Adopted Levels, Gammas

History

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

Q(β^-)=−1591.3 *15*; S(n)=6650.1 *6*; S(p)=6829.8 *15*; Q(α)=1109.2 *6* 2021Wa16
Q(ε)=376.7 *10*, S(2n)=15497 *5*, S(2p)=12718.4 *6* (2021Wa16).
Other reactions and measurements:
See '^{164}Er(n,γ),(n,n):resonances' dataset for 18 resonances from 7.9 eV to 750.2 eV.
(^{16}O,pxnα), (^{17}O,pxnα) and (^{18}O,pxnα) on ^{148}Nd, ^{150}Nd, ^{158}Gd, ^{160}Gd targets: 1996Br08, 1994Ca11, 1994Br31: measured γ, $\gamma(\theta)$, deduced GDR features.
^{166}Er(γ,n): 1976Go21: GDR features.
Additional information 1.
^{165}Ho(π^+,π^0): 1994Kn01, 1987Kn02: IAS states.
Hyperfine structure and isotope-shift measurements: 1965Al10, 1980Bo26.
Mass measurement: 1979Ha32.
2022Ai03: theory: structure: calculated levels, J^π, bands, B(E2) using extended Bohr Hamiltonian.
2012Er08: theory: structure: calculated vibrational and rotational bands, γ energies, B(E2) using Bohr Hamiltonian.
2012Ya08: theory: structure: calculated intrinsic magnetic moment, g factor using Quasiparticle-Phonon Nuclear Model.
2007Ya05: theory: structure: calculated levels, J^π, B(E2) using interacting boson-fermion model.
2001Va27: theory: structure: calculated rotational bands levels, J^π, B(E2) using pseudo-SU(3) scheme.
2001Pu02: theory: structure: calculated ground-state energies using Monte Carlo method.
2000Gu34: theory: structure: calculated high-spin levels, J^π, B(E2) for positive parity bands using interacting boson model (IBM).
Other theoretical calculations: 54 references for structure and seven decay characteristics retrieved from the NSR database are listed in 'document' records which can be accessed via web retrieval of the ENSDF database for ^{165}Er.

^{165}Er Levels

Cross Reference (XREF) Flags

A	^{165}Tm ε decay (30.06 h)	E	^{164}Er(n,γ),(n,n):resonances	I	^{166}Er(d,t)
B	^{160}Gd(^{9}Be,4nγ):E=42,45 MeV	F	^{164}Er(pol n,γ) E=res:arc	J	^{166}Er(^{3}He,α)
C	^{160}Gd(^{9}Be,4nγ):E=57 MeV	G	^{164}Er(d,p)	K	^{167}Er(p,t)
D	^{164}Dy(α,3nγ)	H	^{165}Ho(p,nγ)		

E(level)[†]	J^π[#]	$T_{1/2}$[@]	XREF	Comments
0.0[c]	5/2⁻	10.36 h *4*	ABCD FGHI K	%ε=100 μ=+0.641 *4* (1987OtZW,2019StZV) Q=+2.71 *3* (1987OtZW,2021StZZ) J^π: spin from atomic beam (1964Bu09); parity from log *ft*=4.7 to 7/2⁻. $T_{1/2}$: weighted average of 10.39 h *7* (1963Zy01), 10.34 h *5* (1963Ry01), 10.4 h *1* (1963Ra15), 10.3 h *2* (1965St08). Others: 1963Sc18, 1961Bj02, 1960Wi10, 1960Bu27, 1958Gr03, 1957Go78, 1952Ku15, 1950Wi16, 1950Bu85. μ,Q: collinear fast beam LASER spectroscopy (1987OtZW). Other: μ=0.65 *3*, Q=2.2 *1* (atomic beam,1965Al10).
47.158[&] *4*	5/2⁺	4.0 ns *1*	AB D F I K	$T_{1/2}$: others from ^{165}Tm ε decay: 3.25 ns *20* (1964Ja09), 4.4 ns *7* (1970Ba71). J^π: E1 γ to 5/2⁻; E1 γs from 7/2⁻ and 3/2⁻.
62.672[a] *4*	7/2⁺		ABCD K	J^π: L(p,t)=0.
77.258[d] *4*	7/2⁻	0.96 ns *8*	AB D FGHI	J^π: M1+E2 γ to 5/2⁻; band member.
97.958[&] *9*	9/2⁺		AB D G IJK	J^π: E2 γ to 5/2⁺; L(d,t)=4.
167.4[a] *1*	(11/2⁺)		BCD K	J^π: ΔJ=1 γ to 9/2⁺; band member.
175.82[c] *3*	9/2⁻		ABCD GHIJ	J^π: L(d,t)=5; γ to 5/2⁻.

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Adopted Levels, Gammas (continued)

^{165}Er Levels (continued)

E(level)[†]	J$^{\pi}$[#]	T$_{1/2}$[@]	XREF	Comments
237.8[&] *7*	(13/2$^+$)		B D JK	J$^{\pi}$: ΔJ=1 γ to 11/2$^+$; ΔJ=2 γ to 9/2$^+$; L=(6) from σ(d,t)/σ(^{3}He,α) ratio.
242.929[b] *4*	3/2$^-$	0.31 ns *4*	A D FGHI	μ=+0.62 *21* (1978EgZY,1989Ra17,2014StZZ) J$^{\pi}$: E2 γ to 7/2$^-$; L(d,t)=1. μ: from 1978EgZY, probably perturbed angular correlation method. No value is listed in 2020StZV.
295.8[d] *7*	(11/2$^-$)		B D H	
296.124[b] *4*	5/2$^-$	≤0.24 ns	A D h	J$^{\pi}$: M1+E2 γs to 3/2$^-$ and 7/2$^-$.
297.367[e] *5*	1/2$^-$	0.70 ns *8*	A FGhI K	T$_{1/2}$: other: ≤1.0 ns (1970BaYN). J$^{\pi}$: 297γ E2 (from ce data) to 5/2$^-$, 54.4γ M1(+E2) to 3/2$^-$; L(d,t)=1 from 0$^+$; 1/2$^-$ from measured intensity pattern, $\sigma(\theta)$ in (d,p); 54.4$\gamma\gamma(\theta)$ in ^{165}Tm ε decay is consistent with J=1/2 (1988Ul02).
356.525[e] *4*	3/2$^-$	0.35 ns *6*	A FG I	J$^{\pi}$: M1+E2 γ to 1/2$^-$; E2 γ to 7/2$^-$.
372.4[a] *1*	(15/2$^+$)		BCD K	
372.716[b] *14*	7/2$^-$		A G IJ	J$^{\pi}$: L(d,t)=3 in (d,t); 'fingerprint' method in (d,p).
384.341[e] *7*	5/2$^-$		A G I	J$^{\pi}$: M1+E2 γs to 7/2$^-$ and 3/2$^-$.
431 *2*	1/2$^+$		I	J$^{\pi}$: L(d,t)=0.
435.5[c] *1*	(13/2$^-$)		BC H	XREF: H(?).
463.3[&] *10*	(17/2$^+$)		B D	
465	7/2$^+$		K	J$^{\pi}$: L(p,t)=0.
467[b] *2*	(9/2$^-$)[‡]		G I	
477.758[f] *8*	5/2$^-$		A	J$^{\pi}$: M1+E2 γ to 3/2$^-$; γ to 7/2$^+$.
507.421[k] *5*	1/2$^+$	0.70 ns *12*	A F I	J$^{\pi}$: L(d,t)=0.
514[e] *3*	7/2$^-$[‡]		G	
519.144[k] *6*	5/2$^+$		A	J$^{\pi}$: E1 γ to 3/2$^-$; E2 γ to 9/2$^+$.
534.571[m] *10*	3/2$^+$		A FG I	J$^{\pi}$: L(d,t)=2 in (d,t); 'fingerprint' method in (d,p).
550.6[h] *1*	11/2$^-$	0.25 μs *3*	BCD IJ	%IT=100 XREF: I(547). T$_{1/2}$: from γ(t) in (α,2nγ) (1974An04). Other: >100 ns (1970Hj02). J$^{\pi}$: L(d,t)=5; γ to 13/2$^+$.
573[f] *2*	7/2$^-$		G I	J$^{\pi}$: L(d,t)=(3); band member.
589.759[k] *5*	3/2$^+$		A fg i k	J$^{\pi}$: M1 γ to 1/2$^+$; E1 γ to 5/2$^-$.
589.882 *8*	1/2$^-$	≤0.6 ns	A fg i k	J$^{\pi}$: 589.9γ E2 (from ce data) to 5/2$^-$; 346.9γ M1(+E2) to 3/2$^-$; $\gamma\gamma(\theta)$ in ^{165}Tm ε decay is consistent with spin=1/2 (1988Ul02).
595.7[d] *5*	(15/2$^-$)		B h	
599 *2*	(3/2$^+$,5/2$^+$)		I	J$^{\pi}$: L(d,t)=(2).
605.486 *8*	(3/2$^+$)		A g k	J$^{\pi}$: (E1+M2) γ to 3/2$^-$; γ to 5/2$^-$; β feeding from 1/2$^+$ parent.
608.502 *7*	3/2$^-$		A F k	J$^{\pi}$: 531.2γ E2 (from ce data) to 7/2$^-$; 365.6γ M1+E2 to 3/2$^-$; only spin=3/2 with a small δ from 312$\gamma\gamma(\theta)$ in ^{165}Tm ε decay (1988Ul02) is consistent with Mult=M1 for 312γ from measured ce data.
648 *2*			I	
674 *2*	5/2$^+$,3/2$^+$		I	J$^{\pi}$: L(d,t)=2.
678.4[a] *2*	(19/2$^+$)		BCD	
684[f] *3*	9/2$^-$[‡]		G	
700 *3*			G	
706.2[g] *1*	(13/2$^-$)		BCD	
721 *2*			I	
730 *3*			G K	
745.946[o] *9*	1/2$^+$	1.00 ns *15*	A G I	XREF: I(741).

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Adopted Levels, Gammas (continued)

^{165}Er Levels (continued)

E(level)[†]	Jπ[#]	XREF	Comments
			Jπ: L(d,t)=0.
760 2	7/2⁻,5/2⁻	G I	Jπ: L(d,t)=3 from 0⁺.
769.4[&] 14	(21/2⁺)	B D	
772.4[c] 1	(17/2⁻)	BC	
820[f] 3	11/2⁻	G I	
840 2	(1/2⁻,3/2⁻)	G I	XREF: G(846). Jπ: L(d,t)=(1).
853.538 8	3/2⁺	A F	Jπ: M1 γ to 3/2⁺; E2 γ to 7/2⁺; γ to 1/2⁻.
863 2	3/2⁺,5/2⁺	I	Jπ: L(d,t)=2.
873 3		G	
882.4[h] 1	(15/2⁻)	BCD	
896 3		G	
920.716[j] 9	1/2⁻	A FG I	Jπ: E1 γ to 3/2⁺; E2 γ to 5/2⁻.
955 2	(9/2⁺,7/2⁺)	I	Jπ: L(d,t)=(4).
962.422[j] 12	3/2⁻	A FG	Jπ: M1 γs to 5/2⁻ and 1/2⁻.
970.7[d] 5	(19/2⁻)	B	
971 2	(3/2⁺,5/2⁺)	I	Jπ: L(d,t)=(2).
999.853 20	3/2⁺	A	Jπ: M1 γ to 5/2⁺; (E2) γs to 7/2⁺ and 1/2⁺.
1024[j] 5	(5/2⁻)[‡]	G	
1032.1?		F	
1039[l] 2	3/2⁻	I	Jπ: L(d,t)=1; ‘fingerprint’ method.
1045.0 3		FG	
1064[l] 2	5/2⁻	I	Jπ: ‘fingerprint’ method.
1073 5		G	
1078.4[g] 2	(17/2⁻)	BCD	
1079.8[a] 6	(23/2⁺)	B D	
1103.501 11	3/2⁺	A	Jπ: M1 γ to 3/2⁺; γ to 5/2⁻; log *ft*=7.56 from 1/2⁺.
1106[j] 2	(7/2⁻)	G I	Jπ: L(d,t)=(3); (7/2⁻) proposed in (d,p) based on measured intensity pattern, σ(θ).
1139 2	3/2⁺,5/2⁺	G I	Jπ: L(d,t)=2.
1153.1[&] 7	(25/2⁺)	B D	
1165 15		J	
1172[l] 2	7/2⁻	G I	Jπ: L(d,t)=(3); ‘fingerprint’ method in (d,t).
1178.9[c] 6	(21/2⁻)	B	
1198 5		G	
1233 5		G	
1250 2		I	
1274 2	(5/2⁻,7/2⁻)	I	Jπ: L(d,t)=(3).
1289.094 15	3/2⁻	A G I	Jπ: M1 γs to 1/2⁻ and 5/2⁻.
1292.1[h] 7	(19/2⁻)	B	
1317.8[i] 1	(15/2⁻)	BC	
1332 2		I	
1339.41 5	5/2⁻	A	Jπ: M1 γs to 7/2⁻ and 5/2⁻; (M1) γ to 3/2⁻; 7/2⁻ not allowed by 749.01γ to 1/2⁺ or 3/2⁺.
1379 2	(5/2⁻,7/2⁻)	G I	Jπ: L(d,t)=(3).
1411.92 7	3/2⁺	A G I	Jπ: M1 γ to 5/2⁺; log *ft*=6.65 from 1/2⁺.
1413.5[d] 7	(23/2⁻)	B	
1416.72 5	3/2⁻	A	Jπ: 827.4γ M1 to 1/2⁻, 1339.39γ to 7/2⁻.
1427.411 10	3/2⁺	A	Jπ: E1 γ to 5/2⁻; log *ft*=5.4 from 1/2⁺.
1474[n] 5	(3/2⁻)[‡]	G	
1489 2	1/2⁺	G I	Jπ: L(d,t)=0.
1506.0[i] 1	(17/2⁻)	BC	

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Adopted Levels, Gammas (continued)

^{165}Er Levels (continued)

E(level)[†]	J^{π}[#]	$T_{1/2}$[@]	XREF	Comments
1521.8[g] 7	(21/2⁻)		B	
1528.12 6	(3/2⁺)		A	J^{π}: log *ft*=5.9 from 1/2⁺; γ to 5/2⁻.
1539[n] 5	(5/2⁻)[‡]		G	
1564 5			G	
1570.7[a] 7	(27/2⁺)		B	
1610.7[&] 9	(29/2⁺)		B	
1612 5			G	
1631[n] 5	(7/2⁻)[‡]		G	
1647.8[c] 7	(25/2⁻)		B	
1656 5			G	
1728 5			G	
1761 5			G	
1766.6[h] 8	(23/2⁻)		B	
1780 5			G	
1805 5			G	
1819 5			G	
1823.0 1	(19/2,21/2)	0.37 μs 4	BC	%IT=100 $T_{1/2}$: from 799.8γ(t) (2012Sw01) in ^{160}Gd(^{9}Be,4nγ):E=57 MeV. J^{π}: Possible configurations=ν5/2[523]⊗π7/2[523]⊗π7/2[404] for J^{π}(1823 level)=19/2⁺; ν5/2[642]⊗π7/2[523]⊗π7/2[404] for J^{π}(1823 level)=19/2⁻; ν7/2[633]⊗π7/2[523]⊗π7/2[404] or ν11/2[505]⊗ν5/2[523]⊗ν5/2[512] for J^{π}(1823 level)=21/2⁻, proposed in ^{160}Gd(^{9}Be,4nγ):E=57 MeV (2012Sw01).
1851 5			G	
1889 5			G	
1901 5			G	
1914.6[d] 7	(27/2⁻)		B	
1940 5			G	
1951 5			G	
1968 5			G	
2004 5			G	
2018 5			G	
2024.8[g] 8	(25/2⁻)		B	
2033 5			G	
2047 5			G	
2057 5			G	
2134.2[&] 10	(33/2⁺)		B	
2140.5[a] 9	(31/2⁺)		B	
2167.8[c] 9	(29/2⁻)		B	
2295.8[h] 8	(27/2⁻)		B	
2466.6[d] 9	(31/2⁻)		B	
2577.7[g] 9	(29/2⁻)		B	
2717.2[&] 11	(37/2⁺)		B	
2729.8[c] 10	(33/2⁻)		B	
2777.7[a] 10	(35/2⁺)		B	
2869.8[h] 10	(31/2⁻)		B	
3060.6[d] 10	(35/2⁻)		B	
3329.8[c] 11	(37/2⁻)		B	
3354.0[&] 12	(41/2⁺)		B	
3467.6[a] 11	(39/2⁺)		B	
3690.6[d] 12	(39/2⁻)		B	

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Adopted Levels, Gammas (continued)

^{165}Er Levels (continued)

E(level)†	J^{π}#	XREF	Comments
3971.8[c] *12*	(41/2⁻)	B	
4042.4[&] *13*	(45/2⁺)	B	
4193.2[a] *13*	(43/2⁺)	B	
4360.6[d] *13*	(43/2⁻)	B	
4664.8?[c] *13*	(45/2⁻)	B	
4784.5[&] *14*	(49/2⁺)	B	
4946.2?[a] *14*	(47/2⁺)	B	
(6650.2 *7*)	1/2,3/2	F	S(n)(^{165}Er)=6650.1 *6* (2021Wa16). J^{π}: s- and/or p-wave capture in ^{164}Er g.s.
15.49×10^{3}		H	IAS in ^{165}Er.
x[p]	(19/2⁻)	C	
101.8+x[p] *1*	(21/2⁻)	C	
242.0+x[p] *2*	(23/2⁻)	C	
410.8+x[p] *2*	(25/2⁻)	C	
603.3+x[p] *2*	(27/2⁻)	C	Magnitude of g_K-g_R=0.31 *+5−3*.
816.5+x[p] *2*	(29/2⁻)	C	Magnitude of g_K-g_R=0.33 *+10−7*.
1049.3+x[p] *2*	(31/2⁻)	C	Magnitude of g_K-g_R=0.39 *+5−4*.
1298.6+x[p] *2*	(33/2⁻)	C	Magnitude of g_K-g_R=0.33 *+6−5*.
1564.9+x[p] *2*	(35/2⁻)	C	Magnitude of g_K-g_R=0.31 *7*.
y[q]	(19/2⁺)	C	
188.7+y[q] *1*	(21/2⁺)	C	
393.8+y[q] *2*	(23/2⁺)	C	
615.0+y[q] *2*	(25/2⁺)	C	
852.0+y[q] *2*	(27/2⁺)	C	
1103.3+y[q] *2*	(29/2⁺)	C	
1368.7+y[q] *3*	(31/2⁺)	C	

† From ^{165}Tm ε decay for low-spin levels up to 1528 keV, where details of least-squares fitting procedure requiring inflating uncertainties of about 18 γ transitions. High-spin levels are from two studies at different beam energies using ^{160}Gd(^{9}Be,4nγ) reaction, and ^{164}Dy(α,3nγ) reaction, with precise level energies from ^{160}Gd(^{9}Be,4nγ):E=57 level (2012Sw01) when available. Other low-spin levels, not populated in γ-ray studies, are from particle-transfer reactions: ^{164}Er(d,p); ^{166}Er(d,t); ^{166}Er(^{3}He,α); and ^{167}Er(p,t).

‡ From analysis of relative intensity pattern (′fingerprint′ method) in (d,p) and band assignment.

\# For high-spin (J>9/2) assignments are based on γ(θ) data for selected transitions and band associations as in (^{9}Be,4nγ):E=42,45 MeV (2011Wa19).

@ From γ(ce)(t) in ^{165}Tm ε decay, unless otherwise noted.

& Band(A): ν5/2[642],α=+1/2. Band assignment from 2011Wa19 in ^{160}Gd(^{9}Be,4nγ):E=42,45 MeV. In particle-transfer reactions, mixed configurations of ν1/2[660], ν3/2[651], ν5/2[642], ν7/2[633], and ν9/2[624] orbitals is proposed for low-spin levels.

a Band(a): ν5/2[642],α=−1/2. Band assignment from 2011Wa19 in ^{160}Gd(^{9}Be,4nγ):E=42,45 MeV.

b Band(B): ν3/2[521] band. A=10.8.

c Band(C): ν5/2[523],α=+1/2. A=11.0.

d Band(c): ν5/2[523],α=−1/2.

e Band(D): ν1/2[521] band. A=10.8, a=0.014.

f Band(E): ν5/2[512] band. A=12.9.

g Band(F): ν11/2[505],α=+1/2. A=11.8.

h Band(f): ν11/2[505],α=−1/2.

i Band(b): γ-vibrational band built on ν11/2[505]. Band assignment from 2011Wa25 in ^{160}Gd(^{9}Be,4nγ):E=42,45 MeV.

j Band(G): K^{π}=1/2⁻ band. ν1/2[510]+(K−2 γ vibration built on ν5/2[512]; K=5/2). A=13.1, a=0.06.

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Adopted Levels, Gammas (continued)

^{165}Er Levels (continued)

[k] Band(H): $K^{\pi}=1/2^{+}$ band. ν1/2[660]+(K−2 γ vibration built on ν5/2[642]; K=5/2). A=6.7, a=3.1.
[l] Band(I): ν1/2[530] band. A=10.2, a=0.51.
[m] Band(J): ν3/2[402] bandhead (?).
[n] Band(K): ν3/2[512] band (?).
[o] Band(L): ν1/2[400] bandhead (?).
[p] Band(M): $K^{\pi}=(19/2^{-})$ band. The floating bands based on 19/2 are in early coincidence with respect to the delayed isomeric transitions, so must decay through the isomer. Authors state "It is highly likely that one of these bands is the isomer band, while the other decays into the isomer bandhead through a low-energy E1 transition (<60 keV). This transition may be obscured by strong x rays between 40 and 60 keV." Intrinsic g factors, g_K-g_R for the band based on $(19/2^{-})$ assume K=19/2 and Q_0=6.6 b (from 1995Mo29). Theoretical value=0.56 *5* for $19/2^{+}$ configuration and 0.46 *5* for $19/2^{-}$ configuration.
[q] Band(N): Band based on $(19/2^{+})$. See comments for band based on $(19/2^{-})$.

Adopted Levels, Gammas (continued)

γ(^{165}Er)

Additional information 2.

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.#	δ#	α@	Comments
47.158	5/2+	47.155 *6*	100	0.0	5/2−	E1		0.450 *7*	B(E1)(W.u.)=3.57×10^{-4} *+22−20* δ: <0.024 from ce data, but RUL=1 for B(M2)(W.u.) gives negligible M2 admixture, thus δ(M2/E1) is assigned as zero. Note that δ<0.024 gives B(M2)(W.u.)<450.
62.672	7/2+	15.512 *10*	0.56 *28*	47.158	5/2+	M1+E2	0.27 *7*	1.2×10^3 *6*	
		62.676 *5*	100.0 *21*	0.0	5/2−	E1		1.099 *15*	
77.258	7/2−	14.56 *2*	12.7	62.672	7/2+	(E1)		11.47 *17*	B(E1)(W.u.)=0.00091 *18*
		30.106 *8*	12.2	47.158	5/2+	E1		1.565 *22*	B(E1)(W.u.)=9.9×10^{-5} *21*
		77.253 *5*	100.0 *25*	0.0	5/2−	M1+E2	2.3 *4*	7.70 *16*	B(M1)(W.u.)=0.00075 *+29−19*; B(E2)(W.u.)=316 *+32−35*
97.958	9/2+	20.71 *2*	100	77.258	7/2−	(E1)		4.39 *6*	
		35.280 *18*	75	62.672	7/2+	M1+E2	0.173 *+26−19*	17.5 *25*	
		50.77 *2*	3.8	47.158	5/2+	E2		46.9 *7*	
167.4	(11/2+)	69.4	100	97.958	9/2+	D+Q			Mult.: from γ(θ) in (α,xnγ).
		104.6	47	62.672	7/2+				
175.82	9/2−	98.60 *5*	20.6	77.258	7/2−	[M1+E2]		3.03 *8*	
		113.1		62.672	7/2+				γ only from ^{160}Gd(^{9}Be,4nγ),E=57 MeV.
		175.86 *7*	100 *11*	0.0	5/2−	(E2)		0.388 *5*	
237.8	(13/2+)	71.2	45	167.4	(11/2+)	D+Q			
		140.3	100	97.958	9/2+	(Q)			
242.929	3/2−	165.659 *15*	0.44 *6*	77.258	7/2−	E2		0.477 *7*	B(E2)(W.u.)=0.95 *+20−16*
		195.773 *7*	1.62 *4*	47.158	5/2+	E1		0.0550 *8*	B(E1)(W.u.)=1.25×10^{-6} *+20−15*
		242.917 *7*	100.0 *20*	0.0	5/2−	M1+E2	0.12 *+5−7*	0.234 *4*	B(M1)(W.u.)=0.0039 *+6−5*; B(E2)(W.u.)=0.45 *+45−35*
295.8	(11/2−)	120.1	2.4	175.82	9/2−				
		197.8	43	97.958	9/2+				γ only from ^{160}Gd(^{9}Be,4nγ):E=42,45 MeV.
		218.5	100 *12*	77.258	7/2−	(Q)			
296.124	5/2−	53.182 *15*	14.7 *11*	242.929	3/2−	M1+E2	0.148 *12*	3.63 *13*	B(M1)(W.u.)≥0.025; B(E2)(W.u.)≥79
		120.34 *4*	0.14	175.82	9/2−	(E2)		1.479 *21*	B(E2)(W.u.)≥0.58
		218.859 *6*	86 *5*	77.258	7/2−	M1+E2	−0.26 *7*	0.306 *6*	B(M1)(W.u.)≥0.002; B(E2)(W.u.)≥0.77
		248.962& *7*	<20.6&	47.158	5/2+	(E1+M2)	0.08 *+4−7*	0.036 *8*	
		296.119 *9*	100.0 *22*	0.0	5/2−	M1+E2	<0.40	0.134 *5*	B(M1)(W.u.)≥9.1×10^{-4}
297.367	1/2−	54.415 *11*	56.7 *14*	242.929	3/2−	M1(+E2)	<0.017	2.70 *4*	B(M1)(W.u.)=0.035 *+6−4*; B(E2)(W.u.)<1.9
		297.369 *6*	100.0 *20*	0.0	5/2−	E2		0.0709 *10*	B(E2)(W.u.)=2.04 *+27−22*
356.525	3/2−	59.129 *22*	2.12 *17*	297.367	1/2−	M1+E2	0.77 *8*	17.1 *6*	B(M1)(W.u.)=0.00060 *+14−11*; B(E2)(W.u.)=48 *+12−10*

$^{165}_{68}Er_{97}$-7

Adopted Levels, Gammas (continued)

γ(^{165}Er) (continued)

E_i(level)	J^π_i	E_γ [†]	I_γ [†]	E_f	J^π_f	Mult. [#]	δ [#]	α [@]	Comments
356.525	3/2$^-$	60.399 *4*	25.8 *5*	296.124	5/2$^-$	M1+E2	0.044 *+14−19*	12.13 *17*	B(M1)(W.u.)=0.0108 *+22−16*; B(E2)(W.u.)=2.8 *+22−18*
		113.599 *4*	56.8 *12*	242.929	3/2$^-$	M1+E2	0.081 *+24−33*	1.974 *28*	B(M1)(W.u.)=0.0036 *+7−5*; B(E2)(W.u.)=0.9 *6*
		279.264 *7*	21.8 *7*	77.258	7/2$^-$	E2		0.0860 *12*	B(E2)(W.u.)=0.57 *+12−9*
		309.4 *3*	2.8	47.158	5/2$^+$	(E1)		0.0172 *3*	B(E1)(W.u.)=8.9×10^{-8} *+27−21*
		356.519 *12*	100.0 *30*	0.0	5/2$^-$	M1+E2	0.84 *13*	0.0665 *35*	B(M1)(W.u.)=1.20×10^{-4} *+30−22*; B(E2)(W.u.)=0.32 *+9−8*
372.4	(15/2$^+$)	134.3	47	237.8	(13/2$^+$)	D+Q			
		205.1	100	167.4	(11/2$^+$)				
372.716	7/2$^-$	76.56 *2*	10	296.124	5/2$^-$	M1(+E2)	<0.3	6.23 *13*	
		129.82 *4*	40	242.929	3/2$^-$	[E2]		1.124 *16*	
		372.8 *4*	100	0.0	5/2$^-$				
384.341	5/2$^-$	11.60 *2*		372.716	7/2$^-$	M1		262 *4*	
		27.879 *15*	1.6	356.525	3/2$^-$	M1+E2	0.077 *12*	24.6 *18*	E_γ: poor fit in the level scheme.
		86.93 *1*	22.4	297.367	1/2$^-$	E2		5.03 *7*	E_γ: poor fit in the level scheme.
		88.205 *15*	29.8 *32*	296.124	5/2$^-$	M1+E2	0.12 *2*	4.09 *6*	
		141.36 *7*	18.6 *29*	242.929	3/2$^-$	M1+E2	0.47 *10*	1.019 *21*	
		286.30 *15*	5.6	97.958	9/2$^+$	[M2]		0.643 *9*	
		307.067 *11*	100.0 *27*	77.258	7/2$^-$	M1(+E2)	<0.9	0.112 *14*	
		384.53 *4*	96 *11*	0.0	5/2$^-$	M1+E2	1.1 *+8−5*	0.050 *10*	
435.5	(13/2$^-$)	259.6 [‡]	100 [‡] *9*	175.82	9/2$^-$				
		268.1 [‡]	46 [‡]	167.4	(11/2$^+$)				
463.3	(17/2$^+$)	91.5	25.5	372.4	(15/2$^+$)	D+Q			
		225.2	100	237.8	(13/2$^+$)				
477.758	5/2$^-$	181.61 *4*	4.3 *5*	296.124	5/2$^-$	M1(+E2)	<1.2	0.47 *5*	
		234.789 *22*	16.2 *6*	242.929	3/2$^-$	M1(+E2)	<1.2	0.226 *33*	
		400.520 *11*	34.8 *8*	77.258	7/2$^-$				
		415.12 *3*	15.1 *7*	62.672	7/2$^+$				
		430.594 *21*	69.9 *36*	47.158	5/2$^+$	E1		0.00782 *11*	
		477.791 *23*	100.0 *36*	0.0	5/2$^-$	M1+E2	1.2 *4*	0.027 *4*	
507.421	1/2$^+$	150.894 *5*	13.71 *34*	356.525	3/2$^-$	E1		0.1090 *15*	B(E1)(W.u.)=8.4×10^{-6} *+18−13*
		210.053 *7*	20.3 *4*	297.367	1/2$^-$	E1		0.0458 *6*	B(E1)(W.u.)=4.6×10^{-6} *+10−7*
		264.492 *7*	13.45 *34*	242.929	3/2$^-$	E1		0.0254 *4*	B(E1)(W.u.)=1.53×10^{-6} *+32−23*
		460.263 *16*	100.0 *35*	47.158	5/2$^+$	E2		0.0204 *3*	B(E2)(W.u.)=0.48 *+10−7*
519.144	5/2$^+$	162.60 *3*	5.1 *12*	356.525	3/2$^-$	E1		0.0895 *13*	
		421.179 *10*	26.2 *6*	97.958	9/2$^+$	E2		0.0259 *4*	
		456.459 *15*	100 *5*	62.672	7/2$^+$	M1+E2	0.62 *11*	0.0377 *18*	
		471.979 *10*	28.2 *7*	47.158	5/2$^+$	M1+E2	0.79 *14*	0.0323 *20*	
534.571	3/2$^+$	149.65 *6*	2.8 *5*	384.341	5/2$^-$	E1		0.1115 *16*	
		238.471 *18*	15.3 *14*	296.124	5/2$^-$	(E1)		0.0330 *5*	
		487.399 *10*	100.0 *21*	47.158	5/2$^+$	M1		0.0373 *5*	

$^{165}_{68}$Er$_{97}$-8

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

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[#]	α[@]	Comments
534.571	3/2+	534.72 7	3.20 34	0.0	5/2−	(E1)		0.00482 7	
550.6	11/2−	314.8	32.7	237.8	(13/2+)	[E1]		0.01646 24	B(E1)(W.u.)=5.3×10^{-9} 11
		375.0	34.9	175.82	9/2−	(M1+E2)		0.055 9	B(M1)(W.u.)=3.3×10^{-7} 7 if M1, B(E2)(W.u.)=0.00112 +24−22 if E2.
		383.7	100	167.4	(11/2+)	[E1]		0.01023 15	B(E1)(W.u.)=8.9×10^{-9} +14−11
		473.7	7.9	77.258	7/2−	[E2]		0.0189 3	B(E2)(W.u.)=7.8×10^{-5} +20−17
589.759	3/2+	70.610 5	14.7 4	519.144	5/2+	M1+E2	0.05 +4−3	7.77 11	
		82.33 1	0.30	507.421	1/2+	M1+E2	<0.23	5.01 7	
		205.402 11	29.7 8	384.341	5/2−	E1		0.0485 7	
		233.280 13	7.18 22	356.525	3/2−	E1		0.0349 5	
		346.825 11	15.4 5	242.929	3/2−	E1		0.01301 18	
		527.106 12	65.8 15	62.672	7/2+	E2		0.01437 20	
		542.622 11	100 5	47.158	5/2+	M1+E2	0.61 17	0.0242 17	
589.882	1/2−	292.410 14	44.2 14	297.367	1/2−	(M1)		0.1428 20	B(M1)(W.u.)≥2.7×10^{-4}
		346.933 11	100.0 37	242.929	3/2−	M1(+E2)	<0.53	0.086 6	B(M1)(W.u.)≥3.7×10^{-4}; B(E2)(W.u.)≥0.0071
		589.912 15	63.3 27	0.0	5/2−	E2		0.01088 15	B(E2)(W.u.)≥0.066
595.7	(15/2−)	300[‡]	100[‡] 13	295.8	(11/2−)				
		357.5[‡]	40[‡]	237.8	(13/2+)				
605.486	(3/2+)	127.69 4	9.2	477.758	5/2−	[E1]		0.170 3	
		221.15 5	100	384.341	5/2−				
		248.962[&] 7	<340[&]	356.525	3/2−	(E1+M2)	0.08 +4−7	0.036 8	
		362.3 2		242.929	3/2−				
		605.93[&] 3	<70[&]	0.0	5/2−				
608.502	3/2−	224.02 8	5.7 11	384.341	5/2−	M1		0.294 4	
		251.7[a] 3	2.4	356.525	3/2−	(M1)		0.2142 31	
		312.327 12	95 5	296.124	5/2−	M1		0.1197 17	E_γ: poor fit in the level scheme.
		365.577 8	100.0 29	242.929	3/2−	M1+E2	1.14 +25−21	0.056 5	
		531.243 26	27.0 10	77.258	7/2−	E2		0.01409 20	
		608.527 16	92.0 29	0.0	5/2−	E2		0.01009 14	
678.4	(19/2+)	214.3	12.1	463.3	(17/2+)	D+Q			
		306.1	100	372.4	(15/2+)	(Q)			
706.2	(13/2−)	155.6	100	550.6	11/2−	D			
745.946	1/2+	156.10 3	0.42 20	589.882	1/2−	E1		0.0997 14	B(E1)(W.u.)=1.2×10^{-7} +6−5
		156.21 3	0.62 20	589.759	3/2+	M1		0.801 11	B(M1)(W.u.)=1.7×10^{-5} +7−6
		238.471 18	5.7 5	507.421	1/2+	[M1]		0.248 4	B(M1)(W.u.)=4.3×10^{-5} +9−6
		389.404 14	100.0 23	356.525	3/2−	E1		0.00988 14	B(E1)(W.u.)=1.78×10^{-6} +32−23
		448.580 14	57.8 19	297.367	1/2−	E1		0.00713 10	B(E1)(W.u.)=6.7×10^{-7} +12−9
		698.843 16	45.6 17	47.158	5/2+	E2		0.00730 10	B(E2)(W.u.)=0.0135 +24−18
769.4	(21/2+)	306.1	100	463.3	(17/2+)	(Q)			

$^{165}_{68}Er_{97}$-9

Adopted Levels, Gammas (continued)

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

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	α[@]	Comments
772.4	(17/2−)	336.9[‡]	100[‡] 10	435.5	(13/2−)			
		400.0[‡]	29[‡]	372.4	(15/2+)			
853.538	3/2+	318.84 7	0.12 3	534.571	3/2+	M1	0.1133 16	
		334.34 10	0.16 2	519.144	5/2+	(M1,E2)	0.075 25	
		496.98 13	0.17 6	356.525	3/2−			
		557.38 4	1.94 22	296.124	5/2−			
		610.616 17	5.04 15	242.929	3/2−	(E1)	0.00363 5	
		790.873 18	4.81 11	62.672	7/2+	E2	0.00553 8	
		806.372 17	100.0 34	47.158	5/2+	M1	0.01046 15	
		853.568 22	1.69 7	0.0	5/2−			
882.4	(15/2−)	175.8[&]	100[&]	706.2	(13/2−)			
		331.5	12.4	550.6	11/2−			
920.716	1/2−	330.777 10	3.82 22	589.882	1/2−	M1	0.1027 14	
		330.885 10	4.95 22	589.759	3/2+	E1	0.01458 20	
		413.294 23	3.57 28	507.421	1/2+	(E1)	0.00860 12	
		442.980 16	31.7 12	477.758	5/2−	E2	0.02261 32	
		537.17 3	3.17 31	384.341	5/2−	E2	0.01371 19	
		564.183 17	100 6	356.525	3/2−	M1	0.0256 4	
		623.39 3	8.45 26	297.367	1/2−	M1	0.01989 28	
		677.85 3	6.42 25	242.929	3/2−	M1	0.01611 23	
962.422	3/2−	427.56 12	9.4 6	534.571	3/2+			
		484.73 3	28.5 16	477.758	5/2−			
		578.049 16	44.0 11	384.341	5/2−	M1	0.02409 34	
		605.93[&] 3	<43[&]	356.525	3/2−	E2	0.01020 14	
		665.067 20	100.0 28	297.367	1/2−	M1	0.01690 24	
		719.58 8	4.6 6	242.929	3/2−			
970.7	(19/2−)	375	100 17	595.7	(15/2−)			
		507.4	35.5	463.3	(17/2+)			
999.853	3/2+	410.02 7	24.9 26	589.759	3/2+	M1	0.0583 8	
		492.41 8	71 5	507.421	1/2+	(E2)	0.01711 24	
		703.66 19	12.8 18	296.124	5/2−			
		937.39 10	13.9 16	62.672	7/2+	(E2)	0.00384 5	
		952.71 3	100 8	47.158	5/2+	M1	0.00694 10	
1078.4	(17/2−)	195.6[&]	<134[&]	882.4	(15/2−)			
		371.6	100	706.2	(13/2−)			
1079.8	(23/2+)	310.0		769.4	(21/2+)			
		401.9		678.4	(19/2+)	(Q)		
1103.501	3/2+	141.36 7		962.422	3/2−			E_γ: poor fit in the level scheme.
		249.83 4	59 6	853.538	3/2+	M1,E2	0.17 5	
		494.94 5	21.8 12	608.502	3/2−			

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

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.#	δ#	α@	Comments
1103.501	3/2+	513.627 *14*	33.8	589.882	1/2−	E1		0.00526 *7*	
		513.735 *14*	100 *7*	589.759	3/2+	M1		0.0325 *5*	
		570.4 *8*	3.4 *9*	534.571	3/2+				
		595.95 *13*	9.7 *30*	507.421	1/2+				
		719.58 *8*	7.2 *9*	384.341	5/2−				E_γ: poor fit in the level scheme.
		747.00 *6*	74 *5*	356.525	3/2−				
1153.1	(25/2+)	383.7		769.4	(21/2+)	(Q)			
1178.9	(21/2−)	407	100 *12*	772.4	(17/2−)				
		501.1	21	678.4	(19/2+)				
1289.094	3/2−	680.613 *19*	88.1 *27*	608.502	3/2−	M1		0.01595 *22*	
		932.56 *4*	65 *10*	356.525	3/2−	M1		0.00731 *10*	
		991.77 *6*	40.3 *31*	297.367	1/2−	M1(+E2)	0.5 *+4−5*	0.0057 *7*	
		1046.07 *7*	74.1 *34*	242.929	3/2−	M1+E2	0.77 *+36−30*	0.0046 *5*	
		1289.04 *3*	100.0 *24*	0.0	5/2−	M1+E2	1.8 *+11−5*	0.00336 *5*	
1292.1	(19/2−)	213.4		1078.4	(17/2−)				
		408.4		882.4	(15/2−)				
1317.8	(15/2−)	611.4		706.2	(13/2−)				
		767.2 *1*		550.6	11/2−				
1339.41	5/2−	749.01 *13*	100 *10*	589.882	1/2−				E_γ: γ to 589.927 and/or 589.773.
		955.28 *13*	25.0 *28*	384.341	5/2−	M1		0.00690 *10*	
		1096.47 *7*	17.9 *19*	242.929	3/2−	(M1)		0.00493 *7*	
		1262.09 *9*	16.5 *38*	77.258	7/2−	M1		0.00353 *5*	
		1277.79 *6*	19 *5*	62.672	7/2+	[E1]			
		1339.39 *6*	27 *5*	0.0	5/2−	[M1,E2]		0.0025 *6*	
1411.92	3/2+	558.74 *3*	100 *5*	853.538	3/2+	M1		0.0263 *4*	
		821.54 *3*	32.3 *21*	589.759	3/2+	M1		0.00999 *14*	
		892.79 *7*	8.8 *11*	519.144	5/2+	M1		0.00814 *11*	
1413.5	(23/2−)	442.9	100 *16*	970.7	(19/2−)				
		643.5	30.9	769.4	(21/2+)				
1416.72	3/2−	416.88 *10*	46 *6*	999.853	3/2+				
		827.43 *7*	100 *12*	589.882	1/2−	M1		0.00981 *14*	
		1339.39 *6*	48 *8*	77.258	7/2−	[E2]		1.90×10^{-3} *3*	
		1416.80 *10*	74 *3*	0.0	5/2−	E2		1.73×10^{-3} *2*	
1427.411	3/2+	573.882 *12*	11.7 *5*	853.538	3/2+	M1+E2	1.2 *4*	0.017 *3*	
		837.646 *23*	16.5 *5*	589.759	3/2+	M1		0.00952 *13*	
		908.26 *11*	0.72 *18*	519.144	5/2+	M1+E2	1.0 *+22−7*	0.0060 *15*	
		920.24 *8*	1.37 *12*	507.421	1/2+	E2		0.00399 *6*	
		949.78 *7*	1.98 *7*	477.758	5/2−				
		1043.05 *4*	2.63 *7*	384.341	5/2−	E1		1.27×10^{-3} *2*	
		1070.80 *12*	0.40 *6*	356.525	3/2−	[E1]		1.21×10^{-3} *2*	
		1131.26 *3*	58.6 *27*	296.124	5/2−	E1		1.10×10^{-3} *2*	

From ENSDF

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

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.#	α@
1427.411	3/2+	1184.45 3	100 5	242.929	3/2−	E1	1.02×10^{-3} 1
		1364.75 3	2.22 6	62.672	7/2+	E2	1.84×10^{-3} 3
		1380.21 3	13.1 9	47.158	5/2+	M1	0.00288 4
		1427.40 4	27.4 18	0.0	5/2−	E1	0.87×10^{-3} 12
1506.0	(17/2−)	188.2 1	21.0 16	1317.8	(15/2−)		
		623.6 1	38.7 32	882.4	(15/2−)		
		799.8 1	100 7	706.2	(13/2−)		
1521.8	(21/2−)	229.8		1292.1	(19/2−)		
		442.9		1078.4	(17/2−)		
1528.12	(3/2+)	1231.86 11	53 5	296.124	5/2−	[E1]	
		1285.22 6	100 4	242.929	3/2−	(E1)	0.93×10^{-3} 13
1570.7	(27/2+)	417.0		1153.1	(25/2+)		
		490.8		1079.8	(23/2+)		
1610.7	(29/2+)	457		1153.1	(25/2+)		
1647.8	(25/2−)	469	100 19	1178.9	(21/2−)		
		567.8	15.4	1079.8	(23/2+)		
1766.6	(23/2−)	244.7		1521.8	(21/2−)		
		474.4		1292.1	(19/2−)		
1823.0	(19/2,21/2)	317.0 1	100 8	1506.0	(17/2−)		
		1050.6 1	5 1	772.4	(17/2−)		
		1144.6 1	17 2	678.4	(19/2+)		
1914.6	(27/2−)	501	100 20	1413.5	(23/2−)		
		761.0	22.8	1153.1	(25/2+)		
2024.8	(25/2−)	258		1766.6	(23/2−)		
		503.2		1521.8	(21/2−)		
2134.2	(33/2+)	523.5		1610.7	(29/2+)		
2140.5	(31/2+)	569.8		1570.7	(27/2+)		
2167.8	(29/2−)	520		1647.8	(25/2−)		
2295.8	(27/2−)	271		2024.8	(25/2−)		
		529.2		1766.6	(23/2−)		
2466.6	(31/2−)	552		1914.6	(27/2−)		
2577.7	(29/2−)	552.9		2024.8	(25/2−)		
2717.2	(37/2+)	583.0		2134.2	(33/2+)		
2729.8	(33/2−)	562		2167.8	(29/2−)		
2777.7	(35/2+)	637.2		2140.5	(31/2+)		
2869.8	(31/2−)	574		2295.8	(27/2−)		
3060.6	(35/2−)	594		2466.6	(31/2−)		
3329.8	(37/2−)	600		2729.8	(33/2−)		
3354.0	(41/2+)	636.8		2717.2	(37/2+)		
3467.6	(39/2+)	689.9		2777.7	(35/2+)		
3690.6	(39/2−)	630		3060.6	(35/2−)		

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

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Comments
3971.8	(41/2⁻)	642		3329.8	(37/2⁻)	
4042.4	(45/2⁺)	688.4		3354.0	(41/2⁺)	
4193.2	(43/2⁺)	725.6		3467.6	(39/2⁺)	
4360.6	(43/2⁻)	670		3690.6	(39/2⁻)	
4664.8?	(45/2⁻)	693[a]		3971.8	(41/2⁻)	
4784.5	(49/2⁺)	742.1		4042.4	(45/2⁺)	
4946.2?	(47/2⁺)	753[a]		4193.2	(43/2⁺)	
(6650.2)	1/2,3/2	5605.1 *7*	49.2 *26*	1045.0		
		5618.1[a]	<2.9	1032.1?		
		5687.6 *12*	65 *7*	962.422	3/2⁻	
		5729.1 *7*	44.0 *21*	920.716	1/2⁻	
		5796.8 *16*	8.9 *20*	853.538	3/2⁺	
		5904.5[a]	<3.4	745.946	1/2⁺	
		6041.6 *6*	65.2 *32*	608.502	3/2⁻	
		6059.9 *12*	68 *5*	589.882	1/2⁻	6059.9γ can feed either or both the 589.759 and 589.882 levels.
		6117.3 *16*	13 *5*	534.571	3/2⁺	
		6143.7 *21*	11 *4*	507.421	1/2⁺	
		6293.7 *6*	99 *4*	356.525	3/2⁻	
		6352.5 *6*	100 *4*	297.367	1/2⁻	
		6407.2 *7*	63.2 *29*	242.929	3/2⁻	
		6572.7[a] *6*	<4.4	77.258	7/2⁻	
		6602.7[a] *6*	<4.7	47.158	5/2⁺	
		6649.9[a] *6*	<4.7	0.0	5/2⁻	
101.8+x	(21/2⁻)	101.8 *1*	100	x	(19/2⁻)	
242.0+x	(23/2⁻)	140.2 *1*	100 *10*	101.8+x	(21/2⁻)	
		242.0[a] *1*	23 *9*	x	(19/2⁻)	
410.8+x	(25/2⁻)	168.8 *1*	100 *7*	242.0+x	(23/2⁻)	
		309.0[a] *1*	24 *8*	101.8+x	(21/2⁻)	
603.3+x	(27/2⁻)	192.5 *1*	100 *8*	410.8+x	(25/2⁻)	
		361.3 *1*	35 *6*	242.0+x	(23/2⁻)	
816.5+x	(29/2⁻)	213.2 *1*	100 *12*	603.3+x	(27/2⁻)	
		405.7 *1*	49 *17*	410.8+x	(25/2⁻)	
1049.3+x	(31/2⁻)	232.8 *1*	100 *10*	816.5+x	(29/2⁻)	
		446.0 *1*	49 *6*	603.3+x	(27/2⁻)	
1298.6+x	(33/2⁻)	249.3 *1*	100 *13*	1049.3+x	(31/2⁻)	
		482.1 *1*	89 *16*	816.5+x	(29/2⁻)	
1564.9+x	(35/2⁻)	266.3 *1*	79 *18*	1298.6+x	(33/2⁻)	
		515.6 *1*	100 *18*	1049.3+x	(31/2⁻)	
188.7+y	(21/2⁺)	188.7 *1*	100	y	(19/2⁺)	
393.8+y	(23/2⁺)	205.1 *1*	100	188.7+y	(21/2⁺)	
615.0+y	(25/2⁺)	221.2 *1*	100	393.8+y	(23/2⁺)	

$^{165}_{68}Er_{97}$-13

Adopted Levels, Gammas (continued)

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

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
852.0+y	$(27/2^+)$	237.0 *1*	100	615.0+y	$(25/2^+)$
1103.3+y	$(29/2^+)$	251.3 *1*	100 *15*	852.0+y	$(27/2^+)$
		488.3[a] *1*	63 *15*	615.0+y	$(25/2^+)$
1368.7+y	$(31/2^+)$	265.4 *1*	100 *15*	1103.3+y	$(29/2^+)$
		516.7[a] *1*	80 *15*	852.0+y	$(27/2^+)$

† From ^{165}Tm ε decay for low-spin (J<=9/2) and from (α,3nγ) for high-spin levels, unless otherwise noted. Energies and intensities of γ rays above 5 MeV are from ^{164}Er(pol n,γ) E=res:ARC data.

‡ from (^{9}Be,4nγ):E=42,45 MeV and/or E=57 MeV.

\# From α(K)exp and subshell ratios in ^{165}Tm ε decay, unless otherwise stated. For high-spin levels, assignments are from $\gamma(\theta)$ data in ^{164}Dy(α,3nγ) and band structures.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

& Multiply placed with undivided intensity.

^{a} Placement of transition in the level scheme is uncertain.

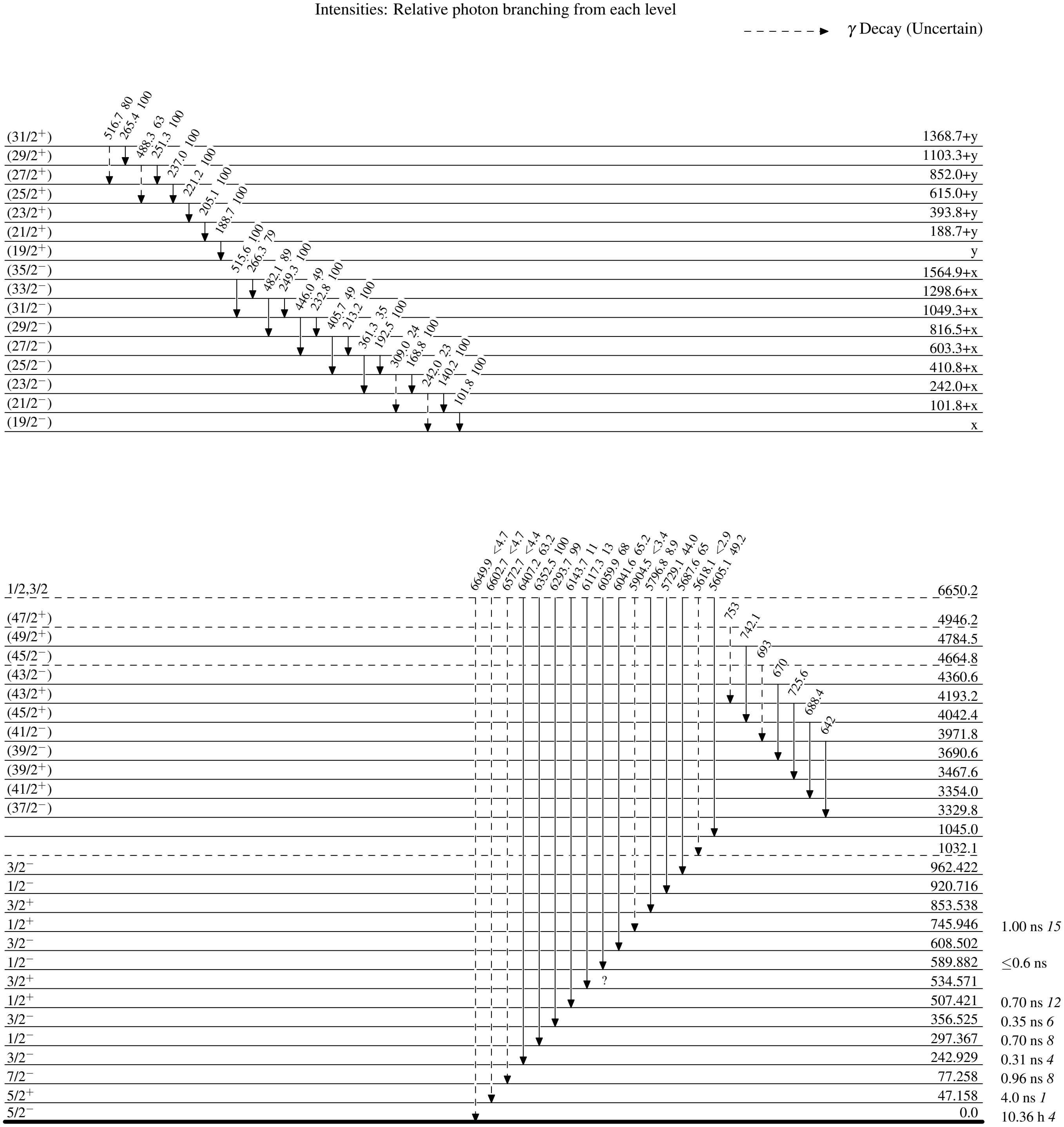
$^{165}_{68}Er_{97}$-14

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

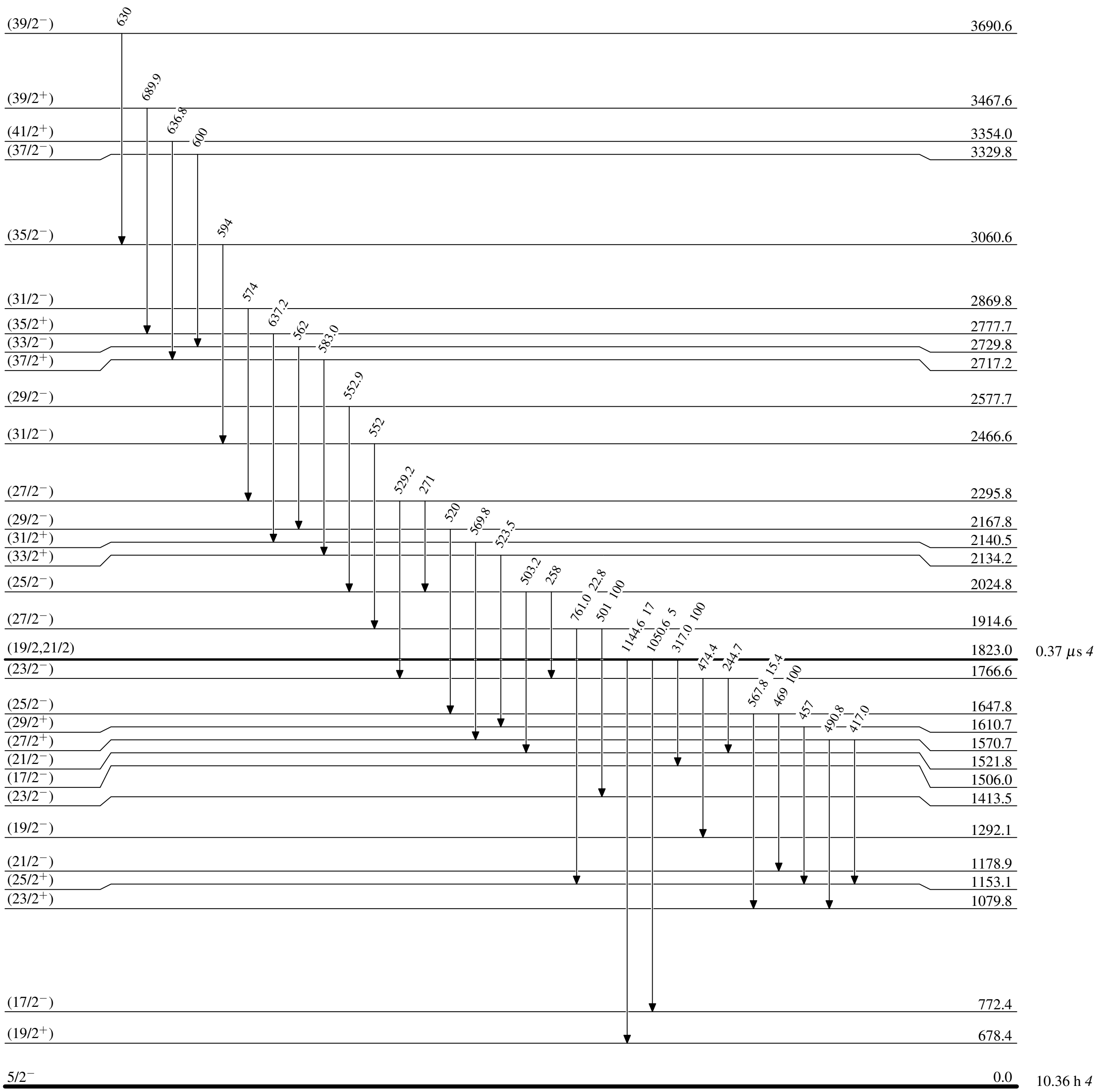


$^{165}_{68}Er_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

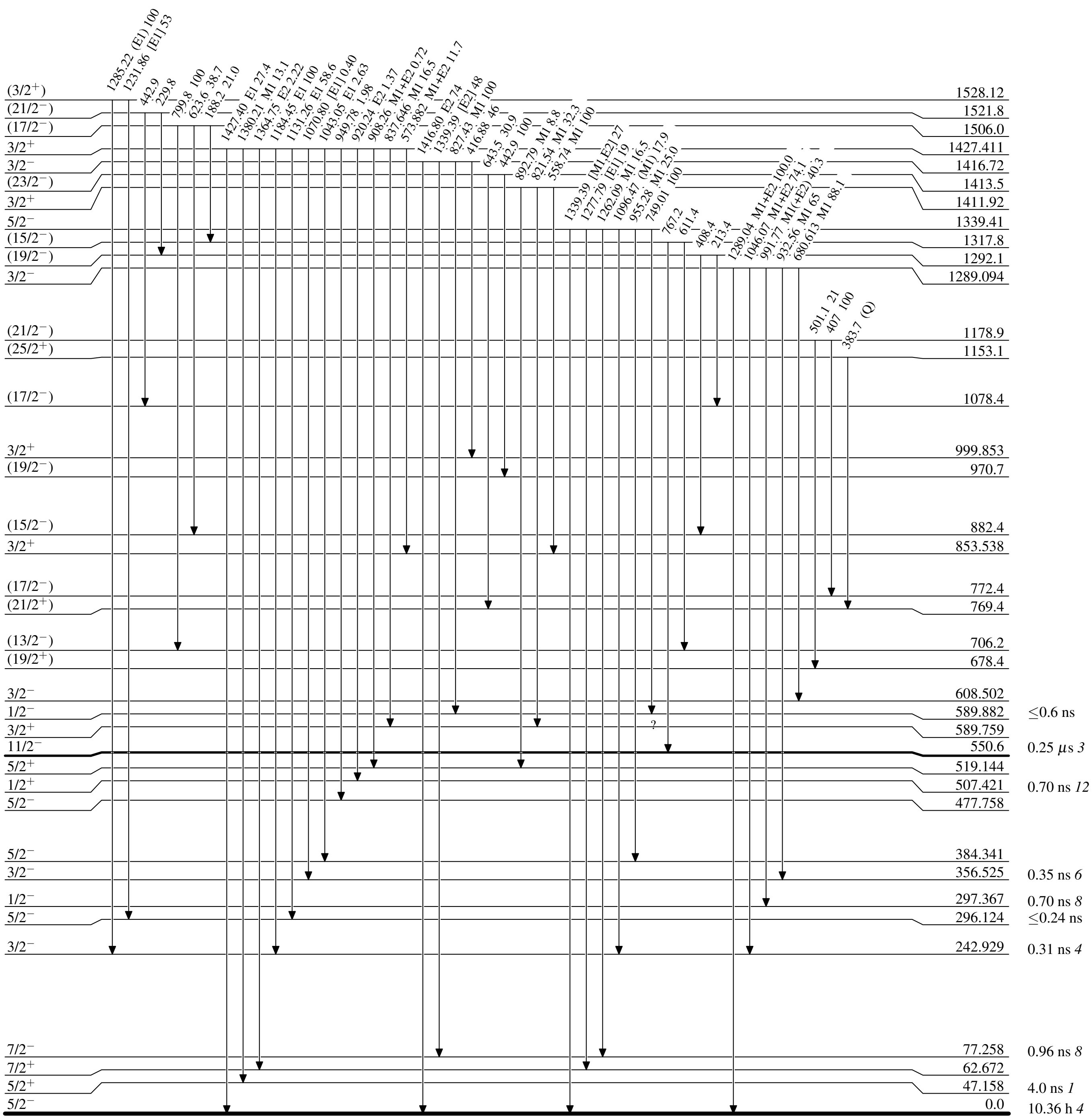


$^{165}_{68}Er_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

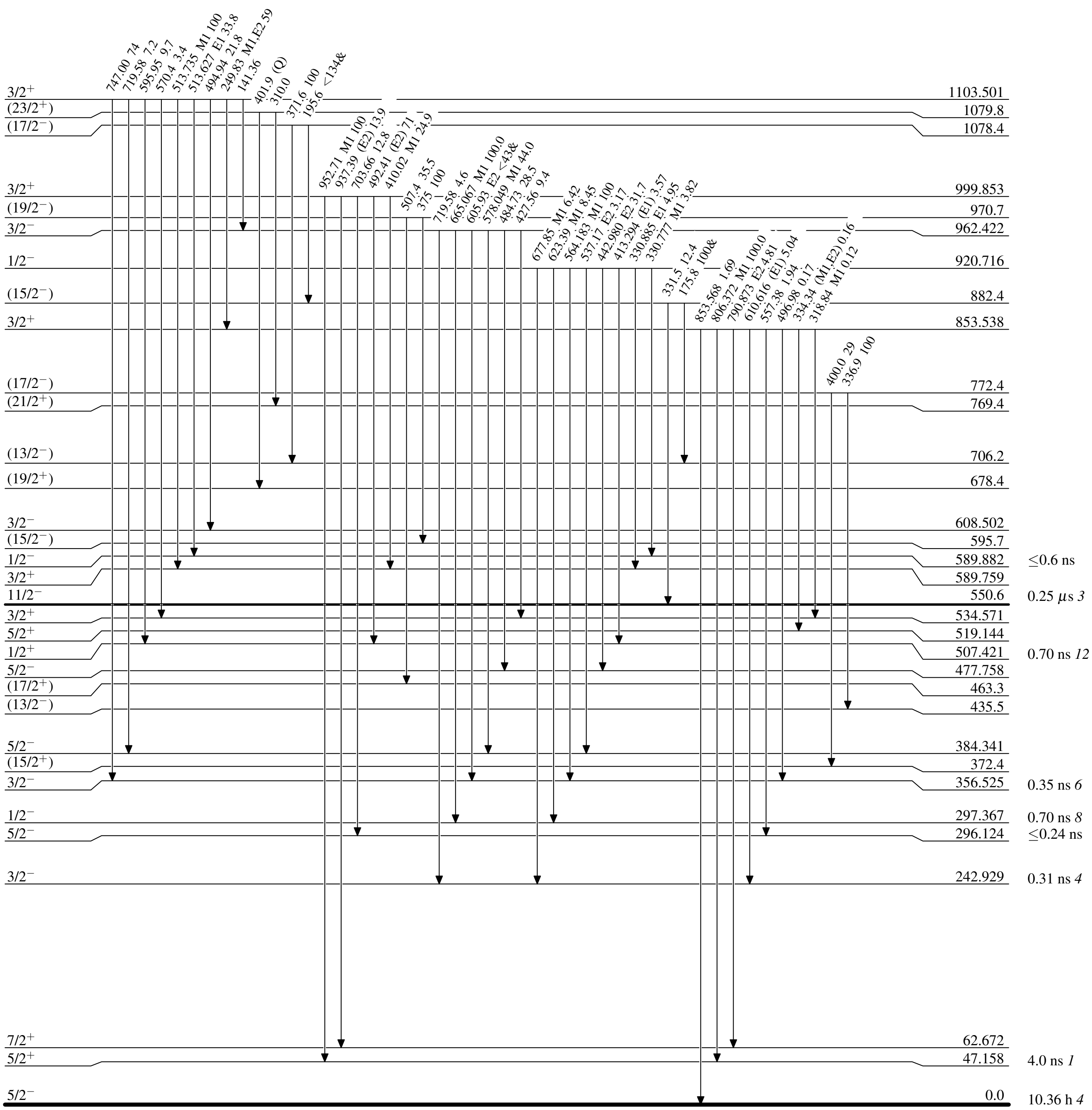


$^{165}_{68}Er_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

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



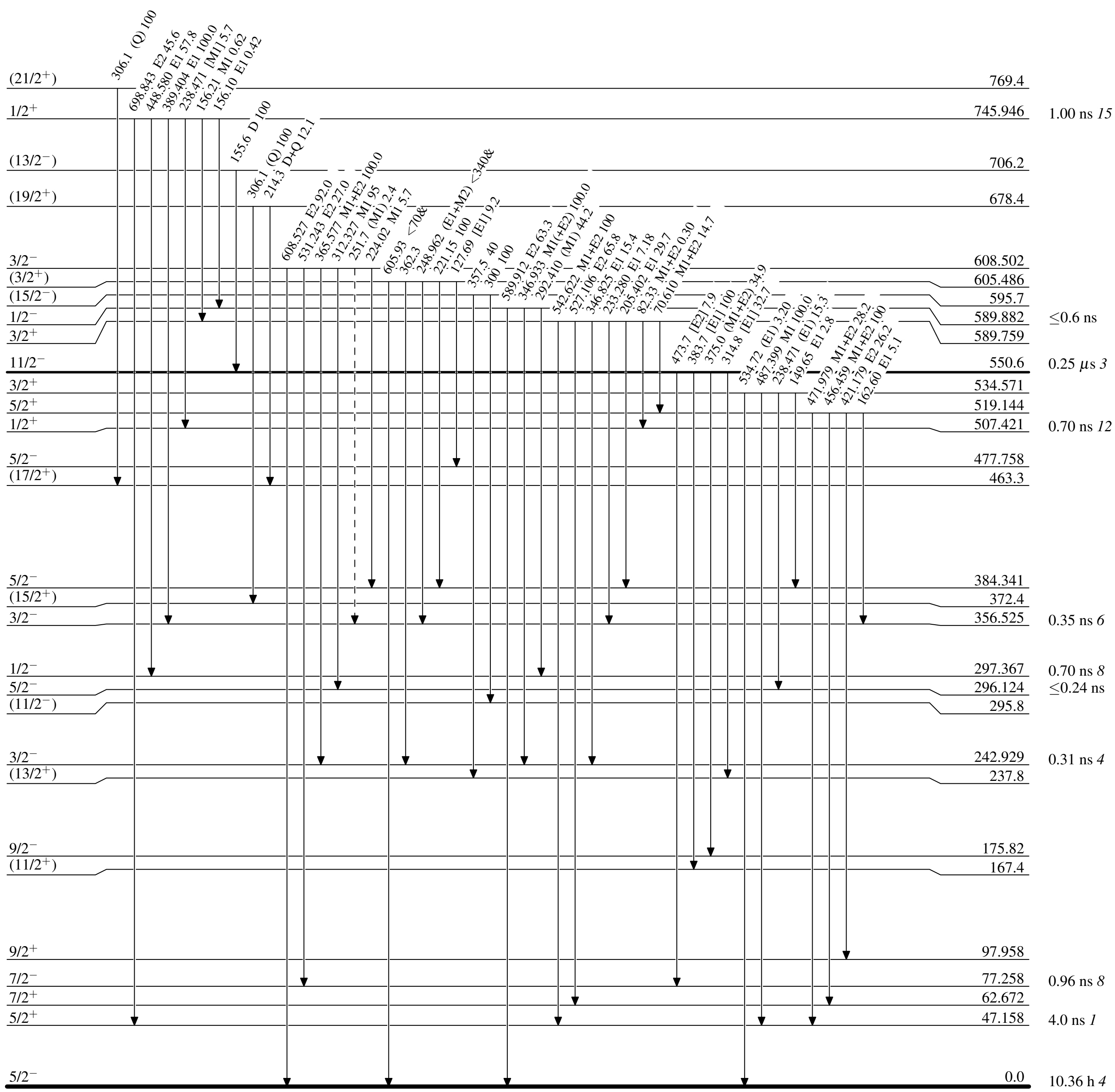
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

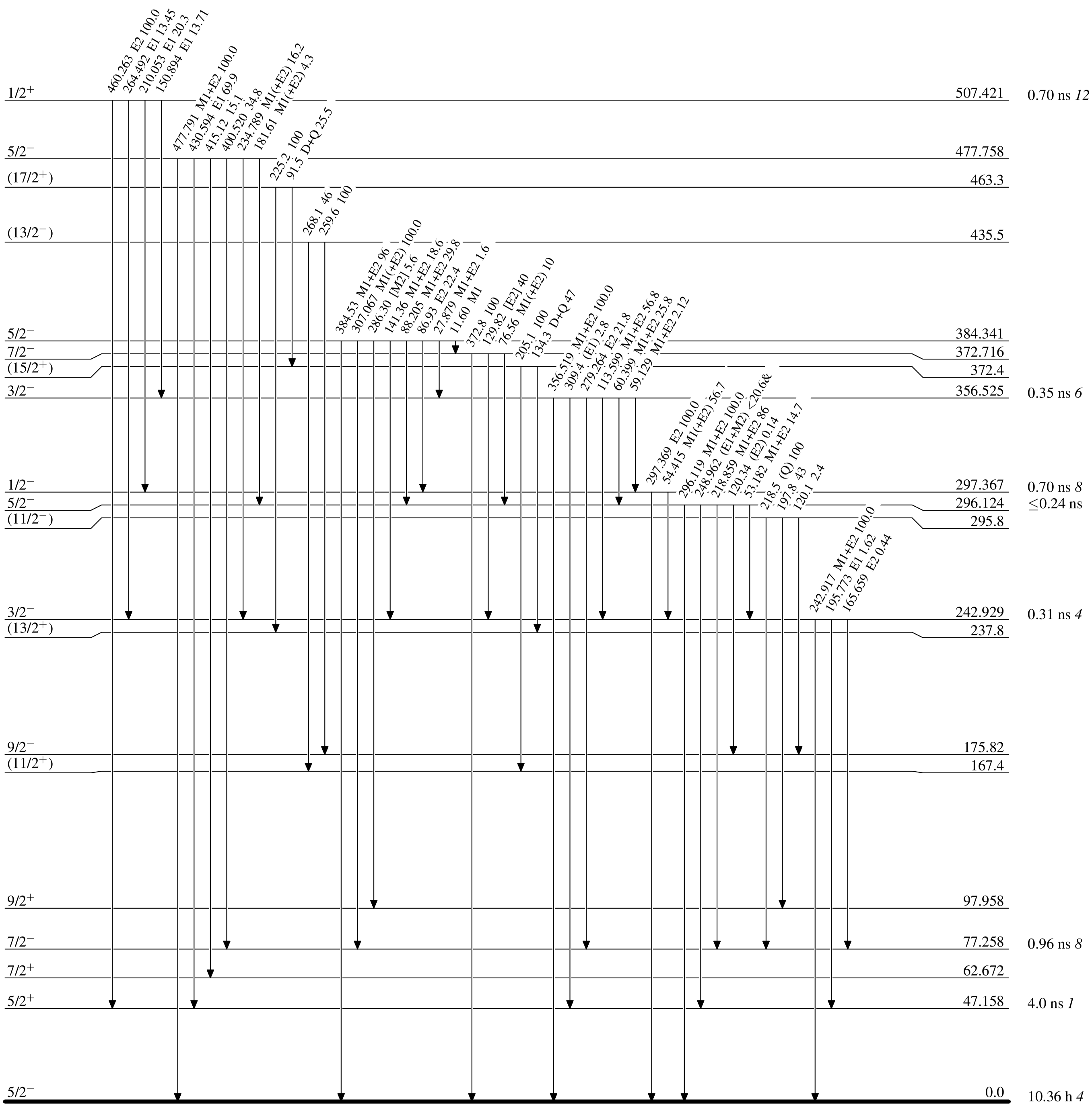


$^{165}_{68}Er_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

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

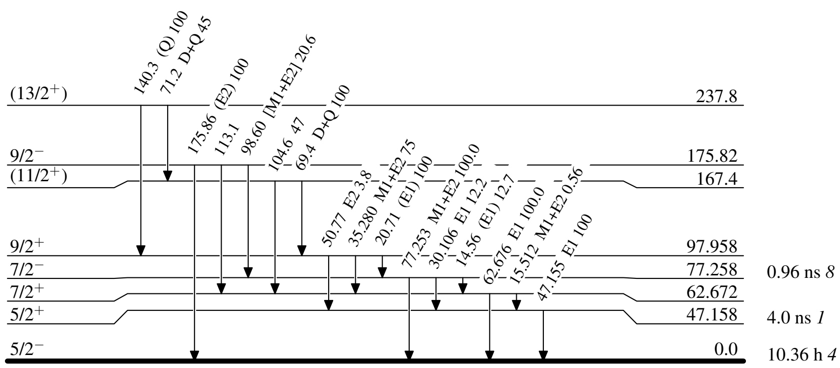


$^{165}_{68}Er_{97}$

Adopted Levels, Gammas

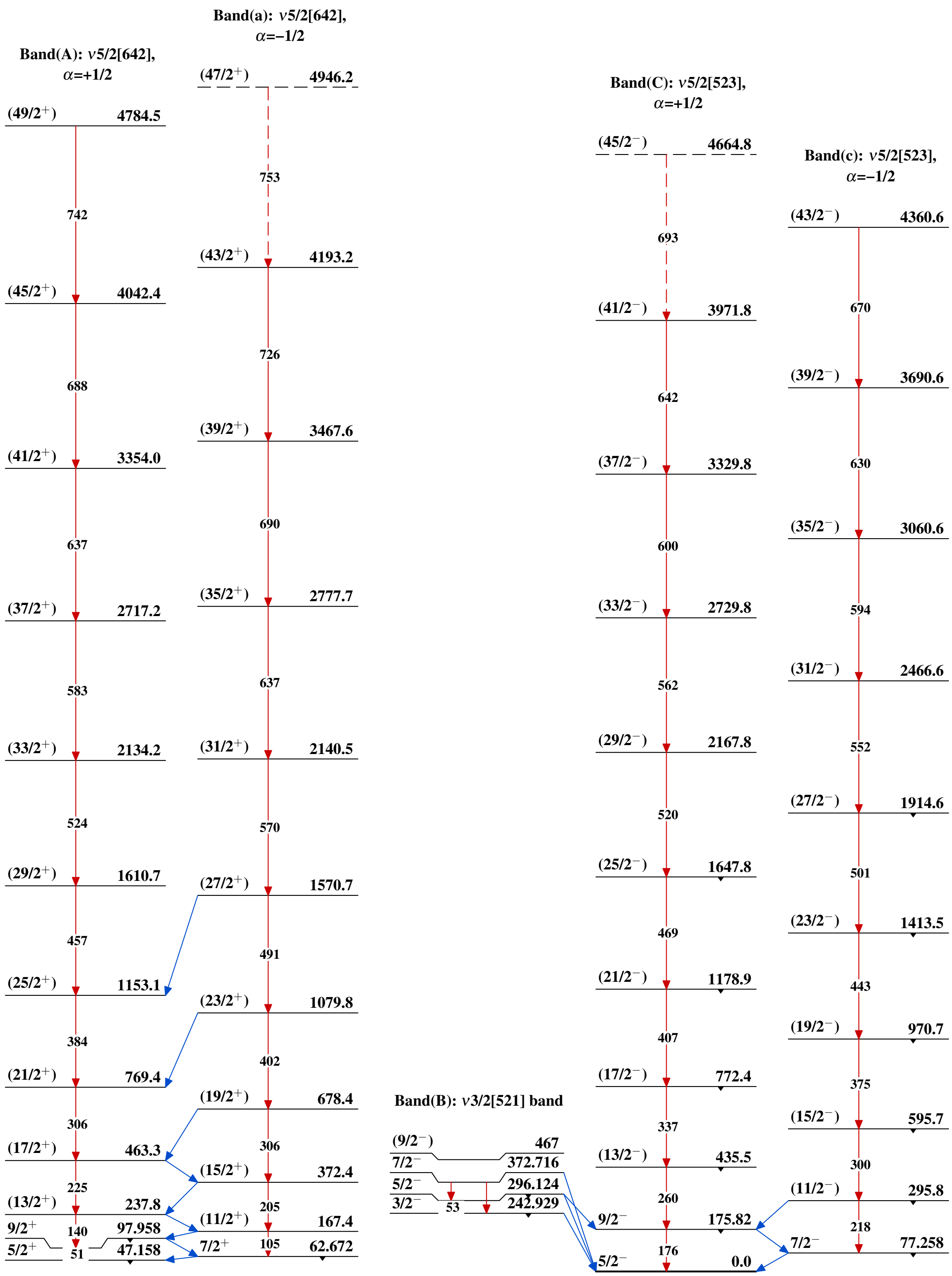
Level Scheme (continued)

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



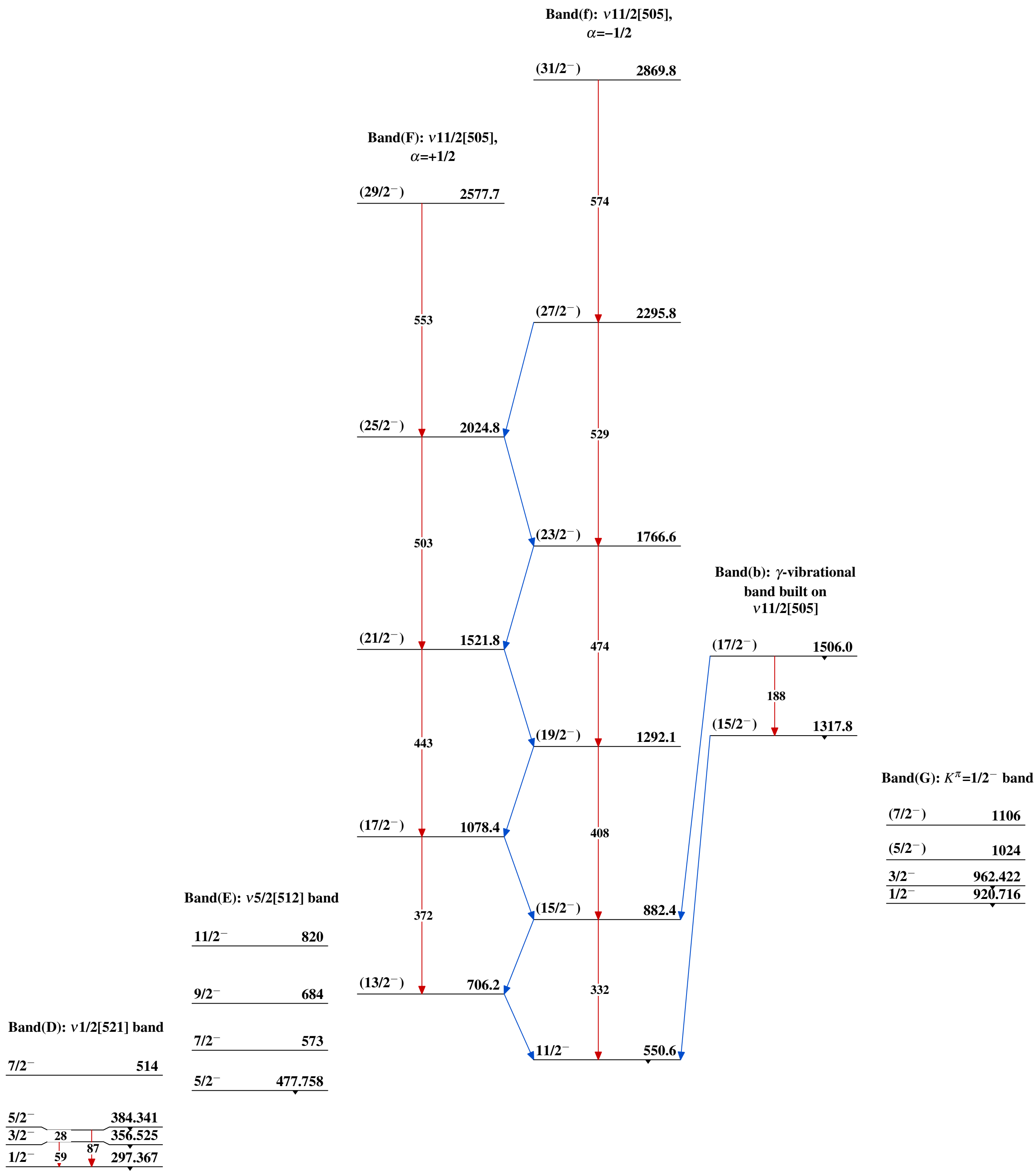
$^{165}_{68}Er_{97}$

Adopted Levels, Gammas



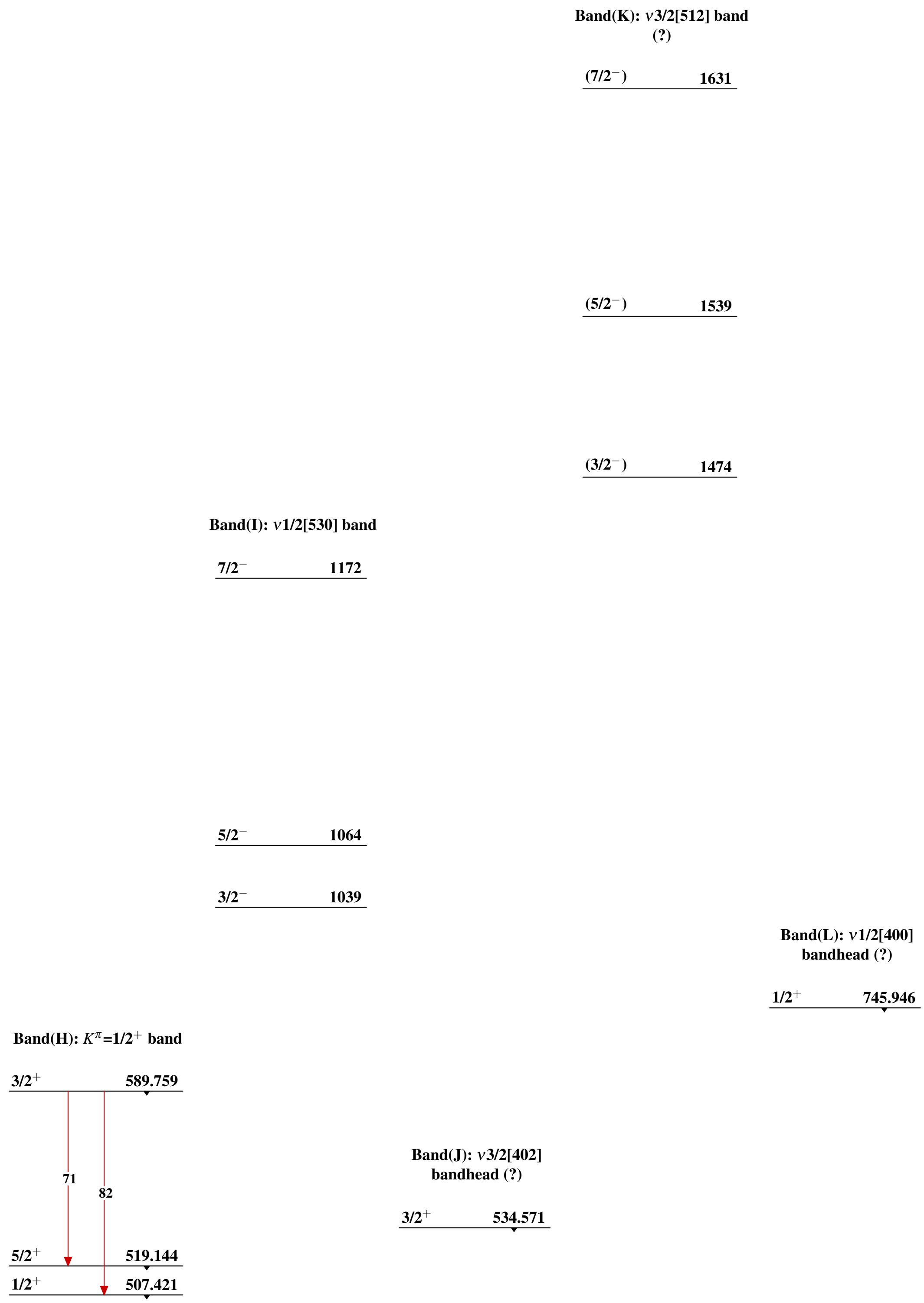
$^{165}_{68}Er_{97}$

Adopted Levels, Gammas (continued)



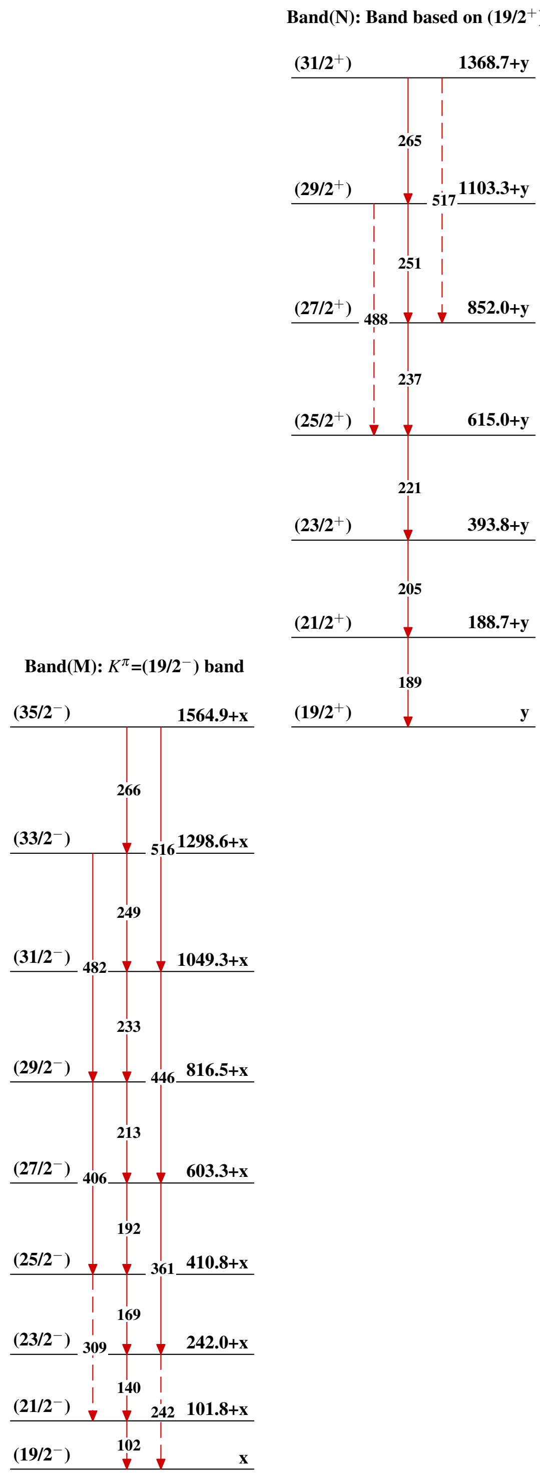
$^{165}_{68}Er_{97}$

Adopted Levels, Gammas (continued)



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

Adopted Levels, Gammas (continued)



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