^{165}Tm ε+β^+ decay (30.06 h) 1982Vy03,1980Ab18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

Parent: ^{165}Tm: E=0.0; J$^\pi$=1/2$^+$; T$_{1/2}$=30.06 h *3*; Q(ε)=1591.3 *15*; %ε+%β^+ decay=100

^{165}Tm-J$^\pi$,T$_{1/2}$: From ^{165}Tm Adopted Levels.

^{165}Tm-Q(ε): From 2021Wa16.

1982Vy03: measured Eγ, Iγ, Eβ, Iβ, (ce)(γ) coin. The γ radiation measured by Ge(Li), conversion electrons by Si(Li) and β spectra by iron-free toroidal magnetic spectrometer.

1980Ab18 (also 1970Ab18 and analysis in 1980Ab22): measured Eγ, Iγ, ce. Conversion electrons measured by a magnetic spectrometer.

1983Mo10: analyzed Iγ, ce, $\gamma\gamma(\theta)$ data. Analysis of Eγ, Iγ, mult, δ for γ rays from doublet of levels at 589.760 (3/2$^+$) and 589.869 (1/2$^-$).

1988Ul02: Measured $\gamma\gamma(\theta)$ using Ge(Li) and NaI(Tl) detectors for $\gamma\gamma$-coincidences.

Others:

γ: 1987BaZB, 1976Gu02, 1973St22, 1972Ma40 (also 1971Ma74), 1968Ku14, 1968Ku02, 1967Co26, 1967Co20, 1966Bo07, 1963Gr15, 1963Ra15, 1961Ka30, 1961Bj02, 1960Gr27, 1959Kh32, 1957Go78, 1953Ha43.

ce: 1991GaZZ, 1987BaZB, 1974An04, 1972Ma40 (also 1971Ma74), 1968Ku14, 1967Co26, 1964Ch22, 1963Gr15, 1962Ha24, 1961Ka30, 1961Bj02, 1960Gr27, 1959Bo57, 1957Gr74.

$\gamma\gamma$: 1972Ma40 (also 1971Ma74), 1968Ku14, 1968Ku02, 1967Dz07, 1963Gr15, 1963Dz06, 1958An39.

(ce)(γ) coin: 1968Ku14, 1968Ku02.

(ce)(ce) coin: 1967Dz07.

(ce)γ(t): 1974An04, 1972Af03, 1970Ba71, 1968Ad05. The last three references and 1974An04 have some common authors.

$\gamma\gamma(\theta)$: 1975Fu13, 1978EgZY.

β: 1965Pr02.

^{165}Tm isotope T$_{1/2}$: 1970Ka23, 1967Co20, 1964Ch22, 1963Ra15, 1961Bj02, 1957Gr74, 1954Mi01, 1953Ha43.

Additional information 1.

^{165}Er Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0.0	5/2$^-$		
47.158 *4*	5/2$^+$	4.0 ns *1*	T$_{1/2}$: others: 3.25 ns *20* (1964Ja09) from γ(ce)(t).
62.672 *4*	7/2$^+$		
77.258 *4*	7/2$^-$	0.96 ns *8*	T$_{1/2}$: weighted average of 0.90 ns *9* (1974An04) and 1.10 ns *13* (1970Ba71).
97.958 *9*	9/2$^+$		
175.82 *3*	9/2$^-$		
242.929 *4*	3/2$^-$	0.31 ns *4*	μ=+0.62 *21* (1978EgZY) T$_{1/2}$: weighted average of 0.30 ns *5* (1974An04) and 0.321 ns *51* (1968Ad05).
296.124 *4*	5/2$^-$	≤0.24 ns	
297.367 *5*	1/2$^-$	0.70 ns *8*	T$_{1/2}$: other: ≤1.0 ns (1970BaYN).
356.525 *4*	3/2$^-$	0.35 ns *6*	
372.716 *14*	7/2$^-$		
384.341 *7*	5/2$^-$		
477.758 *8*	5/2$^-$		
507.421 *5*	1/2$^+$	0.70 ns *12*	
519.144 *6*	5/2$^+$		
534.571 *10*	3/2$^+$		
589.759 *5*	3/2$^+$		
589.882 *8*	1/2$^-$	≤0.6 ns	
605.486 *8*	(3/2$^+$)		
608.502 *7*	3/2$^-$		
745.946 *9*	1/2$^+$	1.00 ns *15*	
853.538 *8*	3/2$^+$		
920.716 *9*	1/2$^-$		

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^{165}Tm $\varepsilon+\beta^+$ decay (30.06 h) 1982Vy03,1980Ab18 (continued)

^{165}Er Levels (continued)

E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]
962.422 *12*	3/2$^-$	1289.094 *15*	3/2$^-$	1416.72 *5*	3/2$^-$
999.853 *20*	3/2$^+$	1339.41 *5*	5/2$^-$	1427.411 *10*	3/2$^+$
1103.501 *11*	3/2$^+$	1411.92 *7*	3/2$^+$	1528.12 *6*	(3/2$^+$)

[†] From least-squares fit to Eγ data, with uncertainties adjusted upwards, as specified in comments, for 23 Eγ values out of a total of 151 γ rays placed in the decay scheme. With this adjustment reduced χ^2=2.0 as compared to χ^2=1.3 at 95% confidence level, and only ten γ rays deviating between 2σ and 3σ. Without this adjustment reduced χ^2=18, much too large, with 14 γ rays deviating by more than 5σ, three γ rays deviating between 4σ and 5σ, and ten γ rays between 3σ and 4σ.

[‡] From the Adopted Levels.

[#] From (γ)(ce)(t) (1974An04, also 1972Af03), unless otherwise noted. The same values are adopted in Adopted Levels.

ε,β^+ radiations

av Eβ: Additional information 2.

Measured Eβ^+=329.25 (2.1×10^{-3} *2*)%, 272 *2* (5.6×10^{-3} *7*)% (1982Vy03). Other : Eβ^+=330 *20* (6.5×10^{-3} *20*)% (1965Pr02).

Intensity balance gives apparent $\varepsilon+\beta^+$ feeding for the following low-lying levels, which are not likely due to highly forbidden β transitions from 1/2$^+$ parent state: 1.3% *12* for 47.16, 5/2$^+$ level; 1.8% *4* for 77.26, 7/2$^-$ level; 0.25% *6* for 97.96, 9/2$^+$ level; and 0.036% *4* for 175.8, 9/2$^-$ level. These imbalance are probably due to some unresolved issues in the decay scheme, for example accurate and precise information about multipolarities of very low-energy transitions, and a few doubly-placed transitions with undivided intensities.

E(decay)	E(level)	Iβ^+ [†]	Iε[†]	Log *ft*	I($\varepsilon+\beta^+$)[†]	Comments
(63.2 *18*)	1528.12		0.083 *5*	5.98 *6*	0.083 *5*	εK=0.061 *26*; εL=0.664 *17*; εM+=0.274 *7*
(163.9 *18*)	1427.411		7.0 *4*	5.46 *4*	7.0 *4*	εK=0.7083 *22*; εL=0.2166 *14*; εM+=0.0752 *6*
(174.6 *18*)	1416.72		0.116 *9*	7.32 *+5−4*	0.116 *9*	εK=0.7201 *19*; εL=0.2081 *12*; εM+=0.0718 *5*
(179.4 *18*)	1411.92		0.46 *3*	6.75 *4*	0.46 *3*	εK=0.7248 *18*; εL=0.2047 *11*; εM+=0.0705 *5*
(251.9[‡] *18*)	1339.41		0.155 *12*	6.86[1u] *5*	0.155 *12*	εK=0.6134 *27*; εL=0.2850 *17*; εM+=0.1016 *7* Value of log *ft* is inconsistent with expected value of >8.5 for first-forbidden unique transition.
(302.2 *18*)	1289.094		0.385 *21*	7.400 *+31−30*	0.385 *21*	εK=0.7822 *7*; εL=0.1635 *4*; εM+=0.05421 *21*
(487.8 *18*)	1103.501		0.78 *5*	7.569 *+33−31*	0.78 *5*	εK=0.8066 *4*; εL=0.14596 *18*; εM+=0.04740 *14*
(591.5 *18*)	999.853		0.293 *19*	8.179 *+33−31*	0.293 *19*	εK=0.81282 *34*; εL=0.14149 *15*; εM+=0.04569 *13*
(628.9 *18*)	962.422		0.88 *4*	7.759 *+24−23*	0.88 *4*	εK=0.81449 *33*; εL=0.14028 *15*; εM+=0.04522 *13*
(670.6 *18*)	920.716		3.83 *22*	7.181 *+29−28*	3.83 *22*	εK=0.81612 *32*; εL=0.13910 *14*; εM+=0.04478 *13*
(737.8 *18*)	853.538		10.1 *6*	6.849 *+30−28*	10.1 *6*	εK=0.81831 *31*; εL=0.13752 *13*; εM+=0.04418 *13*
(845.4 *18*)	745.946		6.0 *3*	7.201 *+25−24*	6.0 *3*	εK=0.82104 *29*; εL=0.13554 *12*; εM+=0.04342 *11*
(982.8 *18*)	608.502		1.53 *8*	7.932 *+26−25*	1.53 *8*	εK=0.82359 *28*; εL=0.13369 *11*; εM+=0.04271 *11*
(985.8 *18*)	605.486		0.85 *21*	8.19 *+13−10*	0.85 *21*	εK=0.82364 *28*; εL=0.13366 *11*; εM+=0.04269 *11*
(1001.4 *18*)	589.882		6.1 *3*	7.349 *+25−24*	6.1 *3*	εK=0.82388 *28*; εL=0.13349 *11*; εM+=0.04263 *11*
(1001.5 *18*)	589.759		4.05 *21*	7.527 *+26−25*	4.05 *21*	εK=0.82388 *28*; εL=0.13348 *11*; εM+=0.04263 *11*
(1056.7 *18*)	534.571	2.5×10^{-9} *8*	1.26 *6*	8.083 *+24−23*	1.26 *6*	av Eβ=14.8 *14*; εK=0.82467 *28*; εL=0.13291 *11*; εM+=0.04242 *11*

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^{165}Tm $\varepsilon+\beta^+$ decay (30.06 h) 1982Vy03,1980Ab18 (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(1072.2‡ *18*)	519.144	1.5×10^{-10} *10*	0.15 *9*	9.6 *+4−2*	0.15 *9*	av Eβ=29.4 *9*; εK=0.80816 *33*; εL=0.14488 *14*; εM+=0.04695 *13* I($\varepsilon+\beta^+$): no ε feeding is expected to this level from ΔJ=2, Δπ=no.
(1083.9 *18*)	507.421	3.9×10^{-7} *6*	5.8 *3*	7.443 *+26−25*	5.8 *3*	av Eβ=35.5 *8*; εK=0.82503 *27*; εL=0.13265 *11*; εM+=0.04232 *11*
(1113.5 *18*)	477.758	2.8×10^{-9} *17*	0.07 *4*	10.0^{1u} *+4−2*	0.07 *4*	av Eβ=53.2 *8*; εK=0.80947 *32*; εL=0.14394 *14*; εM+=0.04659 *13*
(1207.0‡ *18*)	384.341	1.049×10^{-7}	0.05	>10.3^{1u}	<0.05	av Eβ=102.4 *8*; εK=0.81205 *31*; εL=0.14207 *13*; εM+=0.04589 *13* I($\varepsilon+\beta^+$): −0.01 *6* from γ-transition intensity balance.
(1234.8 *18*)	356.525	5.5×10^{-4} *4*	11.7 *7*	7.257 *+29−28*	11.7 *7*	av Eβ=109.7 *7*; εK=0.82667 *27*; εL=0.13143 *11*; εM+=0.04185 *11*
(1293.9 *18*)	297.367	0.00502 *29*	34.4 *17*	6.831 *+25−24*	34.4 *17*	av Eβ=137.1 *7*; εK=0.82713 *27*; εL=0.13102 *11*; εM+=0.04170 *11*
(1295.2‡ *18*)	296.124	7.94×10^{-6}	0.49999	>9.4^{1u}	<0.5	av Eβ=146.6 *7*; εK=0.81408 *30*; εL=0.14059 *13*; εM+=0.04532 *13* I($\varepsilon+\beta^+$): 0.0 *5%* from γ-transition intensity balance.
(1348.4 *18*)	242.929	8×10^{-4} *4*	2.4 *13*	8.02 *+34−19*	2.4 *13*	av Eβ=161.9 *7*; εK=0.82744 *26*; εL=0.13067 *11*; εM+=0.04156 *11*
(1591.3‡ *21*)	0.0	0.001580	2.9984	9.0^{1u}	<3	av Eβ=284.8 *7*; εK=0.81866 *28*; εL=0.13689 *11*; εM+=0.04392 *11* I($\varepsilon+\beta^+$): −2 *5* from γ-transition intensity balance.

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

$\gamma(^{165}Er)$

Iγ normalization: From Iγ/I(K x ray) (1982Vy03). I(K$_{\alpha2}$)=77.4 *18*, I(K$_{\alpha1}$)=133 *3*, I(K$_{\beta1}$)=43.3 *10*, I(K$_{\beta2}$)=10.7 *3* relative to Iγ=100 for 242.9γ (1982Vy03).

Ice(K) values from 1982Vy03 are normalized to Ice(K)=100 for 242.9γ. For some of the transitions, ce data are available from 1980Ab18 only. The Ice(K) values from 1980Ab18 are also normalized to Ice(K)=100 for 242.9γ.

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[†]	$I_{(\gamma+ce)}$[c]	Comments
11.60[b] *2*		384.341	5/2−	372.716	7/2−	M1		262 *4*	0.5 *1*	ce(L)/(γ+ce)=0.775 *8*; ce(M)/(γ+ce)=0.1741 *33* ce(N)/(γ+ce)=0.0406 *8*; ce(O)/(γ+ce)=0.00584 *12*; ce(P)/(γ+ce)=0.000319 *7* α(L)=203.6 *30*; α(M)=45.7 *7* α(N)=10.65 *16*; α(O)=1.534 *23*; α(P)=0.0838 *13* $I_{(\gamma+ce)}$: from γ-transition intensity balance at 384.3 level. Mult.: small E2 admixture is also possible (1980Ab18). Ice(M1):Ice(M2):Ice(M3)=0.66 *25*:0.41 *16*:0.33 *16* (1980Ab18).
14.56[b] *2*	0.26[&]	77.258	7/2−	62.672	7/2+	(E1)		11.47 *17*		α(L)=8.91 *13*; α(M)=2.068 *30* α(N)=0.447 *6*; α(O)=0.0448 *6*; α(P)=0.000961 *14* %Iγ=0.092 Ice(M1):Ice(M2):Ice(M3)=0.25 *12*:0.25 *12*:0.33 *16* (1980Ab18).
15.512 *10*	0.008[&] *4*	62.672	7/2+	47.158	5/2+	M1+E2	0.27 *7*	1.2×10^3 *6*	9.4 *3*	%Iγ=0.0028 *14* ce(L)/(γ+ce)=0.77 *25*; ce(M)/(γ+ce)=0.18 *11* ce(N)/(γ+ce)=0.041 *27*; ce(O)/(γ+ce)=0.0048 *32*; ce(P)/(γ+ce)=2.8×10^{-5} *14* α(L)=10×10^2 *5*; α(M)=2.3×10^2 *11* α(N)=51 *25*; α(O)=6.0 *28*; α(P)=0.0351 *5* $I_{(\gamma+ce)}$: from γ-transition intensity balance. Iγ: from I(γ+ce) and α(total). Other: ≈0.05 (1980Ab18). Ice(M1):Ice(M2):Ice(M3)=0.49 *16*:2.5 *5*:2.9 *6* (1980Ab18). M1:M2:M3=<37.5:60:100 (1970Ab18).
20.71[b] *2*	0.08[&]	97.958	9/2+	77.258	7/2−	(E1)		4.39 *6*		α(L)=3.42 *5*; α(M)=0.779 *11* α(N)=0.1711 *24*; α(O)=0.01876 *27*; α(P)=0.000466 *7* %Iγ=0.028 Ice(L1):Ice(L2)=0.66 *16*:0.41 *16* (1980Ab18).
27.879 *15*	0.007[&]	384.341	5/2−	356.525	3/2−	M1+E2	0.077 *12*	24.6 *18*		%Iγ=0.0025

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[†]	Comments
									α(L)=19.1 *14*; α(M)=4.33 *33* α(N)=1.00 *7*; α(O)=0.138 *8*; α(P)=0.00617 *9* Uncertainty in Eγ increased to 0.030 keV for least-squares fitting. Mult.: M1 in 1982Vy03. Ice(L1):Ice(L2):Ice(L3)=0.41 *8*:0.11 *3*:0.070 *16* (1980Ab18).
30.106 *8*	0.25[&]	77.258	7/2$^-$	47.158	5/2$^+$	E1		1.565 *22*	L1:L2:L3=100:58:116 (1970Ab18) α(L)=1.222 *17*; α(M)=0.275 *4* α(N)=0.0612 *9*; α(O)=0.00721 *10*; α(P)=0.0002076 *29* %Iγ=0.089 Ice(L1):Ice(L2):Ice(L3)=0.57 *8*:0.30 *5*:0.66 *8* (1980Ab18).
35.280 *18*	0.06[&]	97.958	9/2$^+$	62.672	7/2$^+$	M1+E2	0.173 *+26−19*	17.5 *25*	α(L)=13.6 *19*; α(M)=3.1 *5* α(N)=0.72 *10*; α(O)=0.094 *12*; α(P)=0.00301 *5* %Iγ=0.021 L1:L2:L3=100:33:67; M1:M2:M3=100:≈33:≈59 (1970Ab18). Ice(L1):Ice(L2):Ice(L3)=1.9 *3*:0.95 *12*:1.05 *12* (1980Ab18);
47.155 *6*	47.5 *12*	47.158	5/2$^+$	0.0	5/2$^-$	E1		0.450 *6*	%Iγ=16.9 *8* L1:L2:L3=100:33:67 (1970Ab18); M1:M2:M3=100:33:67 (1970Ab18) α(N)=0.01767 *25*; α(O)=0.002213 *31*; α(P)=7.48×10^{-5} *10* α(L)=0.351 *5*; α(M)=0.0784 *11* Mult.: E1 in 1982Vy03. Ice(L1):Ice(L2):Ice(L3)=46 *4*:18.3 *13*:26.9 *16* (1980Ab18). δ: <0.024 from L1:L2:L3 (1980Ab18). Other: δ=−0.14 *+5−6* ($\gamma\gamma(\theta)$) (1988Ul02). However RUL=1 for B(M2)(W.u.) does not permit any M2 admixture, thus pure E1 is assigned.
50.77[b] *2*	0.003[&]	97.958	9/2$^+$	47.158	5/2$^+$	E2		46.9 *7*	α(L)=36.0 *5*; α(M)=8.76 *12* α(N)=1.975 *28*; α(O)=0.2271 *32*; α(P)=0.0001887 *26* %Iγ=0.0011 Ice(L1):Ice(L2):Ice(L3)=≤0.022:0.25 *8*:0.22 *7* (1980Ab18).
53.182 *15*	1.60 *12*	296.124	5/2$^-$	242.929	3/2$^-$	M1+E2	0.148 *12*	3.63 *13*	%Iγ=0.57 *5* L1:L2:L3=100:27:13 (1970Ab18); M1:M2:M3=100:30:15 (1970Ab18) α(L)=2.82 *10*; α(M)=0.639 *25* α(N)=0.148 *6*; α(O)=0.0203 *6*; α(P)=0.000907 *13* Mult.: M1 in 1982Vy03. Ice(L1):Ice(L2):Ice(L3)=16.4 *16*:5.5 *5*:3.6 *4* (1980Ab18).
54.415 *11*	20.3 *5*	297.367	1/2$^-$	242.929	3/2$^-$	M1(+E2)	<0.017	2.70 *4*	%Iγ=7.2 *4* L1:L2:L3=100:9.2:1.4 (1970Ab18); M1:M2:M3=100:9.2:1.4 (1970Ab18) α(L)=2.110 *30*; α(M)=0.468 *7* α(N)=0.1091 *15*; α(O)=0.01575 *22*; α(P)=0.000863 *12*

γ(^{165}Er) (continued)

E_γ [‡]	I_γ [‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	δ [#]	α [†]	Comments
									Mult.: M1 in 1982Vy03. Ice(L1):Ice(L2):Ice(L3)=189 *13*:23.6 *15*:7.6 *5* (1980Ab18). δ=−0.16 *4* (γγ(θ)) (1988Ul02). δ: from L1, L2, M1, M2 and M3 electron intensity ratios.
59.129 *22*	0.164 *13*	356.525	3/2⁻	297.367	1/2⁻	M1+E2	0.77 *8*	17.1 *6*	%Iγ=0.058 *5* L1:L2:L3=100:375:250 (1970Ab18) α(K)=7.4 *4*; α(L)=7.4 *8*; α(M)=1.79 *19* α(N)=0.41 *4*; α(O)=0.048 *5*; α(P)=0.000476 *28* Mult.: M1 in 1982Vy03. M1:M2:M3=100:≈333:≈256 (1970Ab18). Ice(L1):Ice(L2):Ice(L3)=0.90 *8*:2.7 *3*:3.0 *3* (1980Ab18).
60.399 *4*	2.00 *4*	356.525	3/2⁻	296.124	5/2⁻	M1+E2	0.044 +*14*−*19*	12.13 *17*	α(K)=10.11 *14*; α(L)=1.578 *30*; α(M)=0.351 *7* α(N)=0.0817 *16*; α(O)=0.01175 *21*; α(P)=0.000635 *9* %Iγ=0.710 *33* Mult.: M1 in 1982Vy03. L1:L2:L3=100:11:<2.1; M1:M2=100:11 (1970Ab18). Ice(L1):Ice(L2):Ice(L3)=14.4 *16*:1.44 *16*:0.36 *8* (1980Ab18). δ: from ce ratios (1980Ab18). Other: −0.20 *2* (γγ(θ)) (1988Ul02).
62.676 *5*	1.44 *3*	62.672	7/2⁺	0.0	5/2⁻	E1		1.099 *15*	α(K)=0.896 *13*; α(L)=0.1587 *22*; α(M)=0.0353 *5* α(N)=0.00801 *11*; α(O)=0.001033 *14*; α(P)=3.81×10^{-5} *5* %Iγ=0.511 *24* Ice(L2):Ice(L3)=0.62 *8*:0.23 *3* (1980Ab18).
70.610 *5*	0.595 *17*	589.759	3/2⁺	519.144	5/2⁺	M1+E2	0.05 +*4*−*3*	7.77 *11*	%Iγ=0.211 *11* α(K)exp=4.5 *5* α(K)=6.49 *9*; α(L)=1.00 *4*; α(M)=0.222 *9* α(N)=0.0517 *21*; α(O)=0.00744 *24*; α(P)=0.000403 *6* Mult.: (M1) in 1982Vy03. K:L1:L2:L3=≈714:100:10:≈2.3; M1:M2=100:≤12 (1970Ab18). Ice(L1):Ice(L2):Ice(L3)=2.7 *3*:0.27 *3*:0.066 *16* (1980Ab18). Ice(K)=13.8 *17*.
76.56[b] *2*	0.005[&]	372.716	7/2⁻	296.124	5/2⁻	M1(+E2)	<0.3	6.23 *13*	α(K)=5.01 *15*; α(L)=0.95 *17*; α(M)=0.22 *4* α(N)=0.050 *10*; α(O)=0.0069 *11*; α(P)=0.000309 *11* %Iγ=0.0018 Ice(K):Ice(L1):Ice(L2)=0.12 *4*:0.016 *8*:≤0.006 (1980Ab18).
77.253 *5*	2.05 *5*	77.258	7/2⁻	0.0	5/2⁻	M1+E2	2.3 *4*	7.70 *16*	%Iγ=0.73 *4* α(K)exp=1.8 *3*; α(L3)exp=2.27 *22* (1991GaZZ) K:L1:L2:L3=833:100:813:625 (1970Ab18); M1:M2:M3=100:909:699 (1970Ab18) α(K)=2.30 *19*; α(L)=4.14 *24*; α(M)=1.01 *6* α(N)=0.227 *13*; α(O)=0.0266 *15*; α(P)=0.000117 *13* Mult.: (E2) in 1982Vy03.

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[†]	Comments
									Ice(K):Ice(L1):Ice(L2):Ice(L3)=25.5 *25*:2.9 *3*:23.0 *22*:17.8 *17* (1980Ab18). Ice(K)=18.2 *19* Penetration parameter is deduced as ≈0 (1991GaZZ) from α(L3)exp. δ: from subshell ratios. Others: −23.4 to +25.8 ($\gamma\gamma(\theta)$) (1988Ul02); 6 +∞−3 (1991GaZZ) from α(L3)exp.
82.33[b] *1*	0.012[&]	589.759	3/2$^+$	507.421	1/2$^+$	M1+E2	<0.23	5.01 *8*	%Iγ=0.0043 α(K)=4.11 *9*; α(L)=0.70 *7*; α(M)=0.158 *18* α(N)=0.037 *4*; α(O)=0.0051 *5*; α(P)=0.000253 *6* K:L1:L2=735:100:<24 (1970Ab18). Ice(K):Ice(L1):Ice(L2)=0.25 *8*:0.033 *8*:<0.008 (1980Ab18).
86.93[b] *1*	0.10[&]	384.341	5/2$^-$	297.367	1/2$^-$	E2		5.03 *7*	%Iγ=0.036 K:L1:L2=1200:100:800 (1970Ab18) α(K)=1.456 *20*; α(L)=2.74 *4*; α(M)=0.667 *9* α(N)=0.1509 *21*; α(O)=0.01761 *25*; α(P)=6.17×10^{-5} *9* Uncertainty in Eγ increased to 0.02 keV for least-squares fitting. Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.74 *16*:0.066 *16*:0.49 *8*:0.49 *8* (1980Ab18).
88.205 *15*	0.133 *14*	384.341	5/2$^-$	296.124	5/2$^-$	M1+E2	0.12 *2*	4.09 *6*	%Iγ=0.047 *5* α(K)exp=3.8 *8* α(K)=3.39 *5*; α(L)=0.544 *13*; α(M)=0.1214 *31* α(N)=0.0282 *7*; α(O)=0.00403 *8*; α(P)=0.0002094 *30* Mult.: M1 in 1982Vy03. K:L1:L2=600:100:≤17 (1970Ab18). Ice(K):Ice(L1):Ice(L2):Ice(L3)=2.3 *3*:0.39 *4*:0.049 *8*:0.020 *2* (1980Ab18). δ: from ce ratios (1980Ab18). Other: +0.44 *+16−15* ($\gamma\gamma(\theta)$,1988Ul02). Ice(K)=2.6 *3*.
98.60[b] *5*	0.013[&]	175.82	9/2$^-$	77.258	7/2$^-$	[M1+E2]		3.03 *8*	α(K)exp=12 *6* α(K)=1.8 *7*; α(L)=0.9 *6*; α(M)=0.23 *14* α(N)=0.052 *32*; α(O)=0.0063 *35*; α(P)=1.0×10^{-4} *5* %Iγ=0.0046 α(K)exp from Ice(K)=0.082 *16* (1980Ab18) and Iγ, with assumed 50% uncertainty for Iγ is much larger than α(K)(M1)=2.5 and α(K)(E2)=1.1.
113.599 *4*	4.40 *9*	356.525	3/2$^-$	242.929	3/2$^-$	M1+E2	0.081 *+24−33*	1.974 *28*	%Iγ=1.56 *7* α(K)exp=1.51 *15* α(K)=1.652 *23*; α(L)=0.252 *4*; α(M)=0.0560 *10*

$\gamma(^{165}$Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[†]	Comments
									α(N)=0.01304 *23*; α(O)=0.001878 *30*; α(P)=0.0001017 *15* Mult.: M1 in 1982Vy03. K:L1:L2:L3=778:100:11:≤1.9 (1970Ab18). Ice(K):Ice(L1):Ice(L2):Ice(L3)=37 *4*:5.1 *5*:0.52 *5*:0.115 *16* (1980Ab18). Ice(K)=45 *4*. δ: from ce ratios (1980Ab18). Other: +0.26 *2* ($\gamma\gamma(\theta)$) (1988Ul02).
120.34[b] *4*	0.015[&]	296.124	5/2$^-$	175.82	9/2$^-$	(E2)		1.479 *21*	α(K)exp≈0.66 *30* α(K)=0.677 *10*; α(L)=0.615 *9*; α(M)=0.1490 *21* α(N)=0.0338 *5*; α(O)=0.00401 *6*; α(P)=2.86×10^{-5} *4* %Iγ=0.0053 For α(K)exp, 20% uncertainty assumed in Iγ value. Ice(K)=0.05 *2* (1980Ab18).
^{x}125.17[b] *4*	0.04[&]								%Iγ=0.014 Ice(K)=0.14 *3* (1980Ab18). E$_\gamma$: placed from a 1044 level in 1980Ab18.
127.69[b] *4*	0.06[&]	605.486	(3/2$^+$)	477.758	5/2$^-$	[E1]		0.1699 *24*	%Iγ=0.021 α(K)=0.1419 *20*; α(L)=0.02193 *31*; α(M)=0.00485 *7* α(N)=0.001113 *16*; α(O)=0.0001511 *21*; α(P)=6.62×10^{-6} *9* Ice(K)=0.04 *2* (1980Ab18).
129.82[b] *4*	0.02[&]	372.716	7/2$^-$	242.929	3/2$^-$	[E2]		1.124 *16*	α(K)=0.553 *8*; α(L)=0.438 *6*; α(M)=0.1059 *15* α(N)=0.02402 *34*; α(O)=0.00286 *4*; α(P)=2.363×10^{-5} *33* %Iγ=0.007 Ice(K)=0.06 *2* (1980Ab18).
141.36 *7*	0.083 *13*	384.341	5/2$^-$	242.929	3/2$^-$	M1+E2	0.47 *10*	1.019 *21*	α(K)exp=0.81 *15* (1980Ab18) α(K)=0.809 *31*; α(L)=0.163 *11*; α(M)=0.0373 *28* α(N)=0.0086 *6*; α(O)=0.00117 *7*; α(P)=4.84×10^{-5} *24* %Iγ=0.030 *5* Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.34 *5*:0.046 *9*:0.013 *2*:0.011 *2* (1980Ab18).
141.36 *7*		1103.501	3/2$^+$	962.422	3/2$^-$	[E1]		0.1297 *18*	α(K)=0.1085 *15*; α(L)=0.01658 *23*; α(M)=0.00367 *5* α(N)=0.000843 *12*; α(O)=0.0001149 *16*; α(P)=5.13×10^{-6} *7* Uncertainty in Eγ increased to 0.14 keV for least-squares fitting.
^{x}144.08[b] *4*									
149.65 *6*	0.082 *15*	534.571	3/2$^+$	384.341	5/2$^-$	E1		0.1115 *16*	%Iγ=0.029 *6* α(K)exp=0.08 *2* (1980Ab18) α(K)=0.0933 *13*; α(L)=0.01419 *20*; α(M)=0.00314 *4* α(N)=0.000721 *10*; α(O)=9.87×10^{-5} *14*; α(P)=4.45×10^{-6} *6* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.24 keV for least-squares fitting.
150.894 *5*	1.59 *4*	507.421	1/2$^+$	356.525	3/2$^-$	E1		0.1090 *15*	α(K)exp=0.087 *8* α(K)=0.0913 *13*; α(L)=0.01387 *19*; α(M)=0.00307 *4*

^{165}Tm $\varepsilon+\beta^+$ decay (30.06 h) 1982Vy03,1980Ab18 (continued)

$\gamma(^{165}$Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
									α(N)=0.000705 *10*; α(O)=9.65×10^{-5} *14*; α(P)=4.36×10^{-6} *6* %Iγ=0.565 *28* K:L1:L2:L3=1333:100:≤25:≈33 (1970Ab18). Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.72 *2*:0.082 *8*:0.0164 *16*:0.0164 *16* (1980Ab18). Other: E1(+M2) with −0.25<δ<+0.01 (γγ(θ)) (1988Ul02). Ice(K)=0.95 *8*.
156.10[@] *3*	0.033[@] *16*	745.946	1/2$^+$	589.882	1/2$^-$	E1[@]		0.0997 *14*	α(K)=0.0835 *12*; α(L)=0.01264 *18*; α(M)=0.00280 *4* α(N)=0.000643 *9*; α(O)=8.81×10^{-5} *12*; α(P)=4.01×10^{-6} *6* %Iγ=0.012 *6*
156.21[@] *3*	0.049[@] *16*	745.946	1/2$^+$	589.759	3/2$^+$	M1[@]		0.801 *11*	%Iγ=0.017 *6* α(K)exp=0.22 *5* (1980Ab18); K:L1=1.1 *2*:0.15 *2* α(K)=0.672 *9*; α(L)=0.1002 *14*; α(M)=0.02223 *31* α(N)=0.00518 *7*; α(O)=0.000750 *11*; α(P)=4.14×10^{-5} *6* Mult.: E2 for a complex line (1980Ab18).
162.60 *3*	0.18 *4*	519.144	5/2$^+$	356.525	3/2$^-$	E1		0.0895 *13*	α(K)exp=0.073 *15* (1980Ab18) α(K)=0.0750 *11*; α(L)=0.01132 *16*; α(M)=0.002502 *35* α(N)=0.000575 *8*; α(O)=7.90×10^{-5} *11*; α(P)=3.62×10^{-6} *5* %Iγ=0.064 *15* Ice(K)=0.066 *16* (1980Ab18).
165.659 *15*	0.44 *6*	242.929	3/2$^-$	77.258	7/2$^-$	E2		0.477 *7*	α(K)exp=0.24 *4*; K:L1:L2:L3=875:100:313:250 (1970Ab18) α(K)=0.280 *4*; α(L)=0.1515 *21*; α(M)=0.0364 *5* α(N)=0.00826 *12*; α(O)=0.001003 *14*; α(P)=1.258×10^{-5} *18* %Iγ=0.156 *22* Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.66 *8*:0.066 *8*:0.164 *16*:0.131 *16* (1980Ab18). Ice(K)=0.70 *5*.
175.86 *7*	0.063 *7*	175.82	9/2$^-$	0.0	5/2$^-$	(E2)		0.388 *5*	α(K)exp=0.26 *16* α(K)=0.2354 *33*; α(L)=0.1177 *17*; α(M)=0.0282 *4* α(N)=0.00641 *9*; α(O)=0.000781 *11*; α(P)=1.075×10^{-5} *15* %Iγ=0.0224 *27* Ice(K)=0.11 *6*. Ice(K)=0.074 *16* (1980Ab18).
181.61 *4*	0.049 *5*	477.758	5/2$^-$	296.124	5/2$^-$	M1(+E2)	<1.2	0.47 *5*	%Iγ=0.0174 *19* α(K)exp=0.39 *8* (1980Ab18) α(K)=0.37 *7*; α(L)=0.077 *11*; α(M)=0.0175 *30* α(N)=0.0040 *7*; α(O)=0.00055 *6*; α(P)=2.2×10^{-5} *5* Mult.: (M1,E2) in 1982Vy03. Ice(K)=0.097 *16*. Ice(K)=0.10 *2* (1980Ab18).
195.773 *7*	1.62 *4*	242.929	3/2$^-$	47.158	5/2$^+$	E1		0.0550 *8*	α(K)exp=0.040 *5* α(K)=0.0462 *6*; α(L)=0.00686 *10*; α(M)=0.001515 *21* α(N)=0.000349 *5*; α(O)=4.83×10^{-5} *7*; α(P)=2.280×10^{-6} *32*

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
									%Iγ=0.575 *28* K:L1:L2=833:100:<33 (1970Ab18)$. Ice(K):Ice(L1):Ice(L2)=0.37 *6*:≈0.05:≤0.016 (1980Ab18). Ice(K)=0.44 *5*. δ(M2/E1)=+0.22 *+13−10* (γγ(θ)) (1988Ul02).
[x]197.70[b] *4*									
205.402 *11*	1.20 *3*	589.759	3/2$^+$	384.341	5/2$^-$	E1		0.0485 *7*	α(K)exp=0.067 *19* (1982Vy03); α(K)exp=0.04 *2* (1980Ab18) α(K)=0.0408 *6*; α(L)=0.00604 *8*; α(M)=0.001333 *19* α(N)=0.000307 *4*; α(O)=4.26×10^{-5} *6*; α(P)=2.025×10^{-6} *28* %Iγ=0.426 *21* Ice(K)=0.55 *16*.
210.053 *7*	2.36 *5*	507.421	1/2$^+$	297.367	1/2$^-$	E1		0.0458 *6*	α(K)exp=0.032 *11* α(K)=0.0385 *5*; α(L)=0.00569 *8*; α(M)=0.001256 *18* α(N)=0.000290 *4*; α(O)=4.02×10^{-5} *6*; α(P)=1.916×10^{-6} *27* %Iγ=0.84 *4* Ice(K)=0.52 *19*.
218.859 *6*	9.4 *5*	296.124	5/2$^-$	77.258	7/2$^-$	M1+E2	−0.26 *7*	0.306 *6*	%Iγ=3.34 *23* α(K)exp=0.208 *15* α(K)=0.255 *6*; α(L)=0.0396 *6*; α(M)=0.00883 *16* α(N)=0.002055 *35*; α(O)=0.000294 *4*; α(P)=1.55×10^{-5} *4* Mult.: M1 in 1982Vy03. K:L1:L2:L3=666:100:11:<3.3 (1970Ab18). Ice(K):Ice(L1):Ice(L2):Ice(L3)=12.2 *16*:1.64 *16*:0.181 *16*:0.066 *16* (1980Ab18). Ice(K)=13.3 *6*. δ: from ce and δ=−0.30 *10* (γγ(θ)) (1988Ul02); sign from γγ(θ).
221.15[b] *5*	0.66[&]	605.486	(3/2$^+$)	384.341	5/2$^-$	[E1]		0.0401 *6*	%Iγ=0.234 α(K)=0.0337 *5*; α(L)=0.00496 *7*; α(M)=0.001096 *15* α(N)=0.0002528 *35*; α(O)=3.52×10^{-5} *5*; α(P)=1.688×10^{-6} *24* Ice(K)=0.11 (1980Ab18).
[x]222.0[b] *7*									
224.02 *8*	0.078 *15*	608.502	3/2$^-$	384.341	5/2$^-$	M1		0.294 *4*	%Iγ=0.028 *6* α(K)exp=0.23 *4* (1980Ab18) α(K)=0.2474 *35*; α(L)=0.0366 *5*; α(M)=0.00812 *11* α(N)=0.001893 *27*; α(O)=0.000274 *4*; α(P)=1.516×10^{-5} *21* Mult.: some E2 admixture is also possible (1980Ab18).
233.280 *13*	0.290 *9*	589.759	3/2$^+$	356.525	3/2$^-$	E1		0.0349 *5*	%Iγ=0.103 *6* α(K)exp=0.033 *7* (1980Ab18) α(K)=0.0294 *4*; α(L)=0.00431 *6*; α(M)=0.000952 *13* α(N)=0.0002197 *31*; α(O)=3.06×10^{-5} *4*; α(P)=1.481×10^{-6} *21* Uncertainty in Eγ increased to 0.026 keV for least-squares fitting.
234.789 *22*	0.183 *7*	477.758	5/2$^-$	242.929	3/2$^-$	M1(+E2)	<1.2	0.226 *33*	α(K)exp=0.20 *5* (1980Ab18)

γ(^{165}Er) (continued)

Eγ[‡]	Iγ[‡c]	Ei(level)	J_i^π	Ef	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
									α(K)=0.183 34; α(L)=0.0334 13; α(M)=0.0076 4 α(N)=0.00175 9; α(O)=0.000242 4; α(P)=1.09×10^{-5} 25 %Iγ=0.065 4 Ice(K)=0.18 3 (1980Ab18).
238.471[d] 18	0.45[d] 4	534.571	3/2$^+$	296.124	5/2$^-$	(E1)		0.0330 5	α(K)exp=0.035 7 (1980Ab18) α(K)=0.0278 4; α(L)=0.00407 6; α(M)=0.000899 13 α(N)=0.0002074 29; α(O)=2.89×10^{-5} 4; α(P)=1.404×10^{-6} 20 %Iγ=0.160 16
238.471[d] 18	0.45[d] 4	745.946	1/2$^+$	507.421	1/2$^+$	[M1]		0.2481 35	%Iγ=0.160 16 α(K)=0.2086 29; α(L)=0.0308 4; α(M)=0.00683 10 α(N)=0.001593 22; α(O)=0.0002306 32; α(P)=1.277×10^{-5} 18 Uncertainty in Eγ increased to 0.036 keV for least-squares fitting. Mult.: (E1) listed by 1980Ab18 is inconsistent with 1/2$^+$ to 1/2$^+$ transition.
242.917 7	100.0 20	242.929	3/2$^-$	0.0	5/2$^-$	M1+E2	0.12 +5−7	0.234 4	K:L1:L2:L3=686:100:9.2:1.6 (1970Ab18) α(K)=0.1968 31; α(L)=0.0293 4; α(M)=0.00651 9 α(N)=0.001517 21; α(O)=0.0002192 31; α(P)=1.203×10^{-5} 20 %Iγ=35.5 17 M1:M2:M3=100:9.1:≈1.8 (1970Ab18). α(K)=0.197 4 from BrIcc was used for normalization of α(K)exp for other transitions. Ice(K):Ice(L1):Ice(L2):Ice(L3)=100:14.6:1.34:0.24 (1980Ab18). Ice(K)=100.0 19. δ(E2/M1)=0.12 +5−7 from L- and M-subshell data.
248.962[d] 7	2.25[d] 6	296.124	5/2$^-$	47.158	5/2$^+$	(E1+M2)	0.08 +4−7	0.036 8	α(K)exp=0.0300 26; K:L1:L2:L3=714:100:13:14 (1970Ab18) %Iγ=0.80 4 α(K)=0.030 6; α(L)=0.0047 13; α(M)=1.04×10^{-3} 29 α(N)=2.4×10^{-4} 7; α(O)=3.4×10^{-5} 10; α(P)=1.7×10^{-6} 5 Ice(K):Ice(L1):Ice(L2)=0.29 3:0.06 1:0.082 8 (1980Ab18). Ice(K)=0.54 5 for doublet. δ(M2/E1)=+0.42 2 (γγ(θ)) (1988Ul02).
248.962[d] 7	<2.25[d]	605.486	(3/2$^+$)	356.525	3/2$^-$	(E1+M2)	0.08 +4−7	0.036 8	α(K)exp=0.030 3 (1982Vy03); α(K)exp=0.026 6 (1980Ab18) K:L1:L2=714:100:14 (1970Ab18) %Iγ<0.80 α(K)=0.030 6; α(L)=0.0047 13; α(M)=1.04×10^{-3} 29 α(N)=2.4×10^{-4} 7; α(O)=3.4×10^{-5} 10; α(P)=1.7×10^{-6} 5 Ice(K):Ice(L1):Ice(L2)0.29 3:0.06 1:0.08 1 (1980Ab18).

$^{165}_{68}$Er$_{97}$-11

$\gamma(^{165}$Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[†]	Comments
249.83 *4*	0.40 *4*	1103.501	3/2$^+$	853.538	3/2$^+$	M1,E2	0.17 *5*	%Iγ=0.142 *16* α(K)exp=0.130 (1980Ab18) α(K)=0.13 *5*; α(L)=0.0278 *8*; α(M)=0.0064 *4* α(N)=0.00147 *7*; α(O)=0.000198 *6*; α(P)=7.7×10^{-6} *35* Uncertainty in Eγ increased to 0.08 keV for least-squares fitting. Ice(K)=0.28 3 (1980Ab18).
251.7[b] *3*	0.033[&]	608.502	3/2$^-$	356.525	3/2$^-$	(M1)	0.2142 *31*	α(K)=0.1801 *26*; α(L)=0.0266 *4*; α(M)=0.00589 *8* α(N)=0.001374 *20*; α(O)=0.0001989 *29*; α(P)=1.102×10^{-5} *16* %Iγ=0.0117 Ice(K)=0.030 1 (1980Ab18).
[x]253.45 *5*	0.18 *4*					E1	0.0283 *4*	α(K)exp=0.023 *4* (1980Ab18) α(K)=0.02382 *33*; α(L)=0.00347 *5*; α(M)=0.000767 *11* α(N)=0.0001771 *25*; α(O)=2.475×10^{-5} *35*; α(P)=1.211×10^{-6} *17* %Iγ=0.064 *15* Ice(K)=0.020 *4* (1980Ab18).
264.492 *7*	1.56 *4*	507.421	1/2$^+$	242.929	3/2$^-$	E1	0.0254 *4*	α(K)exp=0.0314 *26* (1980Ab18) α(K)=0.02140 *30*; α(L)=0.00311 *4*; α(M)=0.000687 *10* α(N)=0.0001586 *22*; α(O)=2.220×10^{-5} *31*; α(P)=1.092×10^{-6} *15* %Iγ=0.554 *27* Other: E1+M2 with δ=−0.33 *+6−7* (1988Ul02). Ice(K)=0.33 3. Ice(K)=0.16 3 (1980Ab18).
[x]275.7	0.6							%Iγ=0.21 E_γ: observed only in 1970Ab18; Iγ is from Ice(K).
[x]277.655 *33*	0.109 *5*					M1	0.1642 *23*	α(K)exp=0.15 *3* (1980Ab18) α(K)=0.1381 *19*; α(L)=0.02034 *28*; α(M)=0.00451 *6* α(N)=0.001051 *15*; α(O)=0.0001521 *21*; α(P)=8.44×10^{-6} *12* %Iγ=0.0387 *24* Ice(K)=0.082 *16* (1980Ab18).
279.264 *7*	1.69 *5*	356.525	3/2$^-$	77.258	7/2$^-$	E2	0.0860 *12*	α(K)exp=0.041 *5*; K:L1:L2:L3=700:100:80:50 (1970Ab18) α(K)=0.0619 *9*; α(L)=0.01862 *26*; α(M)=0.00437 *6* α(N)=0.001000 *14*; α(O)=0.0001275 *18*; α(P)=3.14×10^{-6} *4* %Iγ=0.600 *31* Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.53 *12*:0.074 *8*:0.056 *8*:0.041 *8* (1980Ab18). Ice(K)=0.50 *6*.
[x]282.40[b] *15*								
286.30[b] *15*	0.025[&]	384.341	5/2$^-$	97.958	9/2$^+$	[M2]	0.643 *9*	α(K)=0.515 *7*; α(L)=0.0992 *14*; α(M)=0.02274 *32* α(N)=0.00532 *8*; α(O)=0.000757 *11*; α(P)=3.91×10^{-5} *6* %Iγ=0.0089 Ice(K)=0.077 *16* (1980Ab18).
292.410 *14*	3.58 *11*	589.882	1/2$^-$	297.367	1/2$^-$	(M1)	0.1428 *20*	%Iγ=1.27 *7* α(K)exp=0.09 *3*; K:L1:L2:L3=667:100:13:13 (1970Ab18)

$^{165}_{68}Er_{97}$-12

γ(^{165}Er) (continued)

Eγ[‡]	Iγ[‡c]	E_i(level)	$J_i^π$	E_f	$J_f^π$	Mult.[#]	δ[#]	α[†]	Comments
									α(K)=0.1202 *17*; α(L)=0.01767 *25*; α(M)=0.00391 *5* α(N)=0.000913 *13*; α(O)=0.0001322 *19*; α(P)=$7.34×10^{-6}$ *10* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.056 keV for least-squares fitting. Mult.: (M1) in 1982Vy03, M1+E2 in 1980Ab18; $ΔJ^π$ requires M1. Ice(K):Ice(L1):Ice(L2):Ice(L3)=1.8 *3*:0.24 *3*:0.033 *8*:0.033 *8* (1980Ab18). Ice(K)=2.2 8.
296.119 *9*	10.92 *24*	296.124	5/2⁻	0.0	5/2⁻	M1+E2	<0.40	0.134 *5*	%Iγ=3.88 *19* α(K)exp=0.050 *11* α(K)=0.112 *5*; α(L)=0.01693 *28*; α(M)=0.00376 *6* α(N)=0.000877 *13*; α(O)=0.0001261 *25*; α(P)=$6.79×10^{-6}$ *32* Mult.: E2 in 1982Vy03. K:L1:L2=677:100:≈10:≤3.1 (1970Ab18). Ice(K):Ice(L1):Ice(L2)=6.8 *12*:1.00 *12*:0.10 *2* (1980Ab18). Ice(K)=3.7 *9*. δ: from K, L1 and L2 intensities.
297.369 *6*	35.8 *7*	297.367	1/2⁻	0.0	5/2⁻	E2		0.0709 *10*	α(K)exp=0.054 *4*; K:L1:L2:L3=722:100:94:67 (1970Ab18) M1:M2:M3=100:100:77 (1970Ab18) α(K)=0.0518 *7*; α(L)=0.01476 *21*; α(M)=0.00345 *5* α(N)=0.000790 *11*; α(O)=0.0001015 *14*; α(P)=$2.66×10^{-6}$ *4* %Iγ=12.7 *6* Ice(K):Ice(L1):Ice(L2):Ice(L3)=10.0 *16*:1.4 *2*:1.30 *12*:0.93 *12* (1980Ab18). Ice(K)=13.1 *11*.
ˣ304.0[b] *2*									
307.067 *11*	0.446 *12*	384.341	5/2⁻	77.258	7/2⁻	M1(+E2)	<0.9	0.112 *14*	α(K)exp=0.11 *3* (1980Ab18); α(K)exp=0.057 *7* (1982Vy03) α(K)=0.092 *13*; α(L)=0.0150 *6*; α(M)=0.00335 *9* α(N)=0.000778 *24*; α(O)=0.000110 *6*; α(P)=$5.5×10^{-6}$ *9* %Iγ=0.158 *8* Mult.: E2 in 1982Vy03. δ(E2/M1) from α(K)exp in 1980Ab18. α(K)exp in 1982Vy03 gives M1+E2, δ=2.0 *5*. Ice(K)=0.176 22. Ice(K)=0.25 4 (1980Ab18).
309.4[b] *3*	0.22[&]	356.525	3/2⁻	47.158	5/2⁺	(E1)		0.01717 *24*	α(K)=0.01450 *21*; α(L)=0.002089 *30*; α(M)=0.000461 *7* α(N)=0.0001065 *15*; α(O)=$1.498×10^{-5}$ *21*; α(P)=$7.51×10^{-7}$ *11* %Iγ=0.078 Ice(K)≈0.016 (1980Ab18).
312.327 *12*	1.31 *7*	608.502	3/2⁻	296.124	5/2⁻	M1		0.1197 *17*	%Iγ=0.465 *32* α(K)exp=0.085 *6* α(K)=0.1008 *14*; α(L)=0.01479 *21*; α(M)=0.00327 *5*

$\gamma(^{165}$Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[†]	Comments
									α(N)=0.000764 *11*; α(O)=0.0001106 *15*; α(P)=6.15×10^{-6} *9* Uncertainty in Eγ increased to 0.024 keV for least-squares fitting. K:L1:L2:L3=700:100:≈10:<2.5 (1970Ab18). Ice(K):Ice(L1)=0.76 *8*:0.107 *12* (1980Ab18). Other: M1(+E2) with δ=−0.20 *17* ($\gamma\gamma(\theta)$) (1988Ul02). Ice(K)=0.76 5.
318.84 *7*	0.031 *7*	853.538	3/2$^+$	534.571	3/2$^+$	M1		0.1133 *16*	α(K)exp=0.10 *6* α(K)=0.0954 *13*; α(L)=0.01399 *20*; α(M)=0.00310 *4* α(N)=0.000722 *10*; α(O)=0.0001046 *15*; α(P)=5.81×10^{-6} *8* %Iγ=0.0110 *25* Ice(K)=0.021 13.
[x]323.4[b] *2*									
330.777[@] *10*	0.248[@] *14*	920.716	1/2$^-$	589.882	1/2$^-$	M1[@]		0.1027 *14*	%Iγ=0.088 *6* α(K)exp=0.044 *2* α(K)=0.0865 *12*; α(L)=0.01267 *18*; α(M)=0.00281 *4* α(N)=0.000654 *9*; α(O)=9.48×10^{-5} *13*; α(P)=5.27×10^{-6} *7* Uncertainty in Eγ increased to 0.020 keV for least-squares fitting. Mult.: E2 in 1982Vy03, M1+E2 in 1980Ab18 for a complex line. Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.21 *4*:0.029 *3*:0.0033 *8*:0.0021 *4* (1980Ab18) (for 330.777γ+330.885γ).
330.885[@] *10*	0.322[@] *14*	920.716	1/2$^-$	589.759	3/2$^+$	E1[@]		0.01458 *20*	%Iγ=0.114 *7* α(K)=0.01232 *17*; α(L)=0.001767 *25*; α(M)=0.000389 *5* α(N)=9.01×10^{-5} *13*; α(O)=1.270×10^{-5} *18*; α(P)=6.41×10^{-7} *9* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.040 keV for least-squares fitting. Mult.: see comment for 330.777γ. Ice(K)=0.172 9 for doublet.
334.34 *10*	0.042 *6*	853.538	3/2$^+$	519.144	5/2$^+$	(M1,E2)		0.075 *25*	α(K)exp=0.02 (1980Ab18) α(K)=0.061 *23*; α(L)=0.0110 *13*; α(M)=0.00249 *24* α(N)=0.00058 *6*; α(O)=8.0×10^{-5} *13*; α(P)=3.5×10^{-6} *16* %Iγ=0.0149 *22*
346.825[@] *11*	0.62[@] *2*	589.759	3/2$^+$	242.929	3/2$^-$	E1[@]		0.01301 *18*	α(K)=0.01100 *15*; α(L)=0.001573 *22*; α(M)=0.000347 *5* α(N)=8.02×10^{-5} *11*; α(O)=1.132×10^{-5} *16*; α(P)=5.75×10^{-7} *8* %Iγ=0.220 *12* K:L1:L2=800:100:≈10 (1970Ab18).
346.933[@] *11*	8.1[@] *3*	589.882	1/2$^-$	242.929	3/2$^-$	M1(+E2)[@]	<0.53	0.086 *5*	%Iγ=2.88 *16* α(K)exp=0.073 *4* (1982Vy03); α(K)exp=0.076 *15* (1980Ab18) α(K)=0.072 *5*; α(L)=0.01086 *33*; α(M)=0.00241 *6*

γ(^{165}Er) (continued)

E_γ‡	I_γ‡c	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α†	Comments
									α(N)=0.000562 *16*; α(O)=8.08×10^{-5} *29*; α(P)=4.33×10^{-6} *32* δ: from α(K) value. Others: 0.086 (1983Mo10); −0.23 +*7*−*8* (γγ(θ)) (1988Ul02). Mult.: M1 in 1982Vy03. K:L1:L2=800:100:≈10 (1970Ab18). Ice(K):Ice(L1):Ice(L2)=3.3 *7*:0.41 *4*:≈0.04 (1980Ab18). (346.9γ)(242.9γ)(θ): A_2=+0.057 *11*, A_4=−0.034 *38* (1975Fu13). Ice(K)=4.30 *21* for doublet.
356.519 *12*	7.75 *23*	356.525	3/2$^-$	0.0	5/2$^-$	M1+E2	0.84 *13*	0.0665 *35*	%Iγ=2.75 *14* α(K)exp=0.0320 *19* α(K)=0.0546 *32*; α(L)=0.00928 *24*; α(M)=0.00209 *5* α(N)=0.000484 *12*; α(O)=6.78×10^{-5} *21*; α(P)=3.22×10^{-6} *21* Mult.: E2 in 1982Vy03. K:L1:L2:L3=833:100:20:≈10 (1970Ab18). Ice(K):Ice(L1):Ice(L2):Ice(L3)=2.1 *5*:0.28 *3*:0.056 *7*:≈0.028 (1980Ab18). Ice(K)=1.68 *10*. δ: from L1, L2 and L3 intensity ratios.
362.3^b *2*		605.486	(3/2$^+$)	242.929	3/2$^-$				
365.577 *8*	1.38 *4*	608.502	3/2$^-$	242.929	3/2$^-$	M1+E2	1.14 +*25*−*21*	0.056 *4*	α(K)exp=0.0429 *23* %Iγ=0.490 *25* α(K)=0.045 *4*; α(L)=0.00823 *29*; α(M)=0.00186 *6* α(N)=0.000431 *14*; α(O)=5.96×10^{-5} *25*; α(P)=2.64×10^{-6} *25* K:L1:L2:L3=700:100:≤20:<10 (1970Ab18). Ice(K):Ice(L1):Ice(L2)=0.41 *8*:0.066 *8*:≤0.016 (1980Ab18). Ice(K)=0.403 21.
372.8^b *4*	0.05&	372.716	7/2$^-$	0.0	5/2$^-$	[M1+E2]		0.056 *19*	α(K)=0.045 *18*; α(L)=0.0079 *13*; α(M)=0.00179 *25* α(N)=0.00041 *6*; α(O)=5.8×10^{-5} *11*; α(P)=2.7×10^{-6} *12* %Iγ=0.018 Ice(K)=0.016 *5* (1980Ab18).
^{x}377.4^b *2*									
384.53 *4*	0.43 *5*	384.341	5/2$^-$	0.0	5/2$^-$	M1+E2	1.1 +*8*−*5*	0.050 *10*	%Iγ=0.153 *19* α(K)exp=0.05 *1* (1980Ab18); α(K)exp=0.037 *5* (1982Vy03); K:L1=1.3:0.2 (1970Ab18) α(K)=0.040 *9*; α(L)=0.0071 *7*; α(M)=0.00161 *14* α(N)=0.000372 *34*; α(O)=5.2×10^{-5} *6*; α(P)=2.4×10^{-6} *6* Uncertainty in Eγ increased to 0.08 keV for least-squares fitting. Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.11 *2*:0.014 *3*:0.028 *3*:≤0.014 (1980Ab18). δ: from α(K)exp (1980Ab18,1982Vy03) and K/L1 ratios in 1980Ab18 and 1970Ab18.

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[†]	Comments
389.404 14	7.94 18	745.946	1/2$^+$	356.525	3/2$^-$	E1	0.00988 14	α(K)exp=0.0064 4 α(K)=0.00836 12; α(L)=0.001188 17; α(M)=0.000262 4 α(N)=6.06×10^{-5} 8; α(O)=8.57×10^{-6} 12; α(P)=4.41×10^{-7} 6 %Iγ=2.82 14 K:L1:L2=717:100:<17 (1970Ab18). Ice(K):Ice(L1):Ice(L2):Ice(L3)=0.33 3:0.041 4:≈0.004:≈0.003 (1980Ab18). Other: δ(M2/E1)=−0.13 +3−2 ($\gamma\gamma(\theta)$) (1988Ul02). Ice(K)=0.341 20.
400.520 11	0.393 9	477.758	5/2$^-$	77.258	7/2$^-$	[M1+E2]	0.046 16	α(K)=0.038 15; α(L)=0.0064 12; α(M)=0.00145 24 α(N)=0.00034 6; α(O)=4.7×10^{-5} 10; α(P)=2.2×10^{-6} 10 %Iγ=0.140 7
410.02 7	0.097 10	999.853	3/2$^+$	589.759	3/2$^+$	M1	0.0583 8	α(K)exp=0.065 13 α(K)=0.0492 7; α(L)=0.00715 10; α(M)=0.001583 22 α(N)=0.000369 5; α(O)=5.35×10^{-5} 7; α(P)=2.98×10^{-6} 4 %Iγ=0.034 4 Ice(K)=0.040 7.
413.294 23	0.232 18	920.716	1/2$^-$	507.421	1/2$^+$	(E1)	0.00860 12	α(K)exp=0.013 8 α(K)=0.00728 10; α(L)=0.001030 14; α(M)=0.0002268 32 α(N)=5.26×10^{-5} 7; α(O)=7.45×10^{-6} 10; α(P)=3.85×10^{-7} 5 %Iγ=0.082 7 Ice(K)=0.020 13.
415.12 3	0.171 8	477.758	5/2$^-$	62.672	7/2$^+$	[E1]	0.00851 12	α(K)=0.00721 10; α(L)=0.001020 14; α(M)=0.0002245 31 α(N)=5.20×10^{-5} 7; α(O)=7.38×10^{-6} 10; α(P)=3.82×10^{-7} 5 %Iγ=0.061 4
416.88 10	0.056 7	1416.72	3/2$^-$	999.853	3/2$^+$	[E1]	0.00843 12	%Iγ=0.0199 26 α(K)=0.00714 10; α(L)=0.001010 14; α(M)=0.0002223 31 α(N)=5.15×10^{-5} 7; α(O)=7.30×10^{-6} 10; α(P)=3.78×10^{-7} 5
421.179 10	0.921 20	519.144	5/2$^+$	97.958	9/2$^+$	E2	0.0259 4	α(K)exp=0.0155 17 α(K)=0.02020 28; α(L)=0.00444 6; α(M)=0.001021 14 α(N)=0.0002350 33; α(O)=3.13×10^{-5} 4; α(P)=1.097×10^{-6} 15 %Iγ=0.327 16 Ice(K)=0.097 10.
427.56 12	0.100 6	962.422	3/2$^-$	534.571	3/2$^+$	[E1]	0.00795 11	%Iγ=0.0355 26 α(K)=0.00674 9; α(L)=0.000951 13; α(M)=0.0002094 29 α(N)=4.85×10^{-5} 7; α(O)=6.89×10^{-6} 10; α(P)=3.57×10^{-7} 5
430.594 21	0.79 4	477.758	5/2$^-$	47.158	5/2$^+$	E1	0.00782 11	α(K)exp=0.0064 6 α(K)=0.00663 9; α(L)=0.000936 13; α(M)=0.0002059 29 α(N)=4.77×10^{-5} 7; α(O)=6.77×10^{-6} 9; α(P)=3.52×10^{-7} 5 %Iγ=0.281 19 Ice(K)=0.034 3.
442.980 16	2.06 8	920.716	1/2$^-$	477.758	5/2$^-$	E2	0.02261 32	α(K)exp=0.0107 10 (1982Vy03)

$^{165}_{68}$Er$_{97}$-16

$\gamma(^{165}$Er) (continued)

E_γ [‡]	I_γ [‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	α [†]	Comments
									α(K)=0.01774 25; α(L)=0.00378 5; α(M)=0.000867 12
									α(N)=0.0001997 28; α(O)=2.67×10^{-5} 4; α(P)=9.69×10^{-7} 14
									%Iγ=0.73 4
									K:L1:L2:L3=880:100:≈24:≤12 (1970Ab18).
									Ice(K)=0.150 14.
448.580 14	4.59 15	745.946	1/2$^+$	297.367	1/2$^-$	E1		0.00713 10	α(K)exp=0.0044 4 (1982Vy03)
									α(K)=0.00604 8; α(L)=0.000850 12; α(M)=0.0001871 26
									α(N)=4.34×10^{-5} 6; α(O)=6.16×10^{-6} 9; α(P)=3.21×10^{-7} 4
									%Iγ=1.63 9
									K:L1:L2=800:100:<16 (1970Ab18).
									Ice(K)=0.137 10.
456.459 15	3.52 16	519.144	5/2$^+$	62.672	7/2$^+$	M1+E2	0.62 11	0.0377 17	α(K)exp=0.0251 17 (1982Vy03); K:L1:L2:L3=700:100:8:4 (1970Ab18)
									%Iγ=1.25 8
									α(K)=0.0314 15; α(L)=0.00485 16; α(M)=0.001081 33
									α(N)=0.000251 8; α(O)=3.59×10^{-5} 12; α(P)=1.88×10^{-6} 10
									Ice(K)=0.60 3.
460.263 16	11.6 4	507.421	1/2$^+$	47.158	5/2$^+$	E2		0.02042 29	α(K)exp=0.0126 7 (1982Vy03); K:L1:L2:L3=706:100:48:24 (1970Ab18)
									α(K)=0.01609 23; α(L)=0.00335 5; α(M)=0.000768 11
									α(N)=0.0001769 25; α(O)=2.374×10^{-5} 33; α(P)=8.83×10^{-7} 12
									%Iγ=4.12 23
									δ: δ=0.0 (E2+M3) from $\gamma\gamma(\theta)$ (1988Ul02).
									Ice(K)=0.99 4.
471.979 10	0.994 23	519.144	5/2$^+$	47.158	5/2$^+$	M1+E2	0.79 14	0.0323 19	α(K)exp=0.0242 13 (1982Vy03)
									α(N)=0.000220 9; α(O)=3.12×10^{-5} 14; α(P)=1.59×10^{-6} 11
									%Iγ=0.353 17
									α(K)=0.0268 17; α(L)=0.00424 17; α(M)=0.00095 4
									K:L1:L2:L3=600:100:12:≤4 (1970Ab18).
									Ice(K)=0.164 9.
477.791 23	1.13 4	477.758	5/2$^-$	0.0	5/2$^-$	M1+E2	1.2 4	0.027 4	α(K)exp=0.0213 16
									α(K)=0.022 4; α(L)=0.0037 4; α(M)=0.00084 8
									α(N)=0.000194 18; α(O)=2.72×10^{-5} 29; α(P)=1.30×10^{-6} 24
									%Iγ=0.401 22
									K:L1:L2=733:100:<20 (1970Ab18).
									Ice(K)=0.183 13.
^{x}480.23 8	0.136 10								%Iγ=0.048 4
484.73 3	0.302 17	962.422	3/2$^-$	477.758	5/2$^-$				%Iγ=0.107 8
487.399 10	2.94 6	534.571	3/2$^+$	47.158	5/2$^+$	M1		0.0373 5	α(K)exp=0.0205 11 (1982Vy03)
									α(K)=0.0314 4; α(L)=0.00455 6; α(M)=0.001005 14
									α(N)=0.0002344 33; α(O)=3.40×10^{-5} 5; α(P)=1.901×10^{-6} 27

γ(^{165}Er) (continued)

$E_γ$[‡]	$I_γ$[‡c]	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult.[#]	α[†]	Comments
								%Iγ=1.04 *5* K:L1:L2:L3=650:100:7.7:<5 (1970Ab18). Ice(K)=0.452 24.
492.41 *3*	0.276 *19*	999.853	3/2$^+$	507.421	1/2$^+$	(E2)	0.01711 *24*	α(K)exp=0.011 *6* α(K)=0.01360 *19*; α(L)=0.00272 *4*; α(M)=0.000622 *9* α(N)=0.0001435 *20*; α(O)=1.938×10^{-5} *27*; α(P)=7.51×10^{-7} *11* %Iγ=0.098 *8* Ice(K)=0.020 12.
494.94 *5*	0.148 *8*	1103.501	3/2$^+$	608.502	3/2$^-$	[E1]	0.00571 *8*	%Iγ=0.053 *4* α(K)=0.00485 *7*; α(L)=0.000678 *9*; α(M)=0.0001492 *21* α(N)=3.46×10^{-5} *5*; α(O)=4.93×10^{-6} *7*; α(P)=2.59×10^{-7} *4*
496.98 *13*	0.045 *15*	853.538	3/2$^+$	356.525	3/2$^-$	[E1]	0.00566 *8*	%Iγ=0.016 *5* α(K)=0.00480 *7*; α(L)=0.000672 *9*; α(M)=0.0001478 *21* α(N)=3.43×10^{-5} *5*; α(O)=4.88×10^{-6} *7*; α(P)=2.57×10^{-7} *4*
513.627[@] *14*	0.23[@]	1103.501	3/2$^+$	589.882	1/2$^-$	E1[@]	0.00526 *7*	α(K)=0.00447 *6*; α(L)=0.000624 *9*; α(M)=0.0001372 *19* α(N)=3.18×10^{-5} *4*; α(O)=4.54×10^{-6} *6*; α(P)=2.394×10^{-7} *34* %Iγ=0.082
513.735[@] *14*	0.68[@] *5*	1103.501	3/2$^+$	589.759	3/2$^+$	M1[@]	0.0325 *5*	α(K)exp=0.0218 *27* α(K)=0.0275 *4*; α(L)=0.00397 *6*; α(M)=0.000877 *12* α(N)=0.0002044 *29*; α(O)=2.97×10^{-5} *4*; α(P)=1.659×10^{-6} *23* %Iγ=0.241 *21* K:L1:L2=700:100:≤40 (1970Ab18). Ice(K)=0.136 15 for doublet.
[x]525.65[a] *4*	0.296 *21*							%Iγ=0.105 *9*
527.106 *12*	2.66 *6*	589.759	3/2$^+$	62.672	7/2$^+$	E2	0.01437 *20*	α(K)exp=0.0078 *6* (1982Vy03) α(K)=0.01151 *16*; α(L)=0.002225 *31*; α(M)=0.000506 *7* α(N)=0.0001169 *16*; α(O)=1.589×10^{-5} *22*; α(P)=6.40×10^{-7} *9* %Iγ=0.94 *5* K:L1:L2:L3=667:100:33:≈23 (1970Ab18). Ice(K)=0.157 *11*.
531.243 *26*	0.372 *13*	608.502	3/2$^-$	77.258	7/2$^-$	E2	0.01409 *20*	α(K)exp=0.008 *3* α(K)=0.01129 *16*; α(L)=0.002174 *30*; α(M)=0.000495 *7* α(N)=0.0001142 *16*; α(O)=1.553×10^{-5} *22*; α(P)=6.28×10^{-7} *9* %Iγ=0.132 *7* Ice(K)=0.020 7.
534.72 *7*	0.094 *10*	534.571	3/2$^+$	0.0	5/2$^-$	(E1)	0.00482 *7*	α(K)exp=0.0035 *20* α(K)=0.00409 *6*; α(L)=0.000570 *8*; α(M)=0.0001253 *18* α(N)=2.91×10^{-5} *4*; α(O)=4.15×10^{-6} *6*; α(P)=2.197×10^{-7} *31* %Iγ=0.033 *4* α(K)exp=0.36 *20* in 1982Vy03 is a misprint. Ice(K)=0.022 12.
537.17 *3*	0.206 *20*	920.716	1/2$^-$	384.341	5/2$^-$	E2	0.01371 *19*	%Iγ=0.073 *8*

$^{165}_{68}Er_{97}$-18

$\gamma(^{165}$Er) (continued)

E_γ [‡]	I_γ [‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]	δ [#]	α [†]	Comments
									α(K)exp=0.018 *5* α(K)=0.01100 *15*; α(L)=0.002105 *29*; α(M)=0.000479 *7* α(N)=0.0001105 *15*; α(O)=1.505×10^{-5} *21*; α(P)=6.12×10^{-7} *9* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.30 keV for least-squares fitting. Ice(K)=0.025 5.
542.622 *11*	4.04 *21*	589.759	3/2$^+$	47.158	5/2$^+$	M1+E2	0.61 *17*	0.0242 *17*	α(K)exp=0.0165 *15* (1982Vy03) %Iγ=1.43 *10* α(K)=0.0203 *15*; α(L)=0.00306 *16*; α(M)=0.000680 *34* α(N)=0.000158 *8*; α(O)=2.27×10^{-5} *13*; α(P)=1.21×10^{-6} *9* K:L1:L2:L3=686:100:8.6:≤4 (1970Ab18). Ice(K)=0.45 *3*.
557.38 *4*	0.52 *6*	853.538	3/2$^+$	296.124	5/2$^-$	[E1]		0.00441 *6*	%Iγ=0.185 *23* α(K)=0.00374 *5*; α(L)=0.000520 *7*; α(M)=0.0001143 *16* α(N)=2.65×10^{-5} *4*; α(O)=3.79×10^{-6} *5*; α(P)=2.013×10^{-7} *28*
558.74 *3*	0.89 *4*	1411.92	3/2$^+$	853.538	3/2$^+$	M1		0.0263 *4*	%Iγ=0.316 *20* α(K)exp=0.022 *3* (1982Vy03); K:L1:L2=600:100:25 (1970Ab18) α(K)=0.02217 *31*; α(L)=0.00319 *4*; α(M)=0.000705 *10* α(N)=0.0001645 *23*; α(O)=2.387×10^{-5} *33*; α(P)=1.337×10^{-6} *19* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.24 keV for least-squares fitting. Ice(K)=0.204 *13*.
564.183 *17*	6.5 *4*	920.716	1/2$^-$	356.525	3/2$^-$	M1		0.0256 *4*	α(K)exp=0.0223 *18* (1982Vy03) α(K)=0.02163 *30*; α(L)=0.00311 *4*; α(M)=0.000688 *10* α(N)=0.0001604 *22*; α(O)=2.328×10^{-5} *33*; α(P)=1.304×10^{-6} *18* %Iγ=2.31 *17* K:L1:L2:L3=685:100:7.7:<2.3 (1970Ab18). M1+E2 in $\gamma\gamma(\theta)$ (1988Ul02) with δ=−0.18 *4* ($\gamma\gamma(\theta)$) (1988Ul02). Ice(K)=0.97 3.
570.4 *8*	0.023 *6*	1103.501	3/2$^+$	534.571	3/2$^+$				%Iγ=0.0082 *22*
573.882 *12*	0.97 *4*	1427.411	3/2$^+$	853.538	3/2$^+$	M1+E2	1.2 *4*	0.0169 *26*	α(K)exp=0.0140 *17* (1982Vy03) α(N)=0.000117 *13*; α(O)=1.65×10^{-5} *20*; α(P)=8.2×10^{-7} *15* %Iγ=0.344 *20* α(K)=0.0140 *23*; α(L)=0.00225 *25*; α(M)=0.00050 *5* K:L1:L2=545:100:≤23 (1970Ab18). Ice(K)=0.095 *10*.
578.049 *16*	0.467 *12*	962.422	3/2$^-$	384.341	5/2$^-$	M1		0.02409 *34*	α(K)exp=0.0205 *13* (1982Vy03) α(K)=0.02034 *28*; α(L)=0.00293 *4*; α(M)=0.000646 *9* α(N)=0.0001507 *21*; α(O)=2.187×10^{-5} *31*; α(P)=1.226×10^{-6} *17* %Iγ=0.166 *8* K:L1:L2=625:100:<50 (1970Ab18). Ice(K)=0.0650 20.

γ(^{165}Er) (continued)

Eγ[‡]	Iγ[‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
589.912 *15*	5.13 *22*	589.882	1/2⁻	0.0	5/2⁻	E2	0.01088 *15*	α(K)exp=0.0073 *6* (1982Vy03) α(K)=0.00881 *12*; α(L)=0.001612 *23*; α(M)=0.000365 *5* α(N)=8.44×10⁻⁵ *12*; α(O)=1.158×10⁻⁵ *16*; α(P)=4.93×10⁻⁷ *7* %Iγ=1.82 *11* K:L1:L2:L3=866:100:27:≈17 (1970Ab18). Ice(K)=0.251 *16*.
595.95 *13*	0.066 *20*	1103.501	3/2⁺	507.421	1/2⁺			%Iγ=0.023 *7*
605.93[d] *3*	0.46[d] *3*	605.486	(3/2⁺)	0.0	5/2⁻	[E1]	0.00369 *5*	%Iγ=0.163 *13* α(K)=0.00313 *4*; α(L)=0.000434 *6*; α(M)=9.52×10⁻⁵ *13* α(N)=2.210×10⁻⁵ *31*; α(O)=3.16×10⁻⁶ *4*; α(P)=1.692×10⁻⁷ *24* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.24 keV for least-squares fitting.
605.93[d] *3*	0.46[d] *3*	962.422	3/2⁻	356.525	3/2⁻	E2	0.01020 *14*	α(K)exp=0.0067 *24* α(K)=0.00827 *12*; α(L)=0.001496 *21*; α(M)=0.000339 *5* α(N)=7.83×10⁻⁵ *11*; α(O)=1.076×10⁻⁵ *15*; α(P)=4.64×10⁻⁷ *7* %Iγ=0.163 *13* Ice(K)=0.021 7.
608.527 *16*	1.27 *4*	608.502	3/2⁻	0.0	5/2⁻	E2	0.01009 *14*	α(K)exp=0.0085 *9*; K:L1=600:100 (1970Ab18) α(K)=0.00819 *11*; α(L)=0.001479 *21*; α(M)=0.000335 *5* α(N)=7.73×10⁻⁵ *11*; α(O)=1.064×10⁻⁵ *15*; α(P)=4.60×10⁻⁷ *6* %Iγ=0.451 *24* Ice(K)=0.074 8.
610.616 *17*	1.35 *4*	853.538	3/2⁺	242.929	3/2⁻	(E1)	0.00363 *5*	α(K)exp=0.0054 *13* α(K)=0.00308 *4*; α(L)=0.000426 *6*; α(M)=9.37×10⁻⁵ *13* α(N)=2.174×10⁻⁵ *30*; α(O)=3.11×10⁻⁶ *4*; α(P)=1.666×10⁻⁷ *23* %Iγ=0.479 *25* Ice(K)=0.049 11.
623.39 *3*	0.549 *17*	920.716	1/2⁻	297.367	1/2⁻	M1	0.01989 *28*	α(K)exp=0.0214 *13* α(K)=0.01681 *24*; α(L)=0.002411 *34*; α(M)=0.000532 *7* α(N)=0.0001242 *17*; α(O)=1.803×10⁻⁵ *25*; α(P)=1.011×10⁻⁶ *14* %Iγ=0.195 *10* Ice(K)=0.0798 18.
ˣ654.54[a] *8*	0.068 *8*							%Iγ=0.0241 *30*
ˣ660.62[a] *21*	0.050 *13*							%Iγ=0.018 *5*
665.067 *20*	1.06 *3*	962.422	3/2⁻	297.367	1/2⁻	M1	0.01690 *24*	α(K)exp=0.0152 *11* (1982Vy03) α(K)=0.01429 *20*; α(L)=0.002045 *29*; α(M)=0.000451 *6* α(N)=0.0001053 *15*; α(O)=1.529×10⁻⁵ *21*; α(P)=8.59×10⁻⁷ *12* %Iγ=0.376 *19* K:L1:L2:L3=600:100:<50:10 (1970Ab18). Ice(K)=0.110 5.
677.85 *3*	0.417 *16*	920.716	1/2⁻	242.929	3/2⁻	M1	0.01611 *23*	α(K)exp=0.0133 *9*

$^{165}_{68}$Er$_{97}$-20

γ(^{165}Er) (continued)

Eγ[‡]	Iγ[‡c]	Ei(level)	Jπi	Ef	Jπf	Mult.[#]	α[†]	Comments
								α(K)=0.01362 *19*; α(L)=0.001948 *27*; α(M)=0.000430 *6* α(N)=0.0001003 *14*; α(O)=1.456×10^{-5} *20*; α(P)=8.18×10^{-7} *11* %Iγ=0.148 *9* K:L1:L2=667:100:<33 (1970Ab18). Ice(K)=0.0378 10.
680.613 *19*	0.258 *8*	1289.094	3/2^{-}	608.502	3/2^{-}	M1	0.01595 *22*	α(K)exp=0.0145 *9* (1982Vy03) α(K)=0.01348 *19*; α(L)=0.001928 *27*; α(M)=0.000426 *6* α(N)=9.93×10^{-5} *14*; α(O)=1.442×10^{-5} *20*; α(P)=8.10×10^{-7} *11* %Iγ=0.092 *5* K:L1:L2=583:100:<33 (1970Ab18). Ice(K)=0.0255 7.
698.843 *16*	3.62 *13*	745.946	1/2^{+}	47.158	5/2^{+}	E2	0.00730 *10*	%Iγ=1.29 *7* α(K)exp=0.0065 *4* (1982Vy03); K:L1=520:100 (1970Ab18) α(K)=0.00599 *8*; α(L)=0.001021 *14*; α(M)=0.0002298 *32* α(N)=5.32×10^{-5} *7*; α(O)=7.40×10^{-6} *10*; α(P)=3.38×10^{-7} *5* Uncertainty in Eγ increased to 0.032 keV for least-squares fitting. Ice(K)=0.158 5.
703.66 *19*	0.050 *7*	999.853	3/2^{+}	296.124	5/2^{-}	[E1]	0.00271 *4*	%Iγ=0.0178 *26* α(K)=0.002303 *32*; α(L)=0.000316 *4*; α(M)=6.94×10^{-5} *10* α(N)=1.610×10^{-5} *23*; α(O)=2.310×10^{-6} *32*; α(P)=1.250×10^{-7} *18*
[x]712.59[a] *6*	0.066 *11*							%Iγ=0.023 *4*
[x]716.96[a] *5*	0.087 *8*					M1	0.01400 *20*	α(K)exp=0.0092 *13* α(K)=0.01184 *17*; α(L)=0.001690 *24*; α(M)=0.000373 *5* α(N)=8.70×10^{-5} *12*; α(O)=1.264×10^{-5} *18*; α(P)=7.11×10^{-7} *10* %Iγ=0.0309 *31* Ice(K)=0.0055 *5*.
719.58[d] *8*	0.049[d] *6*	962.422	3/2^{-}	242.929	3/2^{-}			%Iγ=0.0174 *23*
719.58[d] *8*	0.049[d] *6*	1103.501	3/2^{+}	384.341	5/2^{-}	[E1]	0.00259 *4*	%Iγ=0.0174 *23* α(K)=0.002201 *31*; α(L)=0.000302 *4*; α(M)=6.62×10^{-5} *9* α(N)=1.537×10^{-5} *22*; α(O)=2.207×10^{-6} *31*; α(P)=1.196×10^{-7} *17* Uncertainty in Eγ increased to 0.16 keV for least-squares fitting.
[x]742.84[a] *6*	0.080 *10*					M1	0.01282 *18*	α(K)exp=0.0078 *23* α(K)=0.01084 *15*; α(L)=0.001546 *22*; α(M)=0.000341 *5* α(N)=7.95×10^{-5} *11*; α(O)=1.156×10^{-5} *16*; α(P)=6.50×10^{-7} *9* %Iγ=0.028 *4* Ice(K)=0.0043 *11*.
747.00 *6*	0.50 *3*	1103.501	3/2^{+}	356.525	3/2^{-}	[E1]	2.40×10^{-3} *3*	α(K)exp=0.0062 *5* %Iγ=0.178 *13* α(K)=0.002042 *29*; α(L)=0.000279 *4*; α(M)=6.13×10^{-5} *9*

$^{165}_{68}Er_{97}$-21

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[†]	Comments
								α(N)=1.424×10^{-5} 20; α(O)=2.045×10^{-6} 29; α(P)=1.111×10^{-7} 16 α(K)exp is close to α(K)(theory)=0.0052 for E2 and disagrees with mult=E1 from level scheme. Ice(K)=0.0299 16.
749.01 13	0.212 20	1339.41	5/2$^-$	589.882	1/2$^-$	[E2]	0.00624 9	%Iγ=0.075 8 α(K)=0.00514 7; α(L)=0.000856 12; α(M)=0.0001920 27 α(N)=4.45×10^{-5} 6; α(O)=6.21×10^{-6} 9; α(P)=2.91×10^{-7} 4 Uncertainty in Eγ increased to 0.26 keV for least-squares fitting. E$_\gamma$: γ to 589.905 and/or 589.781.
^{x}773.42[a] 18	0.050 10							%Iγ=0.018 4
790.873 18	1.29 3	853.538	3/2$^+$	62.672	7/2$^+$	E2	0.00553 8	α(K)exp=0.0038 3 α(K)=0.00457 6; α(L)=0.000747 10; α(M)=0.0001674 23 α(N)=3.88×10^{-5} 5; α(O)=5.44×10^{-6} 8; α(P)=2.59×10^{-7} 4 %Iγ=0.458 22 Ice(K)=0.0359 12.
^{x}793.72[a] 10	0.082 10							%Iγ=0.029 4
806.372 17	26.8 9	853.538	3/2$^+$	47.158	5/2$^+$	M1	0.01046 15	α(K)exp=0.0088 4 α(K)=0.00885 12; α(L)=0.001258 18; α(M)=0.000277 4 α(N)=6.47×10^{-5} 9; α(O)=9.40×10^{-6} 13; α(P)=5.30×10^{-7} 7 %Iγ=9.5 5 K:L1:L2:L3=500:100:8.3:<4 (1970Ab18). δ: M1(+E2) with δ=+0.06 6 from $\gamma\gamma(\theta)$ (1988Ul02). Ice(K)=1.62 6.
821.54 3	0.287 19	1411.92	3/2$^+$	589.759	3/2$^+$	M1	0.00999 14	%Iγ=0.102 8 α(K)exp=0.0081 7 α(K)=0.00845 12; α(L)=0.001201 17; α(M)=0.000265 4 α(N)=6.18×10^{-5} 9; α(O)=8.97×10^{-6} 13; α(P)=5.06×10^{-7} 7 Poor fit in the level scheme. Uncertainty in Eγ increased to 0.24 keV for least-squares fitting. Ice(K)=0.0159 5.
^{x}826.04[a] 6	0.130 8							%Iγ=0.0462 35
827.43 7	0.121 14	1416.72	3/2$^-$	589.882	1/2$^-$	M1	0.00981 14	%Iγ=0.043 5 α(K)exp=0.0091 15 α(K)=0.00830 12; α(L)=0.001179 17; α(M)=0.000260 4 α(N)=6.07×10^{-5} 8; α(O)=8.82×10^{-6} 12; α(P)=4.97×10^{-7} 7 Poor fit in the level scheme. Uncertainty in Eγ increased to 0.28 keV for least-squares fitting. Ice(K)=0.0141 5.
837.646 23	1.37 4	1427.411	3/2$^+$	589.759	3/2$^+$	M1	0.00952 13	α(K)exp=0.0073 5 α(K)=0.00806 11; α(L)=0.001144 16; α(M)=0.0002523 35 α(N)=5.88×10^{-5} 8; α(O)=8.55×10^{-6} 12; α(P)=4.82×10^{-7} 7 %Iγ=0.486 25 Ice(K)=0.0676 20.

$^{165}_{68}$Er$_{97}$-22

γ(^{165}Er) (continued)

Eγ[‡]	Iγ[‡c]	Ei(level)	J^{π}_{i}	E_f	J^{π}_{f}	Mult.[#]	δ[#]	α[†]	Comments
853.568 *22*	0.454 *19*	853.538	3/2^{+}	0.0	5/2^{-}	[E1]		1.85×10^{-3} *3*	%Iγ=0.161 *10* α(K)=0.001573 *22*; α(L)=0.0002138 *30*; α(M)=4.69×10^{-5} *7* α(N)=1.089×10^{-5} *15*; α(O)=1.567×10^{-6} *22*; α(P)=8.59×10^{-8} *12*
^{x}880.93[a] *7*	0.089 *7*								%Iγ=0.0316 *28*
^{x}884.48[a] *21*	0.035 *7*								%Iγ=0.0124 *26*
892.79 *7*	0.078 *10*	1411.92	3/2^{+}	519.144	5/2^{+}	M1		0.00814 *11*	α(K)exp=0.0075 *12* α(K)=0.00689 *10*; α(L)=0.000976 *14*; α(M)=0.0002152 *30* α(N)=5.02×10^{-5} *7*; α(O)=7.30×10^{-6} *10*; α(P)=4.12×10^{-7} *6* %Iγ=0.028 *4* Ice(K)=0.0040 *3*.
908.26 *11*	0.060 *15*	1427.411	3/2^{+}	519.144	5/2^{+}	M1+E2	1.0 *+22−7*	0.0060 *15*	α(K)exp=0.0050 *13* %Iγ=0.021 *6* α(K)=0.0050 *13*; α(L)=0.00074 *17*; α(M)=0.00016 *4* α(N)=3.8×10^{-5} *9*; α(O)=5.5×10^{-6} *13*; α(P)=2.9×10^{-7} *8* %Iγ=0.021 *6* Ice(K)=0.00202 *18*.
920.24 *8*	0.114 *10*	1427.411	3/2^{+}	507.421	1/2^{+}	E2		0.00399 *6*	%Iγ=0.041 *4* α(K)exp=0.0032 *5* α(K)=0.00333 *5*; α(L)=0.000520 *7*; α(M)=0.0001160 *16* α(N)=2.69×10^{-5} *4*; α(O)=3.80×10^{-6} *5*; α(P)=1.893×10^{-7} *27* Uncertainty in Eγ increased to 0.16 keV for least-squares fitting. Ice(K)=0.0025 *3*.
932.56 *4*	0.19 *3*	1289.094	3/2^{-}	356.525	3/2^{-}	M1		0.00731 *10*	α(K)exp=0.0068 *13* α(K)=0.00619 *9*; α(L)=0.000876 *12*; α(M)=0.0001931 *27* α(N)=4.50×10^{-5} *6*; α(O)=6.55×10^{-6} *9*; α(P)=3.70×10^{-7} *5* %Iγ=0.068 *11* Ice(K)=0.0089 3.
937.39 *10*	0.054 *6*	999.853	3/2^{+}	62.672	7/2^{+}	(E2)		0.00384 *5*	α(K)exp=0.0018 *6* α(K)=0.00320 *4*; α(L)=0.000498 *7*; α(M)=0.0001110 *16* α(N)=2.58×10^{-5} *4*; α(O)=3.64×10^{-6} *5*; α(P)=1.823×10^{-7} *26* %Iγ=0.0192 *23* Ice(K)=0.00066 21.
949.78 *7*	0.164 *6*	1427.411	3/2^{+}	477.758	5/2^{-}	[E1]		1.51×10^{-3} *2*	α(K)exp=0.00257 *23*

From ENSDF

$^{165}_{68}$Er$_{97}$-23

γ(^{165}Er) (continued)

E_γ [‡]	I_γ [‡c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[†]	Comments
									%Iγ=0.0582 *33* α(K)=0.001285 *18*; α(L)=0.0001737 *24*; α(M)=3.80×10^{-5} *5* α(N)=8.84×10^{-6} *12*; α(O)=1.275×10^{-6} *18*; α(P)=7.03×10^{-8} *10* Mult.: α(K)exp close to α(K)(E2)=0.00312 disagrees with mult=E1 from level scheme. Ice(K)=0.00286 *18*.
952.71 *3*	0.39 *3*	999.853	3/2$^+$	47.158	5/2$^+$	M1		0.00694 *10*	α(K)exp=0.0056 *6* α(K)=0.00588 *8*; α(L)=0.000831 *12*; α(M)=0.0001832 *26* α(N)=4.27×10^{-5} *6*; α(O)=6.21×10^{-6} *9*; α(P)=3.51×10^{-7} *5* %Iγ=0.139 *12* Ice(K)=0.0147 5.
955.28 *13*	0.053 *6*	1339.41	5/2$^-$	384.341	5/2$^-$	M1		0.00690 *10*	α(K)exp=0.0054 *10* α(K)=0.00584 *8*; α(L)=0.000825 *12*; α(M)=0.0001819 *25* α(N)=4.24×10^{-5} *6*; α(O)=6.17×10^{-6} *9*; α(P)=3.49×10^{-7} *5* %Iγ=0.0188 *23* Ice(K)=0.0020 3.
^{x}988.75[a] *28*	0.023 *6*								%Iγ=0.0082 *22*
991.77 *6*	0.118 *9*	1289.094	3/2$^-$	297.367	1/2$^-$	M1(+E2)	0.5 *+4−5*	0.0057 *7*	α(K)exp=0.0048 *6* %Iγ=0.042 *4* α(K)=0.0048 *6*; α(L)=0.00069 *8*; α(M)=0.000152 *17* α(N)=3.5×10^{-5} *4*; α(O)=5.1×10^{-6} *6*; α(P)=2.9×10^{-7} *4* Ice(K)=0.00388 24.
^{x}1013.59[a] *18*	0.018 *5*								%Iγ=0.0064 *18*
1043.05 *4*	0.218 *6*	1427.411	3/2$^+$	384.341	5/2$^-$	E1		1.27×10^{-3} *2*	α(K)exp=0.00140 *17* α(K)=0.001080 *15*; α(L)=0.0001454 *20*; α(M)=3.18×10^{-5} *4* α(N)=7.40×10^{-6} *10*; α(O)=1.068×10^{-6} *15*; α(P)=5.92×10^{-8} *8* %Iγ=0.077 *4* Ice(K)=0.00207 *21*.
1046.07 *7*	0.217 *10*	1289.094	3/2$^-$	242.929	3/2$^-$	M1+E2	0.77 *+36−30*	0.0046 *5*	α(K)exp=0.0039 *4* %Iγ=0.077 *5* α(K)=0.0039 *4*; α(L)=0.00056 *5*; α(M)=0.000123 *11*

$^{165}_{68}$Er$_{97}$-24

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
								α(N)=2.88×10^{-5} *27*; α(O)=4.2×10^{-6} *4*; α(P)=2.30×10^{-7} *26* Ice(K)=0.0059 4.
1070.80 *12*	0.033 *5*	1427.411	3/2$^+$	356.525	3/2$^-$	[E1]	1.21×10^{-3} *2*	%Iγ=0.0117 *19* α(K)=0.001029 *14*; α(L)=0.0001384 *19*; α(M)=3.03×10^{-5} *4* α(N)=7.04×10^{-6} *10*; α(O)=1.017×10^{-6} *14*; α(P)=5.65×10^{-8} *8*
1096.47 *7*	0.038 *4*	1339.41	5/2$^-$	242.929	3/2$^-$	(M1)	0.00493 *7*	α(K)exp=0.0035 *21* α(K)=0.00418 *6*; α(L)=0.000588 *8*; α(M)=0.0001296 *18* α(N)=3.02×10^{-5} *4*; α(O)=4.40×10^{-6} *6*; α(P)=2.489×10^{-7} *35* %Iγ=0.0135 *15* Ice(K)=0.0009 5.
^{x}1118.77[a] *13*	0.023 *4*					(M1)	0.00470 *7*	α(K)exp=0.006 *4* α(K)=0.00398 *6*; α(L)=0.000560 *8*; α(M)=0.0001234 *17* α(N)=2.88×10^{-5} *4*; α(O)=4.18×10^{-6} *6*; α(P)=2.371×10^{-7} *33*; α(IPF)=6.43×10^{-7} *10* %Iγ=0.0082 *15* Ice(K)=0.0009 *4*.
1131.26 *3*	4.86 *22*	1427.411	3/2$^+$	296.124	5/2$^-$	E1	1.10×10^{-3} *2*	α(K)exp=0.00106 *8* α(K)=0.000932 *13*; α(L)=0.0001250 *18*; α(M)=2.74×10^{-5} *4* α(N)=6.36×10^{-6} *9*; α(O)=9.19×10^{-7} *13*; α(P)=5.12×10^{-8} *7*; α(IPF)=4.42×10^{-6} *6* %Iγ=1.73 *11* δ: −0.72<δ(M2/E1)<−0.45 from $\gamma\gamma(\theta)$ (1988Ul02). Ice(K)=0.0345 *11*.
1184.45 *3*	8.3 *4*	1427.411	3/2$^+$	242.929	3/2$^-$	E1	1.02×10^{-3} *1*	α(K)exp=0.00097 *7* α(K)=0.000858 *12*; α(L)=0.0001149 *16*; α(M)=2.515×10^{-5} *35* α(N)=5.85×10^{-6} *8*; α(O)=8.45×10^{-7} *12*; α(P)=4.72×10^{-8} *7*; α(IPF)=1.682×10^{-5} *24* %Iγ=2.95 *19* δ: +0.19 *7* (E1+M2) from $\gamma\gamma(\theta)$ (1988Ul02). Ice(K)=0.0543 *14*.
1231.86 *11*	0.081 *7*	1528.12	(3/2$^+$)	296.124	5/2$^-$	[E1]	0.000973 *14*	%Iγ=0.0288 *28* α(K)=0.000801 *11*; α(L)=0.0001070 *15*; α(M)=2.342×10^{-5} *33* α(N)=5.45×10^{-6} *8*; α(O)=7.88×10^{-7} *11*; α(P)=4.40×10^{-8} *6*; α(IPF)=3.56×10^{-5} *5*
1262.09 *9*	0.035 *8*	1339.41	5/2$^-$	77.258	7/2$^-$	M1	0.00353 *5*	α(K)exp=0.0031 *9* α(K)=0.00298 *4*; α(L)=0.000418 *6*; α(M)=9.20×10^{-5} *13* α(N)=2.145×10^{-5} *30*; α(O)=3.12×10^{-6} *4*; α(P)=1.772×10^{-7} *25*; α(IPF)=1.564×10^{-5} *22* %Iγ=0.0124 *29* Ice(K)=0.00076 12.

$^{165}_{68}$Er$_{97}$-25

γ(^{165}Er) (continued)

E_γ[‡]	I_γ[‡c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
1277.79 *6*	0.041 *11*	1339.41	5/2⁻	62.672	7/2⁺	[E1]		0.000935 *13*	%Iγ=0.015 *4* α(K)=0.000751 *11*; α(L)=0.0001002 *14*; α(M)=2.192×10^{-5} *31* α(N)=5.10×10^{-6} *7*; α(O)=7.38×10^{-7} *10*; α(P)=4.13×10^{-8} *6*; α(IPF)=5.66×10^{-5} *8* Poor fit in the level scheme. Uncertainty in Eγ increased to 0.48 keV for least-squares fitting.
1285.22 *6*	0.154 *6*	1528.12	(3/2⁺)	242.929	3/2⁻	(E1)		0.000930 *13*	α(K)exp=0.00115 *13* α(N)=5.05×10^{-6} *7*; α(O)=7.30×10^{-7} *10*; α(P)=4.09×10^{-8} *6*; α(IPF)=6.01×10^{-5} *8* %Iγ=0.0547 *32* α(K)=0.000743 *10*; α(L)=9.92×10^{-5} *14*; α(M)=2.169×10^{-5} *30* Ice(K)=0.00120 *11*.
1289.04 *3*	0.293 *7*	1289.094	3/2⁻	0.0	5/2⁻	M1+E2	1.8 +*11*−*5*	0.00235 *18*	α(K)exp=0.00197 *14* %Iγ=0.104 *5* α(K)=0.00197 *16*; α(L)=0.000283 *21*; α(M)=6.3×10^{-5} *5* α(N)=1.46×10^{-5} *11*; α(O)=2.10×10^{-6} *16*; α(P)=1.14×10^{-7} *10*; α(IPF)=1.80×10^{-5} *5* Ice(K)=0.00392 17.
1339.39[d] *6*	0.058[d] *10*	1339.41	5/2⁻	0.0	5/2⁻	[M1,E2]		0.0025 *6*	%Iγ=0.021 *4* α(K)exp=0.0021 *10* α(K)=0.0021 *5*; α(L)=0.00030 *7*; α(M)=6.5×10^{-5} *15* α(N)=1.52×10^{-5} *34*; α(O)=2.2×10^{-6} *5*; α(P)=1.22×10^{-7} *32*; α(IPF)=2.96×10^{-5} *28* Uncertainty in Eγ increased to 0.12 keV for least-squares fitting. Ice(K)=0.0008 3 for doublet.
1339.39[d] *6*	0.058[d] *10*	1416.72	3/2⁻	77.258	7/2⁻	[E2]		1.90×10^{-3} *3*	α(K)exp=0.0021 *10* α(K)=0.001584 *22*; α(L)=0.0002292 *32*; α(M)=5.06×10^{-5} *7* α(N)=1.177×10^{-5} *16*; α(O)=1.689×10^{-6} *24*; α(P)=9.03×10^{-8} *13*; α(IPF)=2.68×10^{-5} *4* %Iγ=0.021 *4*
1364.75 *3*	0.184 *5*	1427.411	3/2⁺	62.672	7/2⁺	E2		1.84×10^{-3} *3*	α(K)exp=0.00178 *15* α(K)=0.001529 *21*; α(L)=0.0002205 *31*; α(M)=4.87×10^{-5} *7*

$^{165}_{68}$Er$_{97}$-26

γ(^{165}Er) (continued)

Eγ[‡]	Iγ[‡c]	Ei(level)	$J^π_i$	E_f	$J^π_f$	Mult.[#]	α[†]	Comments
								α(N)=1.133×10^{-5} *16*; α(O)=1.625×10^{-6} *23*; α(P)=8.71×10^{-8} *12*; α(IPF)=3.27×10^{-5} *5* %Iγ=0.0653 *33* Ice(K)=0.00224 *14*.
1380.21 *3*	1.09 *7*	1427.411	3/2$^+$	47.158	5/2$^+$	M1	0.00288 *4*	α(K)exp=0.00268 *23* α(K)=0.002410 *34*; α(L)=0.000337 *5*; α(M)=7.41×10^{-5} *10* α(N)=1.728×10^{-5} *24*; α(O)=2.515×10^{-6} *35*; α(P)=1.429×10^{-7} *20*; α(IPF)=4.43×10^{-5} *6* %Iγ=0.387 *30* Ice(K)=0.0198 *7*.
1416.80 *10*	0.090 *4*	1416.72	3/2$^-$	0.0	5/2$^-$	E2	1.73×10^{-3} *2*	α(K)exp=0.00156 *23* α(K)=0.001424 *20*; α(L)=0.0002043 *29*; α(M)=4.51×10^{-5} *6* α(N)=1.049×10^{-5} *15*; α(O)=1.507×10^{-6} *21*; α(P)=8.11×10^{-8} *11*; α(IPF)=4.65×10^{-5} *7* %Iγ=0.0320 *20* Ice(K)=0.00095 *12*.
1427.40 *4*	2.27 *15*	1427.411	3/2$^+$	0.0	5/2$^-$	E1	0.000872 *12*	α(K)exp=0.00068 *6* α(N)=4.19×10^{-6} *6*; α(O)=6.07×10^{-7} *8*; α(P)=3.41×10^{-8} *5*; α(IPF)=0.0001466 *21* %Iγ=0.81 *6* α(K)=0.000620 *9*; α(L)=8.24×10^{-5} *12*; α(M)=1.802×10^{-5} *25* Ice(K)=0.0104 *4*.

[†] Additional information 3.
[‡] From 1982Vy03, except where noted otherwise.
[#] From ce data of 1980Ab18 and 1982Vy03. The data are normalized to α(K)(M1)=0.202 *7* for 242γ. Since α(K)(M1+E2,δ=0.12 *+5−7*) for the 242γ is 0.197 *4*, all the experimental conversion coefficients have been adjusted downward by 2.5%. Below 390 keV, the multipolarity assignments and mixing ratios are primarily from subshell data and conversion coefficients of 1970Ab18 and 1980Ab18, above this the α(K)exp data are from 1982Vy03 only. Uncertainties in experimental electron intensities are stated in 1970Ab18 as ≈10%. Values of K-shell and L-subshell intensities are used from 1980Ab18 when available in both the references: 1980Ab18 and 1970Ab18. 1988Ul02 report δ(E2/M1) and δ(M2/E1) for 19 γ rays from γγ(θ) data, but no A_2 and A_4 values are listed in the paper and sign convention for mixing ratio is not given. Eight of these transitions are assigned M2+E1 multipolarity with significant values of mixing ratios. Several of these M2+E1 mixing as given by 1988Ul02 give B(M2)(W.u.) values larger than RUL(M2)=1, for 264.5γ from 507 level, δ(M2/E1)=−0.33 *7* (1988Ul02) gives B(M2)(W.u.)=9, about an order of magnitude larger than RUL. For this reason the δ values given by 1988Ul02 have not been adopted here but are listed under comments. For assignment of mult=M1, small E2 admixtures are not ruled out.
[@] From analysis by 1983Mo10 of earlier ce and γγ(θ) data.
[&] Tentative value deduced by 1980Ab18 from their ce data assuming multipolarity as stated. The evaluators have normalized Iγ values quoted by 1980Ab18 to Iγ(242.9γ)=100.
[a] Observed only in 1982Vy03.

γ(^{165}Er) (continued)

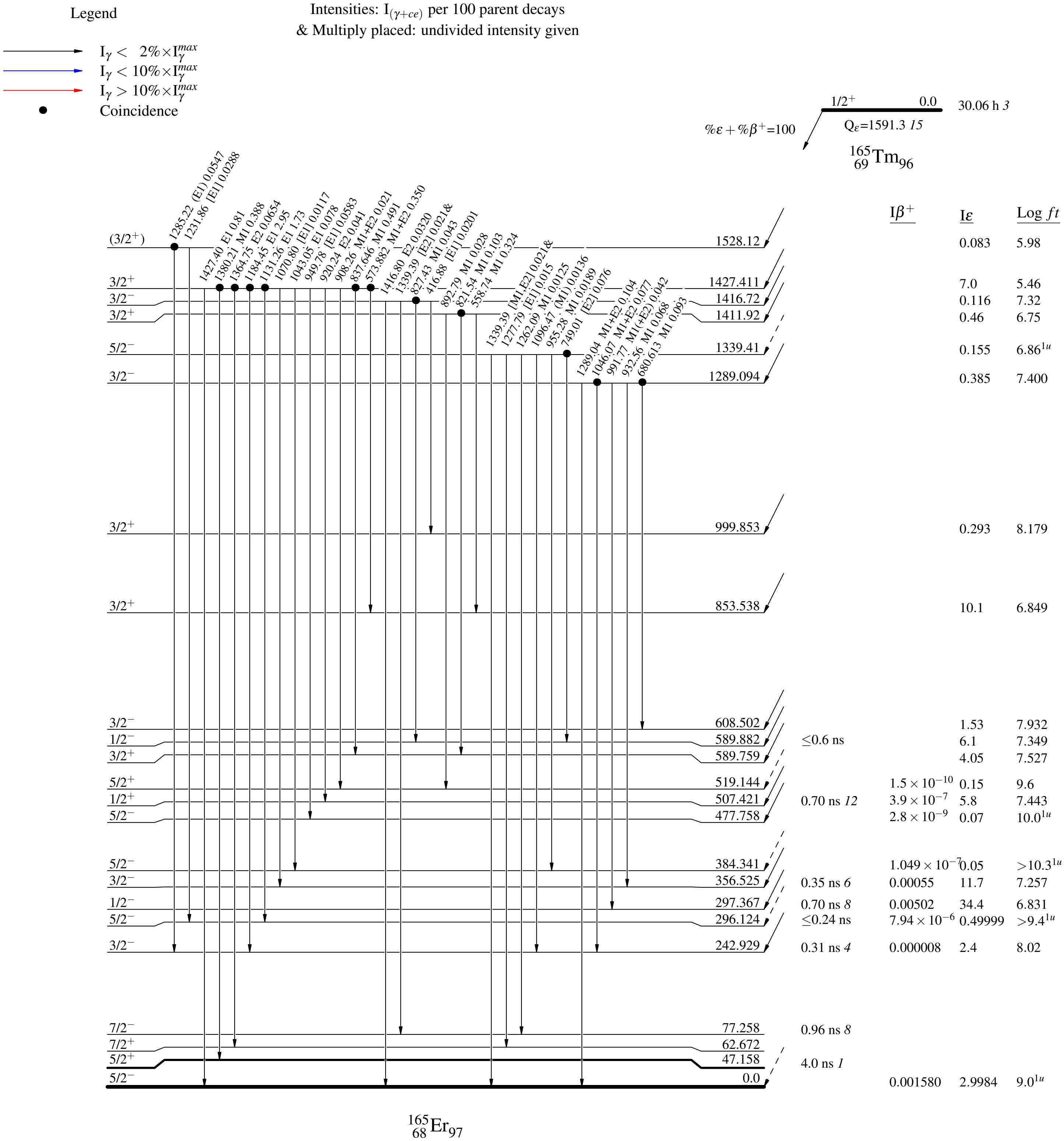
[b] Observed only in ce spectra, for ce(K) see 1980Ab18.
[c] For absolute intensity per 100 decays, multiply by 0.355 *15*.
[d] Multiply placed with undivided intensity.
[x] γ ray not placed in level scheme.

$^{165}_{68}$Er$_{97}$-28

^{165}Tm ε decay (30.06 h) 1982Vy03,1980Ab18

Decay Scheme

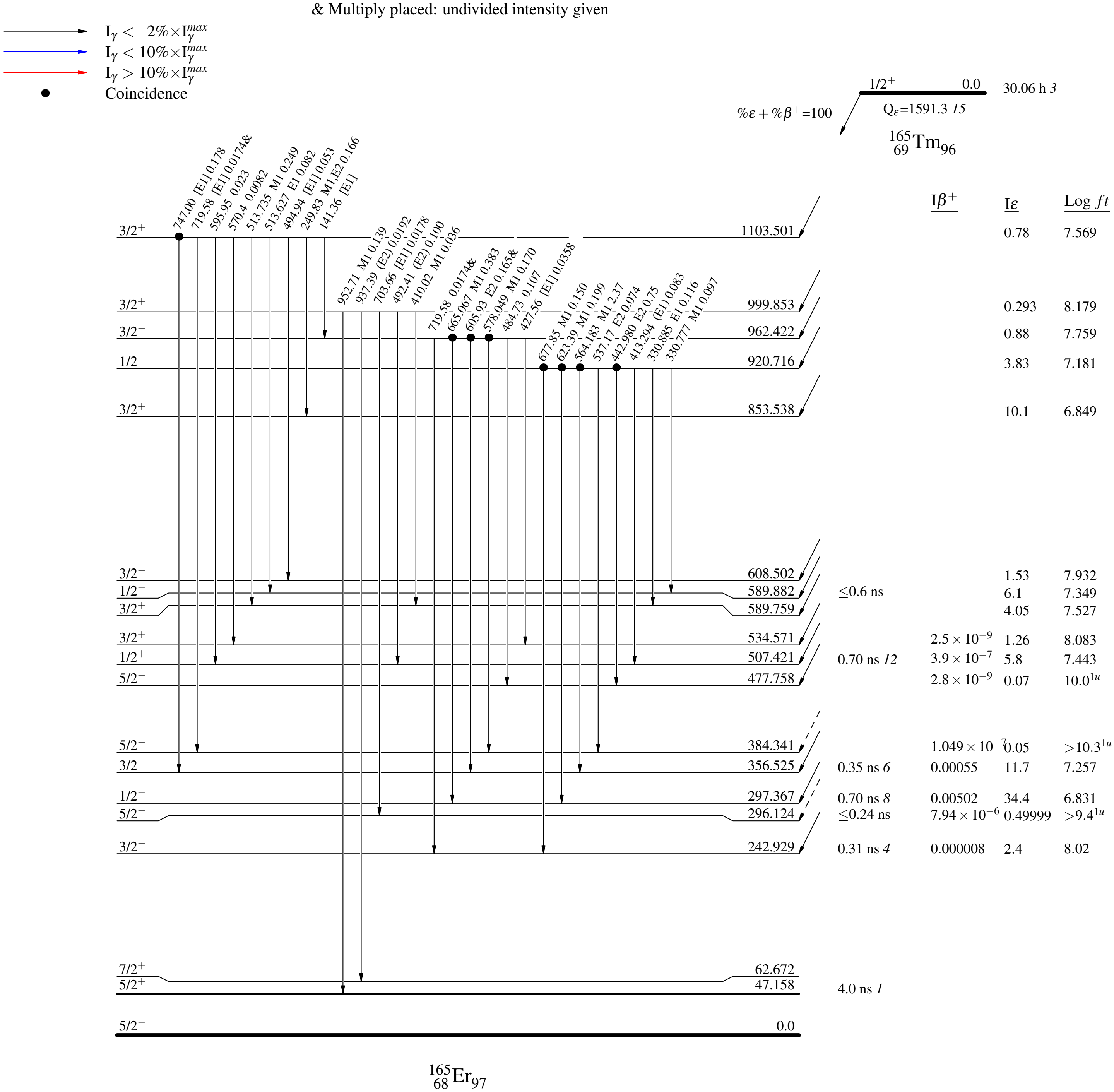
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{165}Tm ε decay (30.06 h) 1982Vy03,1980Ab18

Decay Scheme (continued)

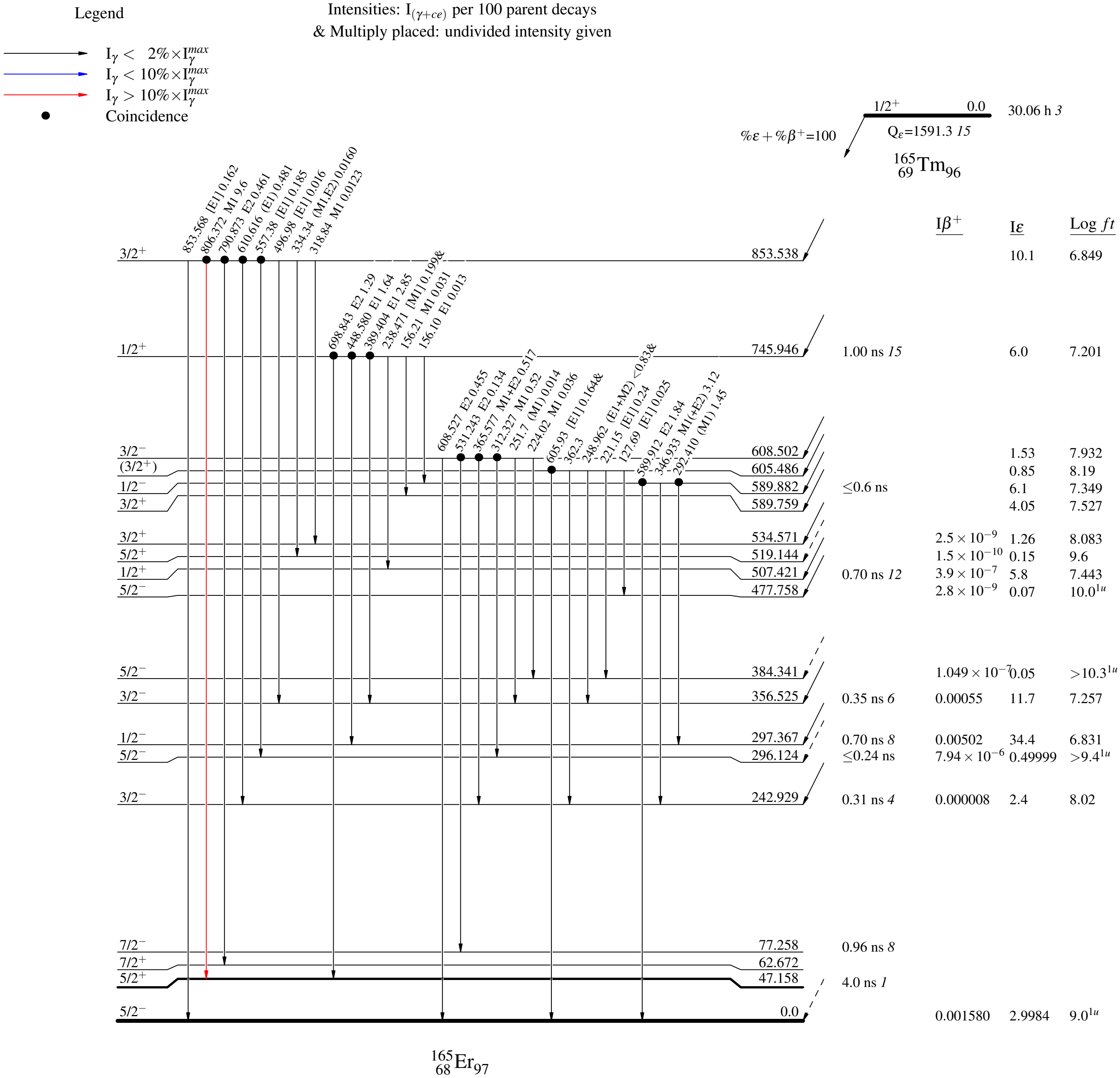
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{165}Tm ε decay (30.06 h) 1982Vy03,1980Ab18

Decay Scheme (continued)

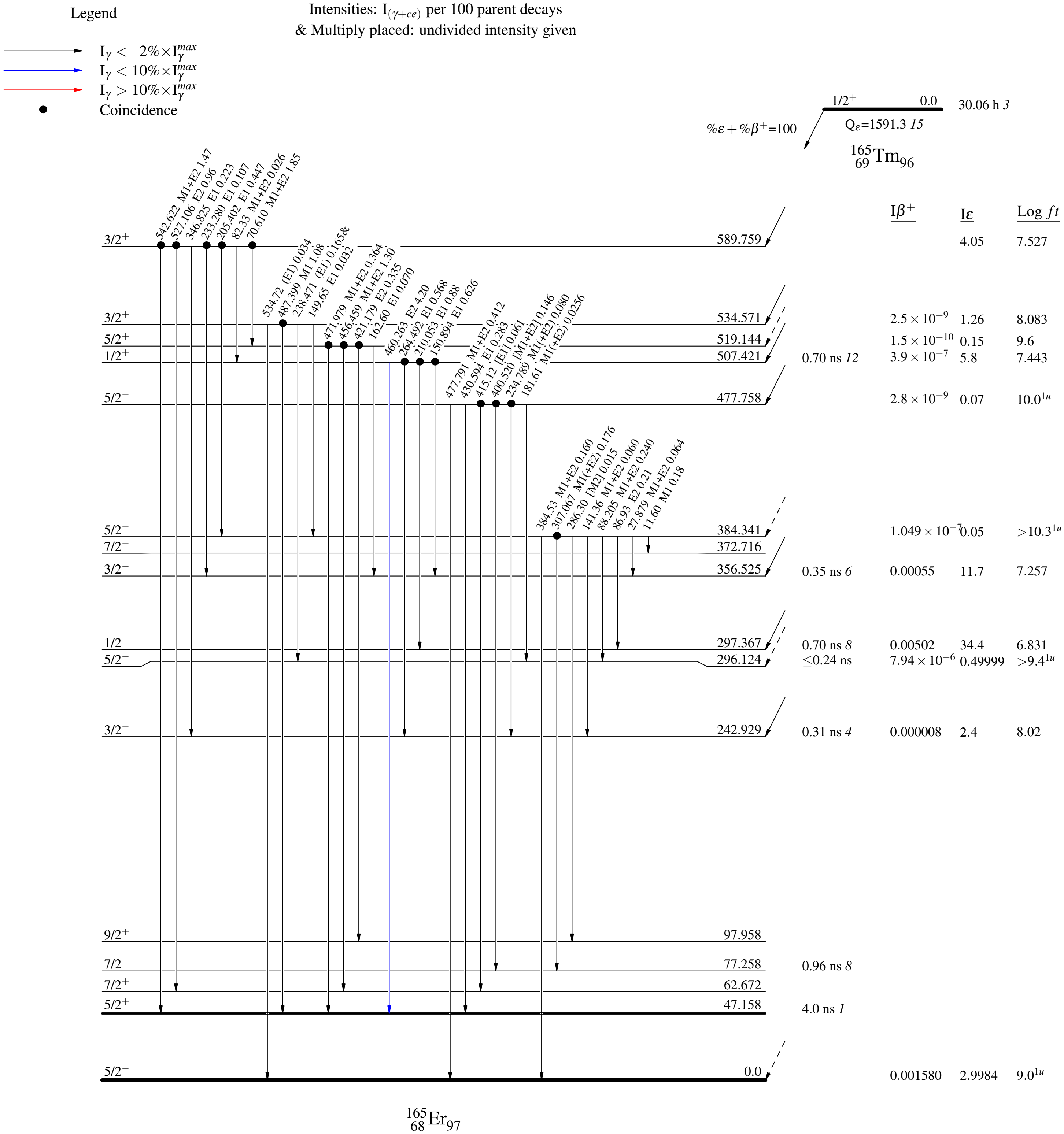
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{165}Tm ε decay (30.06 h) 1982Vy03,1980Ab18

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{165}Tm ε decay (30.06 h) 1982Vy03,1980Ab18

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given