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)†‡	Jπ@	$T_{1/2}$	XREF	Comments
0.0&	0^+	stable	ABCDEFG	$T_{1/2}$: from a cluster-model calculation, 2004Xu02 estimate $T_{1/2}(\alpha)=2.8\times10^{29}$ 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 $2\varepsilon2\nu$ 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*. $\Delta<r^2>$ results (in fm^2) are: for ^{160}Er-^{162}Er, $\Delta<r^2>\approx$ 0.15 (1985Ne09) and for ^{162}Er-^{164}Er, $\Delta<r^2>\approx$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 Jπ: 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). Jπ: 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	Jπ: 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$^{\pi}$[@]	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$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: E0 transition to 0$^+$ level.
1096.70[&] *11*	8$^+$	<3.5 ps	CD F	J$^{\pi}$: 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$^{\pi}$: γ's to 2$^+$ and 6$^+$ levels.
1171.02[b] *9*	2$^+$	1.2 ps *2*	A E G	XREF: E(1166). J$^{\pi}$: 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$^{\pi}$: M1 components in γ's to 4$^+$ and 6$^+$ levels.
1352.17[c] *5*	1$^-$		A F	J$^{\pi}$: 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$^{\pi}$: γ's to 2$^+$ and 4$^+$ levels; (d,d') cross-section ratios.
≈1369[#b]	(4$^+$)		E	J$^{\pi}$: energy consistent with that expected for the 4$^+$ member of the proposed first-excited K^{π}=0$^+$ band.
1412.58 *14*	1,2$^+$		A	J$^{\pi}$: γ's to 0$^+$ and 2$^+$ levels.
1420.45 *5*	(2$^-$)		A e	XREF: e(1423). J$^{\pi}$: γ's to 2$^+$ and 3$^+$ levels suggest J^{π}=1$^+$,2$^-$. 2002Ca35, in ^{162}Tm ε decay, suggest J^{π}=2$^-$, based on the occurrence of K^{π}=2$^-$ octupole bands in several neighboring nuclei.
1429.79 *7*	2$^+$	0.43 ps *19*	A e G	XREF: e(1423). J$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: γ's to 0$^+$ and 2$^+$ levels. This argument also allows 1$^+$ and 2$^+$ assignments, but assignment as the K^{π}=1$^-$ bandhead supports 1$^-$.
1542.62[e] *20*	(4$^-$)		F	J$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$[@]	$T_{1/2}$	XREF	Comments
1594[#d]	(1$^-$)		E	J$^{\pi}$: from (d,d′) cross-section ratios.
1602.83[&] *13*	10$^+$		C F	J$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: $\gamma(\theta)$ and γ to 6$^+$. Energy consistent with that expected for the 7$^-$ member of the associated band.
1712.18[f] *10*	4$^+$		B	J$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: γ′s to 0$^+$ and 4$^+$ levels.
1872.66[a] *14*	8$^+$		F	J$^{\pi}$: γ′s to 6$^+$ and 10$^+$ levels.
1910[#]			E	
1931.30 *13*			A	
1955[#]	(3$^-$,4$^+$)		E	J$^{\pi}$: from (d,d′) cross-section ratios.
1966			E	
1974.74 *10*			A E	XREF: E(1966).
1986.01[c] *15*	9$^-$		F	J$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: γ′s to 0$^+$, 2$^+$, and 2$^-$ levels.
2061.95[e] *12*	(8$^-$)		F	J$^{\pi}$: 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$^{\pi}$: γ decay takes place to 2$^+$ levels only.
2121.67 *8*			A E	XREF: E(2116).
2133.79[a] *11*	9$^+$		F	J$^{\pi}$: 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$^{\pi}$: 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$^{\pi}$: γ′s to 0$^+$ and 4$^+$ levels.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{162}Er Levels (continued)

E(level)[†‡]	J$^\pi$[@]	XREF	Comments
2205.94 *25*		A	
2242.21 *10*		A	
2260.24 *14*		A	
2288[#]	(3$^-$,4$^+$)	E	J$^\pi$: from (d,d′) cross-section ratios.
2318.67 *11*		A E	XREF: E(2306).
2332[#]		E	
2346.59[a] *12*	10$^+$	F	J$^\pi$: from γ′s to 8$^+$ and 12$^+$ levels and $\gamma(\theta)$.
2368.19[c] *15*	11$^-$	F	J$^\pi$: from E1 γ to 10$^+$ level and $\gamma(\theta)$.
2399[#]		E	
2429.49[e] *14*	(10$^-$)	F	J$^\pi$: 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$^\pi$: from γ′s to 9$^+$ and 10$^+$ levels and $\gamma(\theta)$.
2664.45 *23*		A	
2745.72[&] *17*	14$^+$	C F	J$^\pi$: 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$^\pi$: from γ to 6$^+$ level and $\gamma(\theta)$.
2817.76[c] *15*	13$^-$	F	J$^\pi$: 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$^\pi$: stretched E2 to (10$^-$). Level energy consistent with that of the 12$^-$ member of this level sequence.
2910.85[a] *17*	12$^+$	F	J$^\pi$: from γ to 10$^+$ level and $\gamma(\theta)$.
3039.8 *4*		A	
3116.84 *17*	2$^+$	A	J$^\pi$: from γ′s to 4$^+$, 2$^+$, and (0$^+$) levels.
3132.52 *8*		A	J$^\pi$: γ′s to 1$^-$, 3$^-$, 2$^+$, 3$^+$, and (0$^+$) levels suggest J^π=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$^\pi$: 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$^\pi$: from γ′s to 0$^+$, 2$^+$, and 4$^+$ levels.
3676.48 *13*	2$^+$,3$^-$	A	J$^\pi$: from γ′s to 1$^-$, 2$^+$, and 4$^+$ levels.
3689.6 *3*		A	
3846.6[&] *5*	18$^+$	F	J$^\pi$: 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$^\pi$: 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	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{162}Er Levels (continued)

E(level)[†‡]	Jπ[@]	XREF	E(level)[†‡]	Jπ[@]	XREF	E(level)[†‡]	Jπ[@]	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 $J^\pi=22^+$ 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 $K^\pi=0^-$ 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).

Adopted Levels, Gammas (continued)

$\gamma(^{162}Er)$

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.

$^{162}_{68}Er_{94}$-6

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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 γ(θ) 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 γ(θ) 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*

$^{162}_{68}Er_{94}$-7

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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.
1171.02	2^+	1171.05 *15*	100 *5*	0.0	0^+	[E2]		0.00245		α: deduced by the evaluator from α(K)exp. 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*;

$^{162}_{68}Er_{94}$-8

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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$^+$			

$^{162}_{68}Er_{94}$-9

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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 γ(θ) 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*

Adopted Levels, Gammas (continued)

γ(^{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.: γ(θ) 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 γ(θ) 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.: γ(θ) 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$^+$				

$^{162}_{68}Er_{94}$-11

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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 γ(θ) 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.: γ(θ) 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.: γ(θ) 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 γ(θ) 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

Adopted Levels, Gammas (continued)

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 γ(θ) 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 γ(θ) 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 γ(θ) 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 γ(θ) in ^{165}Ho(p,4nγ), 1977Ja06 conclude that this γ is a stretched E2.

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

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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 γ(θ) 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 γ(θ) 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 γ(θ) 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 γ(θ) 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

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	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 $(\alpha,4n\gamma)$ (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 $(\alpha,4n\gamma)$ (1975Fe06).
7516	(27^-)	841		6675	(25^-)	[#]		

Adopted Levels, Gammas (continued)

γ(^{162}Er) (continued)

E_i(level)	J_i^π	E_γ	E_f	J_f^π	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.

$^{162}_{68}Er_{94}$-17

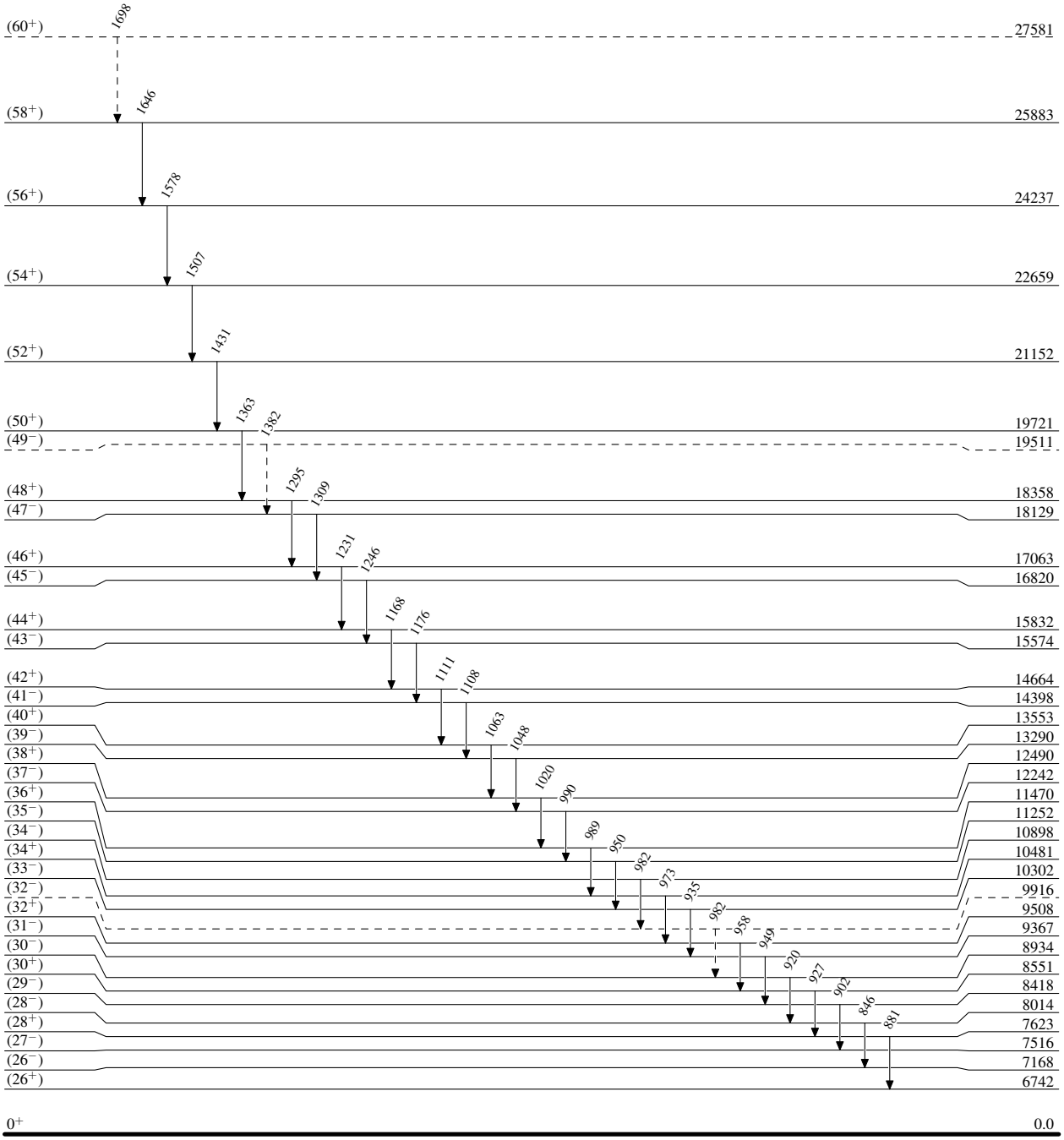
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

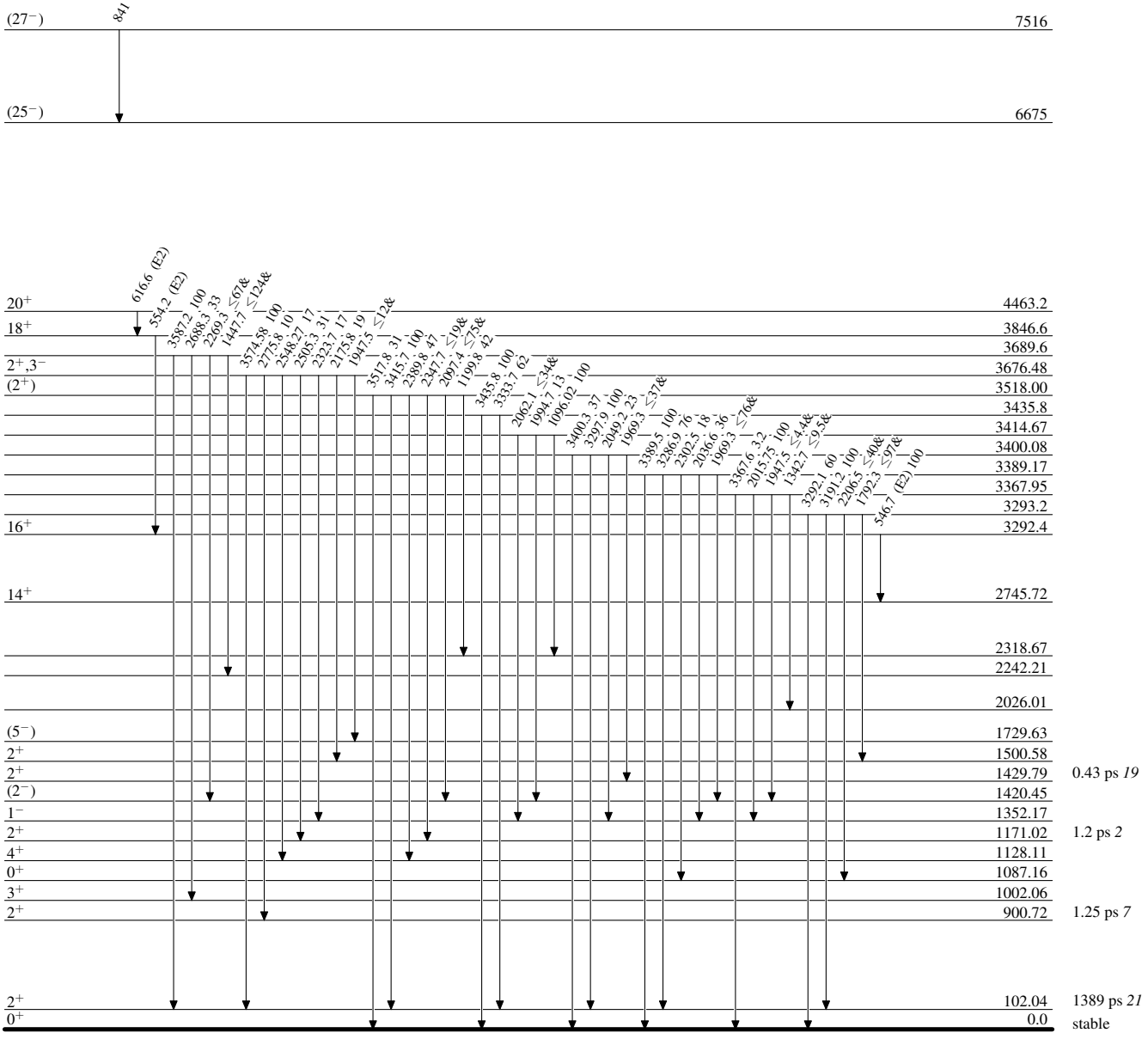


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

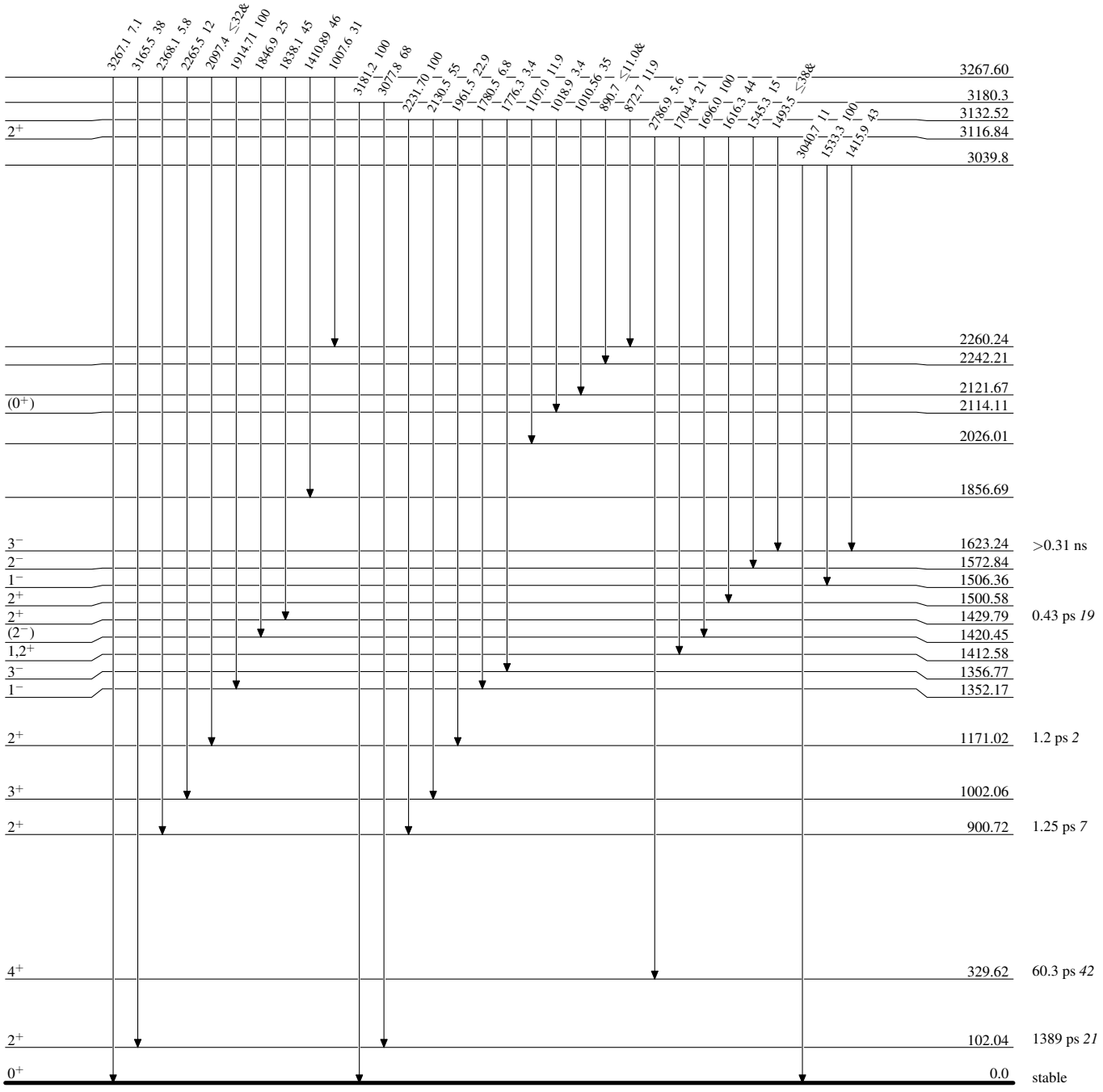


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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



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

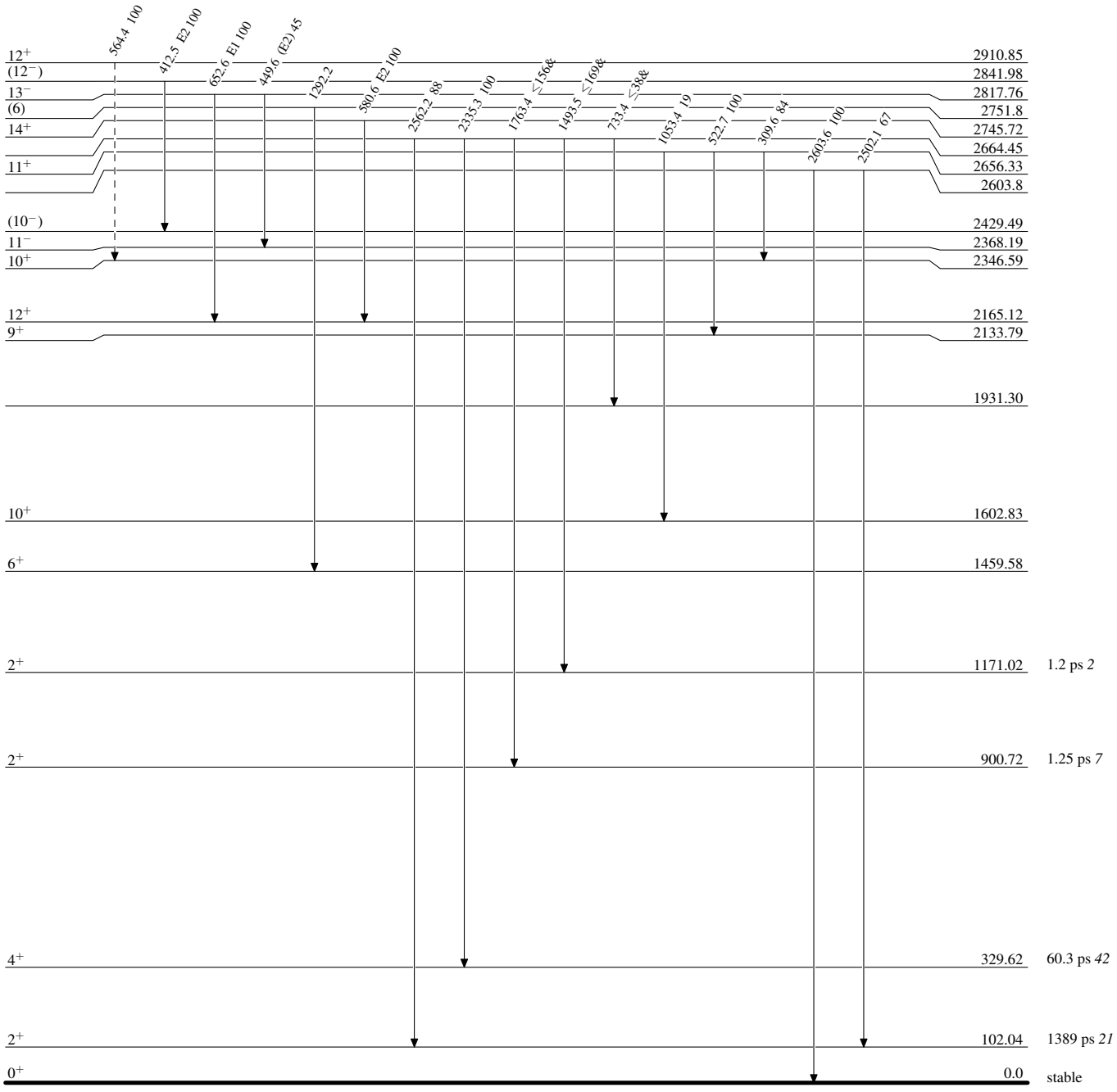
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

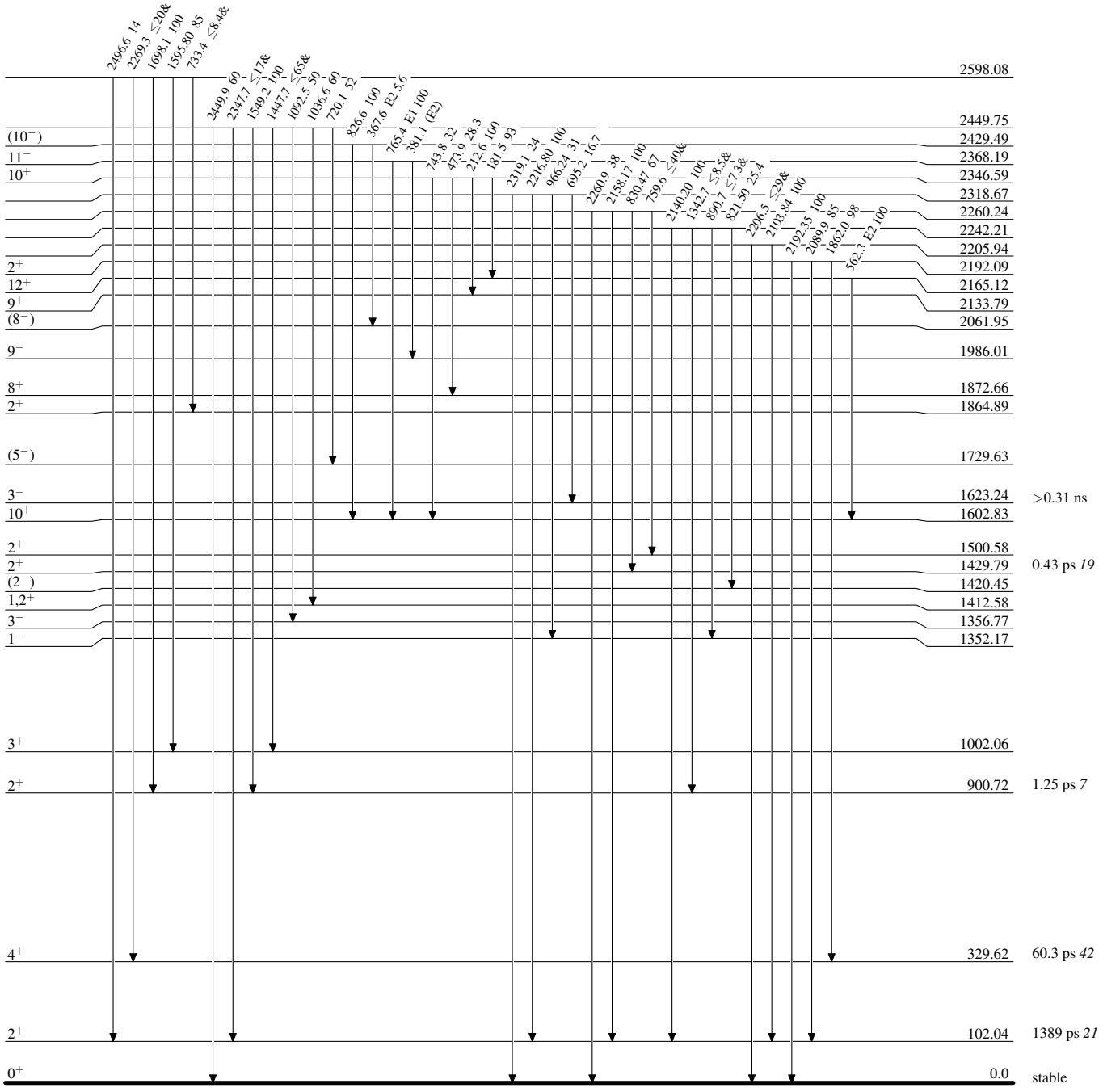


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

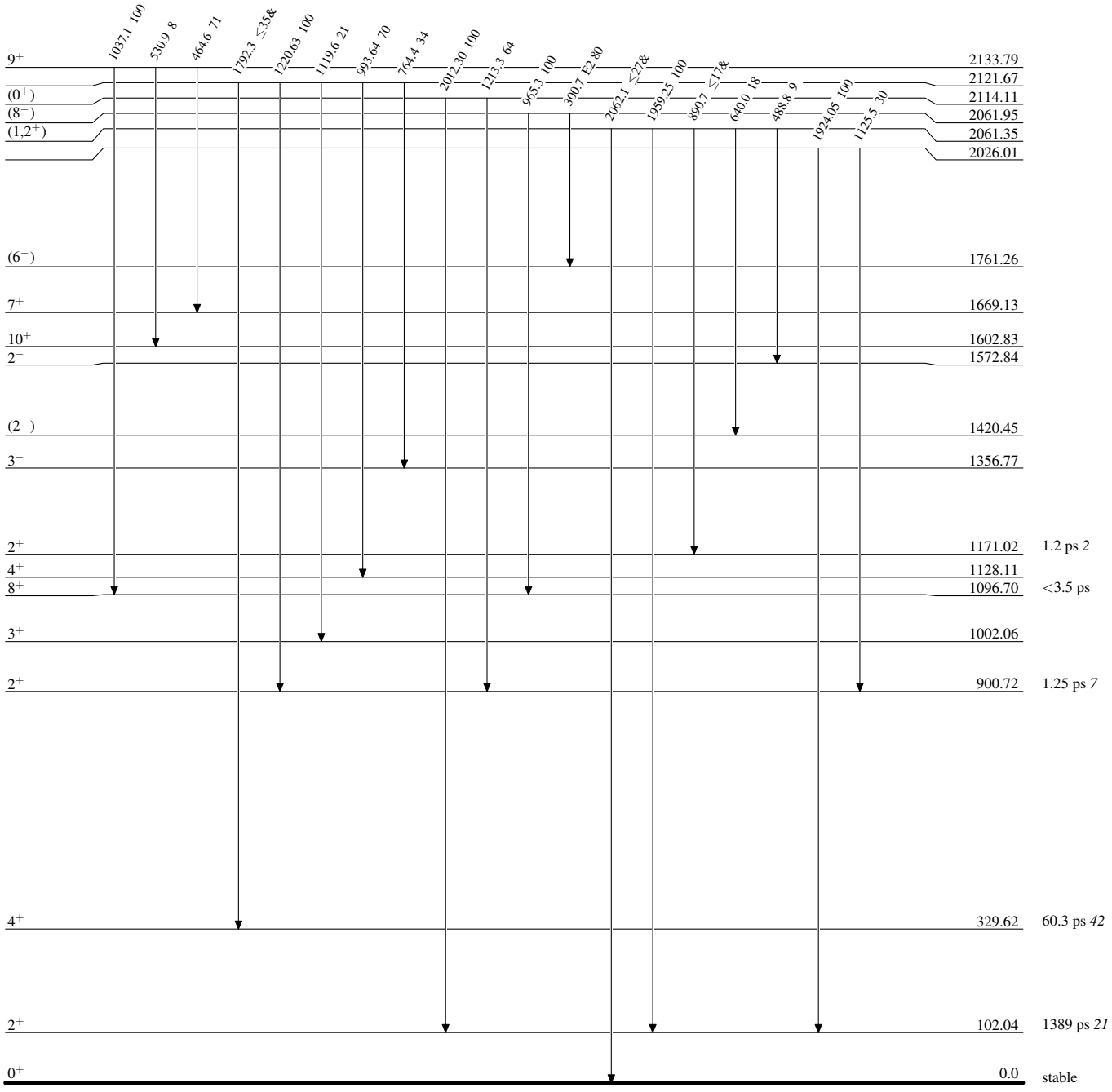


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

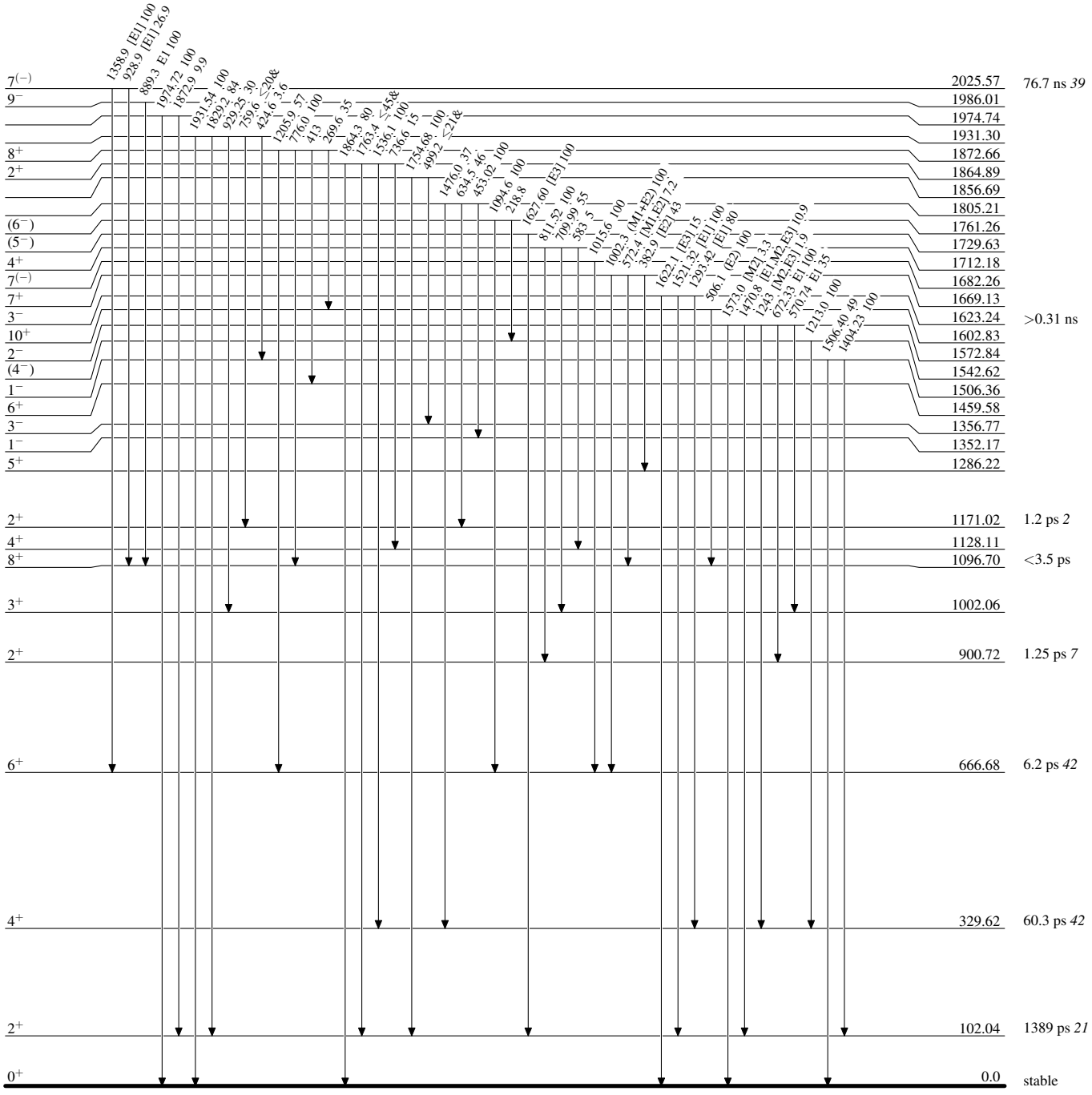


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

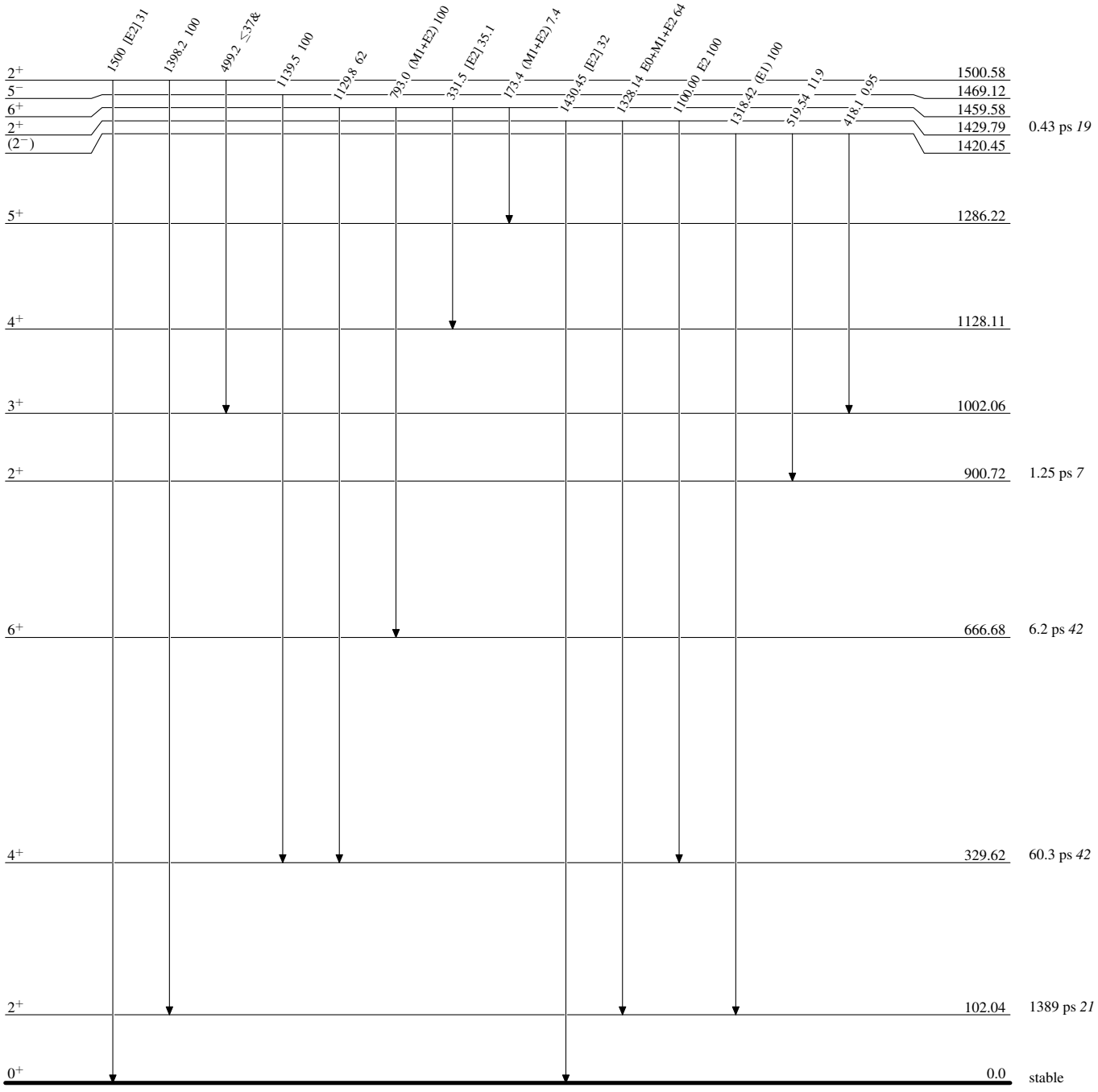


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

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

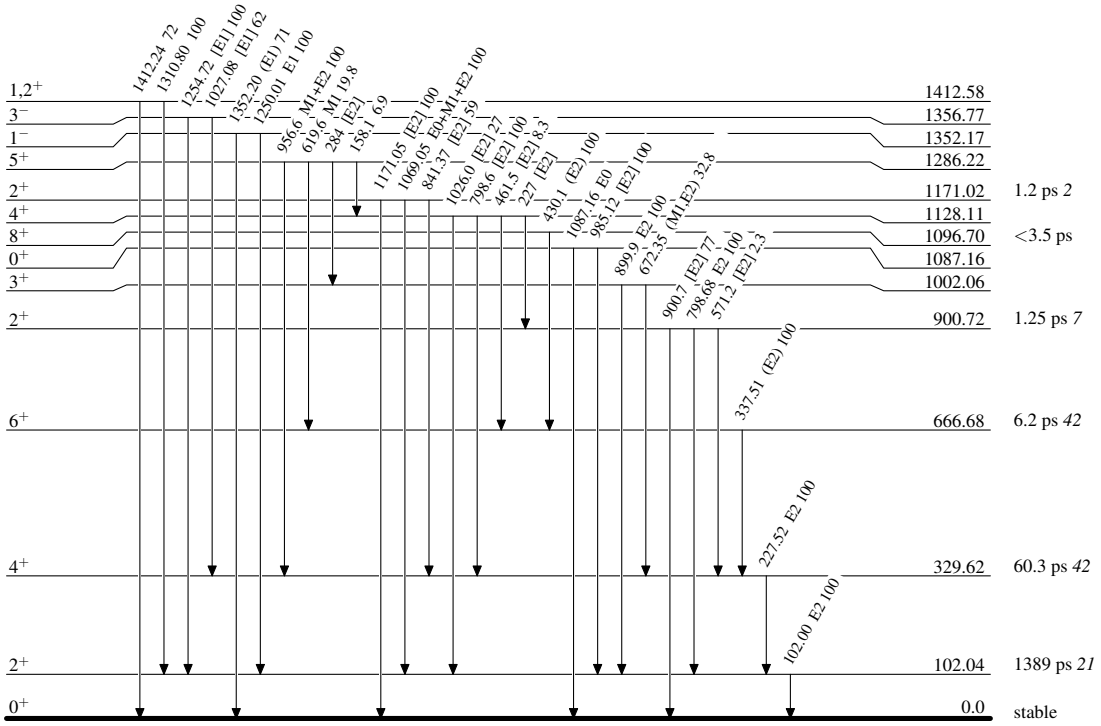


$^{162}_{68}Er_{94}$

Adopted Levels, Gammas

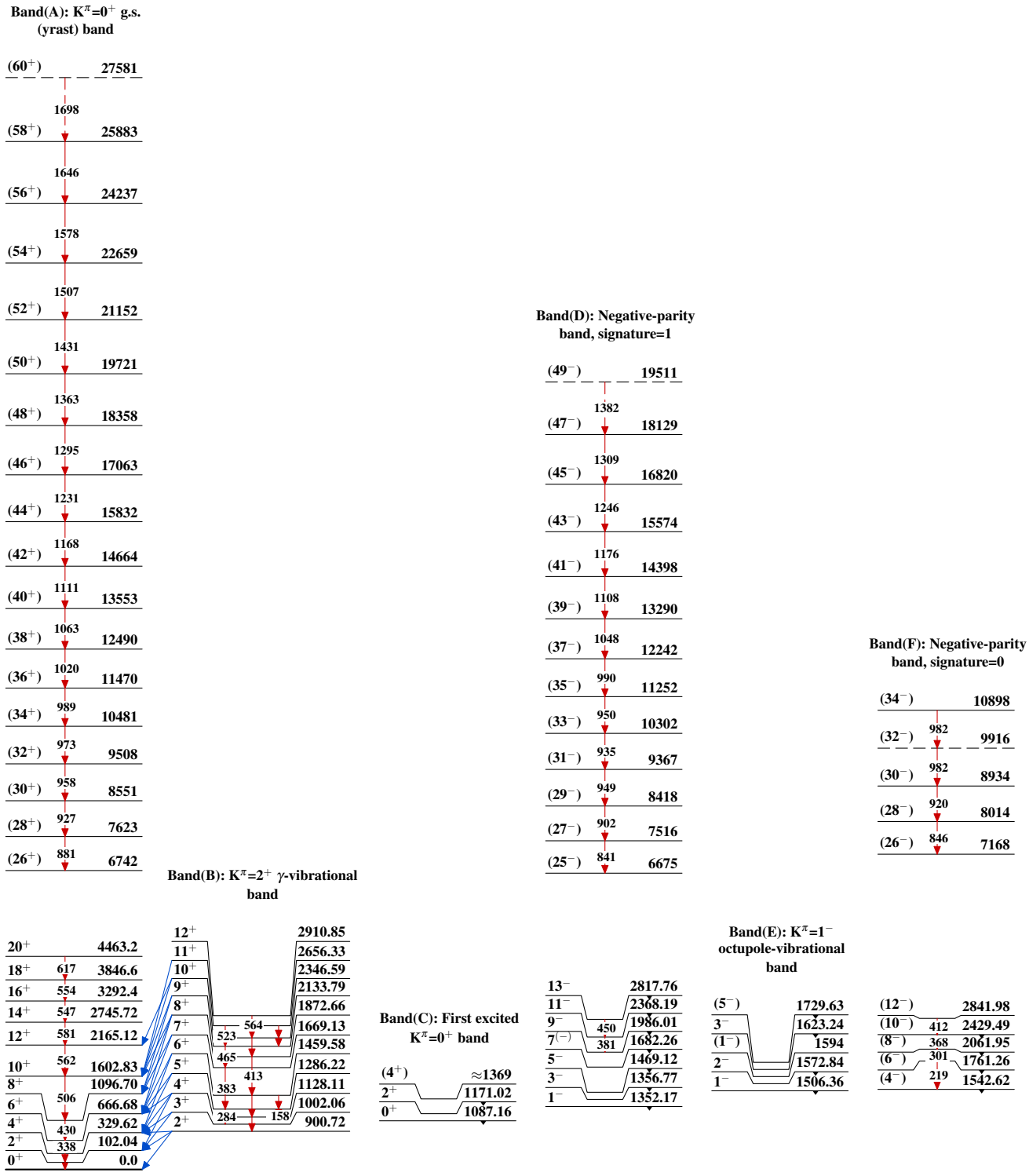
Level Scheme (continued)

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



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

Adopted Levels, Gammas



Adopted Levels, Gammas (continued)

Band(G): Bandhead of a $K^{\pi}=4^{+}$ band

4^{+} 1712.18

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