: see, e.g., 2000As04, 1992Kr06, 1990Ji07, 1989Kr16, 1987Ah03.
Hexadecapole deformation ^{170}Er(^{16}O,^{16}O): 2014Ji08.

^{170}Er Levels

For rotational band configurations see, e.g., 1982Bo39, 1985SuZX, 1998GrZV, 2000Gr33, 2000Gr14, 2000Wu01.

Cross Reference (XREF) Flags

A	^{170}Ho β^- decay (2.76 min)	F	^{170}Er(d,d′)
B	^{170}Ho β^- decay (43 s)	G	^{170}Er(^{136}Xe,Xγ)
C	^{170}Tm ε decay	H	^{170}Er(^{238}U,^{238}U′γ)
D	^{170}Er(γ,γ'), (γ,pol γ')	I	Coulomb excitation
E	^{170}Er(n,n′γ)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[b]	0$^+$	stable	ABCDEFGHI	T$_{1/2}$: ≥ 4.1×10^{17} y (2018Be25) for (2ν+0ν) double β decay to ^{170}Yb(2$^+$, 84-keV level). Early limit ≥ 3.2×10^{17} y (1996De60).
78.590[b] *22*	2$^+$	1.896 ns *23*	ABCDEFGHI	μ=+0.633 *13* (1969Wi04) Q=−1.94 *23* (1973Lu02) μ: based on g(^{170}Er, 79)/g(^{166}Er, 81)=1.002 *13* (1969Wi04) from Mossbauer. Other: 0.66 *5* (1967Ku07) from time differential perturbed angular distribution. Q: from Coulomb excitation reorientation (1973Lu02). Other: Q/Q(^{166}Er, 81)=1.05 *16* (1969Wi04). J$^\pi$: E2 γ to 0$^+$. T$_{1/2}$: from Coulomb excitation. Additional information 1.
260.140[b] *24*	4$^+$		AB EFGHI	μ=+1.09 *15* (1968De28) Q=−2.2 *10* (1970McZQ) B(E4)↑=0.06 *+9−5* μ: from IMPAC (1968De28), recalculated by 2014StZZ using revised value for ^{166}Er(265 level) standard. Q: from Coulomb excitation reorientation (1970McZQ). B(E4)↑: from Coulomb excitation. J$^\pi$: stretched E2 182γ to 2$^+$ 79.
540.68[b] *3*	6$^+$		A EFGHI	J$^\pi$: stretched E2 γ to 4$^+$; g.s. band member.
890.88[c] *4*	(0$^+$)		B EF HI	J$^\pi$: (E2) 812γ to 2$^+$ 79; E matches that expected for K$^\pi$=0$^+$ bandhead.
914.97[b] *5*	8$^+$	3.6 ps *3*	E GHI	J$^\pi$: (E2) 374γ to 6$^+$ 541; g.s. band assignment. T$_{1/2}$: from Doppler-broadened lineshape analysis in Coulomb excitation (2011Di07).
934.023[d] *24*	2$^+$	1.81 ps *6*	A EFGHI	Q=2.0 *3*(1983Hu01) Q: from Coulomb excitation reorientation (1983Hu01).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{170}Er Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
				J^{π}: E2 934γ to 0$^+$ g.s.. $T_{1/2}$: from B(E2)=0.103 *3* in Coulomb excitation (1978Mc02, 1974Ba81, 1972Do01).
959.994[c] *25*	2$^+$	12.1 ps *15*	B EF HI	J^{π}: E2 960γ to 0$^+$ g.s.. $T_{1/2}$: from B(E2)=0.0079 *9* in Coulomb excitation (1978Mc02).
1010.53[d] *3*	(3$^+$)		A E GHI	J^{π}: D+Q γ to 2$^+$; Q(+D) γ to 4$^+$; large δ(932γ) favors π=+; band assignment.
1103.36[c] *3*	4$^+$		A EFGHI	J^{π}: ΔJ=2 E2 1025γ to 2$^+$; M1+E2 843γ to 4$^+$.
1127.29[d] *3*	4$^+$		A EFGHI	J^{π}: ΔJ=2 E2 1048γ to 2$^+$; M1+E2 867γ to 4$^+$.
1217.50[e] *3*	3$^{(+)}$		A E GH	J^{π}: D+Q γ to 2$^+$ and 4$^+$; large δ(1139γ) favors π=+.
1236.68[d] *4*	(5$^+$)		A E HI	J^{π}: D+Q γ to 4$^+$; γ to 6$^+$; possible 5$^+$ member of K$^{\pi}$=2$^+$ band.
1266.63[f] *3*	(1)$^-$		B E	J^{π}: E1 1188γ to 2$^+$ 78; K$^{\pi}$=1$^-$ bandhead.
1268.68[g] *3*	(4$^-$)	42.8 ns *17*	A E GH	$T_{1/2}$: from $\gamma\gamma$(t) in ^{170}Er(^{238}U,^{238}U$'\gamma$). J^{π}: E1 γ to 3$^{(+)}$; (E1) 165γ to 4$^+$; possible K$^{\pi}$=4$^-$ bandhead.
1304	(3$^-$)[&]		F	
1304.57[e] *4*	(4$^+$)		A E H	J^{π}: M1 γ to 3$^{(+)}$; D+Q γ to 4$^+$; possible K$^{\pi}$=3$^+$ band member.
1305.23[f] *6*	(2$^-$)		B E	J^{π}: γ to 2$^+$; possible K$^{\pi}$=1$^-$ band member.
1324.26[h] *5*	(0$^+$)		B E	J^{π}: γ to 2$^+$; possible K$^{\pi}$=0$^+$ bandhead.
1332.0?[@] *7*	2$^+$[@]	4.8 ps *7*	I	J^{π}: E2 1332γ to 0$^+$. $T_{1/2}$: from B(E2)=0.0074 *11* in Coulomb excitation.
1335	(4$^+$)[&]		F	
1340.18[f] *4*	3$^{(-)}$		E I	J^{π}: D+Q γ to 4$^+$ and 2$^+$; K$^{\pi}$=1$^-$ band member.
1350.48[c] *8*	(6$^+$)		E HI	
1370.6?[@] *10*	(3$^-$)[@]		f I	B(E3)=0.020 *3* from Coulomb excitation (1978Mc02). J^{π}: apparent direct E3 excitation in Coulomb excitation (1978Mc02).
1372.11[g] *6*	(5$^-$)		A EfGH	J^{π}: 103γ to (4$^-$) 1267 is M1; log *ft*=6.9 *3* from (6$^+$) in ^{170}Ho β^- decay (2.76 min); possible K$^{\pi}$=4$^-$ band member.
1376.6[b] *4*	(10$^+$)	1.48 ps *10*	GHI	J^{π}: multiple Coulomb excitation; probable K$^{\pi}$=0$^+$ g.s. band member 1977Ke06. $T_{1/2}$: from Doppler-broadened lineshape analysis in Coulomb (1977Ke06). excitation.
1385.40[h] *3*	2$^+$		E	J^{π}: E2 γ to 0$^+$.
1401.92[d] *7*	(6$^+$)		EF HI	J^{π}: γ-rays to 6$^+$ and 4$^+$; band assignment in (^{238}U,^{238}U$'\gamma$).
1413.12[e] *5*	(5$^+$)		A E	J^{π}: D+Q γ to 6$^+$; γ to 4$^+$; band assignment in (n,n$'\gamma$). Note, however, that the 1422 level instead was suggested as this band member in (^{238}U,^{238}U$'\gamma$) (2000Si32).
1416.23[i] *3*	(2$^+$)		B E I	J^{π}: γ to 2$^+$; γ to 0$^+$; possible K$^{\pi}$=2$^+$ bandhead.
1422.1 *8*	(5$^+$,6$^+$)		H	J^{π}: indicated as J=5 member of K$^{\pi}$=3$^+$ band in (^{238}U,^{238}U$'\gamma$), but 1413 level is adopted as that member here. γ from (7$^+$), γ to 4$^+$.
1432.97[f] *4*	(4$^-$)		E	J^{π}: D(+Q) γ to 4$^+$; γ to (3$^+$); possible K$^{\pi}$=1$^-$ band member.
1483.35[i] *4*	(3$^+$)		Ef	J^{π}: D+Q γ to 2$^+$; possible 380γ to 4$^+$; possible K$^{\pi}$=2$^+$ band member.
1483.75[f] *6*	(5$^-$)		Ef I	J^{π}: γ to 4$^+$; γ to 6$^+$; possible K$^{\pi}$=1$^-$ band member.
1487.81 *12*	(4$^+$,5$^+$)		E	J^{π}: 947γ to 6$^+$; γ-rays to (5$^+$) and (3$^+$).
1496.15[g] *8*	(6$^-$)		A E GH	J^{π}: (M1,E2) 124γ to (5$^-$); γ to (4$^-$); possible J=6 member of K$^{\pi}$=4$^-$ band.
1500.87 *19*	$\leq$4		B	J^{π}: γ to 2$^+$.
1506.21[j] *8*	(2$^-$)		E	J^{π}: D+Q γ to (3$^+$); 572γ to 2$^+$; possible K$^{\pi}$=2$^-$ bandhead.
1526.34[h] *7*	(4$^+$)		E	J^{π}: 1448γ to 2$^+$; 1266γ to 6$^+$.
1539	(1$^-$)[&]		F	
1543.46[e] *14*	(6$^+$)		E H	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{170}Er Levels (continued)

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	XREF	Comments
1556.72[d] 8	(7$^+$)		E H	J^π: γ to 6$^+$; K$^\pi$=2$^+$ band member.
1572.67[i] 6	(4$^+$)		E	J^π: D+Q γ to 4$^+$; 638γ to 2$^+$; possible 336γ to (5$^+$); possible K$^\pi$=2$^+$ band assignment.
1579.16[j] 4	(3$^-$)		EF I	J^π: (3$^-$) from $\sigma(\theta)$ in (d,d′); D(+Q) γ to 2$^+$; 1319γ to 4$^+$.
1590.80[n] 9	(6$^-$)	4.0 ns 10	A E G	$T_{1/2}$: from (^{136}Xe,Xγ). J^π: M1 95γ to (6$^-$) 1496; log ft=6.3 from (6$^+$) ^{170}Ho favors configuration=(ν 7/2[633])+(ν 5/2[512]) (2000Gr14).
1631.00[f] 8	(6$^-$)		E	J^π: 1090γ to 6$^+$; band assignment.
1640.34[g] 8	(7$^-$)		E GH	J^π: 1100γ to 6$^+$ 541; 725γ to (8$^+$) 915; band assignment.
1676.35[j] 4	(4$^-$)		E	J^π: 460γ to 3$^{(+)}$ 1218; possible gammas to (2$^-$) and (5$^+$); band assignment in (n,n′γ).
1677.3[c] 6	(8$^+$)		H	
1683.59[i] 8	(5$^+$)		E	J^π: γ-rays to 6$^+$ and 4$^+$; band assignment.
1689.78 10	(5$^+$)		E	J^π: γ to 4$^+$.
1694.7[e] 7	(7$^+$)		H	
1699.69 4	(1$^+$)		E	J^π: γ to 0$^+$ and 3$^{(+)}$; not 2$^+$ from 482$\gamma(\theta)$ in (n,n′γ).
1704.84[f] 19	(7$^-$)		E I	J^π: band assignment.
1708.17[k] 6	(5$^-$)		EF	J^π: γ-rays to 4$^+$ and (5$^-$) and (4$^-$); (5$^-$) favored by $\sigma(\theta)$ in (d,d′) and by band assignment.
1716.02[n] 16	(7$^-$)		G	
1741.87 7			E	
1745.88? 6	(4$^-$)		AB E	J^π: D+Q γ to 3$^{(-)}$; γ to (4$^-$); 406$\gamma(\theta)$ and linear polarization imply significant mixing for ΔJ=0 or J to J-1 transitions; J=4 favored by population probability in (n,n′γ); possible (π 7/2[523])+(π 1/2[411]) bandhead (2000Gr14).
1769.19 6			E	J^π: γ to 4$^+$.
1773.1[d] 5	(8$^+$)		H	
1804.26[g] 14	(8$^-$)		GH	
1805.23 6	(3$^+$,4$^+$)		E	J^π: γ-rays to 2$^+$ and (5$^+$).
1819.11[k] 19	(6$^-$)		E	J^π: band assignment.
1823.23[i] 6	(6$^+$)		E	J^π: band assignment.
1824.61[l] 6	1$^-$	5.7 fs 5	DE	J^π: E1 γ to 0$^+$. $T_{1/2}$: Other: 15.3 fs +14−13 from (n,n′γ). reason for discrepancy unclear (1992Be29).
1861.13[n] 17	(8$^-$)		G	
1867.7[e] 5	(8$^+$)		H	
1899.7? 3			E	J^π: γ-rays to (3$^+$) and 2$^+$.
1918.6[b] 6	12$^+$	0.57 ps 3	HI	J^π: multiple Coulomb excitation; K$^\pi$=0$^+$ g.s. band member (1977Ke06). $T_{1/2}$: from Doppler broadened lineshape analysis in Coulomb excitation (2011Di07).
1935.50[l] 11	(3$^-$)		EF	J^π: D(+Q) γ to 2$^+$; probable γ to 4$^+$; (3$^-$) from (d,d′).
1943.30[o] 22	(7)		G	possible K=7 intrinsic state.
1963.9[d] 6	(9$^+$)		H	
1973.04[m] 8	1$^{(+)}$		B DE	J^π: D 1973γ to 0$^+$ g.s.; possibly allowed feeding from (1$^+$) in ^{170}Ho β^- decay (43 s).
1982.61 11	(1$^+$,2$^+$)		E	J^π: γ to 0$^+$ and 3$^+$.
1982.8 3			B	J^π: γ to 2$^+$; fed from (1$^+$) in ^{170}Ho β^- decay (43 s).
1990.81[g] 17	(9$^-$)		GH	
2019.07[m] 17	(2$^+$)		B EF	
2026.49[n] 20	(9$^-$)		G	
2039.31 24	1	0.10 ps 3	B DE	J^π: D γ to 0$^+$.
2061.7[e] 7	(9$^+$)		H	

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Adopted Levels, Gammas (continued)

^{170}Er Levels (continued)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
2071.3 *3*	$(1,2^+)$		B EF	J$^\pi$: γ to 0^+; D+Q γ to 2^+.
2080.52 *13*	2^+		E	J$^\pi$: E2 γ to 0^+.
2080.7[c] *6*	(10^+)		H	
2106.7[o] *3*	(8)		G	
2112.2? *3*	(2^+)		EF	J$^\pi$: probable (E2) γ to 0^+.
2132.97 *15*	1[a]	62 fs *9*	B DE	Other T$_{1/2}$: see comment in (n,n′γ).
2150.9[l] *3*	(5^-)		Ef	XREF: f(2154). J$^\pi$: band assignment.
2158.94 *12*	(5^+)		A f	XREF: f(2154). J$^\pi$: log *ft*=5.10 *8* from (6^+) in ^{170}Ho β^- decay (2.76 min); 941γ to $3^{(+)}$ 1217. Probable configuration=(ν 5/2[523])+(ν 5/2[512]) (2000Gr14) based on allowed unhindered β^- decay from (6^+) ^{170}Ho.
2168.40 *15*	(7)		G	possible intrinsic state; May be the K$^\pi$=7$^-$ (π 7/2[404])+(π 7/2[523]) bandhead (2010Dr02).
2188.45[g] *24*	(10^-)		GH	
2190.17 *19*	$(4^+,5,6^+)$		EF	J$^\pi$: γ-rays to 6^+ and 4^+.
2212.01[n] *22*	(10^-)		G	
2223.2[d] *6*	(10^+)		H	
2285.6[e] *6*	(10^+)		H	
2289.7[o] *11*	(9)		G	
2399.04 *24*	$(1^+,2^+)$		EF	J$^\pi$: γ to 0^+ and $3^{(+)}$.
2407.9[n] *3*	(11)		G	
2431.71[p] *25*	(8)		G	possible intrinsic state; May be K$^\pi$=8$^-$ (ν 9/2[624])+(ν 7/2[512]) bandhead (2010Dr02).
2434.2[g] *6*	(11^-)		H	
2444.9[d] *7*	(11^+)		H	
2451.57 *7*	(4^+)	76 fs *+33−25*	E	J$^\pi$: γ-rays to 2^+ and 3^+ levels; possible candidate for two-phonon excitation state ($4^+_{\gamma\gamma}$ level) from (n,n′γ) (1999YoZY). T$_{1/2}$: from (n,n′γ).
2518.9[e] *7*	(11^+)		H	
2537.2[b] *11*	14^+		H	
2551.1[c] *7*	(12^+)		H	
2603.1[p] *4*	(9)		G	
2606			F	
2656.5[g] *3*	(12^-)		GH	
2657.4 *5*			EF	J$^\pi$: γ to 4^+.
2684.8 *3*	$(1,2^+)$		B DE	J$^\pi$: γ to 0^+ and 2^+.
2700.83 *24*	1[a]	23 fs *3*	B DE	
2717.2 *3*	$(4^+,5,6^+)$		Ef	J$^\pi$: γ-rays to 4^+ and 6^+.
2720.13? *17*	$(3^+,4^+)$		Ef	J$^\pi$: γ-rays to (5^+) and 2^+.
2723.7[e] *8*	(12^+)		H	
2750.8 *7*	(1)[a]	≈0.15 ps	D	
2753.3 *3*	$(1,2^+)$		E	J$^\pi$: γ to 0^+ and 2^+. presumed to differ from 2751 level because its strong transition to g.s. is absent here.
2790.3 *4*	1^+[a]	7.7 fs *5*	B DE	
2794.1[p] *11*	(10)		G	
2813.3[d] *8*	(12^+)		H	
2897 *1*	1[a]		D	
2929.8 *7*	1[a]	39 fs *9*	D	Branching differs from that of 2931 level in (n,n′γ).
2930.9 *3*	$(1,2^+)$		E	J$^\pi$: γ to 2^+, γ to 0^+. Branching differs from that for 2930 level in (γ,γ′).
2937.8 *7*	1[a]	31 fs *5*	D	
2943.0 *6*	$(1,2^+)$		E	J$^\pi$: γ to 0^+.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{170}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
2971.5 6	1,2$^{(+)}$		DE	Jπ: γ to 0$^+$; J=1,2 from (γ,γ′).
2973.2[g] 12	(13$^-$)		H	
2984.4[e] 9	(13$^+$)		H	
2993.5? 5	(1,2$^+$)		E	Jπ: γ to 0$^+$.
2995 1	1,2$^{(+)}$		D	Jπ: γ to 0$^+$; J=1,2 from excitation in (γ,γ′). assumed to differ from 2993.5 level because γ deexcitation pattern differs.
3019 1	1[a]		D	
3063.4 9	1[a]	3.1 fs 4	DE	
3073.3[c] 12	(14$^+$)		H	
3073.9[d] 9	(13$^+$)		H	
3084 1	1[a]		D	
3177.8 7	1[a]	7.9 fs 24	D	
3182.8 7	1[a]	11 fs 4	D	
3189.2[g] 11	(14$^-$)		H	
3225.7[b] 14	16$^+$		H	
3237.8 7	1[a]	27 fs 6	D	
3242.8 7	1[a]	4.2 fs 6	D	
3275.9[e] 12	(14$^+$)		H	
3405.8 7	1$^{(+)}$[a]	2.09 fs 10	D	Presumed to differ from 3405.9 level in (n,n′γ) because γ branching differs.
3405.9 4	(1,2$^+$)		E	Jπ: γ to 0$^+$. Presumed to differ from 3406 level in (γ,γ′) because γ branching differs.
3436.3[d] 10	(14$^+$)		H	
3540	1[a]		D	
3554	1[a]		D	
3566	1[a]	4.9 fs 8	D	
3572	1[a]		D	
3583.1[g] 16	(15$^-$)		H	
3584.9[e] 14	(15$^+$)		H	
3606.4 4	(1$^+$,2$^+$)		B E	Jπ: 2715γ to (0$^+$) 891; β^- branch from (1$^+$) in ^{170}Ho β^- decay (43 s) is probably allowed unhindered, consistent with configuration=((ν 5/2[523])⊗(n 5/2[512]))2$^+$ suggested in 2000Gr14.
3623	1[a]	3.3 fs 12	D	
3633.4[c] 14	(16$^+$)		H	
3695	1[a]		D	
3713.1[d] 11	(15$^+$)		H	
3792.1[g] 15	(16$^-$)		H	
3892.1[e] 15	(16$^+$)		H	
3978.4[b] 15	18$^+$		H	
4132.5[d] 12	(16$^+$)		H	
4232.3[c] 15	(18$^+$)		H	
4249.9[e] 17	(17$^+$)		H	
4417.2[d] 15	(17$^+$)		H	
4447.7[g] 15	(18$^-$)		H	
4579.1[e] 18	(18$^+$)		H	
4787.1[b] 16	20$^+$		H	
4882.6[c] 15	(20$^+$)		H	
4888.7[d] 16	(18$^+$)		H	
4978.3[e] 20	(19$^+$)		H	
5206.6[d] 18	(19$^+$)		H	
5334.8[e] 21	(20$^+$)		H	

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Adopted Levels, Gammas (continued)

^{170}Er Levels (continued)

E(level)[†]	J^{π}[‡]	XREF
5558.9[c] *17*	(22^+)	H
5674.8[b] *17*	22^+	H
6142.9[e] *23*	(22^+)	H
6586.6[b] *20*	24^+	H
7531.4[b] *22*	26^+	H

[†] For states deexcited by γ rays, E(level) values are from least-squares fit to Eγ (omitting the poorly-fitting, doubly-placed 572γ from 1676 level), except when level is excited in (γ,γ') alone or (^{238}U,^{238}U$'\gamma$) alone. ΔE for energies adopted from (d,d$'$) is estimated by the evaluator to be $\leq$ 7 keV (authors do not state ΔE).

[‡] Values given without comment are from deduced band structure in ^{170}Er(^{238}U,^{238}U$'\gamma$), supported by Coulomb excitation strengths, γ decay patterns and strengths, and band-mixing calculations.

[#] From (γ,γ'), except As noted.

[@] Reported in Coulomb excitation only. A level with this J^{π} should have been clearly populated in (n,n$'\gamma$) but no evidence exists for its excitation in that reaction. Consequently, the existence of this level is considered to be doubtful.

[&] From $\sigma(\theta)$ and/or $\sigma(90°)/\sigma(125°)$, and band configuration analysis in (d,d$'$).

[a] From $\gamma(\theta)$ and/or γ linear polarization in (γ,γ').

[b] Band(A): $K^{\pi}=0^+$ g.s. band (2000Wu01). Rotational parameters: α=13.1, β=−0.007. Definite J^{π} assigned to band members based on smooth progression of level energies and independently-established J^{π}(g.s.)=0^+ and mult(79γ)=E2, unless band membership is uncertain.

[c] Band(B): $K^{\pi}=(0)^+$ quasi β vibrational band (2000Wu01). Strongly mixed with γ band at J=4 (where β- and γ-band energies are almost degenerate); becomes yrast at J=22 (2000Wu01). Rotational parameters: α=11.6, β=−0.016 (J=0,2,6 members). Note that the J=4 and 6 levels are assigned, instead, to the γ band in (n,n$'\gamma$) (2000Gr14), and *vice versa*.

[d] Band(C): $K^{\pi}=2^+$ γ vibrational band (2000Wu01). See comments on β band and $K^{\pi}=3^+$ band. Rotational parameters: α=13.4, B=−0.010 (J=2,6,8); α=12.8, B=−0.006 (J odd).

[e] Band(D): $K^{\pi}=(3)^+$ band (2000Wu01). Significantly mixed with K=2 γ band as evidenced by strength of Coulomb excitation of a 3^+ band, presence of K-forbidden E2 transitions to g.s. band and repulsion between J=12 and 13 members of this band and the γ band (2000Wu01). Rotational parameters: α=10.9, β=−0.002 (if 1413 level is J=5 member). Configuration=(ν 5/2[512])+(ν 1/2[521]) (2000Gr14).

[f] Band(E): $K^{\pi}=(1)^-$ band (2000Gr14). Configuration=(ν 7/2[633])-(ν 5/2[512]) (2000Gr14).

[g] Band(F): $K^{\pi}=(4^-)$ band (2000Gr14). Rotational parameter: α=10.34. Mixed configuration: comparable contributions from (ν 7/2[633])+(ν 1/2[521]) and (π 7/2[523])+(π 1/2[411]); supported by experimental band properties and expectations from multi-quasiparticle calculations.

[h] Band(G): $K^{\pi}=(0^+)$ band (1992Be63). Rotational parameters: α=10.2, β=−0.006. Includes a two-phonon component (2000Gr14). Possibly involves neutron-pair excitation into 7/2[633] orbital or into 1/2[521] orbital (1998GrZV).

[i] Band(H): $K^{\pi}=(2^+)$ band (2000Gr14). Rotational parameters: α=11.2, β=−0.002. Possible two-phonon $\beta\gamma$ component (2000Gr14,2000Gr33). Possible configuration=(ν 5/2[512])$\otimes$(ν 3/2[512]) indicated In 1998GrZV appears to be a misprint; 3/2[512] orbital seems unlikely At this energy, and also leads to inconsistent K^{π}.

[j] Band(I): $K^{\pi}=(2^-)$ band (2000Gr14). Rotational parameter: α=12.16. Configuration=(ν 9/2[624])-(ν 5/2[512]) (2000Gr14).

[k] Band(J): $K^{\pi}=(5^-)$ band (2000Gr14). Configuration=(ν 9/2[624])+(ν 1/2[521]) (2000Gr14). Rotational parameter: α=9.24.

[l] Band(K): $K^{\pi}=(0^-)$, α=1 band (2000Gr14). Configuration=(ν 7/2[514])-(ν 7/2[633]) (2000Gr14). Rotational parameter: α=10.7, β=+0.032.

[m] Band(L): $K^{\pi}=1^{(+)}$ band (2000Gr14). Rotational parameter: α=11.5.

[n] Band(M): $K^{\pi}=(6^-)$ band. possible configuration: (ν 7/2[633])+(ν 5/2[512]); consistent with observed alignment and In reasonable agreement with expected g_K-g_R. Transition energies are similar to those for the (6^-) band in ^{168}Er. A $K^{\pi}=7^-$ (ν 7/2[633])+(ν 7/2[514]) configuration, predicted At comparable excitation energy, is expected to have significantly smaller g_K-g_R. Note, however, that I(95γ)/I(218γ) and absence of a 322γ to the 4^- 1269 level differ from expectations for the $K^{\pi}=6^-$ bandhead

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Adopted Levels, Gammas (continued)

^{170}Er Levels (continued)

option.

[o] Band(N): K=(7) band.

[p] Band(O): K=(8) band.

Adopted Levels, Gammas (continued)

$\gamma(^{170}Er)$

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[g]	Comments
78.590	2^+	78.63 *3*	100	0.0	0^+	E2[&]		7.47	B(E2)(W.u.)=208 *4* E_γ: weighted average of 78.63 *3* (n,n′γ), 78.65 *8* (^{170}Ho β^- decay (2.76 min)). Mult.: from α(exp) in ^{170}Ho β^- decay (2.76 min).
260.140	4^+	181.570 *20*	100	78.590	2^+	E2		0.348	
540.68	6^+	280.523 *20*	100	260.140	4^+	E2		0.0848	
890.88	(0^+)	812.29 *3*	100	78.590	2^+	(E2)[&]			
914.97	8^+	374.27 *4*	100	540.68	6^+	(E2)[&]		0.0360	B(E2)(W.u.)=3.7×10^2 *3*
934.023	2^+	673.72 *9*	1.39 *21*	260.140	4^+	[E2]			B(E2)(W.u.)=0.29 *5*
		855.445 *23*	100 *15*	78.590	2^+	E2(+M1)[&]	≥14		B(M1)(W.u.)<6.1×10^{-5}; B(E2)(W.u.)>5.3 δ: <−70 from Coulomb excitation but +17 *+6−3* from (n,n′γ); discrepancy In signs not understood.
		934.06 *5*	89.7 *24*	0.0	0^+	E2			B(E2)(W.u.)=3.68 *11* I_γ: from Coulomb excitation.
959.994	2^+	69	0.65 *13*	890.88	(0^+)				I_γ: from Coulomb excitation. E_γ: from level energy difference.
		699.870 *22*	65 *3*	260.140	4^+	E2			B(E2)(W.u.)=1.42 *20* I_γ: other: 95 from Coulomb Excitation, 71 *11* from (n,n′γ).
		881.383 *21*	100 *4*	78.590	2^+	E2+M1[&]	+0.27 *+19−8*		B(M1)(W.u.)=0.00108 *18*; B(E2)(W.u.)=0.05 *+7−5* δ: other: +1.7 *8* (Coulomb excitation).
		959.96 *6*	63 *6*	0.0	0^+	E2			B(E2)(W.u.)=0.28 *3*
1010.53	(3^+)	750.379 *23*	14.6 *8*	260.140	4^+	(M1+E2)	−1.8×10^2 *+11−46*		I_γ: from ^{170}Ho β^- decay (2.76 min). Others: 21 *3* in (n,n′γ), 3.5 *3* in Coulomb Excitation. Mult.: D+Q from $\gamma(\theta)$ in (n,n′γ); $\Delta\pi$=(no) from magnitude of δ. Other δ: +0.08 *+4−3* or (1/δ)=−0.03 *+4−3* in (n,n′γ).
		931.98 *4*	100 *5*	78.590	2^+	(M1+E2)[d]	−1.5×10^2 *+8−50*		Other δ: 1/(−0.11 *+11−6*) in (n,n′γ).
1103.36	4^+	843.25 *3*	100 *6*	260.140	4^+	M1+E2	+2.81 *10*		Mult.: D+Q from (n,n′γ); E2(+M1) from Coulomb excitation. δ: from (n,n′γ). However, δ≤−16 In Coulomb excitation. Source of discrepancy In sign not apparent.
		1024.69 *3*	30.1 *19*	78.590	2^+	E2			I_γ: weighted average of 29.6 *21* from Coulomb excitation and 33 *5* from (n,n′γ).
1127.29	4^+	193.2[c]		934.023	2^+				
		586.67[h] *14*	13.8[h] *21*	540.68	6^+				
		867.18 *4*	100 *7*	260.140	4^+	M1+E2[&]	−9.8 *+22−63*		I_γ: from Coulomb excitation. δ: −1.29 *+7−12* or −9.8 *+22−63* in (n,n′γ), −4.3 *+23−99* in Coulomb excitation.
		1048.67 *4*	80 *5*	78.590	2^+	E2			I_γ: weighted average of 73 *6* from Coulomb excitation,

Adopted Levels, Gammas (continued)

γ(^{170}Er) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[g]	Comments
									86 12 from (n,n′γ). Other: 21 11 in ^{170}Ho β^- decay (2.76 min).
1217.50	$3^{(+)}$	283.457 24	12.9 22	934.023	2^+	[M1]		0.1553	I_γ: from ^{170}Ho β^- decay (2.76 min). Other: 25 3 in (n,n′γ).
		957.26 7	18.3 10	260.140	4^+	D+Q			I_γ: from β^- decay. δ: +0.27 +9−6 or +6.6 +40−23 from (n,n′γ).
		1138.99 3	100 4	78.590	2^+	(M1+E2)[d]	+14 +7−4		I_γ: from β^- decay (2.76 min).
1236.68	(5^+)	695.92[h] 5	≤20[h]	540.68	6^+				
		976.45 8	100 15	260.140	4^+	(M1+E2)[d]			δ: +0.12≤δ≤+0.2 or δ>+10 in ^{170}Er(n,n′γ).
1266.63	$(1)^-$	1188.040 21	100 14	78.590	2^+	E1			δ: δ(D,Q)=0.00 10 from (n,n′γ).
1268.68	(4^-)	51.30[@] 10	6.8[@] 5	1217.50	$3^{(+)}$	E1[@]		0.355 6	B(E1)(W.u.)=2.06×10^{-6} 20 E_γ: from β^- decay only; γ absent in (n,n′γ).
		141.50[@] 9	4.6[@] 6	1127.29	4^+	[E1]		0.1293	B(E1)(W.u.)=6.7×10^{-8} 10 E_γ: from β^- decay only; γ absent in (n,n′γ).
		165.33 4	10.2 7	1103.36	4^+	(E1)[@]		0.0856	B(E1)(W.u.)=9.2×10^{-8} 9 I_γ: weighted average of 10.3 13 from (n,n′γ) and 10.1 9 from β^- decay (2.76 min).
		258.136 20	100 5	1010.53	(3^+)	D+Q[f]			I_γ: from β^- decay (2.76 min). Mult.: $\Delta\pi$=(yes) from level scheme, but δ=−30 +7−13 in (n,n′γ) is unreasonably large for E1+M2.
		1008.3 3	0.25 8	260.140	4^+				
1304.57	(4^+)	87.16[@] 9	16.4[@] 23	1217.50	$3^{(+)}$	M1[@]		4.22	E_γ: absent in (n,n′γ).
		293.94 10	19 3	1010.53	(3^+)				E_γ: absent in ^{170}Ho β^- decay (2.76 min).
		1044.40 4	100	260.140	4^+	(M1+E2)[d]	+6.3 +45−18		
		1226.0[@] 3	48[@] 7	78.590	2^+				
1305.23	(2^-)	370.99[h] 17	3.2[h] 9	934.023	2^+				
		1226.64 6	100 16	78.590	2^+				E_γ,I_γ: possible doublet in (n,n′γ); intensity suitably divided.
1324.26	(0^+)	390.11[i] 10	16.5 23	934.023	2^+				
		1245.69 4	100 14	78.590	2^+				
1332.0?	2^+	398[&i]	87[&]	934.023	2^+	M1+E2[&]	−0.40 +15−20	0.059 5	B(M1)(W.u.)=0.028 5; B(E2)(W.u.)=13 9 Mult.,δ: $\gamma(\theta)$ in Coulomb excitation; RUL.
		1332[&i]	100[&]	0.0	0^+	E2[&]			B(E2)(W.u.)=0.26 4
1340.18	$3^{(-)}$	379.99[h] 7	11.5[h] 14	959.994	2^+				
		1080.09 3	100 14	260.140	4^+	(E1+M2)[f]	+0.016 +23−17		
		1261.51 6	43 7	78.590	2^+	D+Q			I_γ: other: <29 from Coulomb Excitation. δ: −0.014 +4−5 or −3.8 6 in (n,n′γ).
1350.48	(6^+)	247.4 7	7.6 21	1103.36	4^+				E_γ: other: 247.0 in (^{238}U,^{238}U′γ).
		809.78 7	100 17	540.68	6^+				E_γ: other: 809.6 in (^{238}U,^{238}U′γ).
		1090.6 4	<66	260.140	4^+				E_γ: other: 1090.1 from (^{238}U,^{238}U′γ).

$^{170}_{68}$Er$_{102}$-9

Adopted Levels, Gammas (continued)

γ(^{170}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[g]	Comments
1370.6?	(3⁻)	1292[&i]	100[&]	78.590	2⁺				
1372.11	(5⁻)	103.46 10	100	1268.68	(4⁻)	M1[@]		2.58	
		831.44 23	23 4	540.68	6⁺				I_γ: other: 15 from ^{170}Ho β^- decay (2.76 min).
		1111.81 11	46[@] 4	260.140	4⁺				I_γ: other: 78 13 from (n,n′γ).
1376.6	(10⁺)	461.5[&] 5	100[&]	914.97	8⁺	(E2)[&]		0.0203	B(E2)(W.u.)=320 22
1385.40	2⁺	1125.28 3	51 7	260.140	4⁺	E2			
		1306.810 24	100 14	78.590	2⁺	(M1+E2)[d]	−0.74 +7−12		
		1385.31 5	44 6	0.0	0⁺	E2			
1401.92	(6⁺)	274.43[h] 21	≤12[h]	1127.29	4⁺	E2			Mult.: from Coulomb excitation.
		861.26 6	100 14	540.68	6⁺				E_γ: other: 860.5 in (^{238}U,^{238}U′γ).
		1141.0[c]		260.140	4⁺				
1413.12	(5⁺)	108.32 14	24 4	1304.57	(4⁺)				
		195.58 9	14.5 21	1217.50	3⁽⁺⁾				
		872.40 7	22 5	540.68	6⁺	D+Q			I_γ: weighted average of 32 8 in (n,n′γ), 19 4 in ^{170}Ho β^- decay (2.76 min). δ: 0.15 +7−6 or −30<δ<−1.6 in (n,n′γ).
		1153.14 8	100[@] 9	260.140	4⁺				E_γ: possible multiplet in (n,n′γ).
1416.23	(2⁺)	405.71[h] 9	≤64[h]	1010.53	(3⁺)				
		456.53 12	19.2 25	959.994	2⁺				I_γ: from I(457γ)/I(1338γ) in ^{170}Ho β^- decay (43 s).
		482.200[h] 23	≤254[h]	934.023	2⁺				
		1337.64 3	100 14	78.590	2⁺	D+Q	+4.9 +12−9		
		1415.6[#] 5	86[#] 12	0.0	0⁺				E_γ,I_γ: other: 1416.23 7, I(1416γ)/I(1338γ)=1.14 17 for doublet in (n,n′γ).
1422.1	(5⁺,6⁺)	1161.9[c]		260.140	4⁺				
1432.97	(4⁻)	422.63[h] 14	5.0[h] 7	1010.53	(3⁺)				
		1172.82 3	100 14	260.140	4⁺	(E1+M2)[f]	+0.02 +4−3		
1483.35	(3⁺)	356.27[h] 14	9[h] 4	1127.29	4⁺				
		379.99[h] 7	29[h] 4	1103.36	4⁺				
		472.84 4	95 12	1010.53	(3⁺)				
		549.31[h] 8	≤68[h]	934.023	2⁺				
		1223.55[hi] 9	≤84[h]	260.140	4⁺				δ: δ(D,Q)=−0.06 +3−4 for doubly-placed γ in (n,n′γ).
		1404.73 4	100 14	78.590	2⁺	D+Q	+5.1 +15−12		
1483.75	(5⁻)	356.27[hi] 14	19[h] 8	1127.29	4⁺				
		943.09 6	100 15	540.68	6⁺				
		1223.55[h] 9	≤185[h]	260.140	4⁺				δ: δ(D,Q)=−0.06 +3−4 for doubly-placed γ in (n,n′γ).
1487.81	(4⁺,5⁺)	250.8[h] 3	4.5[h] 12	1236.68	(5⁺)				I_γ: relative to I(477γ doublet).
		477.21[hi] 6	100[h] 14	1010.53	(3⁺)				
		947.19 12	12.9 20	540.68	6⁺				I_γ: relative to I(477γ doublet).

$^{170}_{68}$Er$_{102}$-10

Adopted Levels, Gammas (continued)

$\gamma(^{170}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[g]	Comments
1496.15	(6⁻)	123.90[@] *14*	100[@] *19*	1372.11	(5⁻)	(M1,E2)[@]		1.44 *11*	E_γ: absent in (n,n′γ).
		227.41[@] *9*	100[@] *13*	1268.68	(4⁻)	[E2]		0.1650	E_γ: other: 227.21 *6* in (n,n′γ).
1500.87	≤4	540.9[#] *2*	100[#]	959.994	2⁺				
1506.21	(2⁻)	288.9 *3*	12.8 *23*	1217.50	3⁽⁺⁾				
		495.67 *7*	100 *16*	1010.53	(3⁺)	D+Q			δ: 0.10 *4* or −12 *+4−5* in (n,n′γ).
		572.22[h] *5*	≤377[h]	934.023	2⁺				
1526.34	(4⁺)	422.63[h] *14*	9.4[h] *13*	1103.36	4⁺				
		985.80 *17*	12.5 *19*	540.68	6⁺				
		1266.24 *8*	100 *15*	260.140	4⁺				
		1447.97[h] *20*	36[h] *6*	78.590	2⁺				
1543.46	(6⁺)	237.4[c]		1305.23	(2⁻)				E_γ: absent in (n,n′γ).
		1002.63 *17*	100 *15*	540.68	6⁺				E_γ: other: 1000.8 in (^{238}U,^{238}U′γ).
		1283.61 *20*	46 *7*	260.140	4⁺				E_γ: other: 1281.3 in (^{238}U,^{238}U′γ).
1556.72	(7⁺)	320.2[c]		1236.68	(5⁺)				E_γ: from (^{238}U,^{238}U′γ) only.
		641.71[h] *22*	≤85[h]	914.97	8⁺				
		1016.04 *7*	100 *15*	540.68	6⁺				
1572.67	(4⁺)	336.05[h] *10*	46[h] *6*	1236.68	(5⁺)				
		445.29 *15*	24 *4*	1127.29	4⁺				
		469.29 *16*	20 *3*	1103.36	4⁺				
		562.30[h] *12*	38[h] *15*	1010.53	(3⁺)				
		638.0 *3*	9.6 *23*	934.023	2⁺				
		1312.51 *11*	100 *15*	260.140	4⁺	D+Q			δ: −0.59 *+7−8* or +3.5 *+10−6* in (n,n′γ).
1579.16	(3⁻)	274.43[h] *21*	≤8.3[h]	1304.57	(4⁺)				E_γ: feeds 1304 (3⁻), or 1304 (4⁺), or both levels.
		451.72 *6*	54 *7*	1127.29	4⁺				
		475.47 *7*	25 *4*	1103.36	4⁺				
		568.65[h] *9*	≤127[h]	1010.53	(3⁺)				
		645.23 *3*	100 *15*	934.023	2⁺	D(+Q)	−0.07 *+4−5*		
		1319.1 *3*	34 *5*	260.140	4⁺				E_γ,I_γ: multiplet; intensity not divided.
1590.80	(6⁻)	94.67[@] *8*	100[@] *8*	1496.15	(6⁻)	M1[@]		3.33	B(M1)(W.u.)=0.0014 *4* E_γ: absent in (n,n′γ).
		218.69 *10*	47[@] *9*	1372.11	(5⁻)				E_γ: from ^{170}Ho β^- decay (2.76 min); possible doublet in (n,n′γ).
1631.00	(6⁻)	280.523 *20*	≤6×10^3	1350.48	(6⁺)				E_γ,I_γ: for doublet; intensity not divided.
		620.46[i] *17*	100 *15*	1010.53	(3⁺)				
		1090.6[h] *4*	≤203[h]	540.68	6⁺				
1640.34	(7⁻)	144.5 *10*		1496.15	(6⁻)				E_γ: from (^{238}U,^{238}U′γ). Other: 142.9 *2* In (^{136}Xe,Xγ). Absent In (n,n′γ). I_γ: Iγ/I(268γ)=0.45 *6* from (^{136}Xe,Xγ).
		268.0 *10*		1372.11	(5⁻)				E_γ: from (^{238}U,^{238}U′γ). Other: 266.8 *2* In (^{136}Xe,Xγ).

From ENSDF

$^{170}_{68}Er_{102}$-11

$\gamma(^{170}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
							Absent In (n,n′γ). I_γ: from (^{136}Xe,Xγ).
1640.34	(7⁻)	725.29 *8*	77 *14*	914.97	8⁺		
		1099.99 *11*	100 *14*	540.68	6⁺		
1676.35	(4⁻)	370.99[h] *17*	5.6[h] *15*	1305.23	(2⁻)		
		439.50[h] *5*	24[h] *3*	1236.68	(5⁺)		
		459.55 *21*	3.5 *6*	1217.50	3⁽⁺⁾		
		549.31[h] *8*	23[h] *4*	1127.29	4⁺		
		572.22[h] *5*	100[h] *13*	1103.36	4⁺		
		665.84[h] *5*	20[h] *3*	1010.53	(3⁺)		δ: −6.4<δ(D,Q)<−2.0 if J=4 (for doublet).
		1416.23 *7*	47 *7*	260.140	4⁺		I_γ: for doublet; intensity not divided.
1677.3	(8⁺)	326.9[c]		1350.48	(6⁺)		
		762.4[c]		914.97	8⁺		
		1136.5[c]		540.68	6⁺		
1683.59	(5⁺)	447.2[h] *3*	≤27[h]	1236.68	(5⁺)		
		580.33 *9*	100 *3*	1103.36	4⁺		
		1142.78 *9*	91 *3*	540.68	6⁺		
		1423.4 *3*	≤109	260.140	4⁺		E_γ: possible multiplet.
1689.78	(5⁺)	562.30[h] *12*	50[h] *20*	1127.29	4⁺		
		586.67[h] *14*	100[h] *15*	1103.36	4⁺		
1694.7	(7⁺)	272.6[c]		1422.1	(5⁺,6⁺)		
		1154.0[c]		540.68	6⁺		
1699.69	(1⁺)	482.200[h] *23*	≤750[h]	1217.50	3⁽⁺⁾		
		1699.57 *9*	100 *15*	0.0	0⁺		
1704.84	(7⁻)	1164.16 *18*	100	540.68	6⁺		
1708.17	(5⁻)	336.05[h] *10*	35[h] *5*	1372.11	(5⁻)		
		439.50[h] *5*	100[h] *12*	1268.68	(4⁻)		
		1447.97[h] *20*	56[h] *9*	260.140	4⁺		
1716.02	(7⁻)	125.5[e] *2*	100	1590.80	(6⁻)		
1741.87		1663.27 *6*	100	78.590	2⁺		
1745.88?	(4⁻)	405.71[h] *9*	69[h] *8*	1340.18	3⁽⁻⁾	D+Q	E_γ: absent in ^{170}Ho β^- decay (2.76 min).
		477.21[h] *6*	100[h] *14*	1268.68	(4⁻)		E_γ: other: 477.4 *2* in ^{170}Ho β^- decay (2.76 min).
1769.19		641.71[h] *22*	32[h] *6*	1127.29	4⁺		
		665.84[h] *5*	100[h] *14*	1103.36	4⁺		
1773.1	(8⁺)	371.6[c]		1401.92	(6⁺)		
		858.0[c]		914.97	8⁺		
		1232.1[c]		540.68	6⁺		
1804.26	(8⁻)	164.3[e] *2*	24[e] *3*	1640.34	(7⁻)		E_γ: other 164.5 *10* from (^{238}U,^{238}U′γ). I_γ: other: 43 *9* from (^{238}U,^{238}U′γ).

$\gamma(^{170}$Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[g]	Comments
1804.26	(8^-)	307.5[e] *2*	100[e]	1496.15	(6^-)				
1805.23	$(3^+,4^+)$	568.65[h] *9*	278[h] *43*	1236.68	(5^+)				
		678.27 *16*	22 *4*	1127.29	4^+				E_γ: multiplet.
		1544.96 *8*	100 *15*	260.140	4^+				
		1726.1 *3*	62 *10*	78.590	2^+				E_γ: possible multiplet; intensity not divided.
1819.11	(6^-)	447.2[h] *3*	≤170[h]	1372.11	(5^-)				
		1278.32 *23*	100 *40*	540.68	6^+				
1823.23	(6^+)	250.8[h] *3*	9.6[h] *26*	1572.67	(4^+)				
		586.67[h] *14*	87[h] *13*	1236.68	(5^+)				
		695.92[h] *5*	100[h] *13*	1127.29	4^+				
		720.6 *10*	11 *4*	1103.36	4^+				E_γ,I_γ: multiplet; intensity not divided.
		1282.3 *4*	10.0 *17*	540.68	6^+				
1824.61	1^-	1746.01 *5*	100[a] *3*	78.590	2^+	(E1)			B(E1)(W.u.)=0.0045 *5* Mult.: D from (n,n′γ); adopted $\Delta\pi$=yes. δ(D,Q)=−0.1 *3* from (n,n′γ).
		1824.6 *3*	61.35[a]	0.0	0^+	E1[b]			B(E1)(W.u.)=0.00242 *22*
1861.13	(8^-)	145.1[e] *2*	100[e]	1716.02	(7^-)				
		270.4[e] *2*	15.9[e] *11*	1590.80	(6^-)				
1867.7	(8^+)	325.6[c]		1543.46	(6^+)				
		465.9[c]		1401.92	(6^+)				
		952.3[c]		914.97	8^+				
		1326.4[c]		540.68	6^+				
1899.7?		889.8 *5*	59 *16*	1010.53	(3^+)				
		1820.9 *3*	100 *18*	78.590	2^+				
1918.6	12^+	541.9[&] *5*	100[&]	1376.6	(10^+)	(E2)[&]		0.01341	B(E2)(W.u.)=375 *20*
1935.50	(3^-)	1675.38 *14*	96 *17*	260.140	4^+				E_γ,I_γ: possible multiplet; intensity not divided.
		1856.88 *14*	100 *17*	78.590	2^+	D(+Q)	−0.03 *+4−5*		
1943.30	(7)	352.5[e] *2*	100	1590.80	(6^-)				
1963.9	(9^+)	407.0[c]		1556.72	(7^+)				
		1049.0[c]		914.97	8^+				
1973.04	$1^{(+)}$	1894.43 *8*	100 *3*	78.590	2^+				
		1973.1 *3*	81 *3*	0.0	0^+	D			
1982.61	$(1^+,2^+)$	765.11 *10*	100 *15*	1217.50	$3^{(+)}$				
		1090.6[hi] *4*	≤167[h]	890.88	(0^+)				
1982.8		482.0[#] *3*	79[#] *3*	1500.87	≤4				
		1022.7[#] *4*	100[#] *5*	959.994	2^+				
1990.81	(9^-)	186.3[e] *2*	50 *12*	1804.26	(8^-)				I_γ: from (^{238}U,^{238}U′γ).
		350.7[e] *2*	100	1640.34	(7^-)				I_γ: from (^{238}U,^{238}U′γ).
2019.07	(2^+)	1059.2 *3*	8.2 *18*	959.994	2^+				
		1940.41 *20*	100 *18*	78.590	2^+				

$\gamma(^{170}Er)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
2026.49	(9⁻)	165.4[e] *2*	100[e]	1861.13	(8⁻)		
		310.4[e] *2*	46[e] *3*	1716.02	(7⁻)		
2039.31	1	1960.7[#] *4*	93[#] *10*	78.590	2⁺		I_γ: other: 52 *8* in (n,n′γ) where 1961γ is possible doublet.
		2039.3 *3*	100[#] *10*	0.0	0⁺	D	
2061.7	(9⁺)	366.9[c]		1694.7	(7⁺)		
		1146.8[c]		914.97	8⁺		
2071.3	(1,2⁺)	1992.8 *3*	100 *15*	78.590	2⁺	D+Q	δ: −0.14 +*6*−*5* or +3.5 +*7*−*6* in (n,n′γ).
		2071.0 *5*	21 *3*	0.0	0⁺		
2080.52	2⁺	953.0 *3*	3.2 *10*	1127.29	4⁺		
		1070.1 *3*	4.6 *10*	1010.53	(3⁺)		
		2080.53 *15*	100 *15*	0.0	0⁺	E2	
2080.7	(10⁺)	403.5[c]		1677.3	(8⁺)		
		704.2[c]		1376.6	(10⁺)		
		1165.9[c]		914.97	8⁺		
2106.7	(8)	163.4[e] *2*	100	1943.30	(7)		
2112.2?	(2⁺)	1177.8 *3*	11 *3*	934.023	2⁺		
		2034.6 *5*	13 *3*	78.590	2⁺		
		2113.0[i] *5*	100 *23*	0.0	0⁺	(E2)	
2132.97	1	2054.37 *15*	39[a] *10*	78.590	2⁺		Iγ:Iγ(2133 multiplet)=108 *15*:100 *15* in (n,n′γ), suggesting 2054γ is multiplet there.
		2132.9 *4*	100[a]	0.0	0⁺	D[b]	E_γ: multiplet in (n,n′γ).
2150.9	(5⁻)	1610.2 *7*	54 *12*	540.68	6⁺		E_γ,I_γ: multiplet (1992BE63); intensity not divided.
		1890.8 *3*	100 *19*	260.140	4⁺		
2158.94	(5⁺)	413.2[@] *2*	14.3[@] *9*	1745.88?	(4⁻)		
		662.9[@i] *3*	5.5[@] *7*	1496.15	(6⁻)		
		746.0[@i] *2*	7.0[@] *10*	1413.12	(5⁺)		
		786.3[@] *5*	22[@] *4*	1372.11	(5⁻)		
		854.7[@] *5*	48[@] *7*	1304.57	(4⁺)		E_γ,I_γ: probable doublet dominated by this transition; divided Iγ given.
		890.2[@] *2*	100[@]	1268.68	(4⁻)		
		941.4[@] *2*	94.0[@] *20*	1217.50	3⁽⁺⁾		
2168.40	(7)	452.7[e] *2*		1716.02	(7⁻)		
		577.4[e] *2*		1590.80	(6⁻)		
		672.1[e] *2*		1496.15	(6⁻)		
2188.45	(10⁻)	197.1[c] *10*	23 *6*	1990.81	(9⁻)		
		384.2[e] *2*	100	1804.26	(8⁻)		I_γ: from (^{238}U,^{238}U′γ).
2190.17	(4⁺,5,6⁺)	885.52 *20*	56 *13*	1304.57	(4⁺)		
		1063.8 *7*	100 *22*	1127.29	4⁺		
		1649.5 *5*	66 *19*	540.68	6⁺		
2212.01	(10⁻)	185.5[e] *2*	100[e]	2026.49	(9⁻)		
		350.9[e] *2*	46[e] *5*	1861.13	(8⁻)		
2223.2	(10⁺)	450.2[c]		1773.1	(8⁺)		

$^{170}_{68}Er_{102}$-14

$\gamma(^{170}$Er) (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[†]	E_f	J^{π}_f	Mult.[‡]	Comments
2223.2	(10$^+$)	846.5[c]		1376.6	(10$^+$)		
		1308.2[c]		914.97	8$^+$		
2285.6	(10$^+$)	418.2[c]		1867.7	(8$^+$)		
		512.5[c]		1773.1	(8$^+$)		
		908.8[c]		1376.6	(10$^+$)		
2289.7	(9)	183[e] *1*	100	2106.7	(8)		
2399.04	(1$^+$,2$^+$)	1182.1 *4*	73 *17*	1217.50	3$^{(+)}$		
		2398.7 *3*	100 *17*	0.0	0$^+$		
2407.9	(11)	381.4[e] *2*	100	2026.49	(9$^-$)		
2431.71	(8)	263.3[e] *2*		2168.40	(7)		
		716[e] *1*		1716.02	(7$^-$)		
2434.2	(11$^-$)	244.6[c] *10*	57 *15*	2188.45	(10$^-$)		
		443.6[c] *10*	100	1990.81	(9$^-$)		
2444.9	(11$^+$)	481.0[c]		1963.9	(9$^+$)		
		1068.3[c]		1376.6	(10$^+$)		
2451.57	(4$^+$)	1441.03 *6*		1010.53	(3$^+$)		
		1518		934.023	2$^+$		
2518.9	(11$^+$)	457.2[c]		2061.7	(9$^+$)		
		555.0[c]		1963.9	(9$^+$)		
		1142.3[c]		1376.6	(10$^+$)		
2537.2	14$^+$	618.5[c]	100	1918.6	12$^+$		
2551.1	(12$^+$)	470.6[c]		2080.7	(10$^+$)		
		632.0[c]		1918.6	12$^+$		
		1174.8[c]		1376.6	(10$^+$)		
2603.1	(9)	171.4[e] *2*	100	2431.71	(8)		
2656.5	(12$^-$)	221.5[c] *10*	34 *8*	2434.2	(11$^-$)		
		468.1[e] *2*	100	2188.45	(10$^-$)		I_{γ}: from (^{238}U,^{238}U$'\gamma$).
2657.4		1352.8 *5*	100 *27*	1304.57	(4$^+$)		
		1530.7[i] *7*	40 *10*	1127.29	4$^+$		
2684.8	(1,2$^+$)	2606.1[#] *4*	96[#] *9*	78.590	2$^+$		I_{γ}: other: 19 *8* in (n,n$'\gamma$); possibly 2683.6γ in (n,n$'\gamma$) is a multiplet.
		2684.8[#] *4*	100[#] *7*	0.0	0$^+$		
2700.83	1	2622.4 *4*	48[a] *6*	78.590	2$^+$		I_{γ}: other: 97 *15* from (n,n$'\gamma$).
		2700.7[b] *3*	100[a]	0.0	0$^+$	D[b]	
2717.2	(4$^+$,5,6$^+$)	1590.2 *3*	100 *22*	1127.29	4$^+$		
		1612.5 *7*	30 *8*	1103.36	4$^+$		
		2176.6[i] *10*	64 *40*	540.68	6$^+$		E_{γ},I_{γ}: possible multiplet: intensity not divided.
2720.13?	(3$^+$,4$^+$)	1483.38 *17*	100 *14*	1236.68	(5$^+$)		
		1617.3 *5*	7 *3*	1103.36	4$^+$		
		1786.4[i] *17*	19 *6*	934.023	2$^+$		E_{γ},I_{γ}: possible multiplet; intensity not divided.
2723.7	(12$^+$)	438.1[c]		2285.6	(10$^+$)		
		500.4[c]		2223.2	(10$^+$)		

$\gamma(^{170}Er)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
2750.8	(1)	2672[b]	≈0[a]	78.590	2^+		
		2751[b]	100[a]	0.0	0^+	(D)	
2753.3	(1,2^+)	1862.6 *3*	22 *8*	890.88	(0^+)		
		2673.1 *9*	100 *24*	78.590	2^+		
2790.3	1^+	2711.2 *12*	52[a] *5*	78.590	2^+		
		2790.3 *4*	100[a]	0.0	0^+	M1[b]	B(M1)(W.u.)=0.087 *7*
2794.1	(10)	191[e] *1*	100	2603.1	(9)		
2813.3	(12^+)	527.7[c]		2285.6	(10^+)		
		590.0[c]		2223.2	(10^+)		
2897	1	2897	100	0.0	0^+	D[b]	
2929.8	1	2851[b]	88[a] *20*	78.590	2^+		
		2930[b]	100[a]	0.0	0^+	D[b]	
2930.9	(1,2^+)	1996.7 *3*	100 *16*	934.023	2^+		
		2852.6 *5*	51 *11*	78.590	2^+		
2937.8	1	2859[b]	61[a] *13*	78.590	2^+		
		2938[b]	100[a]	0.0	0^+	D[b]	
2943.0	(1,2^+)	2051.9 *6*	71 *21*	890.88	(0^+)		
		2865.1 *10*	100 *29*	78.590	2^+		
		2938[i] *3*	71 *29*	0.0	0^+		E_γ,I_γ: possible multiplet; intensity not divided.
2971.5	1,$2^{(+)}$	2893.4 *6*	100 *18*	78.590	2^+		E_γ: absent In (γ,γ').
		2968.8 *13*	38 *10*	0.0	0^+		E_γ: other: 2973 from (γ,γ').
2973.2	(13^-)	539.0[c] *10*	100	2434.2	(11^-)		
2984.4	(13^+)	465.5[c]		2518.9	(11^+)		
		539.5[c]		2444.9	(11^+)		
2993.5?	(1,2^+)	2102.3 *5*	100 *17*	890.88	(0^+)		
		2919.0 *18*	21 *8*	78.590	2^+		
2995	1,$2^{(+)}$	2995[b]	100	0.0	0^+		
3019	1	3019[b]	100	0.0	0^+	D[b]	
3063.4	1	2984.1 *15*	100[a] *9*	78.590	2^+		E_γ: for possible multiplet.
		3063.8 *11*	41.0[a]	0.0	0^+	D[b]	
3073.3	(14^+)	522.3[c]	100	2551.1	(12^+)		
3073.9	(13^+)	555.0[c]		2518.9	(11^+)		
		629.0[c]		2444.9	(11^+)		
3084	1	3084[b]	100	0.0	0^+	D[b]	
3177.8	1	3099[b]	100[a] *22*	78.590	2^+		
		3178[b]	41[a]	0.0	0^+	D[b]	
3182.8	1	3104[b]	100[a] *25*	78.590	2^+		
		3183[b]	45[a]	0.0	0^+	D[b]	
3189.2	(14^-)	532.7[c] *10*	100	2656.5	(12^-)		

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Adopted Levels, Gammas (continued)

γ(^{170}Er) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
3225.7	16^+	688.4[c]	100	2537.2	14^+		
3237.8	1	3159[b]	51[a] 17	78.590	2^+		
		3238[b]	100[a]	0.0	0^+	D[b]	
3242.8	1	3164[b]	93[a] 8	78.590	2^+		
		3243[b]	100[a]	0.0	0^+	D[b]	
3275.9	(14^+)	552.2[c]	100	2723.7	(12^+)		
3405.8	$1^{(+)}$	3327[b]	46.1[a] 23	78.590	2^+		
		3406[b]	100[a]	0.0	0^+	D[b]	B(M1)(W.u.)=0.175 25
3405.9	$(1,2^+)$	2472.4 6	261 50	934.023	2^+		E_γ: possible multiplet in (n,n′γ);
		3326.3 7	100 28	78.590	2^+		
		3406.2 8	78 22	0.0	0^+		
3436.3	(14^+)	623.0[c]		2813.3	(12^+)		
		712.6[c]		2723.7	(12^+)		
3540	1	3540[b]	100	0.0	0^+	D[b]	
3554	1	3554[b]	100	0.0	0^+	D[b]	
3566	1	3487[b]	42[a] 8	78.590	2^+		
		3566[b]	100[a]	0.0	0^+	D[b]	
3572	1	3572[b]	100	0.0	0^+	D[b]	
3583.1	(15^-)	609.9[c] 10	100	2973.2	(13^-)		
3584.9	(15^+)	600.5[c]	100	2984.4	(13^+)		
3606.4	$(1^+,2^+)$	2646.5[#] 4	100 8	959.994	2^+		I_γ: from Iγ/I(2715γ)=1.52 22 in ^{170}Ho β^- decay (43 s) γ-ray absent In (n,n′γ).
		2715.1 8	66[#] 8	890.88	(0^+)		Eγ=2716.1 4 in (n,n′γ).
3623	1	3544[b]	100[a] 43	78.590	2^+		
		3623[b]	71[a]	0.0	0^+	D[b]	
3633.4	(16^+)	560.1[c]	100	3073.3	(14^+)		
3695	1	3616[b]		78.590	2^+		
		3695[b]		0.0	0^+	D[b]	
3713.1	(15^+)	639.2[c]		3073.9	(13^+)		
		728.7[c]		2984.4	(13^+)		
3792.1	(16^-)	602.9[c] 10	100	3189.2	(14^-)		
3892.1	(16^+)	616.2[c]	100	3275.9	(14^+)		
3978.4	18^+	752.7[c]	100	3225.7	16^+		
4132.5	(16^+)	696.2[c]		3436.3	(14^+)		
		856.6[c]		3275.9	(14^+)		
4232.3	(18^+)	599.0[c]	100	3633.4	(16^+)		
4249.9	(17^+)	665.0[c]	100	3584.9	(15^+)		
4417.2	(17^+)	704.1[c]	100	3713.1	(15^+)		
4447.7	(18^-)	655.6[c] 10	100	3792.1	(16^-)		
4579.1	(18^+)	687.0[c]	100	3892.1	(16^+)		

Adopted Levels, Gammas (continued)

$\gamma(^{170}Er)$ (continued)

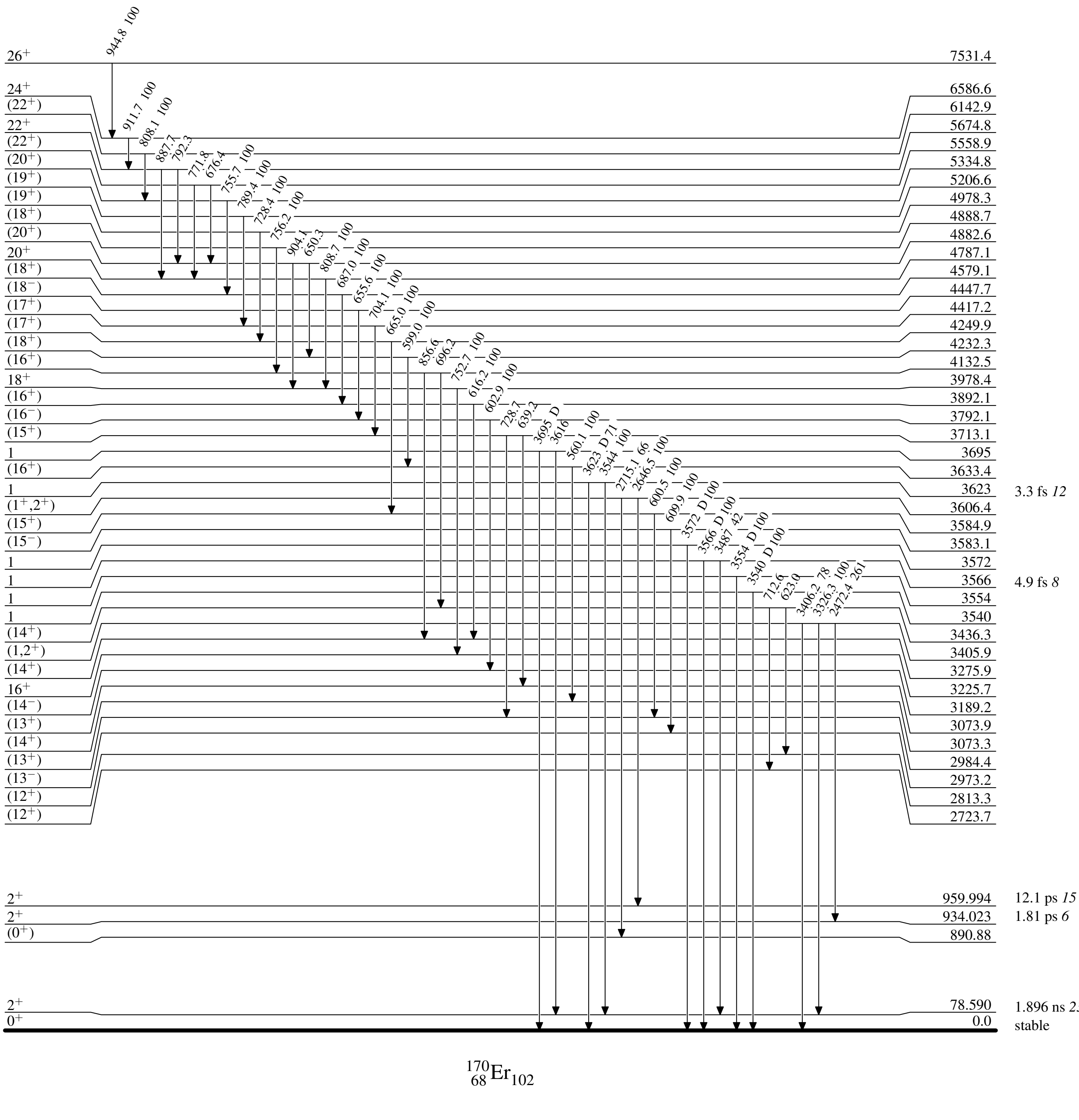
E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
4787.1	20^+	808.7[c]	100	3978.4	18^+	5558.9	(22^+)	676.4[c]		4882.6	(20^+)
4882.6	(20^+)	650.3[c]		4232.3	(18^+)			771.8[c]		4787.1	20^+
		904.1[c]		3978.4	18^+	5674.8	22^+	792.3[c]		4882.6	(20^+)
4888.7	(18^+)	756.2[c]	100	4132.5	(16^+)			887.7[c]		4787.1	20^+
4978.3	(19^+)	728.4[c]	100	4249.9	(17^+)	6142.9	(22^+)	808.1[c]	100	5334.8	(20^+)
5206.6	(19^+)	789.4[c]	100	4417.2	(17^+)	6586.6	24^+	911.7[c]	100	5674.8	22^+
5334.8	(20^+)	755.7[c]	100	4579.1	(18^+)	7531.4	26^+	944.8	100	6586.6	24^+

[†] From ^{170}Er(n,n′γ), except as noted.
[‡] From $\gamma(\theta)$ and/or γ linear polarization in (n,n′γ), except as noted.
[#] From ^{170}Ho β^- decay (43 s).
[@] From ^{170}Ho β^- decay (2.76 min).
[&] From Coulomb excitation.
[a] From $\Gamma_{\gamma 0}/\Gamma$ in (γ,γ').
[b] From (γ,γ').
[c] From (^{238}U,^{238}U′γ).
[d] D+Q or D(+Q) in (n,n′γ); adopted $\Delta\pi$=no.
[e] From ^{170}Er(^{136}Xe,Xγ).
[f] D+Q in (γ,γ'); adopted $\Delta\pi$=yes.
[g] 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.
[h] Multiply placed with undivided intensity.
[i] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

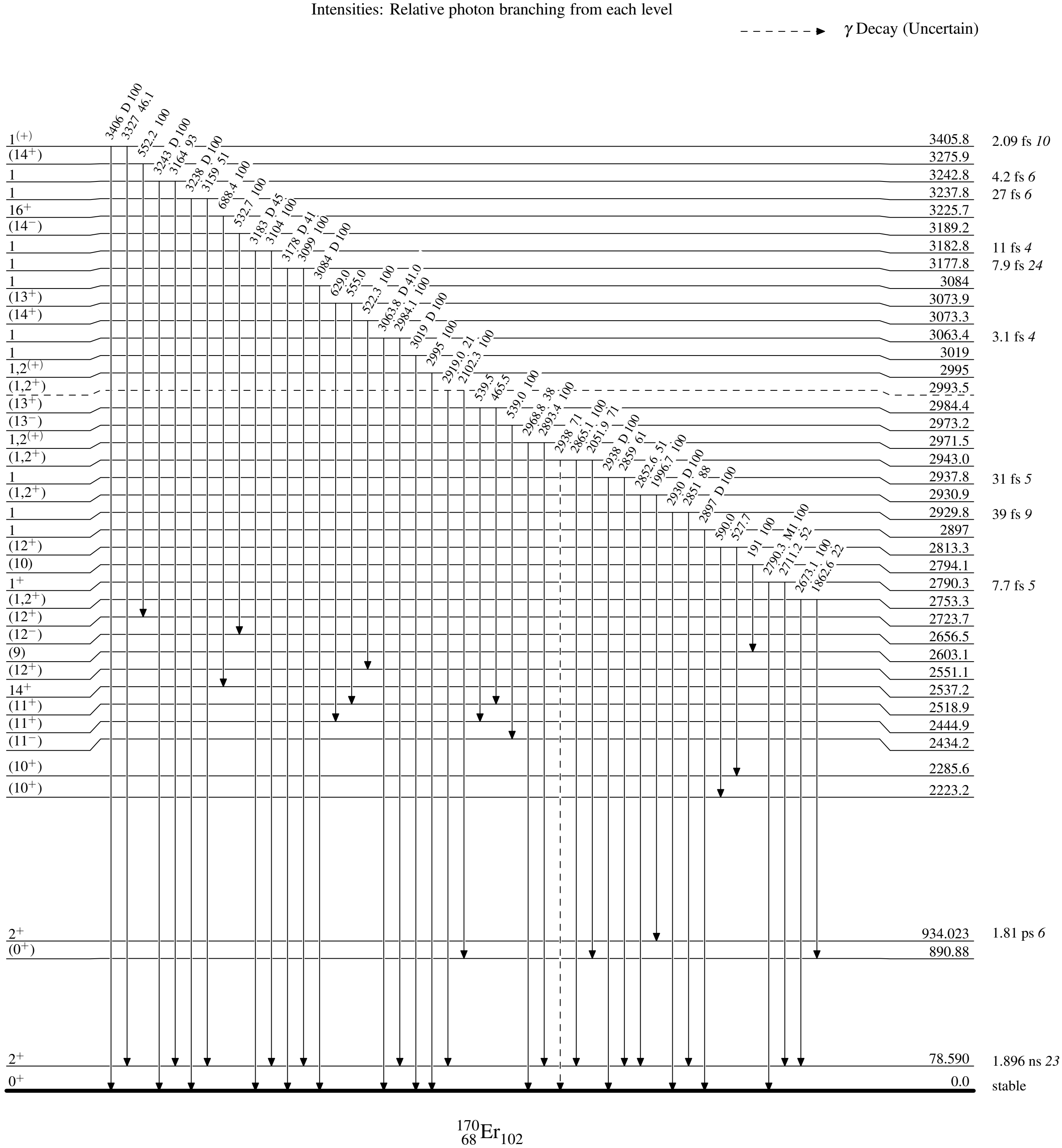


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



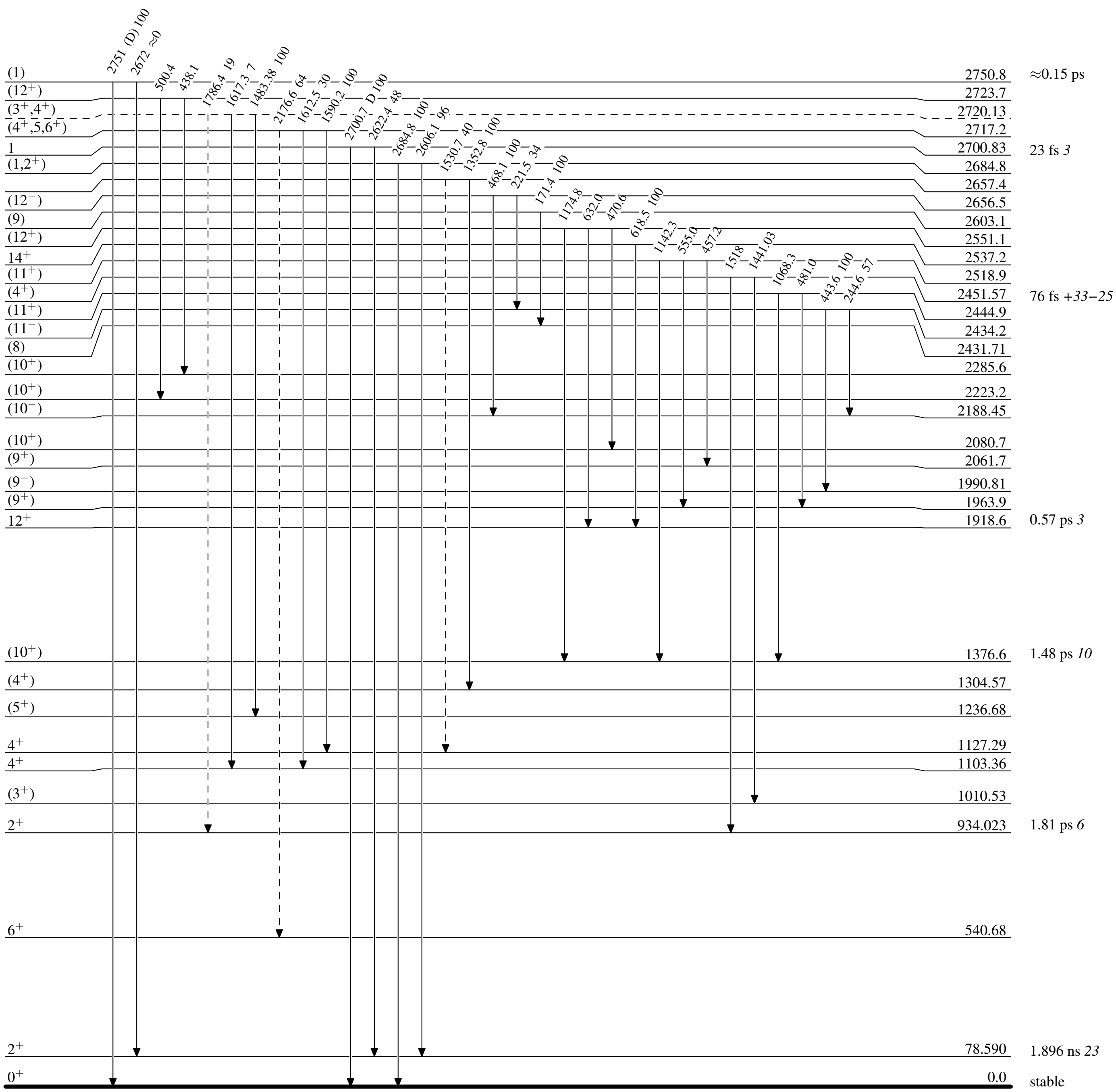
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{170}_{68}Er_{102}$

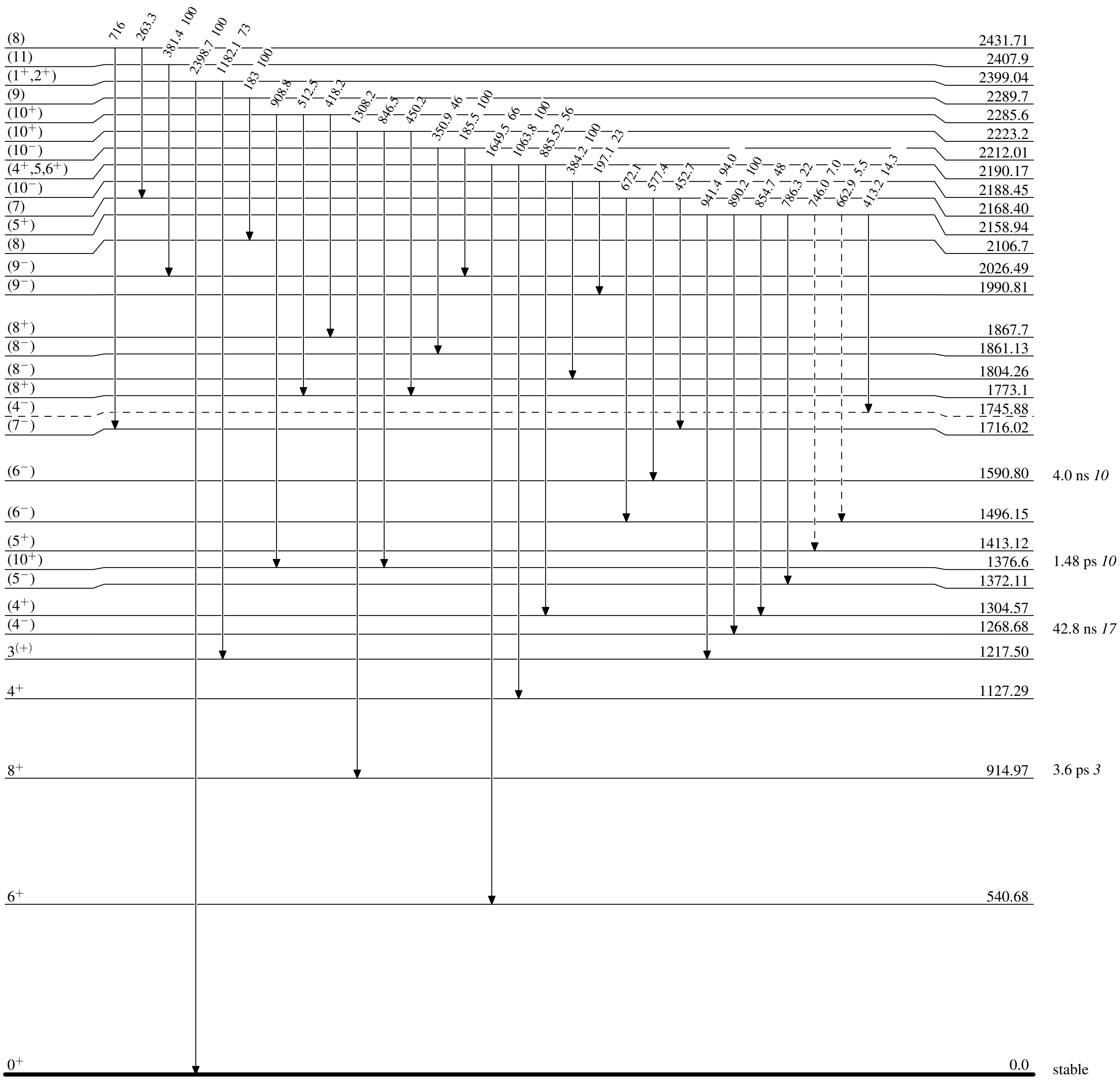
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

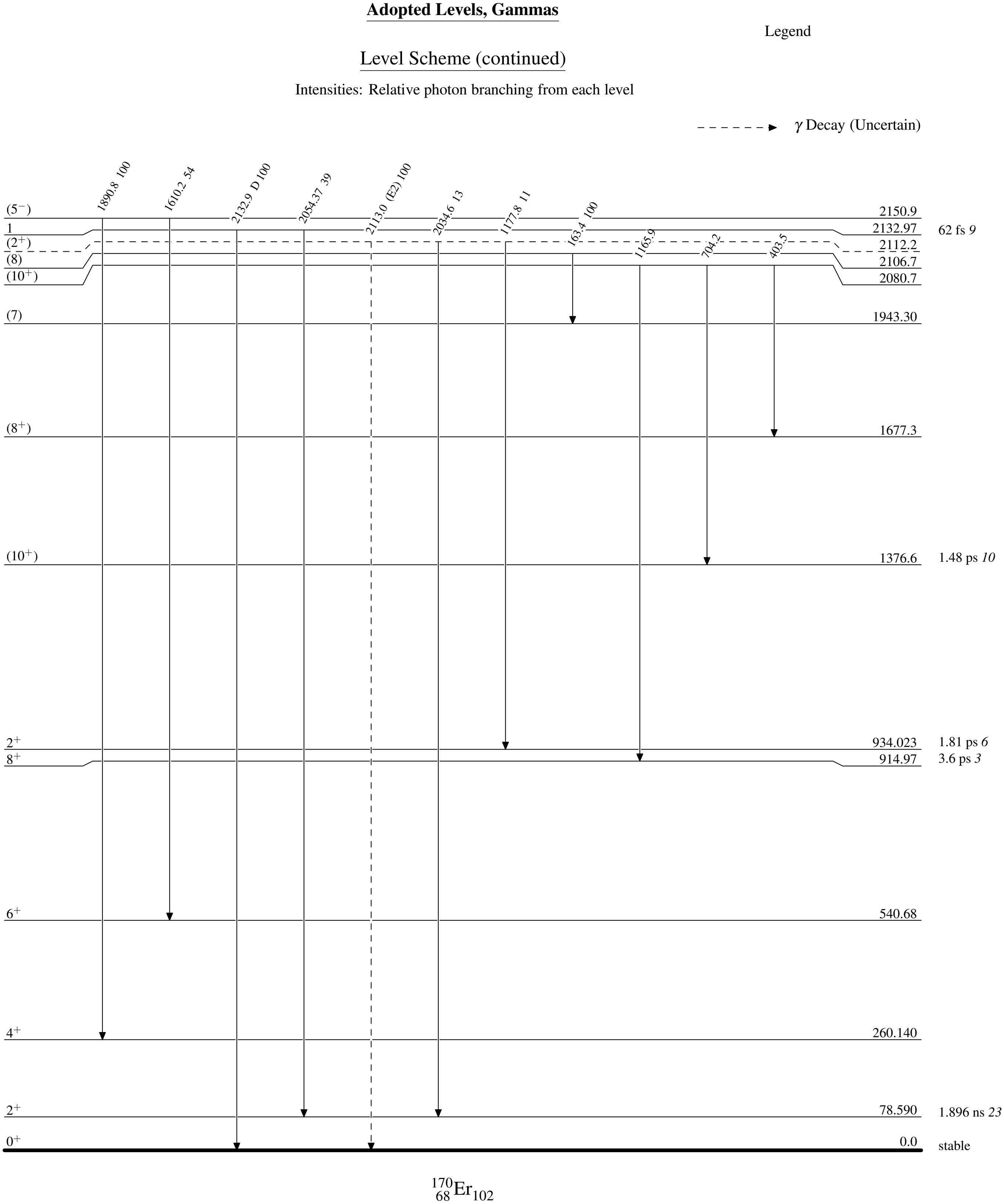


$^{170}_{68}Er_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



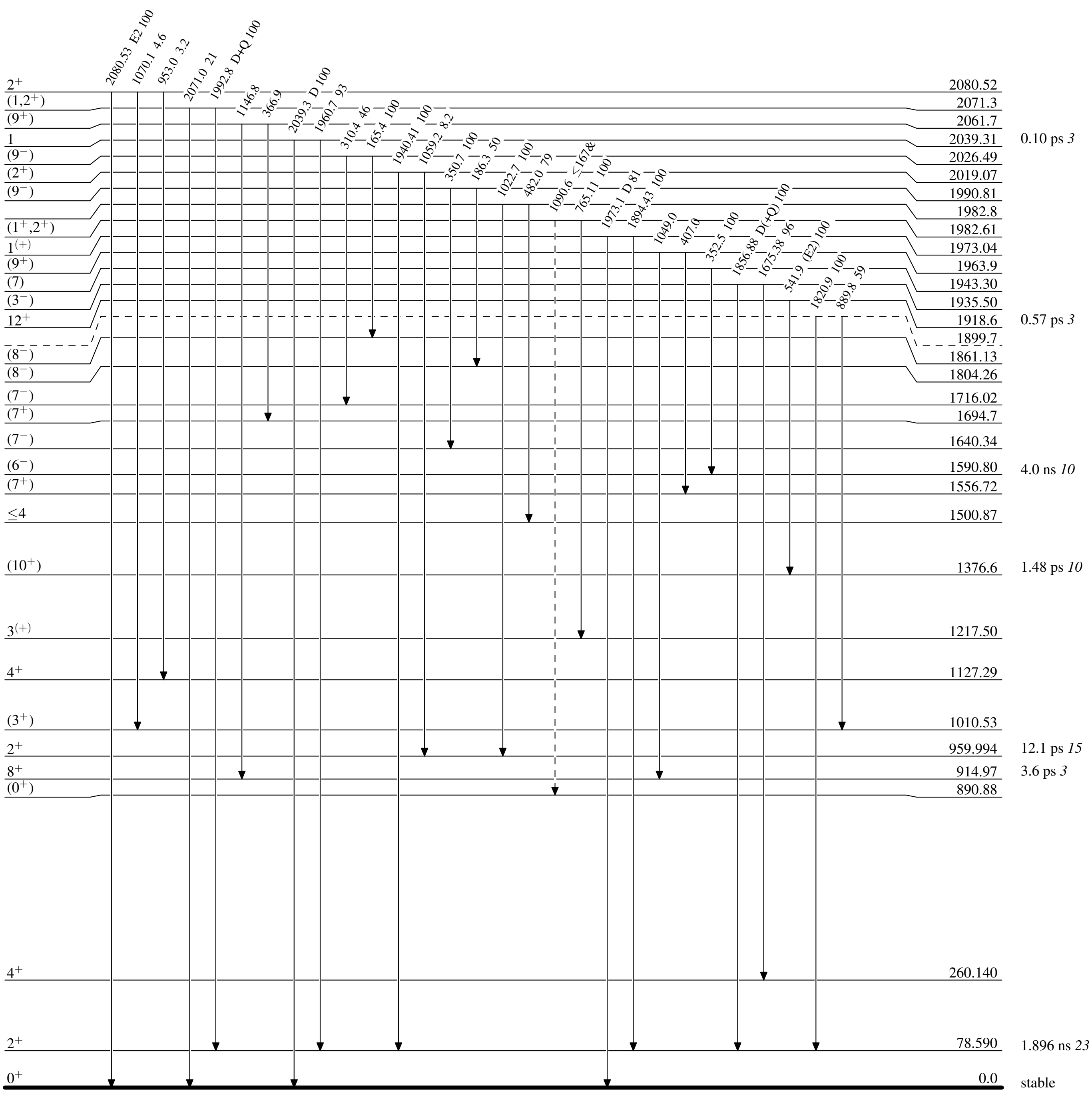
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

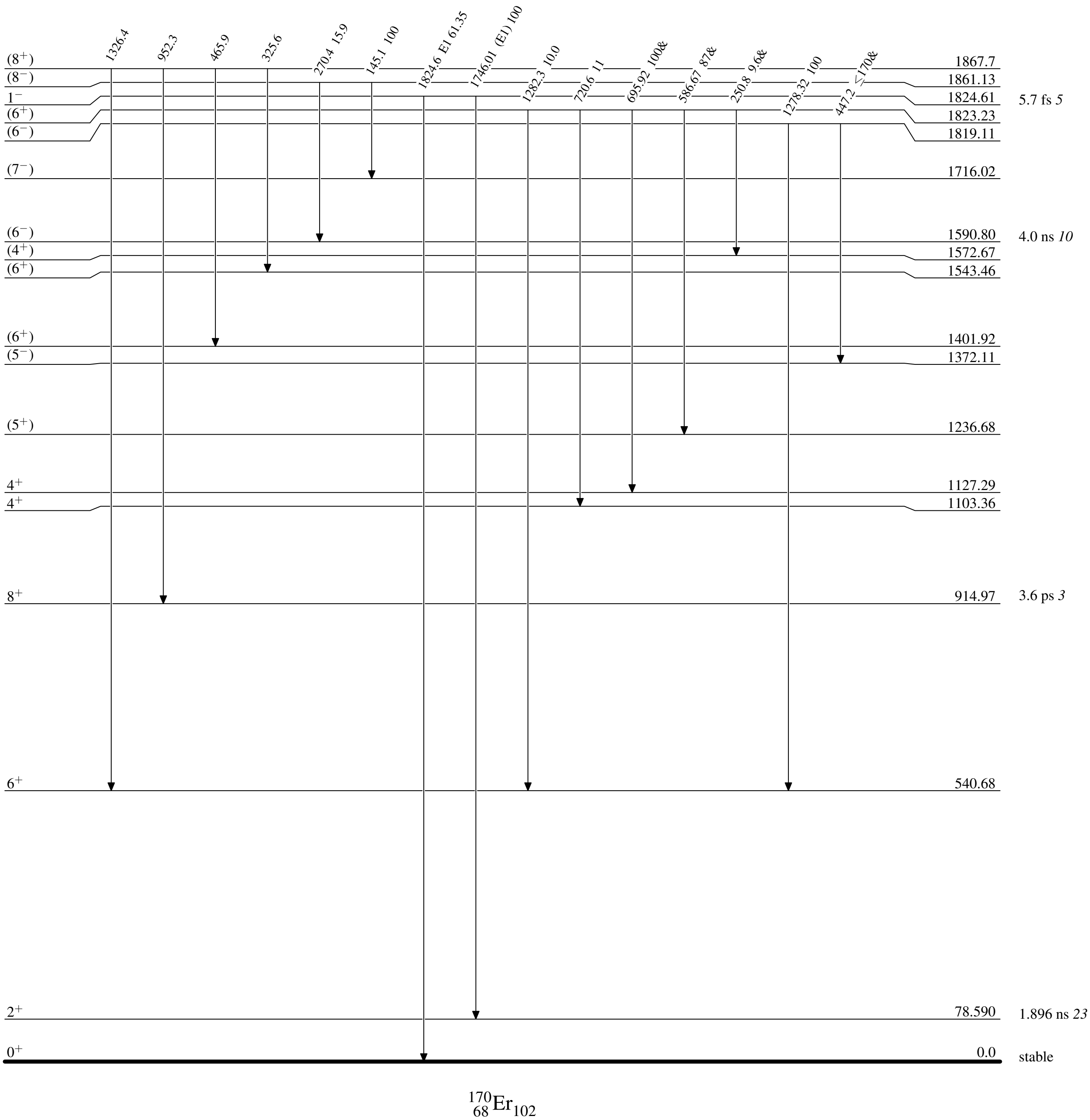


$^{170}_{68}Er_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

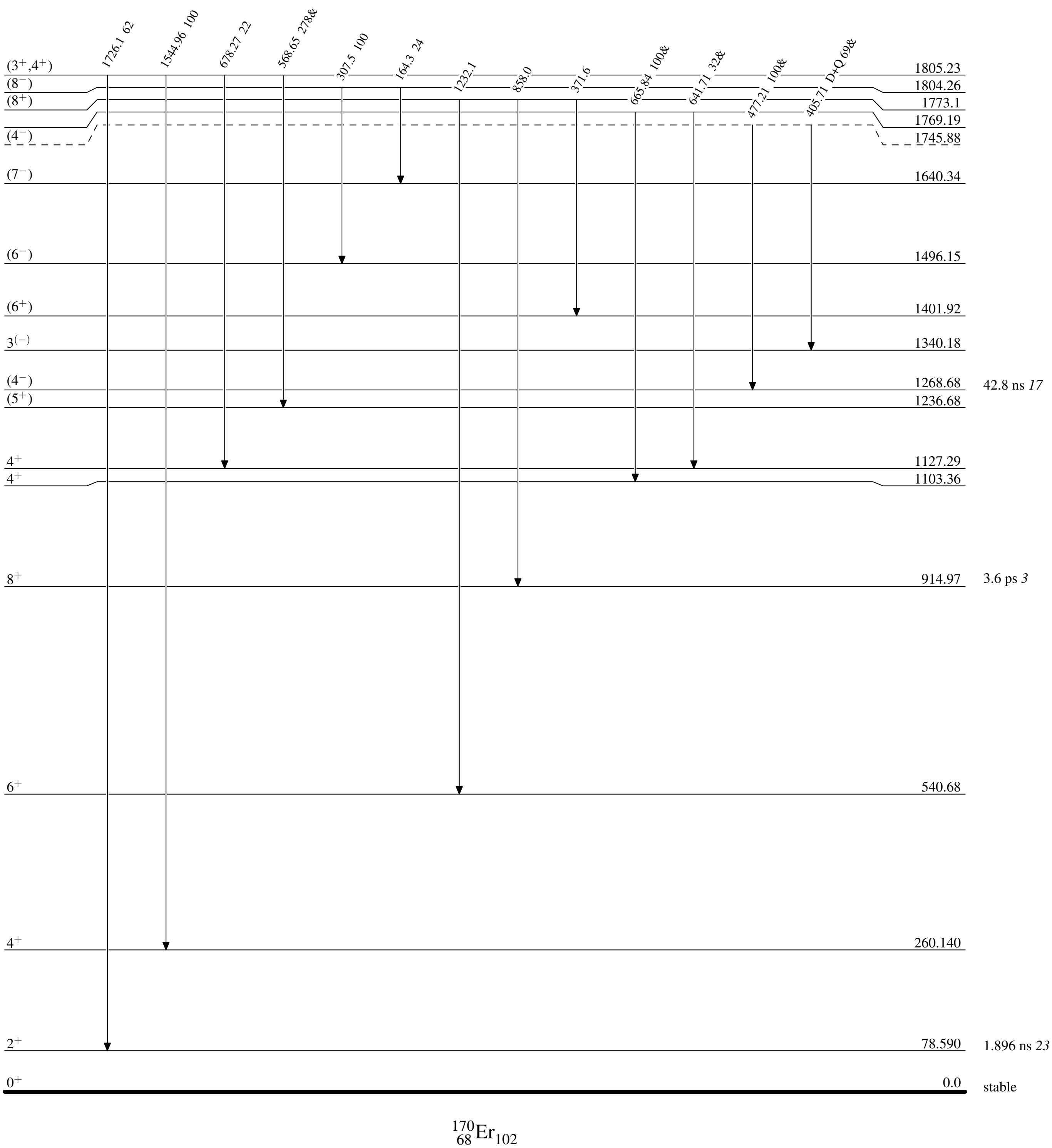
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

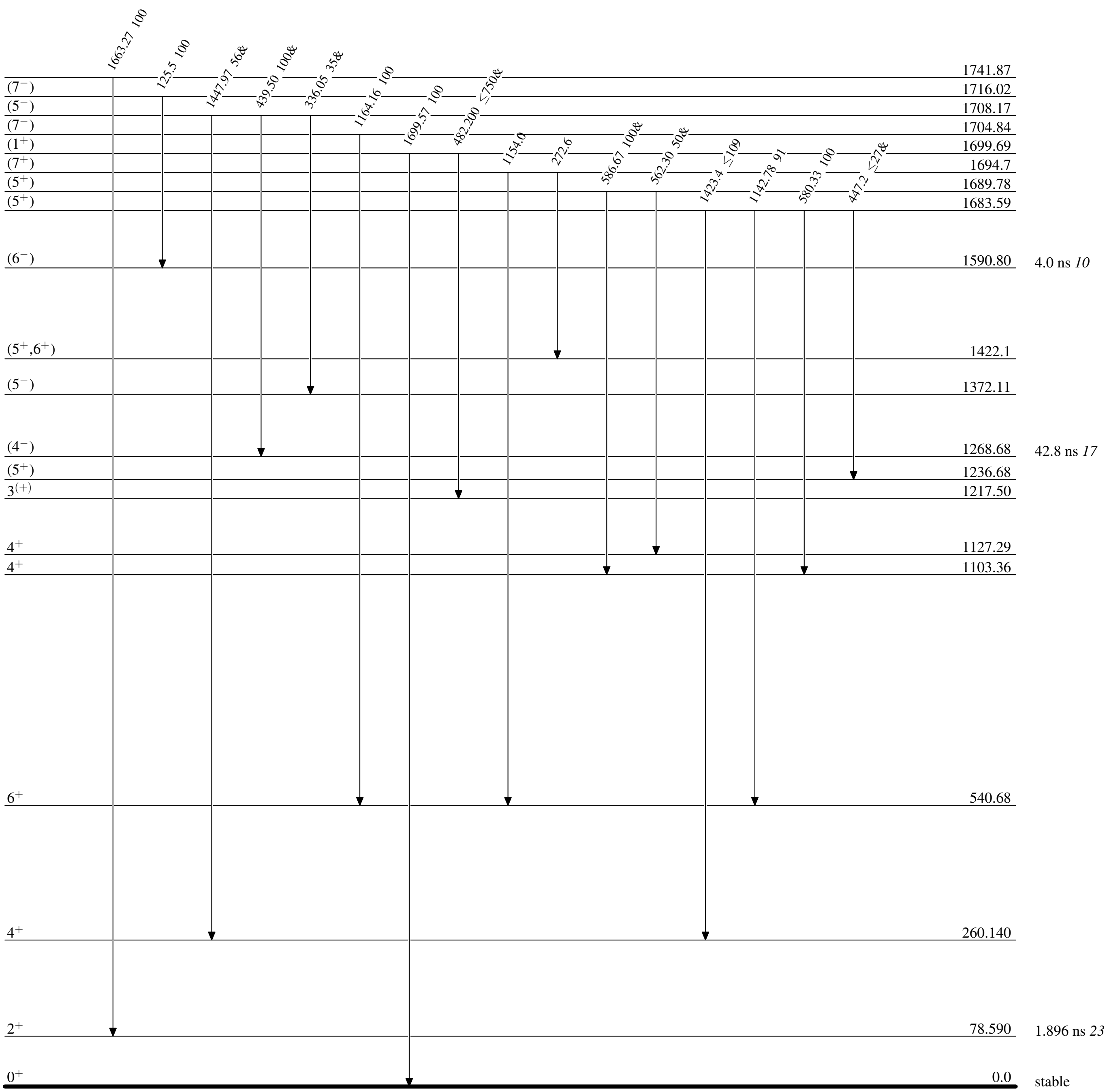
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



$^{170}_{68}Er_{102}$

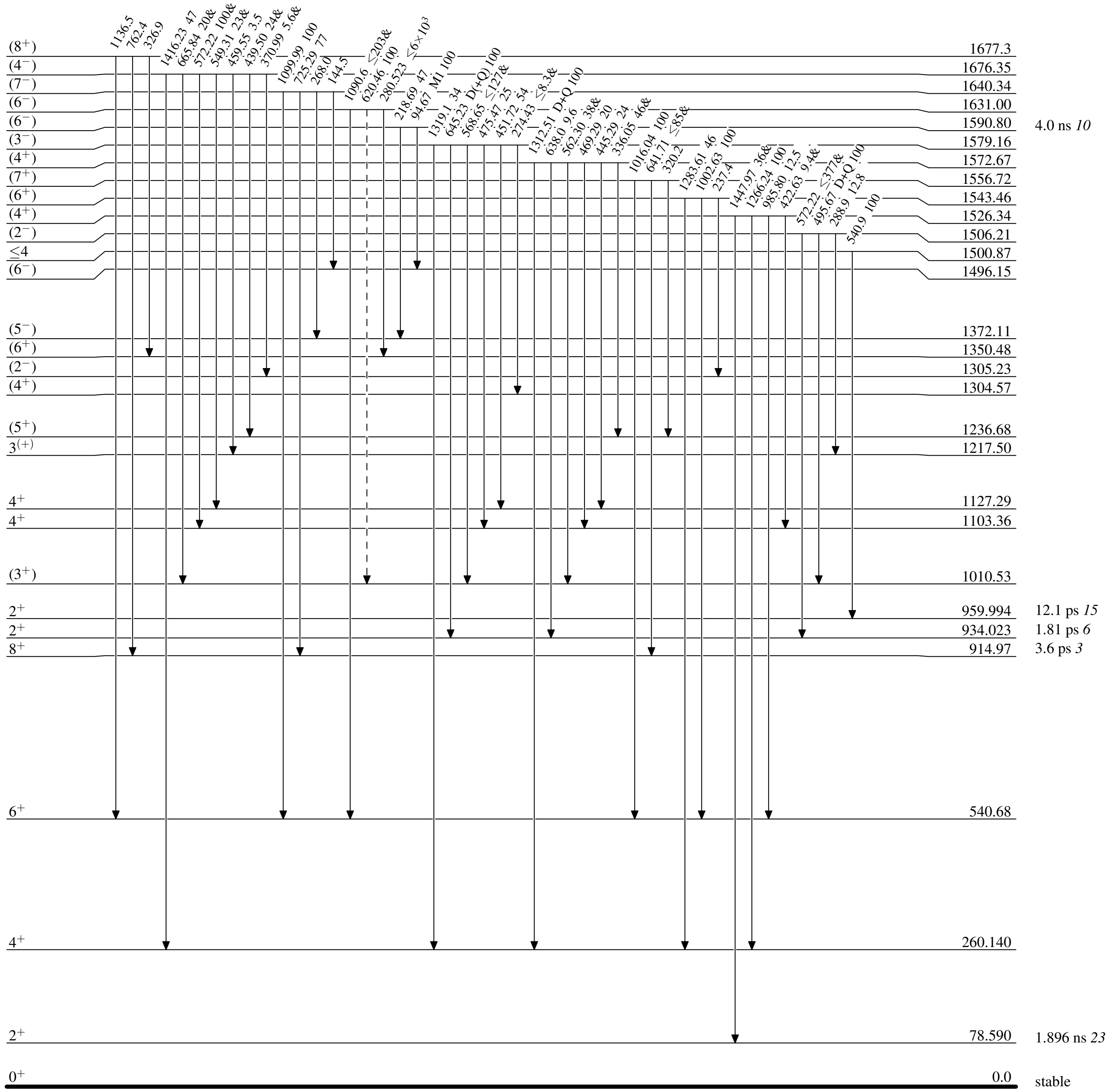
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



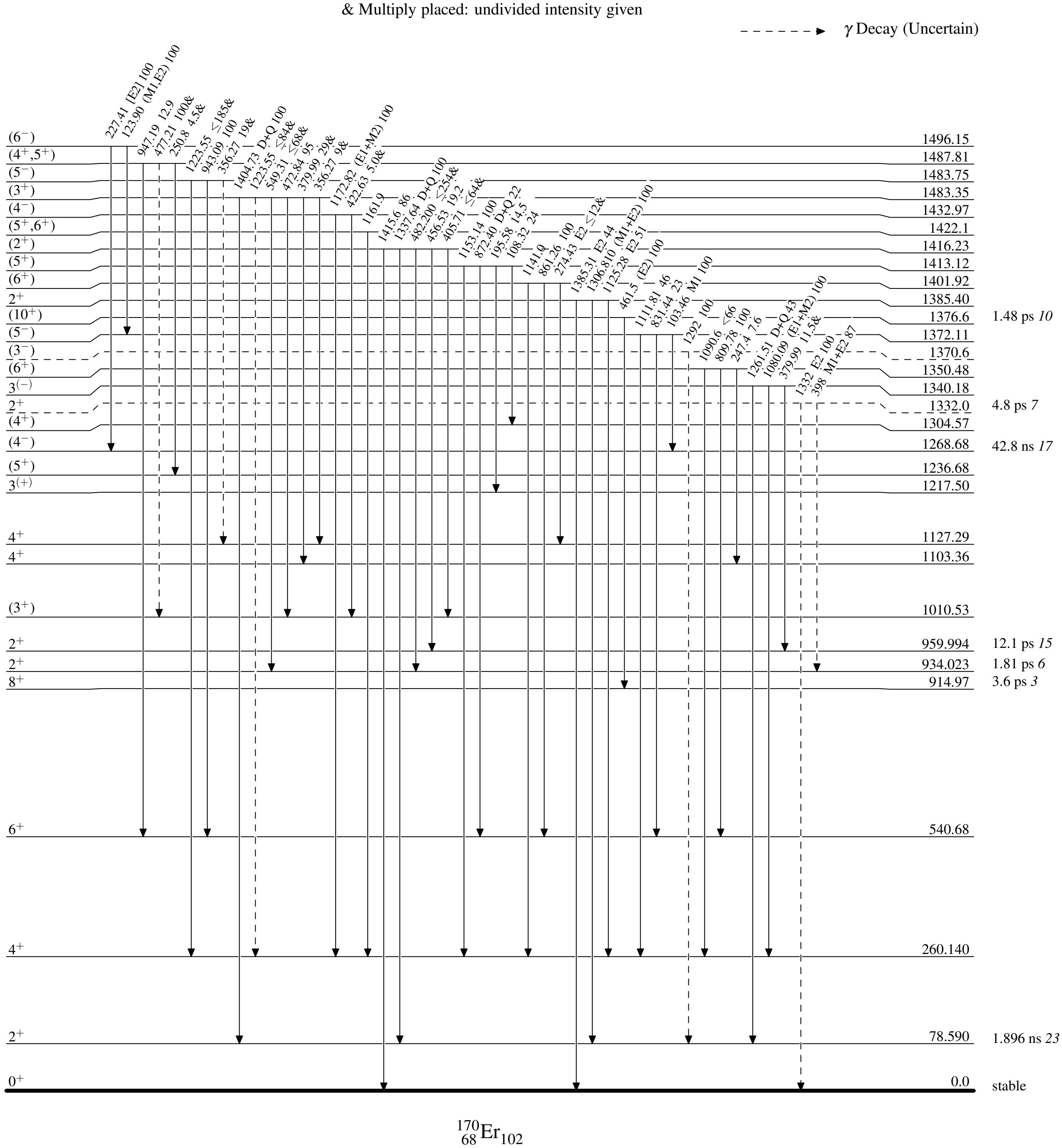
$^{170}_{68}Er_{102}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

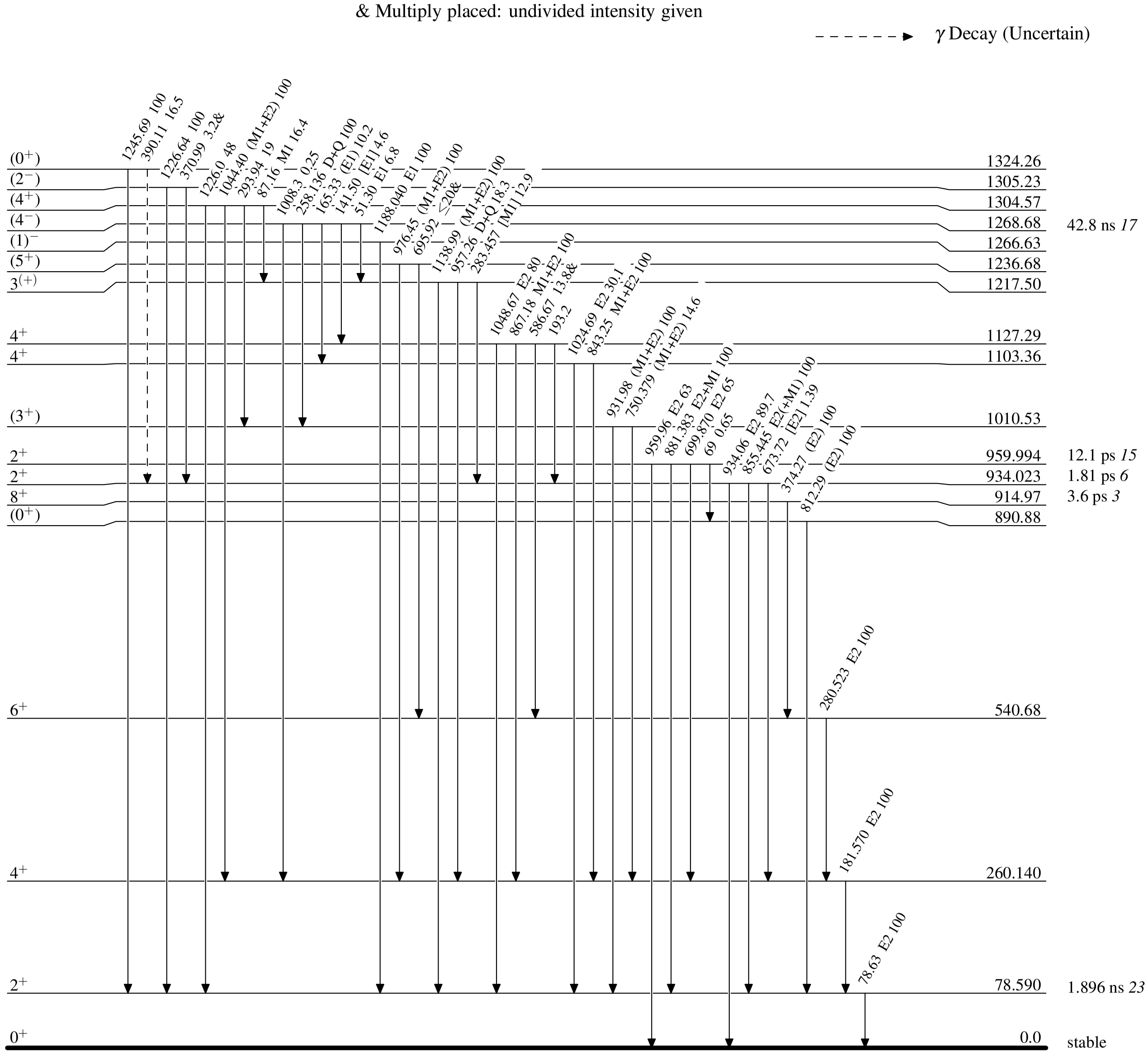
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

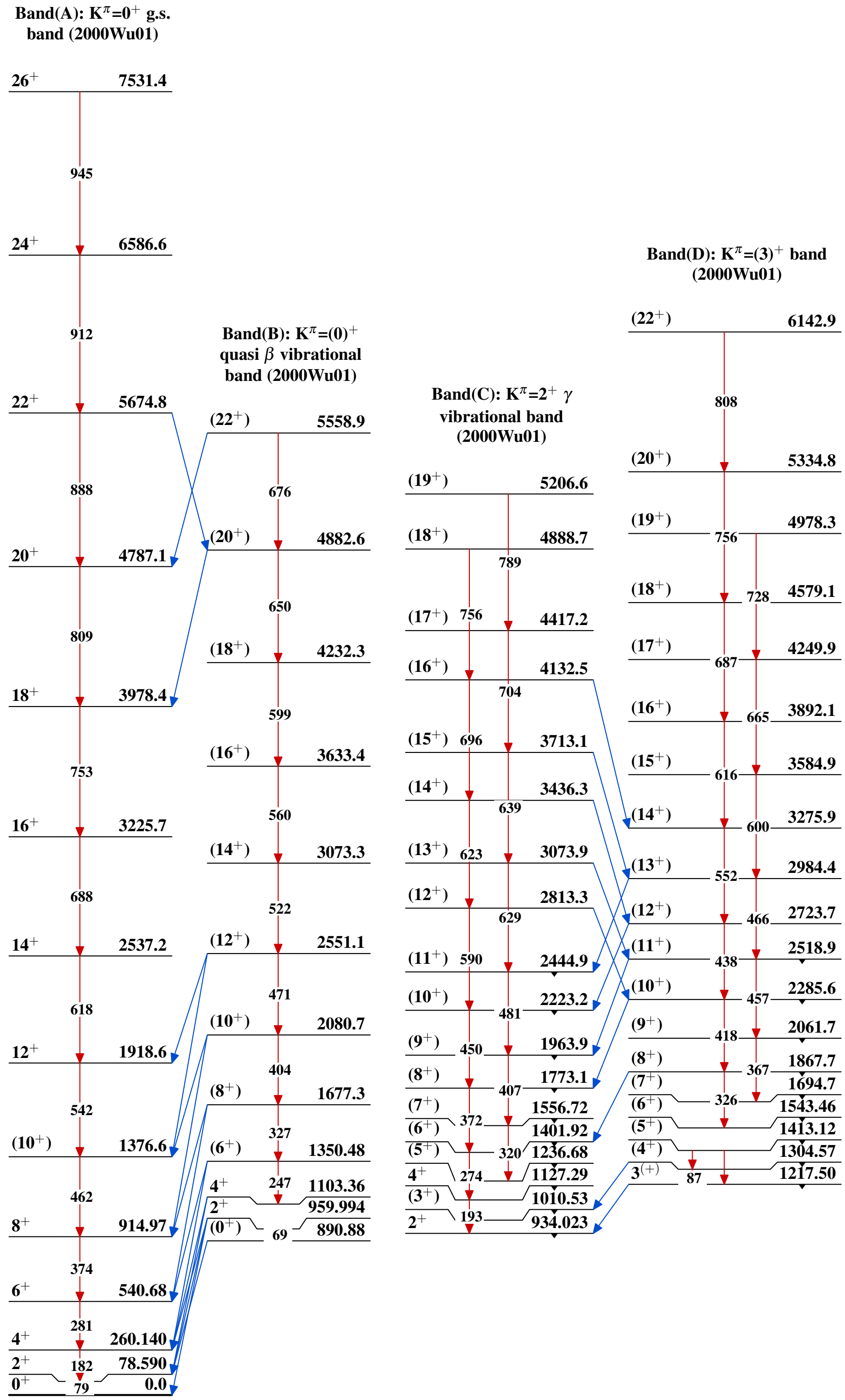
Level Scheme (continued)

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



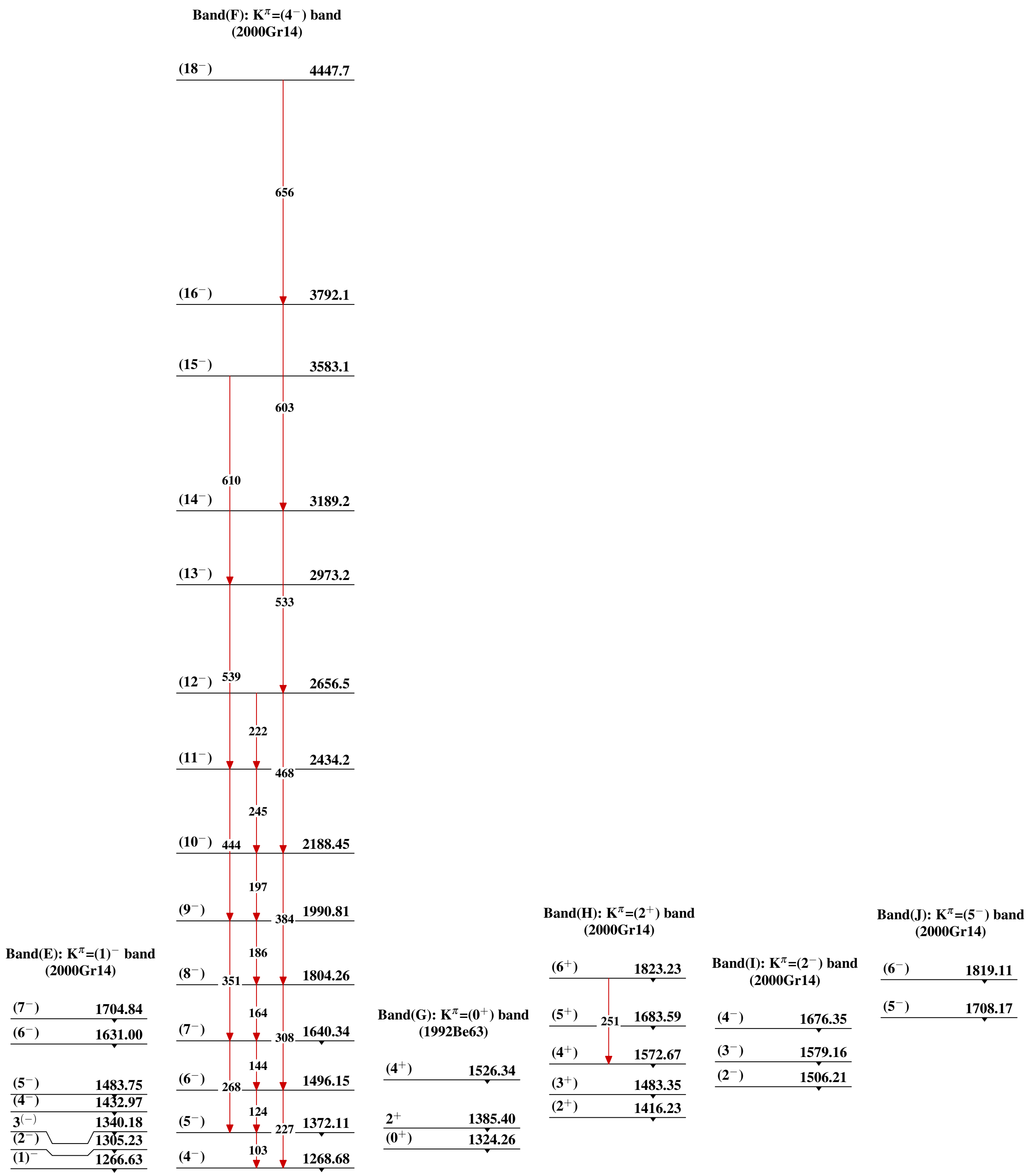
$^{170}_{68}Er_{102}$

Adopted Levels, Gammas



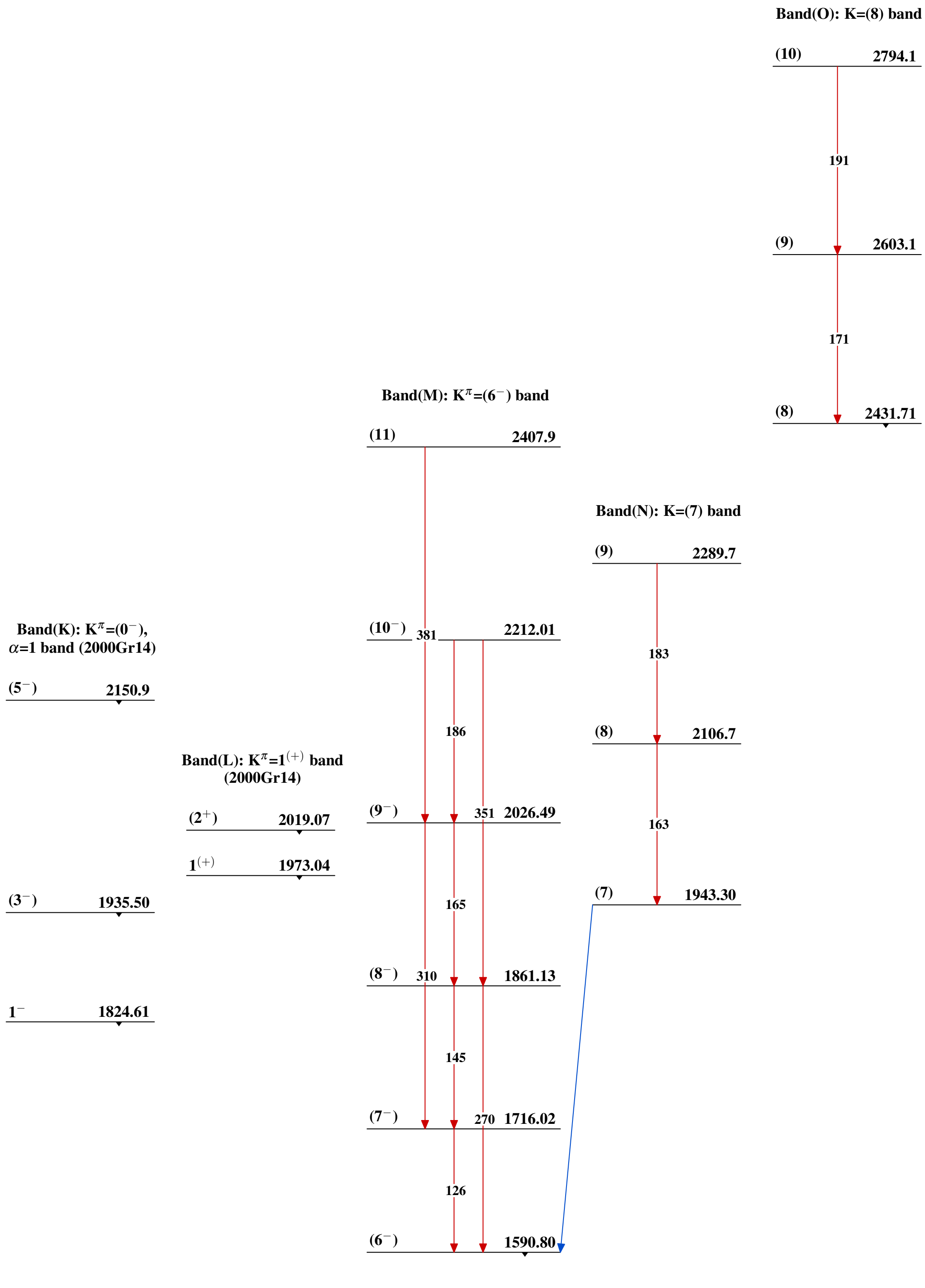
$^{170}_{68}Er_{102}$

Adopted Levels, Gammas (continued)



$^{170}_{68}Er_{102}$

Adopted Levels, Gammas (continued)



$^{170}_{68}Er_{102}$