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^-)=−2635 *27*; S(n)=9092 *25*; S(p)=4276.4 *15*; Q(α)=1941.4 *26* 2021Wa16
Q(ε)=1591.3 *15*, S(2n)=16344 *6*, S(2p)=11129.9 *15* (2021Wa16).
Mass measurement: 2001Bo59 (Penning-trap method).
Hyperfine structure measurements: 1988Al04, 1987Mi31, 1986Al32.
Additional information 1.
2020Zh17: calculated high-spin levels, J^π, Nilsson configurations, kinematic moment of inertia versus angular frequency plots for the ground-state bands, β and γ deformation parameters, proton and neutron pairing energies, total- and neutron and proton single particle-Routhians, angular momentum alignments, and neutron occupation probabilities using the cranked relativistic Hartree-Bogoliubov (CRHB) formalism.
Other theoretical structure calculations: 25 references retrieved from the NSR database are listed in 'document' records in this dataset.

^{165}Tm Levels

Cross Reference (XREF) Flags

A	^{165}Yb ε decay (9.8 min)	D	^{164}Er(^{3}He,d)
B	^{154}Sm(^{15}N,4nγ),^{150}Nd(^{19}F,4nγ)	E	^{164}Er(α,t)
C	^{158}Gd(^{11}B,4nγ)	F	^{165}Ho(α,4nγ)

E(level)†	J$^\pi$‡	T$_{1/2}$#	XREF	Comments
0.0[c]	1/2$^+$	30.06 h *3*	ABCDEF	%ε+%β^+=100 μ=−0.139 *2* (1968Sc26,1988Al04,2019StZV) Evaluated rms charge radius <r^2>$^{1/2}$=5.2004 fm *38* (2013An02). Evaluated δ<r^2>(^{169}Tm−^{166}Tm)=−0.265 fm^2 *2* (2013An02). Δ<r^2>(^{165}Tm−^{169}Tm)=−0.250 fm^2 *2* (1988Al04). J$^\pi$: atomic beam method (1968Ek01); measured μ in agreement with −0.17 to −0.23 calculated (1988Al04) for π1/2[411] orbital; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[411] band. μ: same value from atomic beam (1968Sc26), and laser-resonance ionization spectroscopy (1988Al04,1987Mi31,1986Al32). T$_{1/2}$: from 1970Ka23. Others: 1964Ch22, 1963Ra15, 1961Bj02, 1957Gr74, 1954Mi01, 1953Ha43.
11.51[d] *5*	3/2$^+$	0.75 ns *5*	ABCDEF	T$_{1/2}$: from delayed coin method in ^{165}Yb ε decay (1980AlZE). J$^\pi$: M1(+E2) γ to 1/2$^+$; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[411] band.
80.38[b] *6*	7/2$^+$	80 μs *3*	ABCDEF	%IT=100 J$^\pi$: 68.86γ E2 (ce data) to 3/2$^+$; calculated nuclear structure factor agrees well experimental values from (^{3}He,d) and (α,t) (1974Ch44) for 7/2[404] orbital. 7/2[404] band. T$_{1/2}$: Xγ(t) (1967Co26) in (p,2nγ).
129.63[c] *5*	5/2$^+$	≤0.2 ns	ABCDEF	J$^\pi$: 129.59γ E2, ΔJ=2 to 1/2$^+$; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[411] band agrees well experimental data. T$_{1/2}$: from γce(t) in ^{165}Yb decay (1980AlZE).
158.59[e] *13*	1/2$^-$		AB de	XREF: A(?). J$^\pi$: γ to 1/2$^+$; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[541] band agree well experimental data.
158.97[d] *6*	7/2$^+$	322 ps *20*	ABCdeF	T$_{1/2}$: $\gamma\gamma$(t) in (p,2nγ) (1976Sv01). Other: ≤3 ns from ^{165}Yb ε decay (1980AlZE). J$^\pi$: 147.29γ E2, ΔJ=2 to 3/2$^+$.

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Adopted Levels, Gammas (continued)

^{165}Tm Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
160.49[&] 6	7/2⁻	9.0 μs 5	ABCdeF	%IT=100 Jπ: 30.8γ E1 to 5/2⁺, 80.1γ E1+M2 to 7/2⁺; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 7/2[523] band agrees well experimental data. $T_{1/2}$: from delayed coin method in ^{165}Yb ε decay (1978Ad06,1968Ta05).
181.77[e] 7	5/2⁻		ABCDEF	Jπ: 170.25γ E1, ΔJ=1 to 3/2⁺; γ to 7/2⁺; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[541] band.
210.60[a] 8	9/2⁺		ABC F	Jπ: ΔJ=1, (M1+E2) γ to 7/2⁺; rotational band member.
252.45[@] 7	9/2⁻		ABC F	Jπ: ΔJ=1, M1+E2 γ to 7/2⁻; rotational band member.
275.55[f] 23	3/2⁻		AB DE	Jπ: E1 γ to 1/2⁺; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[541] band.
293.48[e] 8	9/2⁻		ABCDEF	Jπ: ΔJ=1 γ to 7/2⁺; ΔJ=2 γ to 5/2⁻; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[541] band.
315.56[g] 6	5/2⁺		AB DE	Jπ: M1 γ to 7/2⁺; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 5/2[402] band.
362.29[c] 7	9/2⁺		ABCdeF	E(level): doublet in (^{3}He,d) and (α,t). Jπ: ΔJ=2, E2 γ to 5/2⁺; M1 γ to 7/2⁺; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[411] band.
366.04[b] 11	11/2⁺		BC F	
369.01[&] 12	11/2⁻		BCdeF	E(level): doublet in (^{3}He,d) and (α,t). Jπ: ΔJ=1 γ to 9/2⁻; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 7/2[523] band.
413.61[d] 11	11/2⁺		ABC F	Jπ: ΔJ=1 γ to 9/2⁻; ΔJ=2 γ to 7/2⁺.
415.92[o] 8	(3/2⁺)		A	Jπ: γs to 1/2⁺ and 5/2⁺; decay pattern to 1/2[411] band members consistent with Alaga rules (1985Ad12).
419.87[h] 7	7/2⁺		AB	Jπ: M1 γ to 5/2⁺; rotational band member.
450.36[f] 17	7/2⁻		AB DE	Jπ: (E1) γ to 5/2⁺; 'fingerprint' pattern in (^{3}He,d) and (α,t) for 1/2[541] band.
491.24[o] 7	(5/2⁺)		A DE	Jπ: L=(2) from (^{3}He,d)/(α,t) cross section ratio; expected band structure.
497.68[e] 10	13/2⁻		BC F	Jπ: ΔJ=2 γ to 9/2⁻, 84.1γ D, to 11/2⁺.
511.37[@] 13	13/2⁻		BC F	Jπ: 258.9γ ΔJ=2 to 9/2⁻; 142.4γ D+Q to 11/2⁻; rorational band member.
545.10[a] 14	13/2⁺		BC F	Jπ: 334.3γ ΔJ=2 to 9/2⁺; rotaional band member.
551.52[g] 10	9/2⁺		AB	Jπ: γs to 5/2⁺ and 7/2⁺; rotaional band member.
592.28[o] 10	(7/2⁺)		A	Jπ: γs to 5/2⁺ and 7/2⁺; possible band member.
675.50[&] 13	15/2⁻		BC F	Jπ: 306.5γ ΔJ=2 to 11/2⁻; rotational band member.
688 2	(5/2⁺,3/2⁺)		DE	Jπ: L=(2) from (^{3}He,d)/(α,t) cross section ratio.
689.08[c] 13	13/2⁺		BC F	Jπ: 327.0γ ΔJ=2 to 9/2⁺; rotational band member.
701.73[f] 13	11/2⁻		B	Jπ: 251.4γ ΔJ=2 to 7/2⁻; rotational band member.
707.25[h] 15	11/2⁺		B	Jπ: 287.8γ to 7/2⁺; rotaional band member.
725.87[o] 9	(9/2⁺)		A	Jπ: γs to 7/2⁺ and 11/2⁺; possible band member.
746.18[b] 13	15/2⁺		BC F	Jπ: 380.0γ ΔJ=2 to 11/2⁺; rotaional band member.
768.54[d] 13	15/2⁺		BC F	Jπ: 354.8γ ΔJ=2 to 11/2⁺; rotional band member.
795.90[e] 13	17/2⁻		BC F	Jπ: 298.3γ ΔJ=2 to 13/2⁻; rotional band member.
797.36 9			A	
831.00[p] 16	(9/2⁻)		A	Jπ: γ to 9/2⁻; possible band member.
866.57[@] 15	17/2⁻		BC F	Jπ: 355.0γ ΔJ=2 to 13/2⁻; rotational band member.
889.88 23	(5/2⁺,7/2⁺)		A	Jπ: 878.6γ to 3/2⁺, 527.5γ to 9/2⁺.
891.61[g] 17	13/2⁺		B	Jπ: 340.0γ to 9/2⁺; rotational band member.
≈917	(1/2⁺)		DE	Jπ: L=(0) from (^{3}He,d)/(α,t) cross section ratio.
921.40 19	(5/2⁻,7/2)		A	Jπ: γs to 5/2⁻, 5/2⁺ and 9/2⁻.
967.96[a] 14	17/2⁺		BC F	Jπ: 422.8γ ΔJ=2 to 13/2⁺; rotational band member.
969[p] 2	11/2⁻		DE	Jπ: 9/2[514] band member from 'fingerprint' pattern in (^{3}He,d) and (α,t).
1012.80 14			A	

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Adopted Levels, Gammas (continued)

^{165}Tm Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
1030.70[f] *14*	15/2$^-$	B	J$^{\pi}$: 328.9γ ΔJ=2 to 11/2$^-$; rotational band member.
1037.04 *8*	(7/2)	A	J$^{\pi}$: log *ft*=6.3 from 5/2$^-$; γs to 9/2$^+$ and 9/2$^-$.
1072.69[&] *17*	19/2$^-$	BC F	J$^{\pi}$: 397.1γ ΔJ=2 to 15/2$^-$; rotational band member.
1089.41[h] *19*	15/2$^+$	B	J$^{\pi}$: 382.2γ to 11/2$^+$; rotational band member.
1101.71[c] *14*	17/2$^+$	BC F	J$^{\pi}$: 412.8γ ΔJ=2 to 13/2$^+$; rotaional band member.
1185.24[e] *14*	21/2$^-$	BC F	J$^{\pi}$: 389.3γ ΔJ=2 to 17/2$^-$; rotational band member.
1190.52 *7*		A	
1205.44[b] *13*	19/2$^+$	BC F	J$^{\pi}$: 459.4γ ΔJ=2 to 15/2$^+$; rotational band member.
1215.76[d] *13*	19/2$^+$	BC F	J$^{\pi}$: 447.1γ ΔJ=2 to 15/2$^+$; rotational band member.
1250.84 *7*	(5/2)$^-$	A	J$^{\pi}$: log *ft*=5.6 from 5/2$^-$ parent; possible γs to 3/2$^+$ and 9/2$^-$.
1281.18 *10*		A	
1290.36[m] *19*	(15/2$^-$)	B	J$^{\pi}$: 792.8γ D+Q to 13/2$^-$; band assignment.
1308.17 *7*	(7/2$^+$)	A	J$^{\pi}$: γs to 3/2$^+$ and 11/2$^+$.
1309.06[@] *18*	21/2$^-$	BC F	J$^{\pi}$: 442.5γ ΔJ=2 to 17/2$^-$; rotational band member.
1315.03 *8*	(5/2,7/2)	A	J$^{\pi}$: log *ft*=6.2 from 5/2$^-$ parent; γs to 7/2$^+$ and 7/2$^-$.
1321.95[g] *21*	17/2$^+$	B	J$^{\pi}$: 430.4γ to 13/2$^+$; rotational band member.
1326.00 *9*	(5/2$^-$,7/2)	A	J$^{\pi}$: log *ft*=6.25 from 5/2$^-$ parent; γs to 7/2$^+$, 7/2$^-$, 9/2$^-$.
≈1338	(1/2$^+$)	DE	J$^{\pi}$: L=(0) from (^{3}He,d)/(α,t) cross section ratio.
1370.13 *9*	(7/2)	A	J$^{\pi}$: log *ft*=6.36 from 5/2$^-$ parent; γs to 7/2$^+$, 7/2$^-$, 9/2$^-$, (9/2$^+$).
1434.09[f] *15*	19/2$^-$	B	J$^{\pi}$: 403.5γ ΔJ=2 to 15/2$^-$; rotational band member.
1443.03[n] *16*	(17/2$^-$)	B	J$^{\pi}$: 945.5γ to 13/2$^-$; band assignment.
1466.17 *16*	(5/2$^-$,7/2)	A	J$^{\pi}$: log *ft*=6.9 from 5/2$^-$ parent; γs to 7/2$^+$, 7/2$^-$, 9/2$^-$.
1466.44[a] *16*	21/2$^+$	BC F	J$^{\pi}$: 498.5γ ΔJ=2 to 17/2$^+$; rotational band member.
1550.35[&] *19*	23/2$^-$	BC F	J$^{\pi}$: 477.6γ ΔJ=2 to 19/2$^-$; rotational band member.
1552.14[h] *23*	19/2$^+$	B	J$^{\pi}$: 462.7γ to 15/2$^+$; rotational band member.
1564.77 *8*	(7/2)	A	J$^{\pi}$: log *ft*=6.04 from 5/2$^-$; γs to 9/2$^+$ and 9/2$^-$.
1581.79 *6*	(7/2)$^-$	A	J$^{\pi}$: log *ft*=5.53 from 5/2$^-$ parent; γs to 9/2$^+$ and 9/2$^-$.
1589.98[c] *15*	21/2$^+$	B F	J$^{\pi}$: 488.1γ ΔJ=2 to 17/2$^+$; rotational band member.
1595.09? *9*		A	
1615.14[m] *18*	(19/2$^-$)	B	
1633.82[i] *18*	(17/2$^-$)	B	J$^{\pi}$: band assignment.
1659.54[e] *16*	25/2$^-$	BC F	J$^{\pi}$: 474.3γ ΔJ=2 to 21/2$^-$; rotational band member.
1728.44[d] *15*	23/2$^+$	B F	J$^{\pi}$: 512.4γ ΔJ=2 to 19/2$^+$; rotational band member.
1741.64[k] *21*	(17/2$^+$)	B	J$^{\pi}$: band assignment.
1745.25[b] *15*	23/2$^+$	B F	J$^{\pi}$: 539.8γ ΔJ=2 to 19/2$^+$; rotational band member.
1754.08[j] *18*	(19/2$^-$)	B	J$^{\pi}$: band assignment.
1807.50[n] *16*	(21/2$^-$)	B	
1827.80[@] *21*	25/2$^-$	BC F	
1828.32[g] *25*	21/2$^+$	B	
1846.59 *8*	(7/2)	A	J$^{\pi}$: log *ft*=5.9 from 5/2$^-$; γs to 9/2$^+$ and (9/2$^-$).
1857.87[l] *19*	(19/2$^+$)	B	
1899.59[i] *18*	(21/2$^-$)	B	
1904.25[f] *16*	23/2$^-$	B	
1990.08[k] *19*	(21/2$^+$)	B	
2027.19[a] *16*	25/2$^+$	BC F	
2032.56[m] *18*	(23/2$^-$)	B	
2068.04[j] *21*	(23/2$^-$)	B	
2079.08[h] *27*	23/2$^+$	B	
2096.72[&] *22*	27/2$^-$	BC F	

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Adopted Levels, Gammas (continued)

^{165}Tm Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
2136.25[c] *18*	25/2+		B F	
2139.27[l] *19*	(23/2+)		B	
2194.84 *23*	(5/2−,7/2)		A	Jπ: log *ft*=6.1 from 5/2−; γ to 9/2−.
2210.57[e] *19*	29/2−		B F	
2252.73[n] *18*	(25/2−)		B	
2257.37[i] *23*	(25/2−)		B	
2305.41[k] *20*	(25/2+)		B	
2305.62[d] *17*	27/2+		B F	
2330.23[b] *17*	27/2+		B F	
2378.33?[g] *32*	(25/2+)		B	
2408.98[@] *22*	29/2−		B F	
2427.67[f] *19*	27/2−		B	
2466.04[j] *25*	(27/2−)		B	
2489.05[l] *22*	(27/2+)		B	
2541.30[m] *21*	(27/2−)		B	
2621.41[a] *18*	29/2+		B F	
2663.22[c] *20*	29/2+		B F	
2670.88?[h] *34*	(27/2+)		B	
2690.08[k] *23*	(29/2+)		B	
2692.62[i] *26*	(29/2−)		B	
2694.94[&] *23*	31/2−		B F	
2771.13[n] *27*	(29/2−)		B	
2828.86[e] *22*	33/2−	0.187 ps *35*	B F	
2858.91[d] *20*	31/2+		B F	
2893.87[b] *20*	31/2+		B	
2908.13[l] *24*	(31/2+)		B	
2934.80[j] *28*	(31/2−)		B	
2999.84[f] *22*	31/2−		B	
3015.94[@] *23*	33/2−		B F	
3099.09[c] *22*	33/2+		B	
3123.70[m] *29*	(31/2−)		B	
3127.12[a] *21*	33/2+		B	
3143.04[k] *25*	(33/2+)		B	
3193.47[i] *29*	(33/2−)		B	
3267.34[&] *24*	35/2−		B F	
3325.67[d] *26*	35/2+		B	
3345.33[n] *33*	(33/2−)		B	
3374.01[b] *23*	35/2+		B	
3393.87[l] *25*	(35/2+)		B	
3465.49[j] *30*	(35/2−)		B	
3503.06[e] *27*	37/2−	0.180 ps *28*	B F	
3519.60[@] *23*	37/2−		B	
3582.43[c] *26*	37/2+		B	
3618.70[f] *24*	35/2−		B	
3622.40[a] *24*	37/2+		B	
3659.77[k] *26*	(37/2+)		B	

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Adopted Levels, Gammas (continued)

^{165}Tm Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	E(level)†	Jπ‡	$T_{1/2}$#	XREF
3739.20?[m] *35*	(35/2−)		B	5347.6[j] *5*	(47/2−)		B
3749.18[i] *32*	(37/2−)		B	5484.03[c] *44*	49/2+	0.139 ps *+28−35*	B
3766.67[&] *26*	39/2−		B	5526.39[k] *31*	(49/2+)		B
3841.37[d] *33*	39/2+		B	5550.96[a] *37*	49/2+		B
3905.45[b] *25*	39/2+		B	5640.70[&] *37*	51/2−		B
3914.83?[n] *39*	(37/2−)		B	5701.5[i] *5*	(49/2−)		B
3941.23[l] *27*	(39/2+)		B	5725.04[e] *42*	49/2−	0.069 ps *+21−28*	B
4038.60[@] *27*	41/2−		B	5819.9[d] *5*	51/2+	0.125 ps *+21−14*	B
4046.39[j] *36*	(39/2−)		B	5891.69?[l] *33*	(51/2+)		B
4140.83[c] *33*	41/2+		B	5931.81?[b] *38*	(51/2+)		B
4187.73[a] *28*	41/2+		B	6061.15[@] *39*	53/2−		B
4220.34[e] *30*	41/2−	0.152 ps *21*	B	6072.2?[j] *5*	(51/2−)		B
4234.84[k] *28*	(41/2+)		B	6245.99?[k] *37*	(53/2+)		B
4276.79[f] *27*	39/2−		B	6263.9[c] *5*	53/2+	0.14 ps *+5−4*	B
4319.34[&] *29*	43/2−		B	6332.46?[a] *42*	(53/2+)		B
4353.28[i] *38*	(41/2−)		B	6403.00[&] *42*	55/2−		B
4429.67[d] *38*	43/2+		B	6452.8?[i] *5*	(53/2−)		B
4510.93[b] *30*	43/2+		B	6521.3[e] *5*	53/2−		B
4544.75[l] *30*	(43/2+)		B	6613.8[d] *5*	55/2+	0.15 ps *+5−3*	B
4634.30[@] *30*	45/2−		B	6884.05[@] *44*	57/2−		B
4673.89[j] *42*	(43/2−)		B	7110.2[c] *5*	57/2+		B
4775.63[c] *39*	45/2+	0.19 ps *4*	B	7229.3[&] *5*	59/2−		B
4827.56[a] *31*	45/2+		B	7481.6[d] *6*	59/2+		B
4862.61[k] *30*	(45/2+)		B	7774.7[@] *5*	61/2−		B
4944.50[&] *31*	47/2−		B	8023.6[c] *6*	61/2+		B
4962.24[e] *36*	45/2−	0.104 ps *14*	B	8112.5[&] *6*	63/2−		B
4964.92?[f] *31*	(43/2−)		B	8410.5[d] *7*	63/2+		B
5003.58[i] *43*	(45/2−)		B	8731.5[@] *6*	65/2−		B
5090.47[d] *43*	47/2+	0.201 ps *+35−28*	B	8997.9?[c] *8*	(65/2+)		B
5185.81[b] *32*	47/2+		B	9054.0[&] *7*	67/2−		B
5203.87[l] *32*	(47/2+)		B	9405.9?[d] *9*	(67/2+)		B
5309.55[@] *33*	49/2−		B	10051.4[&] *12*	71/2−		B

† From least-squares fit to Eγ data, except for three levels which are from particle-transfer reactions only.

‡ J≥11/2 are based on γγ(θ)(DCO) in ^{154}Sm(^{15}N,4nγ), ^{150}Nd(^{19}F,4nγ), γ-decay patterns and rotational band assignments. It is assumed that in high-spin studies, due to yrast nature of population of levels, spins generally increase with increasing excitation energy.

For excited states, values are from DSAM in ^{154}Sm(^{15}N,4nγ),^{150}Nd(^{19}F,4nγ), unless otherwise stated.

@ Band(A): π7/2[523],α=+1/2. A=11.0.

& Band(a): π7/2[523],α=−1/2. A=10.7.

a Band(B): π7/2[404],α=+1/2. A=13.5.

b Band(b): π7/2[404],α=−1/2. A=13.8.

c Band(C): π1/2[411],α=+1/2. A=13.7, a=0.72 for composite (α=+1/2 and α=−1/2) band.

d Band(c): π1/2[411],α=−1/2.

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Adopted Levels, Gammas (continued)

^{165}Tm Levels (continued)

[e] Band(D): π1/2[541],α=+1/2. A=10.2, a=2.8 for composite (α=+1/2 and α=−1/2) band.
[f] Band(d): π1/2[541],α=−1/2.
[g] Band(E): π5/2[402],α=+1/2. A=14.4.
[h] Band(e): π5/2[402],α=−1/2. A=13.9.
[i] Band(F): π7/2[404]⊗ν5/2[642]⊗ν5/2[523],α=+1/2.
[j] Band(f): π7/2[404]⊗ν5/2[642]⊗ν5/2[523],α=−1/2.
[k] Band(G): π7/2[523]⊗ν5/2[642]⊗ν5/2[523],α=+1/2.
[l] Band(g): π7/2[523]⊗ν5/2[642] ν5/2[523],α=−1/2.
[m] Band(H): γ band (K±2) built on π1/2[541], even J+1/2.
[n] Band(h): γ band (K±2) built on π1/2[541], odd J+1/2.
[o] Band(I): π3/2[411]. A=14.7. Band assignment is from 1985Ad12. Earlier assignments were 491, 3/2$^+$; 592, 5/2$^+$; 726, 7/2$^+$ (1978Ad06); and 491, 3/2$^+$; 609, 5/2$^+$; 725, 7/2$^+$ (1973Ta18). The 609 level has not been reported by 1978Ad06 or in particle-transfer studies. This band, comprised of 3/2$^+$ to 9/2$^+$ members, is not populated in high-spin studies.
[p] Band(J): π9/2[514] band. This band, comprised of 9/2 and 11/2 members, is not populated in high-spin studies.

Adopted Levels, Gammas (continued)

$\gamma(^{165}Tm)$

Additional information 2.

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	$I_{(\gamma+ce)}$[‡]	Comments
11.51	$3/2^+$	11.60 *10*	100	0.0	$1/2^+$	M1(+E2)	≤0.06[&]	4.3×10^2 *14*		α(L)=3.3×10^2 *11*; α(M)=76 *26* α(N)=18 *6*; α(O)=2.3 *7*; α(P)=0.0910 *27* B(M1)(W.u.)=0.044 *+28−14* δ(E2/M1)≤0.3 from ce data in ^{165}Yb decay gives B(E2)(W.u.)<20510, much higher than RUL=1000 which gives δ(E2/M1)<0.06, which is adopted here.
80.38	$7/2^+$	68.86 *5*	100	11.51	$3/2^+$	E2		13.56 *19*		B(E2)(W.u.)=0.00584 *24*
129.63	$5/2^+$	118.06 *5*	100 *5*	11.51	$3/2^+$	(M1)		1.928 *27*		B(M1)(W.u.)≥0.02 E_γ,I_γ: 116.9 *2* from (^{15}N,4nγ) seems mixed with an impurity; not used in averaging.
		129.59 *6*	16 *3*	0.0	$1/2^+$	E2		1.173 *17*		B(E2)(W.u.)≥67 Mult.: Q, ΔJ=2 from DCO in (^{15}N,4nγ); D, E2 from ce data in ^{165} ε decay.
158.59	$1/2^-$	158.20 *25*	100	0.0	$1/2^+$	[E1]		0.0962 *14*		
158.97	$7/2^+$	(29.31 *5*)		129.63	$5/2^+$				177 *63*	
		147.29 *5*	100 *5*	11.51	$3/2^+$	E2		0.743 *10*		B(E2)(W.u.)=133 *+32−22* Mult.: Q, ΔJ=2 from $\gamma(\theta)$ in (^{11}B,4nγ) and DCO in (^{15}N,4nγ); E2 or M1+E2 from ce data in ^{165}Yb ε decay.
160.49	$7/2^-$	30.80 *10*	3.2 *5*	129.63	$5/2^+$	E1		1.517 *25*		B(E1)(W.u.)=9.2×10^{-9} *+30−21*
		80.11 *2*	100 *5*	80.38	$7/2^+$	E1+M2	0.14[&] *3*	1.9 *6*		B(E1)(W.u.)=1.60×10^{-8} *+41−28*; B(M2)(W.u.)=0.22 *+13−9*
181.77	$5/2^-$	(22.78 *7*)		158.97	$7/2^+$	[E1]		3.48 *6*	≈45	
		(52.10 *7*)		129.63	$5/2^+$	[E1]		0.352 *6*	≈45	
		170.25 *5*	100 *5*	11.51	$3/2^+$	E1		0.0817 *11*		Mult.: D, ΔJ=1 from DCO in (^{15}N,4nγ); E1 or (E2) from ce data in ^{165}Yb ε decay.
210.60	$9/2^+$	130.22 *7*	100	80.38	$7/2^+$	(M1+E2)	+1.00 *12*	1.305 *27*		E_γ: weighted average of 130.26 *7* from ^{165}Yb ε decay, 130.0 *2* from (^{15}N,4nγ), 130.0 *3* from (^{11}B,4nγ), and 130.2 *1* from (α,4nγ). Mult.: ΔJ=1 from DCO in (^{15}N,4nγ).
252.45	$9/2^-$	91.97 *5*	100	160.49	$7/2^-$	M1+E2		4.09 *16*		Mult.: ΔJ=1 from DCO in (^{15}N,4nγ).
275.55	$3/2^-$	275.9 *4*	100	0.0	$1/2^+$	E1		0.02373 *33*		E_γ: unweighted average of 275.53 *20* from ^{165}Yb ε decay and 276.2 *2* from (^{15}N,4nγ).
293.48	$9/2^-$	111.6 *2*	8.0 *7*	181.77	$5/2^-$	(E2)		2.030 *32*		E_γ: weighted average of 111.4 *2* from (^{15}N,4nγ)

$^{165}_{69}Tm_{96}$-7

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	Comments
									and 111.8 *2* from (α,4nγ). Other: 111.9 *10* from (^{11}B,4nγ). Mult.: Q, ΔJ=2 from DCO in (^{15}N,4nγ) and γ(θ) in (^{11}B,4nγ); Δπ=no from level scheme. I_γ: others: 10.2 *21* from (^{11}B,4nγ), 5.8 *10* from (α,4nγ).
293.48	9/2$^-$	134.58 *8*	100 *4*	158.97	7/2$^+$	(E1)			E_γ: weighted average of 134.60 *8* from ^{165}Yb ε decay, 134.4 *2* from (^{15}N,4nγ), 134.4 *3* from (^{11}B,4nγ), and 134.6 *1* from (α,4nγ). Mult.: D, ΔJ=1 from DCO in (^{15}N,4nγ) and γ(θ) in (^{11}B,4nγ); Δπ=yes from level scheme.
315.56	5/2$^+$	156.51 *15*	12.7 *12*	158.97	7/2$^+$	M1		0.867 *12*	
		185.88 *6*	54 *3*	129.63	5/2$^+$	E2		0.332 *5*	
		235.21 *9*	8.8 *7*	80.38	7/2$^+$	M1		0.280 *4*	
		304.03 *6*	100 *6*	11.51	3/2$^+$	(E2)		0.0686 *10*	
362.29	9/2$^+$	203.32 *7*	100 *5*	158.97	7/2$^+$	M1		0.418 *6*	I_γ: from ^{165}Yb ε decay. Others: 100 *7* from (^{15}N,4nγ), 100 *20* from (^{11}B,4nγ), and 100 *29* from (α,4nγ).
		232.61 *8*	69 *4*	129.63	5/2$^+$	E2		0.1584 *22*	I_γ: weighted average of 67 *4* from ^{165}Yb ε decay, 71 *5* from (^{15}N,4nγ), 55 *6* from (^{11}B,4nγ), and 65 *10* from (α,4nγ).
366.04	11/2$^+$	155.5 *1*	78 *3*	210.60	9/2$^+$	(M1+E2)	+1.00 *16*	0.753 *26*	E_γ: weighted average of 155.2 *2* from (^{15}N,4nγ), 155.5 *5* from (^{11}B,4nγ), and 155.6 *1* from (α,4nγ). I_γ: Others: 67 *6* from (^{11}B,4nγ) and 111 *11* from (α,4nγ).
		285.3 *2*	100 *5*	80.38	7/2$^+$	(E2)		0.0833 *12*	E_γ: weighted average of 285.3 *2* from (^{15}N,4nγ), 285.9 *3* from (^{11}B,4nγ), and 285.8 *2* from (α,4nγ). I_γ: others: 100 *9* from (^{11}B,4nγ), and 100 *15* from (α,4nγ).
369.01	11/2$^-$	116.5 *2*	100 *5*	252.45	9/2$^-$	D+Q			E_γ: unweighted average of 116.1 *2* from (^{15}N,4nγ), 116.6 *3* from (^{11}B,4nγ), and 116.7 *1* from (α,4nγ). I_γ: from (^{15}N,4nγ). Other: 100 *13* from (α,4nγ).
		208.4 *4*	18.1 *13*	160.49	7/2$^-$	(E2)		0.2282 *33*	E_γ: unweighted average of 208.0 *2* from (^{15}N,4nγ) and 208.8 *3* from (α,4nγ). I_γ: from (^{15}N,4nγ). Other: 16 *5* from (α,4nγ).
413.61	11/2$^+$	120.2 *2*	22 *4*	293.48	9/2$^-$	D			E_γ: weighted average of 119.9 *2* from (^{15}N,4nγ), 120.6 *10* from (^{11}B,4nγ), and 120.4 *2* from (α,4nγ). I_γ: unweighted average of 15.1 *12* from (^{15}N,4nγ), 22 *4* from (^{11}B,4nγ), and 29 *4* from (α,4nγ).
		254.96 *10*	100 *4*	158.59	1/2$^-$	(E2)		0.1187 *17*	E_γ: weighted average of 255.00 *10* from ^{165}Yb ε decay, 254.6 *2* from (^{15}N,4nγ), 255.0 *3* from (^{11}B,4nγ), and 255.0 *1* from (α,4nγ). I_γ: from (^{15}N,4nγ). Others: 100 *11* from (^{11}B,4nγ) and 100 *8* from (α,4nγ).
415.92	(3/2$^+$)	286.03 *15*	19.1 *24*	129.63	5/2$^+$				

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	δ@	α[a]	Comments
415.92	(3/2$^+$)	404.47 *10*	86 *6*	11.51	3/2$^+$				
		416.03 *13*	100 *8*	0.0	1/2$^+$				
419.87	7/2$^+$	104.26 *7*	100 *12*	315.56	5/2$^+$	M1		2.75 *4*	
		260.87 *9*	62 *6*	158.97	7/2$^+$				
		290.32 *16*	34 *4*	129.63	5/2$^+$	(M1,E2)		0.12 *4*	
		339.67 *20*	45 *15*	80.38	7/2$^+$				
450.36	7/2$^-$	174.9 *2*	8 *5*	275.55	3/2$^-$				E_γ,I_γ: from (^{15}N,4nγ).
		320.3 *4*	100	129.63	5/2$^+$	(E1)		0.01633 *23*	E_γ: unweighted average of 320.68 *8* from ^{165}Yb ε decay and 319.9 *3* from (^{15}N,4nγ). I_γ: from (^{15}N,4nγ).
491.24	(5/2$^+$)	332.30 *20*	37 *11*	158.97	7/2$^+$	(E2)		0.0527 *7*	
		361.59 *10*	75 *5*	129.63	5/2$^+$				
		479.72 *7*	100 *7*	11.51	3/2$^+$				
497.68	13/2$^-$	84.1 *1*	16.2 *7*	413.61	11/2$^+$	D			E_γ: weighted average of 83.9 *2* from (^{15}N,4nγ) and 84.2 *1* from (α,4nγ). Other: 84.5 *10* from (^{11}B,4nγ). I_γ: weighted average of 16.4 *7* from (^{15}N,4nγ), 20 *4* from (^{11}B,4nγ), and 14.6 *15* from (α,4nγ).
		128.4 *2*	3.99 *22*	369.01	11/2$^-$				
		204.3 *1*	100 *4*	293.48	9/2$^-$	(E2)		0.2434 *35*	E_γ: weighted average of 204.0 *2* from (^{15}N,4nγ), 204.1 *3* from (^{11}B,4nγ), and 204.4 *1* from (α,4nγ). I_γ: from (^{15}N,4nγ). Others: 100 *20* from (^{11}B,4nγ) and 100 *12* from (α,4nγ). Mult.: Q, ΔJ=2 from DCO in (^{15}N,4nγ) and $\gamma(\theta)$ in (^{11}B,4nγ); Δπ=no from level scheme.
511.37	13/2$^-$	142.4 *1*	100 *4*	369.01	11/2$^-$	D+Q			E_γ: weighted average of 142.2 *2* from (^{15}N,4nγ), 142.0 *3* from (^{11}B,4nγ), and 142.5 *1* from (α,4nγ). I_γ: from (^{15}N,4nγ). Others: 100 *10* from (^{11}B,4nγ) and 100 *7* from (α,4nγ).
		258.9 *2*	28 *4*	252.45	9/2$^-$	(E2)		0.1129 *16*	E_γ: weighted average of 258.7 *2* from (^{15}N,4nγ), 259.1 *5* from (^{11}B,4nγ), and 259.1 *2* from (α,4nγ). I_γ: unweighted average of 32.4 *20* from (^{15}N,4nγ), 31.9 *29* from (^{11}B,4nγ), and 19.5 *27* from (α,4nγ). Mult.: Q, ΔJ=2 from DCO in (^{15}N,4nγ) ; Δπ=no from level scheme.
545.10	13/2$^+$	178.9 *2*	39.9 *17*	366.04	11/2$^+$	(M1+E2)	+1.00 *14*	0.488 *18*	
		334.3 *2*	100 *4*	210.60	9/2$^+$	(E2)		0.0517 *7*	
551.52	9/2$^+$	131.32 *10*	100 *16*	419.87	7/2$^+$				E_γ: from ^{165}Yb ε decay. Other: 131.9 *2* from (^{15}N,4nγ).
		236.3 *2*	75 *12*	315.56	5/2$^+$				E_γ,I_γ: from (^{15}N,4nγ) only.
		422.26 *25*	36 *4*	129.63	5/2$^+$				E_γ,I_γ: from ^{165}Yb ε only.

$^{165}_{69}Tm_{96}$-9

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	Comments
592.28	(7/2$^+$)	433.35 *10*	100 *7*	158.97	7/2$^+$				
		462.63 *15*	58 *6*	129.63	5/2$^+$				
675.50	15/2$^-$	164.2 *1*	100 *4*	511.37	13/2$^-$	D+Q			E_γ: from (α,4nγ). Others: 163.9 *2* from (^{15}N,4nγ) and 164.4 *3* from (^{11}B,4nγ). I_γ: from (^{15}N,4nγ). Others: 100 *11* from (^{11}B,4nγ) and 100 *12* from (α,4nγ).
		177.5 *2*	2.15 *16*	497.68	13/2$^-$				
		306.5 *2*	58.8 *24*	369.01	11/2$^-$	(E2)		0.0671 *9*	E_γ: weighted average of 306.3 *2* from (^{15}N,4nγ), 306.6 *3* from (^{11}B,4nγ), and 306.6 *2* from (α,4nγ). I_γ: weighted average of 59.3 *24* from (^{15}N,4nγ), 58 *6* from (^{11}B,4nγ), and 56 *7* from (α,4nγ).
689.08	13/2$^+$	275.3 *2*	63.2 *24*	413.61	11/2$^+$	D			
		327.0 *2*	100 *4*	362.29	9/2$^+$	(E2)		0.0552 *8*	
701.73	11/2$^-$	251.4 *2*	32 *5*	450.36	7/2$^-$	(E2)		0.1235 *18*	
		339.6 *2*	100 *12*	362.29	9/2$^+$	D			
		408.0 *2*	18.8 *24*	293.48	9/2$^-$	(M1(+E2))	−0.03 *+16−23*	0.0641 *23*	
707.25	11/2$^+$	155.4 *2*	100 *10*	551.52	9/2$^+$				
		287.8 *2*	63 *7*	419.87	7/2$^+$				
725.87	(9/2$^+$)	312.2 *3*	32 *5*	413.61	11/2$^+$				
		363.6 *3*	73 *10*	362.29	9/2$^+$				
		566.90 *10*	100 *8*	158.97	7/2$^+$				
746.18	15/2$^+$	200.8 *2*	26.8 *12*	545.10	13/2$^+$	(M1+E2)	+0.67 *+17−11*	0.378 *19*	
		380.0 *2*	100 *4*	366.04	11/2$^+$	(E2)		0.0358 *5*	
768.54	15/2$^+$	270.8 *2*	28.0 *24*	497.68	13/2$^-$	D			I_γ: other: 24 *5* from (α,4nγ).
		354.8 *2*	100 *4*	413.61	11/2$^+$	(E2)		0.0435 *6*	I_γ: other: 100 *9* from (α,4nγ).
		403.6 *5*	13 *5*	366.04	11/2$^+$				E_γ: weighted average of 403.1 *10* from (^{11}B,4nγ) and 403.7 *5* from (α,4nγ). γ not in (^{15}N,4nγ). I_γ: from (α,4nγ).
795.90	17/2$^-$	298.3 *2*	100	497.68	13/2$^-$	(E2)		0.0727 *10*	
797.36		545.24 *20*	30 *5*	252.45	9/2$^-$				
		636.79 *10*	100 *7*	160.49	7/2$^-$				
831.00	(9/2$^-$)	578.58 *16*	100	252.45	9/2$^-$				
866.57	17/2$^-$	191.1 *1*	100 *4*	675.50	15/2$^-$	D+Q			E_γ: from (α,4nγ). Others: 190.8 *2* from (^{15}N,4nγ) and 191.1 *3* from (^{11}B,4nγ).
		355.1 *2*	70 *3*	511.37	13/2$^-$	(E2)		0.0435 *6*	E_γ: weighted average of 355.0 *2* from (^{15}N,4nγ), 355.0 *3* from (^{11}B,4nγ), and 355.2 *2* from (α,4nγ).
889.88	(5/2$^+$,7/2$^+$)	527.5[b] *3*	<18[b]	362.29	9/2$^+$				
		708.1 *4*	25 *8*	181.77	5/2$^-$				

$^{165}_{69}Tm_{96}$-10

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	Comments
889.88	(5/2$^+$,7/2$^+$)	878.6[b] *5*	100[b] *40*	11.51	3/2$^+$				
891.61	13/2$^+$	184.4 *2*	100 *7*	707.25	11/2$^+$				
		340.0 *2*	58 *6*	551.52	9/2$^+$				
921.40	(5/2$^-$,7/2)	606.24 *25*	88 *14*	315.56	5/2$^+$				
		628.1 *6*	28 *9*	293.48	9/2$^-$				
		739.0 *3*	100 *12*	181.77	5/2$^-$				
967.96	17/2$^+$	221.6 *2*	19.0 *9*	746.18	15/2$^+$	(M1+E2)	+0.57 *6*	0.294 *7*	
		422.8 *2*	100 *4*	545.10	13/2$^+$	(E2)		0.0267 *4*	
1012.80		650.0 *3*	20 *4*	362.29	9/2$^+$				
		831.12 *13*	100 *10*	181.77	5/2$^-$				
1030.70	15/2$^-$	234.8 *5*	4.8 *28*	795.90	17/2$^-$				
		328.9 *2*	100 *7*	701.73	11/2$^-$	(E2)		0.0543 *8*	
		341.5 *2*	90 *7*	689.08	13/2$^+$	D			
		533.3 *2*	55 *3*	497.68	13/2$^-$	(M1(+E2))	−0.22 *+24−78*	0.031 *8*	
1037.04	(7/2)	744.6 *8*	1.4 *7*	293.48	9/2$^-$				
		826.33 *10*	17.2 *14*	210.60	9/2$^+$				
		877.0 *6*	9 *5*	160.49	7/2$^-$				
		956.68 *7*	100 *6*	80.38	7/2$^+$				
1072.69	19/2$^-$	206.0 *2*	96 *4*	866.57	17/2$^-$	D+Q			
		397.1 *2*	100 *4*	675.50	15/2$^-$	(E2)		0.0317 *4*	
1089.41	15/2$^+$	197.7 *2*	100 *7*	891.61	13/2$^+$				
		382.2 *2*	91 *7*	707.25	11/2$^+$				
1101.71	17/2$^+$	333.3 *2*	35.5 *18*	768.54	15/2$^+$	D			
		354.8 *2*	5.2 *5*	746.18	15/2$^+$				E_γ: level-energy difference=355.5.
		412.8 *2*	100 *4*	689.08	13/2$^+$	(E2)		0.0285 *4*	
1185.24	21/2$^-$	389.3 *2*	100	795.90	17/2$^-$	(E2)		0.0335 *5*	
1190.52		937.96 *25*	13.7 *15*	252.45	9/2$^-$				
		1009.3 *8*	3.5 *18*	181.77	5/2$^-$				
		1030.05 *7*	100 *6*	160.49	7/2$^-$				
1205.44	19/2$^+$	237.4 *2*	13.9 *6*	967.96	17/2$^+$	(M1+E2)	+0.45 *+19−14*	0.252 *16*	
		409.4 *2*	15.9 *7*	795.90	17/2$^-$	D			
		436.9 *2*	32.5 *16*	768.54	15/2$^+$	(E2)		0.02439 *34*	E_γ,I_γ: other: 438.5 *5* with Iγ=61 *13* from (α,4nγ).
		459.4 *2*	100 *4*	746.18	15/2$^+$	(E2)		0.02134 *30*	
1215.76	19/2$^+$	247.6 *2*	7.4 *4*	967.96	17/2$^+$				
		419.7 *2*	35 *3*	795.90	17/2$^-$	D			
		447.1 *2*	100 *8*	768.54	15/2$^+$	(E2)		0.02293 *32*	
		469.9 *2*	25.1 *11*	746.18	15/2$^+$	(E2)		0.02011 *28*	
1250.84	(5/2)$^-$	935.17 *8*	9.5 *6*	315.56	5/2$^+$				
		998.38 *8*	≈3.0	252.45	9/2$^-$				
		1090.28 *8*	100 *6*	160.49	7/2$^-$				
		1239.56[c] *9*	6.7 *4*	11.51	3/2$^+$				

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]
1281.18		1122.00 *12*	100 *12*	158.97	7/2$^+$			
		1269.87[c] *12*	89 *9*	11.51	3/2$^+$			
1290.36	(15/2$^-$)	792.8 *2*	100	497.68	13/2$^-$	D+Q		
1308.17	(7/2$^+$)	892.9[c] *6*	30 *13*	415.92	(3/2$^+$)			
		1126.34 *12*	84 *10*	181.77	5/2$^-$			
		1148.56 *10*	100 *10*	158.97	7/2$^+$			
		1296.81[c]		11.51	3/2$^+$			
1309.06	21/2$^-$	236.2 *2*	82 *3*	1072.69	19/2$^-$	D+Q		
		442.5 *2*	100 *4*	866.57	17/2$^-$	(E2)		0.02358 *33*
1315.03	(5/2,7/2)	722.3 *5*	4 *2*	592.28	(7/2$^+$)			
		895.21 *20*	27 *6*	419.87	7/2$^+$			
		999.46 *10*	≈100	315.56	5/2$^+$			
		1154.54 *8*	90 *6*	160.49	7/2$^-$			
1321.95	17/2$^+$	232.5 *2*	95 *7*	1089.41	15/2$^+$			
		430.4 *2*	100 *7*	891.61	13/2$^+$			
1326.00	(5/2$^-$,7/2)	906.10 *17*	10 *4*	419.87	7/2$^+$			
		1009.3 *8*	3.8 *19*	315.56	5/2$^+$			
		1032.3[c] *8*	6 *3*	293.48	9/2$^-$			
		1073.56 *13*	≈100	252.45	9/2$^-$			
		1165.53 *10*	40 *3*	160.49	7/2$^-$			
1370.13	(7/2)	644.2[c] *3*	13 *3*	725.87	(9/2$^+$)			
		878.6[b] *5*	65[b] *26*	491.24	(5/2$^+$)			
		1117.74 *10*	100 *10*	252.45	9/2$^-$			
		1188.40 *13*	68 *7*	181.77	5/2$^-$			
		1209.4 *5*	33 *13*	160.49	7/2$^-$			
		1289.65 *12*	79 *7*	80.38	7/2$^+$			
1434.09	19/2$^-$	248.9 *10*	4.7 *28*	1185.24	21/2$^-$			
		332.1 *2*	35 *3*	1101.71	17/2$^+$	D		
		403.5 *2*	100 *5*	1030.70	15/2$^-$	(E2)		0.0303 *4*
		638.1 *2*	61 *3*	795.90	17/2$^-$	(M1+E2)	−0.36 *+16−38*	0.0190 *26*
1443.03	(17/2$^-$)	646.9 *2*	100 *17*	795.90	17/2$^-$	D+Q		
		945.5 *2*	42 *9*	497.68	13/2$^-$			
1466.17	(5/2$^-$,7/2)	275.70 *20*	≈39	1190.52				
		1015.7[b] *3*	100[b] *19*	450.36	7/2$^-$			
		1172.7[c] *5*	36 *12*	293.48	9/2$^-$			
		1386.0 *4*	26 *7*	80.38	7/2$^+$			
1466.44	21/2$^+$	250.6 *10*	3.8 *5*	1215.76	19/2$^+$			
		260.9 *2*	12.1 *5*	1205.44	19/2$^+$	(M1+E2)	+0.46 *+19−13*	0.194 *13*
		498.5 *2*	100 *4*	967.96	17/2$^+$	(E2)		0.01726 *24*
1550.35	23/2$^-$	241.1 *2*	62.2 *25*	1309.06	21/2$^-$	D+Q		
		477.6 *2*	100 *4*	1072.69	19/2$^-$	(E2)		0.01928 *27*

$^{165}_{69}Tm_{96}$-12

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]
1552.14	19/2$^+$	230.0 *2*	56 *3*	1321.95	17/2$^+$			
		462.7 *2*	100 *6*	1089.41	15/2$^+$			
1564.77	(7/2)	314.3 *3*	15.4 *21*	1250.84	(5/2)$^-$			
		527.5[b] *3*	6.3[b] *13*	1037.04	(7/2)			
		838.83 *20*	20 *3*	725.87	(9/2$^+$)			
		1012.4 *4*	20 *6*	551.52	9/2$^+$			
		1073.54 *10*	100	491.24	(5/2$^+$)			
		1145.3 *3*	35 *5*	419.87	7/2$^+$			
		1202.54 *14*	40 *4*	362.29	9/2$^+$			
		1249.5 *10*	12 *6*	315.56	5/2$^+$			
		1312.12 *11*	45 *3*	252.45	9/2$^-$			
		1404.7 *3*	12.5 *21*	160.49	7/2$^-$			
		1435.28 *16*	33.8 *50*	129.63	5/2$^+$			
1581.79	(7/2)$^-$	391.40 *8*	51 *7*	1190.52				
		784.43 *10*	35 *3*	797.36				
		856.00 *20*	17.0 *15*	725.87	(9/2$^+$)			
		990.0 *3*	13 *3*	592.28	(7/2$^+$)			
		1090.54 *9*	≈15	491.24	(5/2$^+$)			
		1161.78 *18*	16.3 *19*	419.87	7/2$^+$			
		1219.41 *8*	86 *7*	362.29	9/2$^+$			
		1266.13 *10*	37 *3*	315.56	5/2$^+$			
		1329.36 *8*	62 *4*	252.45	9/2$^-$			
		1371.33 *12*	24.7 *22*	210.60	9/2$^+$			
		1421.35 *10*	54 *3*	160.49	7/2$^-$			
		1452.06 *11*	48 *3*	129.63	5/2$^+$			
		1501.31 *8*	100 *7*	80.38	7/2$^+$			
1589.98	21/2$^+$	374.3 *2*	14.9 *7*	1215.76	19/2$^+$	D		
		384.5 *2*	12.4 *6*	1205.44	19/2$^+$	D		
		488.1 *2*	100 *4*	1101.71	17/2$^+$	(E2)		0.01822 *26*
1595.09?		404.57	≈222	1190.52				
		558.0 *4*	100 *33*	1037.04	(7/2)			
1615.14	(19/2$^-$)	324.9 *2*	22.7 *24*	1290.36	(15/2$^-$)			
		819.2 *2*	100 *7*	795.90	17/2$^-$	D+Q		
1633.82	(17/2$^-$)	887.7 *2*	100	746.18	15/2$^+$	D		
1659.54	25/2$^-$	474.3 *2*	100	1185.24	21/2$^-$	(E2)		0.01963 *28*
1728.44	23/2$^+$	262.1 *10*	5.2 *6*	1466.44	21/2$^+$			
		512.4 *2*	31.9 *16*	1215.76	19/2$^+$	(E2)		0.01609 *23*
		523.1 *2*	100 *8*	1205.44	19/2$^+$	(E2)		0.01527 *21*
		543.2 *2*	33 *3*	1185.24	21/2$^-$	D		
1741.64	(17/2$^+$)	1066.0 *3*	100	675.50	15/2$^-$	D		
1745.25	23/2$^+$	278.7 *2*	9.9 *5*	1466.44	21/2$^+$	(M1+E2)	+0.26 *+12−11*	0.171 *6*

$^{165}_{69}Tm_{96}$-13

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	Comments
1745.25	23/2$^+$	529.5 *2*	100 *4*	1215.76	19/2$^+$	(E2)		0.01481 *21*	
		539.8 *2*	18.5 *9*	1205.44	19/2$^+$	(E2)		0.01412 *20*	
		560.1 *2*	19.7 *9*	1185.24	21/2$^-$	D			
1754.08	(19/2$^-$)	120.3 *2*	82 *13*	1633.82	(17/2$^-$)				
		786.1 *2*	100 *16*	967.96	17/2$^+$	D			
1807.50	(21/2$^-$)	364.4 *2*	54 *3*	1443.03	(17/2$^-$)	(E2)		0.0403 *6*	
		621.9 *2*	100 *5*	1185.24	21/2$^-$	D			
		1012.4 *2*	44 *3*	795.90	17/2$^-$				E_γ: level-energy difference=1011.6.
1827.80	25/2$^-$	277.3 *2*	61.8 *24*	1550.35	23/2$^-$	D+Q			
		518.8 *2*	100 *4*	1309.06	21/2$^-$	(E2)		0.01559 *22*	
1828.32	21/2$^+$	275.8 *2*	59 *5*	1552.14	19/2$^+$				
		506.6 *2*	100 *7*	1321.95	17/2$^+$				
1846.59	(7/2)	656.00 *7*	100 *6*	1190.52					
		1015.7[b] *3*	27[b] *5*	831.00	(9/2$^-$)				
		1294.5[c] *5*	20 *7*	551.52	9/2$^+$				
		1426.91 *12*	33 *4*	419.87	7/2$^+$				
		1531.10 *17*	22.5 *24*	315.56	5/2$^+$				
		1686.0 *4*	16 *3*	160.49	7/2$^-$				
1857.87	(19/2$^+$)	116.2 *2*	6 *4*	1741.64	(17/2$^+$)				
		991.4 *2*	100 *11*	866.57	17/2$^-$	D			
1899.59	(21/2$^-$)	145.5 *2*	88 *13*	1754.08	(19/2$^-$)	D+Q			
		265.8 *2*	43 *8*	1633.82	(17/2$^-$)	(E2)		0.1037 *15*	
		694.1 *2*	100 *17*	1205.44	19/2$^+$	D			
1904.25	23/2$^-$	314.1 *2*	14.0 *12*	1589.98	21/2$^+$	D			
		469.9 *2*	100 *5*	1434.09	19/2$^-$	(E2)		0.02011 *28*	
		719.4 *2*	41.1 *22*	1185.24	21/2$^-$	(M1+E2)	−1.0 *+5−9*	0.0111 *24*	
1990.08	(21/2$^+$)	132.2 *2*	24.9 *23*	1857.87	(19/2$^+$)				
		248.4 *2*	4.9 *25*	1741.64	(17/2$^+$)				
		917.4 *2*	100 *10*	1072.69	19/2$^-$	D			
2027.19	25/2$^+$	281.9 *2*	12.1 *6*	1745.25	23/2$^+$	(M1+E2)	+0.27 *8*	0.166 *4*	
		298.7 *2*	8.3 *8*	1728.44	23/2$^+$				
		560.8 *2*	100 *4*	1466.44	21/2$^+$	Q			
2032.56	(23/2$^-$)	417.5 *2*	49.0 *24*	1615.14	(19/2$^-$)	(E2)		0.0276 *4*	
		847.0 *2*	100 *5*	1185.24	21/2$^-$	D+Q			
2068.04	(23/2$^-$)	168.4 *2*	100 *13*	1899.59	(21/2$^-$)				
		314.0 *2*	91 *13*	1754.08	(19/2$^-$)	(E2)		0.0623 *9*	
2079.08	23/2$^+$	250.6 *2*	28 *3*	1828.32	21/2$^+$				
		527.1 *2*	100 *6*	1552.14	19/2$^+$				
2096.72	27/2$^-$	268.8 *2*	43.1 *18*	1827.80	25/2$^-$	D+Q			
		546.4 *2*	100 *4*	1550.35	23/2$^-$	(E2)		0.01370 *19*	
2136.25	25/2$^+$	407.7 *2*	16.6 *8*	1728.44	23/2$^+$	D			

$^{165}_{69}Tm_{96}$-14

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	δ@	α[a]
2136.25	25/2$^+$	546.3 *2*	100 *4*	1589.98	21/2$^+$	(E2)		0.01370 *19*
2139.27	(23/2$^+$)	149.0 *2*	100 *9*	1990.08	(21/2$^+$)	(D+Q)		
		281.5 *2*	25 *5*	1857.87	(19/2$^+$)	(E2)		0.0868 *12*
		830.2 *2*	86 *7*	1309.06	21/2$^-$	D		
2194.84	(5/2$^-$,7/2)	599.6 *3*	95 *20*	1595.09?				
		728.8 *3*	73 *20*	1466.17	(5/2$^-$,7/2)			
		1942.6 *10*	100 *15*	252.45	9/2$^-$			
2210.57	29/2$^-$	551.2 *2*	100	1659.54	25/2$^-$	Q		
2252.73	(25/2$^-$)	445.6 *2*	100 *5*	1807.50	(21/2$^-$)	(E2)		0.02314 *33*
		592.7 *2*	66 *4*	1659.54	25/2$^-$			
		1067.6 *2*	27.1 *22*	1185.24	21/2$^-$			
2257.37	(25/2$^-$)	189.3 *2*	48 *7*	2068.04	(23/2$^-$)	D+Q		
		357.8 *2*	100 *12*	1899.59	(21/2$^-$)	(E2)		0.0425 *6*
2305.41	(25/2$^+$)	166.0 *2*	100 *9*	2139.27	(23/2$^+$)	(D+Q)		
		315.5 *2*	54 *5*	1990.08	(21/2$^+$)	(E2)		0.0614 *9*
		754.9 *2*	71 *7*	1550.35	23/2$^-$	D		
2305.62	27/2$^+$	577.2 *2*	100 *7*	1728.44	23/2$^+$	Q		
		646.1 *2*	29.2 *21*	1659.54	25/2$^-$	D		
2330.23	27/2$^+$	302.9 *2*	7.7 *4*	2027.19	25/2$^+$	(M1+E2)	+0.29 *18*	0.136 *8*
		585.0 *2*	100 *4*	1745.25	23/2$^+$	Q		
		670.8 *2*	14.0 *7*	1659.54	25/2$^-$	D		
2378.33?	(25/2$^+$)	550.0 *2*	100	1828.32	21/2$^+$			
2408.98	29/2$^-$	312.1 *2*	43.6 *17*	2096.72	27/2$^-$	D+Q		
		581.2 *2*	100 *4*	1827.80	25/2$^-$	Q		
2427.67	27/2$^-$	523.4 *2*	100 *5*	1904.25	23/2$^-$	(E2)		0.01525 *21*
		768.1 *2*	51 *3*	1659.54	25/2$^-$	(M1+E2)	−1.7 *+7−22*	0.0079 *16*
2466.04	(27/2$^-$)	208.6 *2*	30 *5*	2257.37	(25/2$^-$)	D+Q		
		398.0 *2*	100 *14*	2068.04	(23/2$^-$)	(E2)		0.0315 *4*
2489.05	(27/2$^+$)	183.5 *2*	100 *8*	2305.41	(25/2$^+$)	D+Q		
		349.8 *2*	73 *6*	2139.27	(23/2$^+$)	(E2)		0.0454 *6*
2541.30	(27/2$^-$)	508.5 *2*	100 *5*	2032.56	(23/2$^-$)	(E2)		0.01641 *23*
		882.0 *2*	16.5 *15*	1659.54	25/2$^-$	D+Q		
2621.41	29/2$^+$	291.1 *2*	9.3 *5*	2330.23	27/2$^+$	(M1(+E2))	+0.27 *37*	0.152 *18*
		315.8 *2*	3.3 *4*	2305.62	27/2$^+$			
		594.3 *2*	100 *4*	2027.19	25/2$^+$	Q		
2663.22	29/2$^+$	357.6 *2*	15.6 *8*	2305.62	27/2$^+$	D+Q		
		526.9 *2*	100 *4*	2136.25	25/2$^+$	(E2)		0.01500 *21*
2670.88?	(27/2$^+$)	591.8 *2*	100	2079.08	23/2$^+$			
2690.08	(29/2$^+$)	200.9 *2*	95 *9*	2489.05	(27/2$^+$)	(D+Q)		
		384.7 *2*	100 *9*	2305.41	(25/2$^+$)	(E2)		0.0346 *5*
2692.62	(29/2$^-$)	226.5 *2*	24 *4*	2466.04	(27/2$^-$)	D+Q		
		435.3 *2*	100 *14*	2257.37	(25/2$^-$)	(E2)		0.02464 *35*

$^{165}_{69}Tm_{96}$-15

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	δ@	α[a]	Comments
2694.94	31/2$^-$	285.8 *2*	31.7 *13*	2408.98	29/2$^-$	D+Q			
		598.3 *2*	100 *4*	2096.72	27/2$^-$	Q			
2771.13	(29/2$^-$)	518.4 *2*	100	2252.73	(25/2$^-$)	(E2)		0.01562 *22*	
2828.86	33/2$^-$	618.3 *2*	100	2210.57	29/2$^-$	E2		0.01015 *14*	B(E2)(W.u.)=6.2×10^2 *+14−10*
2858.91	31/2$^+$	553.3 *2*	100 *4*	2305.62	27/2$^+$	Q			
		648.4 *2*	16 *3*	2210.57	29/2$^-$	D			
2893.87	31/2$^+$	272.3 *2*	13.3 *7*	2621.41	29/2$^+$	(M1+E2)	+0.11 *10*	0.187 *4*	
		563.7 *2*	100 *4*	2330.23	27/2$^+$	Q			
2908.13	(31/2$^+$)	217.9 *2*	80 *6*	2690.08	(29/2$^+$)	(D+Q)			
		419.1 *2*	100 *8*	2489.05	(27/2$^+$)	(E2)		0.0273 *4*	
2934.80	(31/2$^-$)	242.1 *2*	25 *7*	2692.62	(29/2$^-$)				
		468.8 *2*	100 *15*	2466.04	(27/2$^-$)	(E2)		0.02024 *28*	
2999.84	31/2$^-$	572.1 *2*	100 *6*	2427.67	27/2$^-$	Q			
		789.5 *3*	26 *5*	2210.57	29/2$^-$	(M1+E2)	−2.1 *+6−16*	0.0069 *8*	
3015.94	33/2$^-$	320.8 *2*	42.1 *19*	2694.94	31/2$^-$	D+Q			
		607.0 *2*	100 *4*	2408.98	29/2$^-$	Q			
3099.09	33/2$^+$	240.2 *2*	9.7 *5*	2858.91	31/2$^+$	D			
		435.8 *2*	100 *4*	2663.22	29/2$^+$	(E2)		0.02456 *35*	
3123.70	(31/2$^-$)	582.4 *2*	100	2541.30	(27/2$^-$)	Q			
3127.12	33/2$^+$	233.0 *2*	21.8 *11*	2893.87	31/2$^+$	(M1+E2)	+0.32 *12*	0.275 *10*	
		505.9 *2*	100 *4*	2621.41	29/2$^+$	(E2)		0.01662 *23*	
3143.04	(33/2$^+$)	234.7 *2*	68 *7*	2908.13	(31/2$^+$)	D+Q			
		453.0 *2*	100 *8*	2690.08	(29/2$^+$)	(E2)		0.02215 *31*	
3193.47	(33/2$^-$)	258.7 *2*	13 *3*	2934.80	(31/2$^-$)				
		500.9 *2*	100 *13*	2692.62	(29/2$^-$)	(E2)		0.01705 *24*	
3267.34	35/2$^-$	251.2 *2*	52.7 *24*	3015.94	33/2$^-$	D+Q			
		572.5 *2*	100 *4*	2694.94	31/2$^-$	Q			
3325.67	35/2$^+$	466.8 *2*	100	2858.91	31/2$^+$	(E2)		0.02046 *29*	
3345.33	(33/2$^-$)	574.2 *2*	100	2771.13	(29/2$^-$)				
3374.01	35/2$^+$	246.8 *2*	22.1 *11*	3127.12	33/2$^+$	(M1+E2)	+0.21 *13*	0.241 *8*	
		480.3 *2*	100 *4*	2893.87	31/2$^+$	(E2)		0.01900 *27*	
3393.87	(35/2$^+$)	250.6 *2*	48 *5*	3143.04	(33/2$^+$)	D+Q			
		485.8 *2*	100 *9*	2908.13	(31/2$^+$)	(E2)		0.01845 *26*	
3465.49	(35/2$^-$)	271.8 *2*	19 *5*	3193.47	(33/2$^-$)				
		530.6 *2*	100 *16*	2934.80	(31/2$^-$)	(E2)		0.01474 *21*	
3503.06	37/2$^-$	674.3 *2*	100	2828.86	33/2$^-$	E2		0.00829 *12*	B(E2)(W.u.)=4.2×10^2 *+8−6*
3519.60	37/2$^-$	252.1 *2*	100 *4*	3267.34	35/2$^-$	D+Q			
		503.7 *2*	100 *4*	3015.94	33/2$^-$	(E2)		0.01681 *24*	
		690.8 *2*	28 *4*	2828.86	33/2$^-$				
3582.43	37/2$^+$	256.8 *2*	7.6 *4*	3325.67	35/2$^+$	D			
		483.3 *2*	100 *4*	3099.09	33/2$^+$	(E2)		0.01869 *26*	

$^{165}_{69}Tm_{96}$-16

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	Comments
3618.70	35/2$^-$	618.9 *2*	100 *7*	2999.84	31/2$^-$	Q			
		789.7 *2*	53 *6*	2828.86	33/2$^-$	(M1+E2)	−2.1 *+6−16*	0.0069 *8*	δ: may be the same for 789.7γ+789.5γ doublet.
3622.40	37/2$^+$	248.4 *2*	16.5 *9*	3374.01	35/2$^+$	(M1+E2)	+0.25 *10*	0.235 *7*	
		495.3 *2*	100 *4*	3127.12	33/2$^+$	(E2)		0.01755 *25*	
3659.77	(37/2$^+$)	265.7 *2*	47 *5*	3393.87	(35/2$^+$)				
		516.8 *2*	100 *8*	3143.04	(33/2$^+$)	(E2)		0.01575 *22*	
3739.20?	(35/2$^-$)	615.5 *2*	100	3123.70	(31/2$^-$)	Q			
3749.18	(37/2$^-$)	283.4 *2*	7 *3*	3465.49	(35/2$^-$)				
		556.0 *2*	100 *15*	3193.47	(33/2$^-$)	Q			
3766.67	39/2$^-$	247.0 *2*	82 *4*	3519.60	37/2$^-$	D+Q			
		499.4 *2*	100 *5*	3267.34	35/2$^-$	(E2)		0.01718 *24*	
3841.37	39/2$^+$	515.7 *2*	100	3325.67	35/2$^+$	(E2)		0.01583 *22*	
3905.45	39/2$^+$	283.0 *2*	18.7 *10*	3622.40	37/2$^+$	(M1+E2)	+0.27 *13*	0.164 *6*	
		531.5 *2*	100 *4*	3374.01	35/2$^+$	(E2)		0.01467 *21*	
3914.83?	(37/2$^-$)	569.5 *2*	100	3345.33	(33/2$^-$)				
3941.23	(39/2$^+$)	281.2 *2*	37 *5*	3659.77	(37/2$^+$)				
		547.4 *2*	100 *8*	3393.87	(35/2$^+$)				
4038.60	41/2$^-$	271.8 *2*	82 *3*	3766.67	39/2$^-$	D+Q			
		519.0 *2*	100 *4*	3519.60	37/2$^-$	(E2)		0.01558 *22*	
4046.39	(39/2$^-$)	580.9 *2*	100	3465.49	(35/2$^-$)				
4140.83	41/2$^+$	558.4 *2*	100	3582.43	37/2$^+$	Q			
4187.73	41/2$^+$	565.4 *2*	100	3622.40	37/2$^+$	Q			
4220.34	41/2$^-$	717.3 *2*	100	3503.06	37/2$^-$	E2		0.00720 *10*	B(E2)(W.u.)=3.6×10^2 *+6−5*
4234.84	(41/2$^+$)	293.4 *2*	34 *4*	3941.23	(39/2$^+$)				
		575.2 *2*	100 *10*	3659.77	(37/2$^+$)	Q			
4276.79	39/2$^-$	658.0 *2*	100 *42*	3618.70	35/2$^-$	Q			
		773.8 *2*	31 *3*	3503.06	37/2$^-$				
4319.34	43/2$^-$	280.7 *2*	73 *3*	4038.60	41/2$^-$	D+Q			
		552.8 *2*	100 *4*	3766.67	39/2$^-$	Q			
4353.28	(41/2$^-$)	604.1 *2*	100	3749.18	(37/2$^-$)				
4429.67	43/2$^+$	588.3 *2*	100	3841.37	39/2$^+$	Q			
4510.93	43/2$^+$	605.5 *2*	100	3905.45	39/2$^+$	Q			
4544.75	(43/2$^+$)	603.5 *2*	100	3941.23	(39/2$^+$)				
4634.30	45/2$^-$	314.9 *2*	52.9 *24*	4319.34	43/2$^-$	D+Q			
		595.6 *2*	100 *4*	4038.60	41/2$^-$	Q			
4673.89	(43/2$^-$)	627.5 *2*	100	4046.39	(39/2$^-$)				
4775.63	45/2$^+$	634.8 *2*	100	4140.83	41/2$^+$	E2		0.00954 *13*	B(E2)(W.u.)=5.3×10^2 *+15−9*
4827.56	45/2$^+$	639.9 *2*	100	4187.73	41/2$^+$	Q			
4862.61	(45/2$^+$)	627.7 *2*	100	4234.84	(41/2$^+$)				
4944.50	47/2$^-$	309.8 *2*	56.8 *25*	4634.30	45/2$^-$	D+Q			
		625.3 *2*	100 *5*	4319.34	43/2$^-$	Q			

$^{165}_{69}Tm_{96}$-17

Adopted Levels, Gammas (continued)

γ(^{165}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[a]	Comments
4962.24	45/2⁻	741.9 *2*	100	4220.34	41/2⁻	(E2)	0.00668 *9*	B(E2)(W.u.)=4.5×10^2 *+7−5*
4964.92?	(43/2⁻)	688.1 *2*	100 *7*	4276.79	39/2⁻			
		744.6 *2*	62 *5*	4220.34	41/2⁻			
5003.58	(45/2⁻)	650.3 *2*	100	4353.28	(41/2⁻)			
5090.47	47/2⁺	660.8 *2*	100	4429.67	43/2⁺	E2	0.00869 *12*	B(E2)(W.u.)=4.1×10^2 *+7−6*
5185.81	47/2⁺	674.9 *2*	100	4510.93	43/2⁺	Q		
5203.87	(47/2⁺)	659.1 *2*	100	4544.75	(43/2⁺)			
5309.55	49/2⁻	364.8 *2*	63 *9*	4944.50	47/2⁻			
		675.5 *2*	100 *7*	4634.30	45/2⁻	Q		
5347.6	(47/2⁻)	673.7 *2*	100	4673.89	(43/2⁻)			
5484.03	49/2⁺	708.4 *2*	100	4775.63	45/2⁺	E2	0.00741 *10*	B(E2)(W.u.)=4.2×10^2 *+14−7*
5526.39	(49/2⁺)	663.7 *2*	66 *13*	4862.61	(45/2⁺)			
		698.9 *2*	100 *7*	4827.56	45/2⁺			
5550.96	49/2⁺	723.4 *2*	100	4827.56	45/2⁺			
5640.70	51/2⁻	696.2 *2*	100	4944.50	47/2⁻	(Q)		
5701.5	(49/2⁻)	697.9 *2*	100	5003.58	(45/2⁻)			
5725.04	49/2⁻	762.8 *2*	100	4962.24	45/2⁻	(E2)	0.00628 *9*	B(E2)(W.u.)=5.9×10^2 *+36−15*
5819.9	51/2⁺	729.4 *2*	100	5090.47	47/2⁺	E2	0.00693 *10*	B(E2)(W.u.)=4.1×10^2 *+5−6*
5891.69?	(51/2⁺)	687.8 *2*	89 *23*	5203.87	(47/2⁺)			
		705.9 *2*	100 *7*	5185.81	47/2⁺			
5931.81?	(51/2⁺)	746.0 *2*	100	5185.81	47/2⁺			
6061.15	53/2⁻	751.6 *2*	100	5309.55	49/2⁻			
6072.2?	(51/2⁻)	724.6 *2*	100	5347.6	(47/2⁻)			
6245.99?	(53/2⁺)	719.6 *2*	100	5526.39	(49/2⁺)			
6263.9	53/2⁺	779.9 *2*	100	5484.03	49/2⁺	(E2)	0.00598 *8*	B(E2)(W.u.)=2.6×10^2 *+10−7*
6332.46?	(53/2⁺)	781.5 *2*	100	5550.96	49/2⁺			
6403.00	55/2⁻	762.3 *2*	100	5640.70	51/2⁻			
6452.8?	(53/2⁻)	751.3 *2*	100	5701.5	(49/2⁻)			
6521.3	53/2⁻	796.3 *2*	100	5725.04	49/2⁻			
6613.8	55/2⁺	793.9 *2*	100	5819.9	51/2⁺	[E2]	0.00575 *8*	B(E2)(W.u.)=2.2×10^2 *6*
6884.05	57/2⁻	822.9 *2*	100	6061.15	53/2⁻			
7110.2	57/2⁺	846.3 *2*	100	6263.9	53/2⁺			
7229.3	59/2⁻	826.3 *2*	100	6403.00	55/2⁻			
7481.6	59/2⁺	867.8 *2*	100	6613.8	55/2⁺			
7774.7	61/2⁻	890.6 *2*	100	6884.05	57/2⁻			
8023.6	61/2⁺	913.4 *3*	100	7110.2	57/2⁺			
8112.5	63/2⁻	883.2 *3*	100	7229.3	59/2⁻			
8410.5	63/2⁺	928.9 *4*	100	7481.6	59/2⁺			
8731.5	65/2⁻	956.8 *3*	100	7774.7	61/2⁻			
8997.9?	(65/2⁺)	974.3 *5*	100	8023.6	61/2⁺			
9054.0	67/2⁻	941.5 *4*	100	8112.5	63/2⁻			

$^{165}_{69}Tm_{96}$-18

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
9405.9?	$(67/2^+)$	995.4 *6*	100	8410.5	$63/2^+$
10051.4	$71/2^-$	997.4 *10*	100	9054.0	$67/2^-$

† From ^{165}Yb ε decay for γ rays from low-spin (J<9/2), for high-spin (J≥9/2) states, values are from ^{154}Sm(^{15}N,4nγ), ^{150}Nd(^{19}F,4nγ), unless otherwise noted. Values from ^{158}Gd(^{11}B,4nγ) and ^{165}Ho(α,4nγ),^{166}Er(p,2nγ) are in overall agreement with those from (^{15}N,4nγ),(^{19}F,4nγ), but are less complete and not as precise.

‡ From $\gamma\gamma$-coin in ^{165}Yb ε decay.

From ce data in ^{165}Yb ε decay for γ rays from low-spin (J≤9/2) states and from $\gamma\gamma(\theta)$(DCO) data in ^{154}Sm(^{15}N,4nγ),^{150}Nd(^{19}F,4nγ) for γ rays from high−spin states. The mult=Q is most likely stretched E2; mult=D+Q is most likely ΔJ=1, M1+E2 and mult=D is most likely ΔJ=1, E1 or in rare cases ΔJ=0, E1.

@ From DCO data in ^{154}Sm(^{15}N,4nγ),^{150}Nd(^{19}F,4nγ), unless otherwise stated.

& From ^{165}Yb ε decay.

[a] 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.

[b] Multiply placed with undivided intensity.

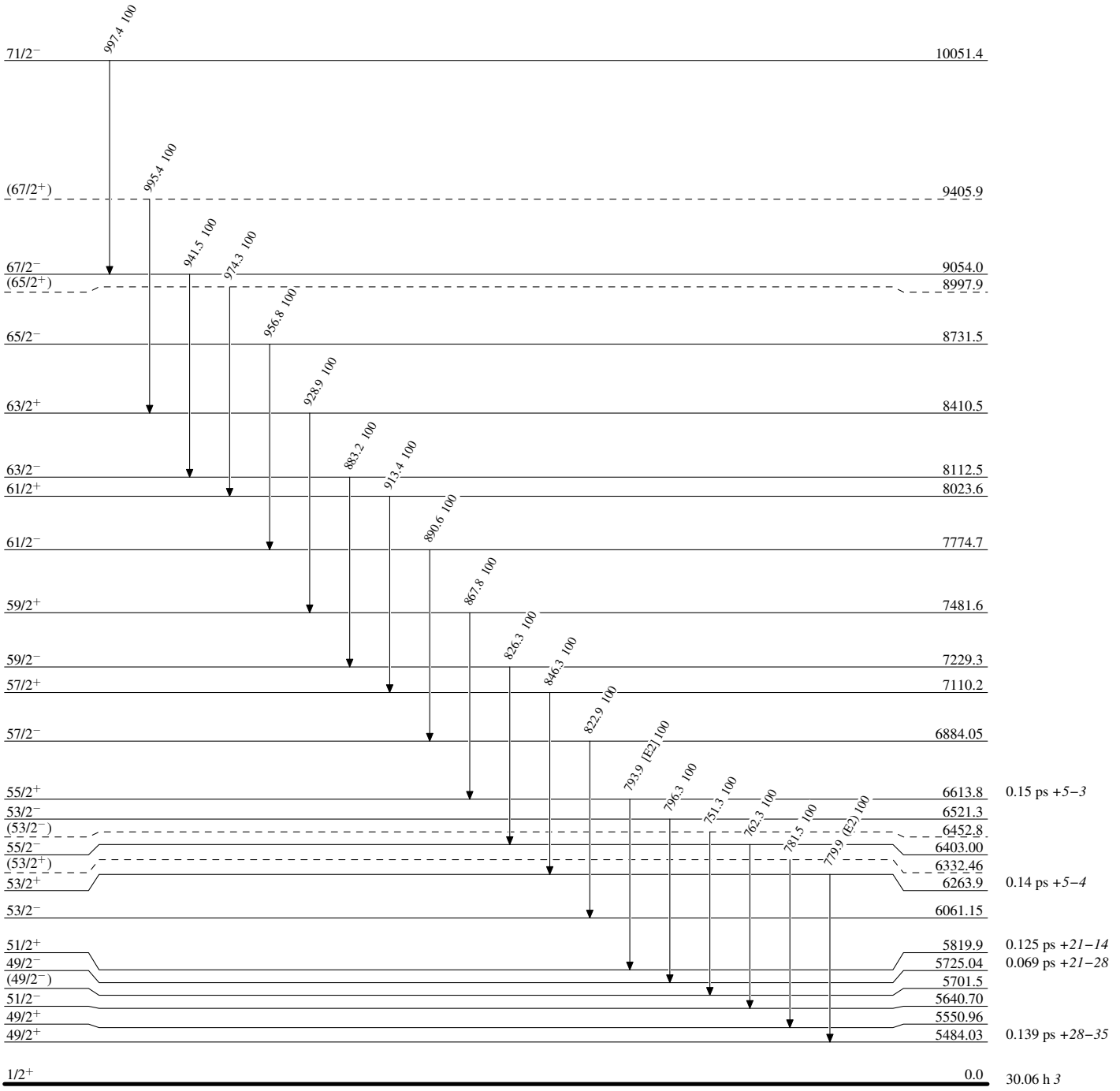
[c] Placement of transition in the level scheme is uncertain.

$^{165}_{69}Tm_{96}$-19

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

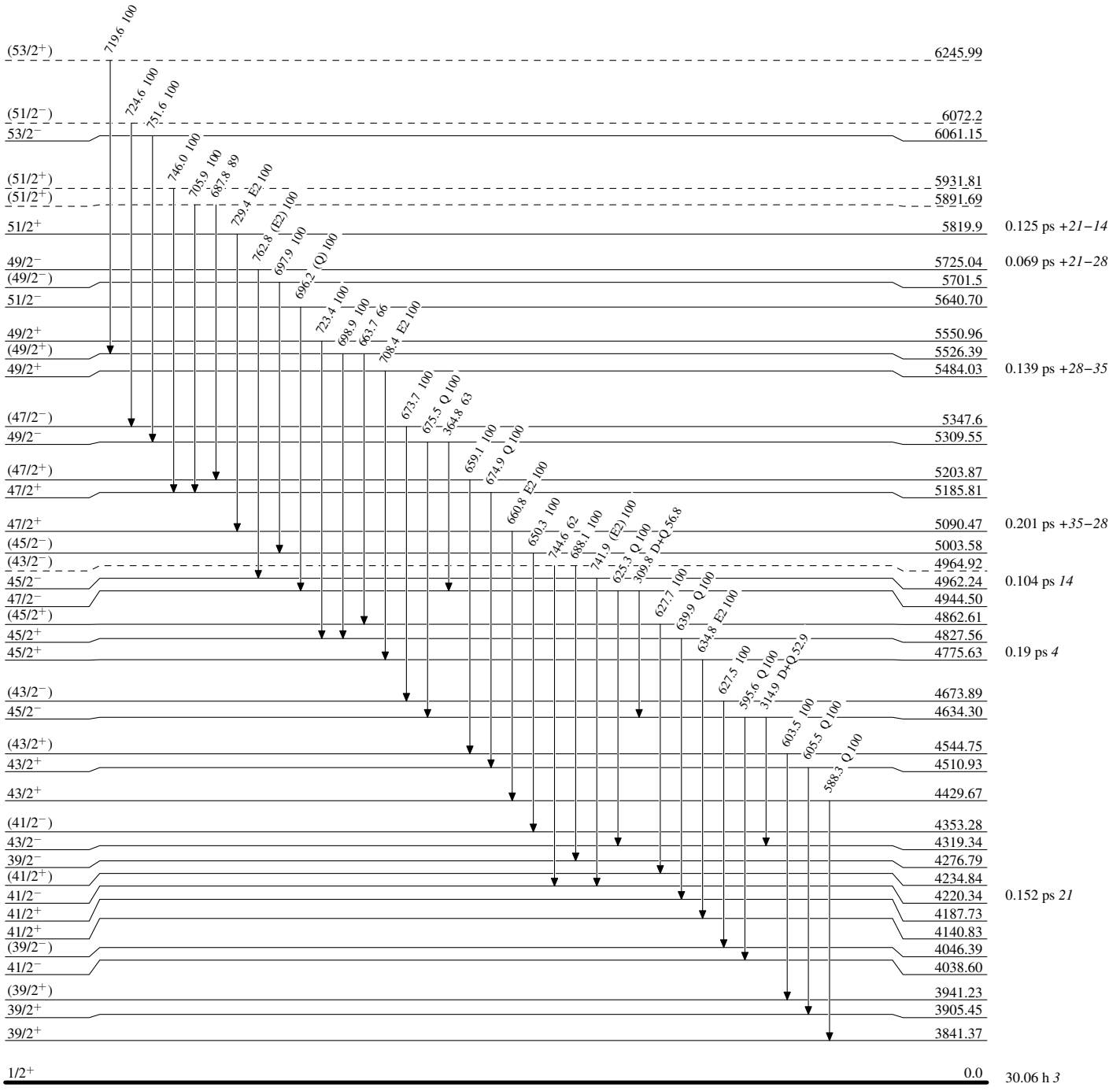


$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

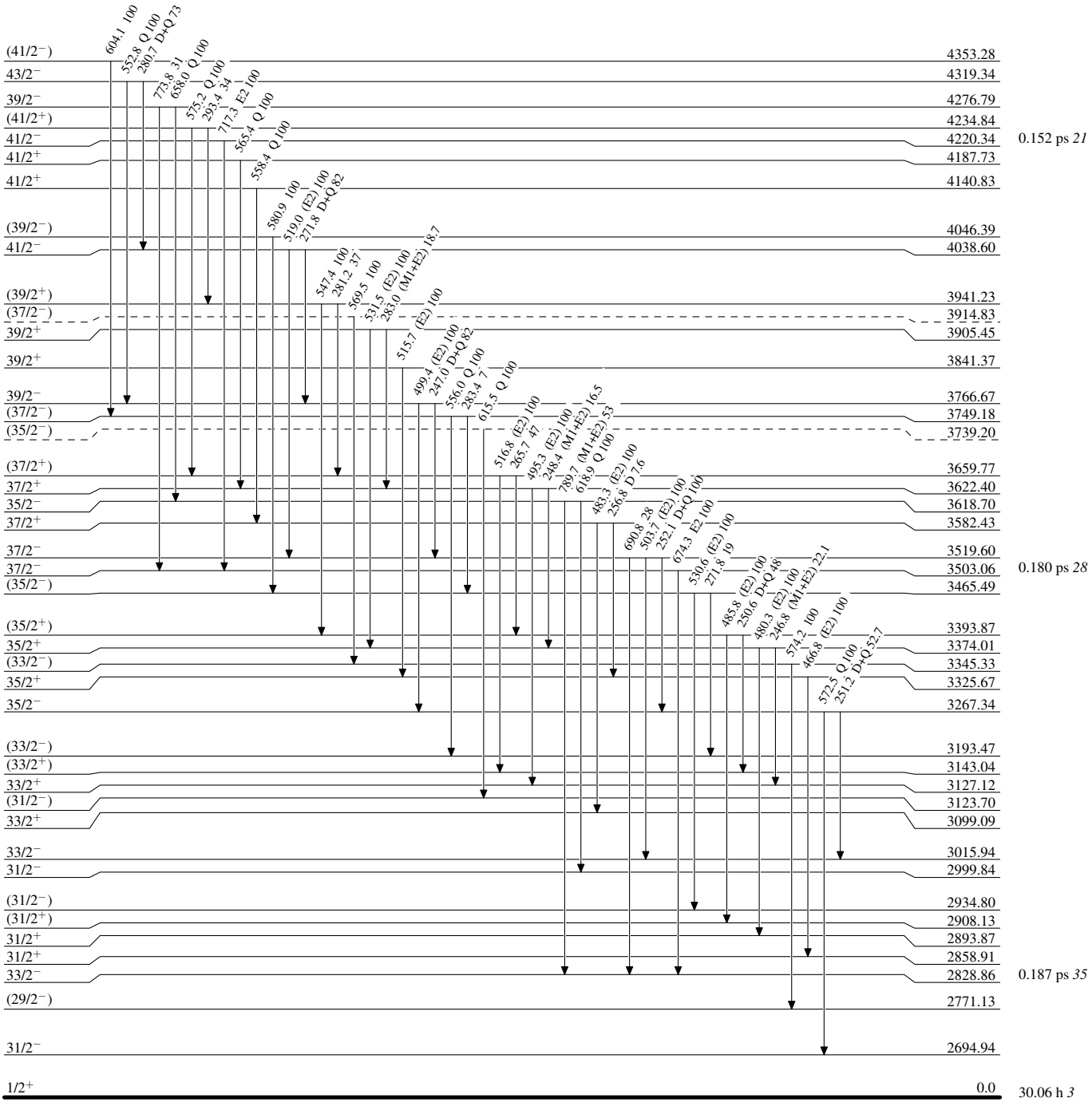


$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

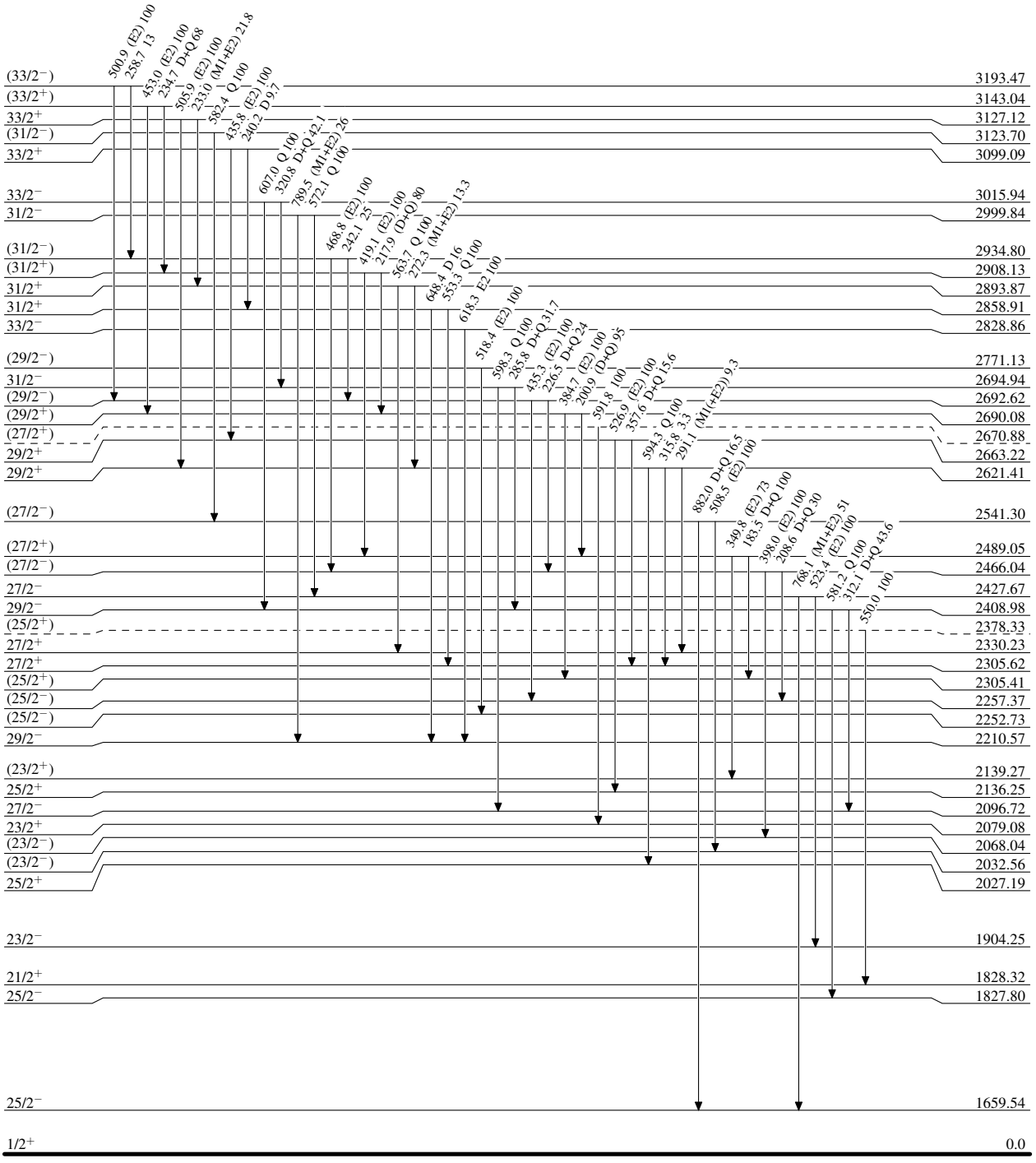


$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

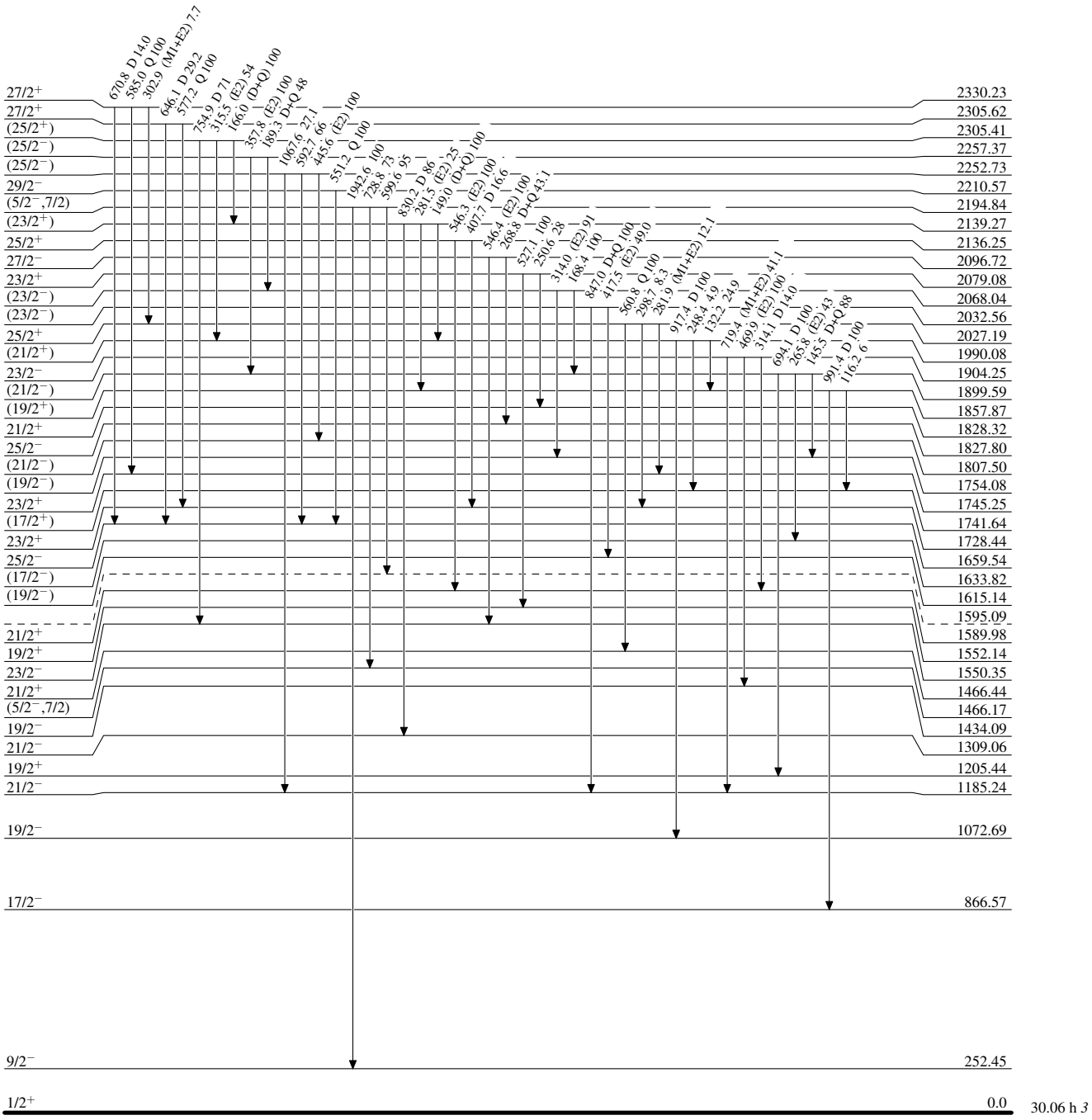


$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{165}_{69}Tm_{96}$

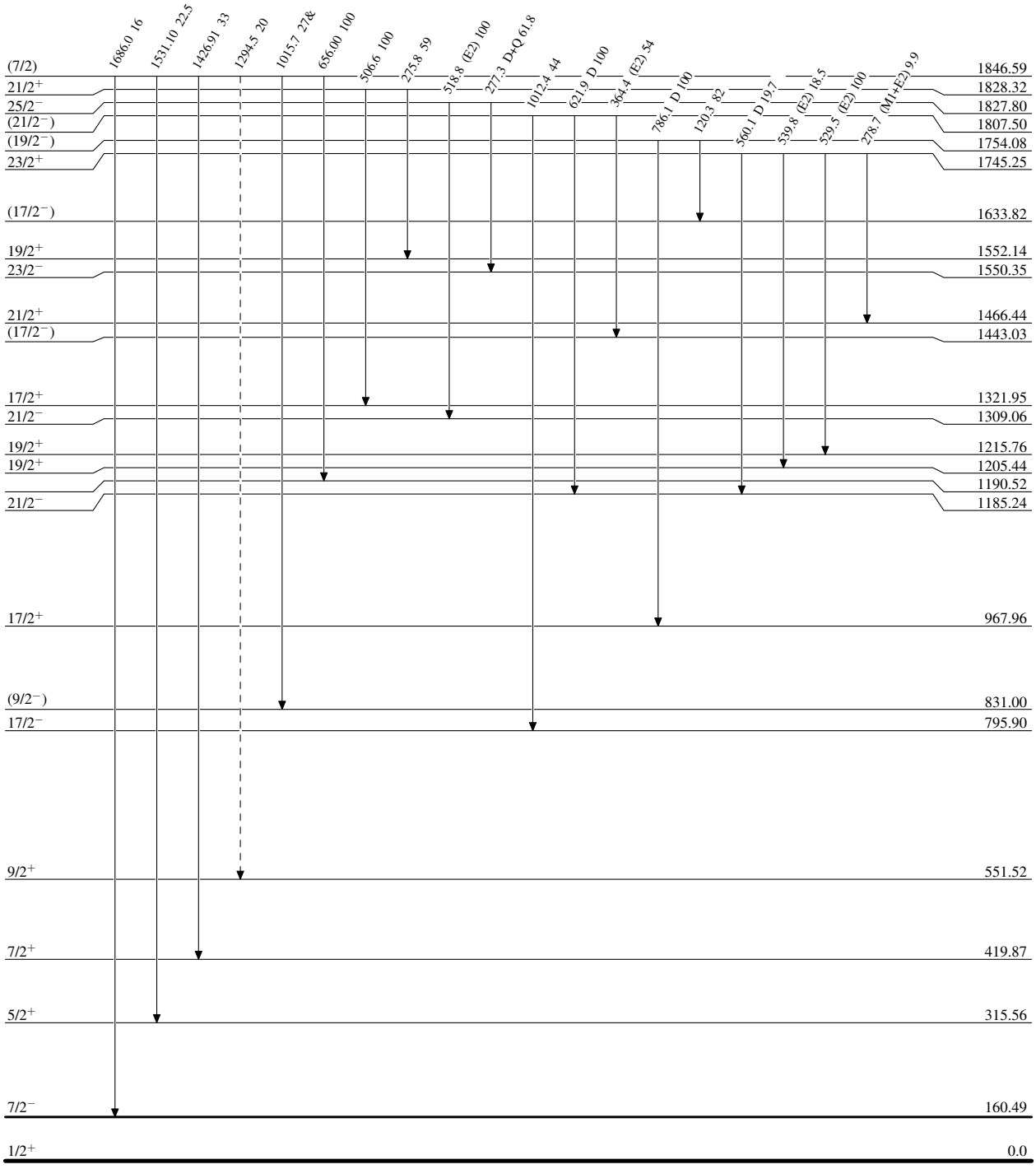
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

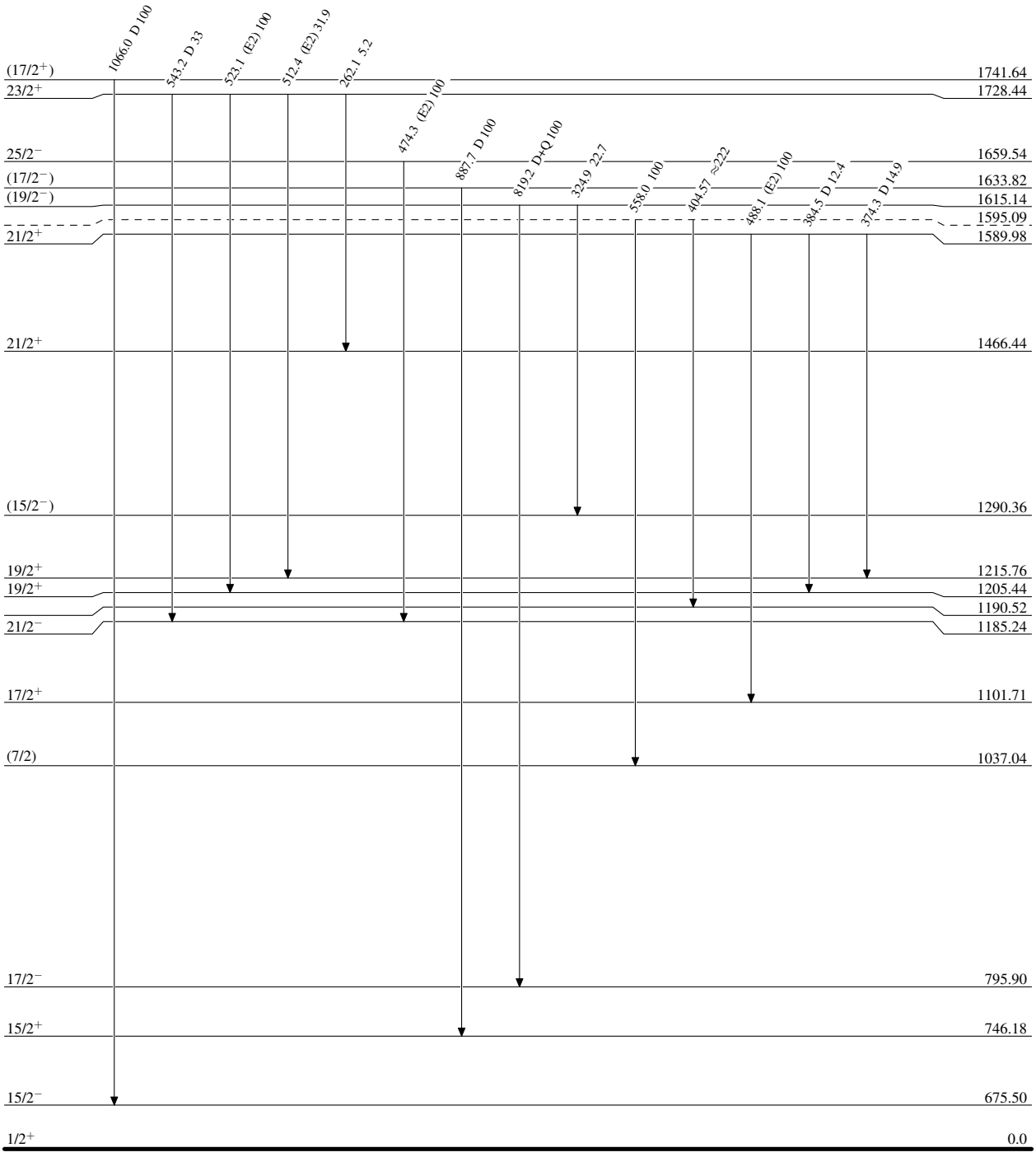


$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{165}_{69}Tm_{96}$

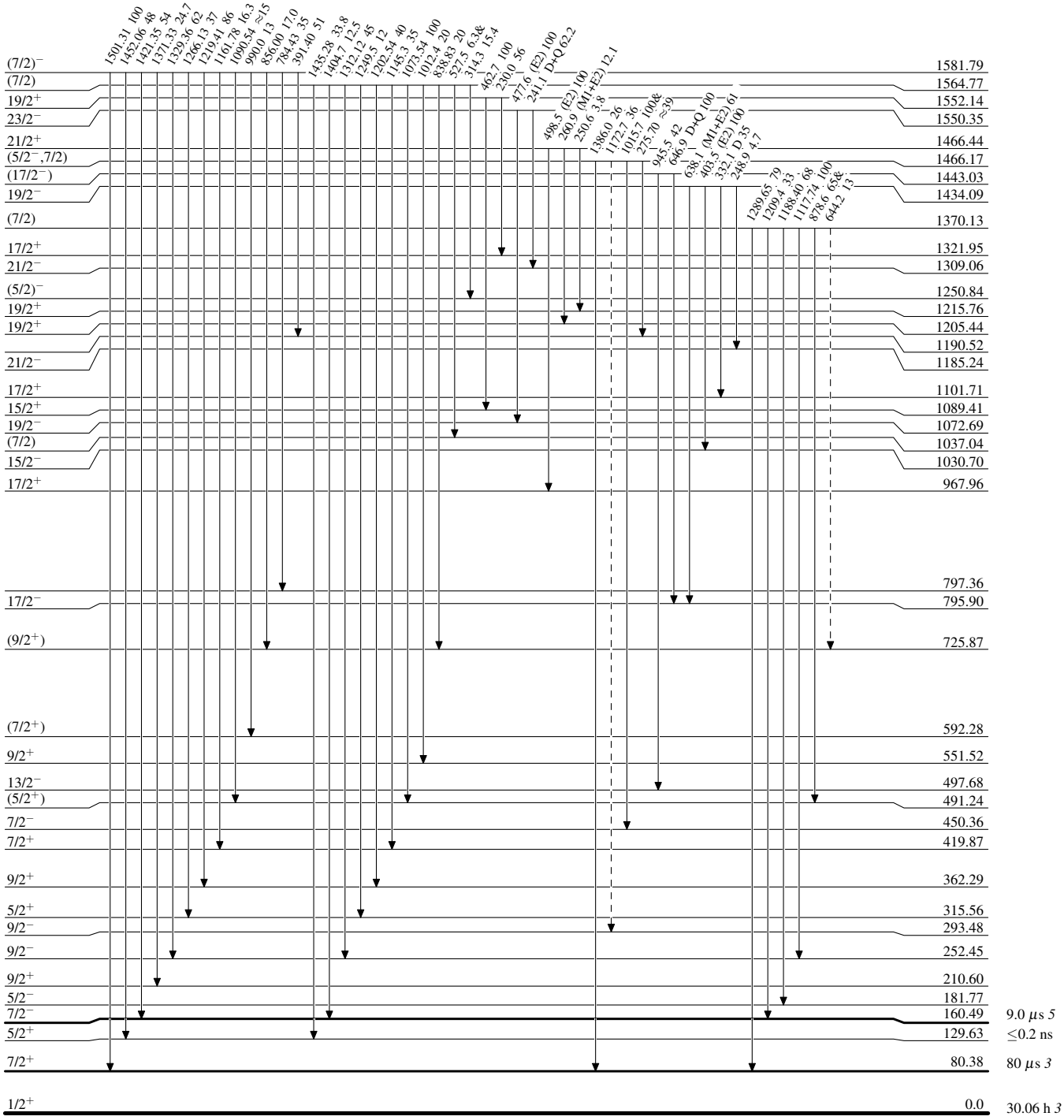
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

- - - - - - ► γ Decay (Uncertain)



$^{165}_{69}Tm_{96}$

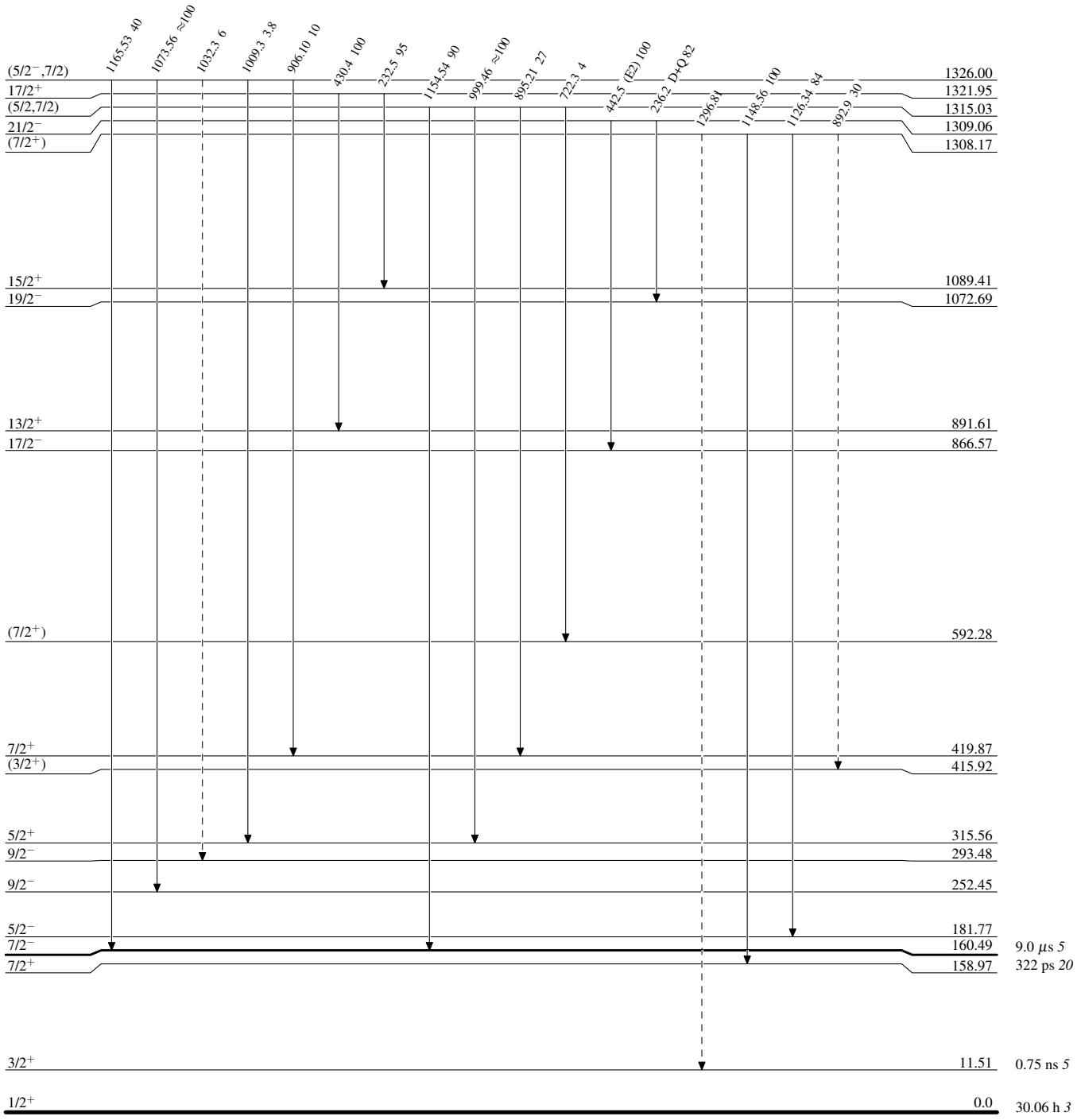
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

- - - - - - ► γ Decay (Uncertain)



$^{165}_{69}Tm_{96}$

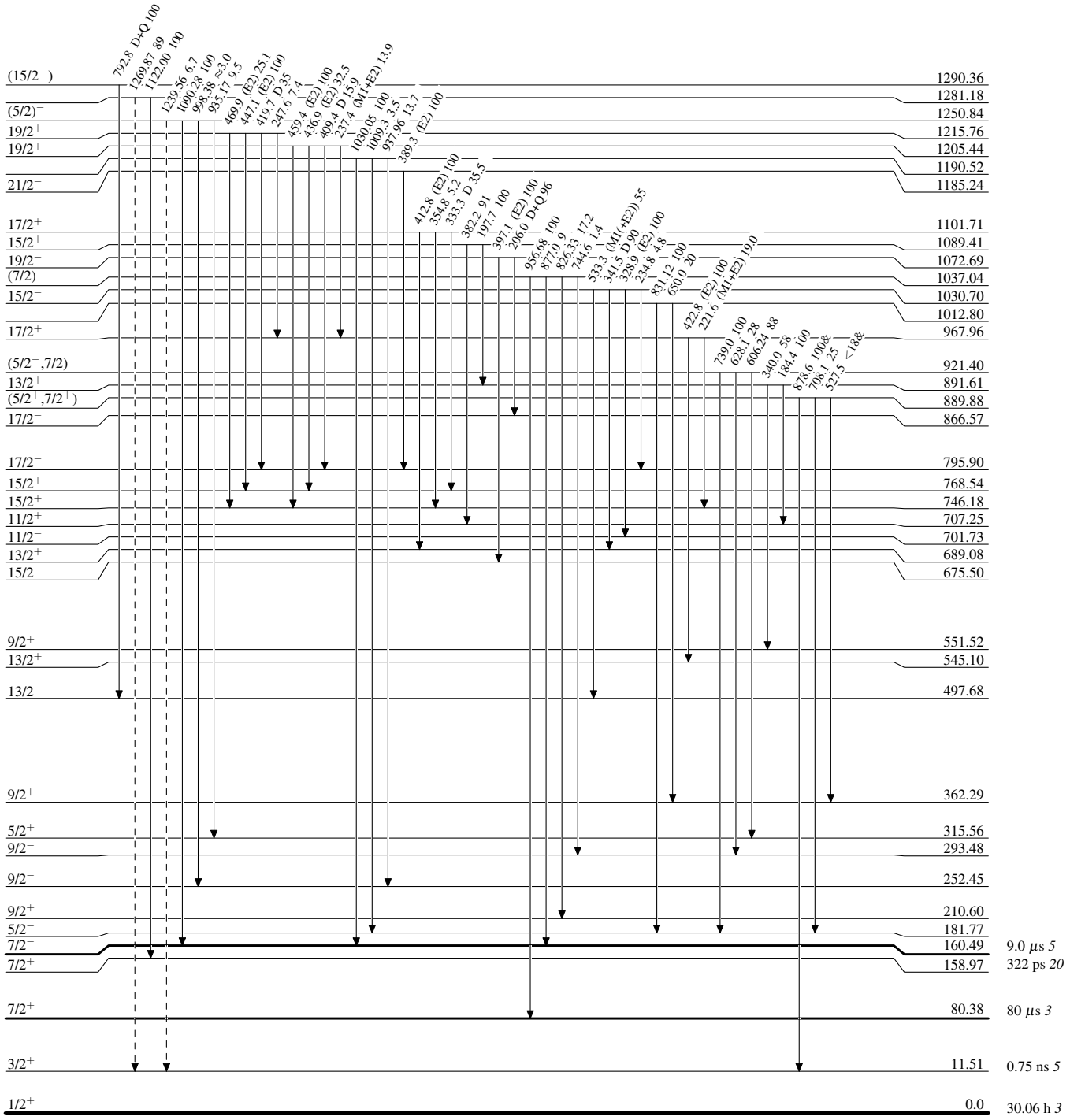
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

– – – – – – ► γ Decay (Uncertain)

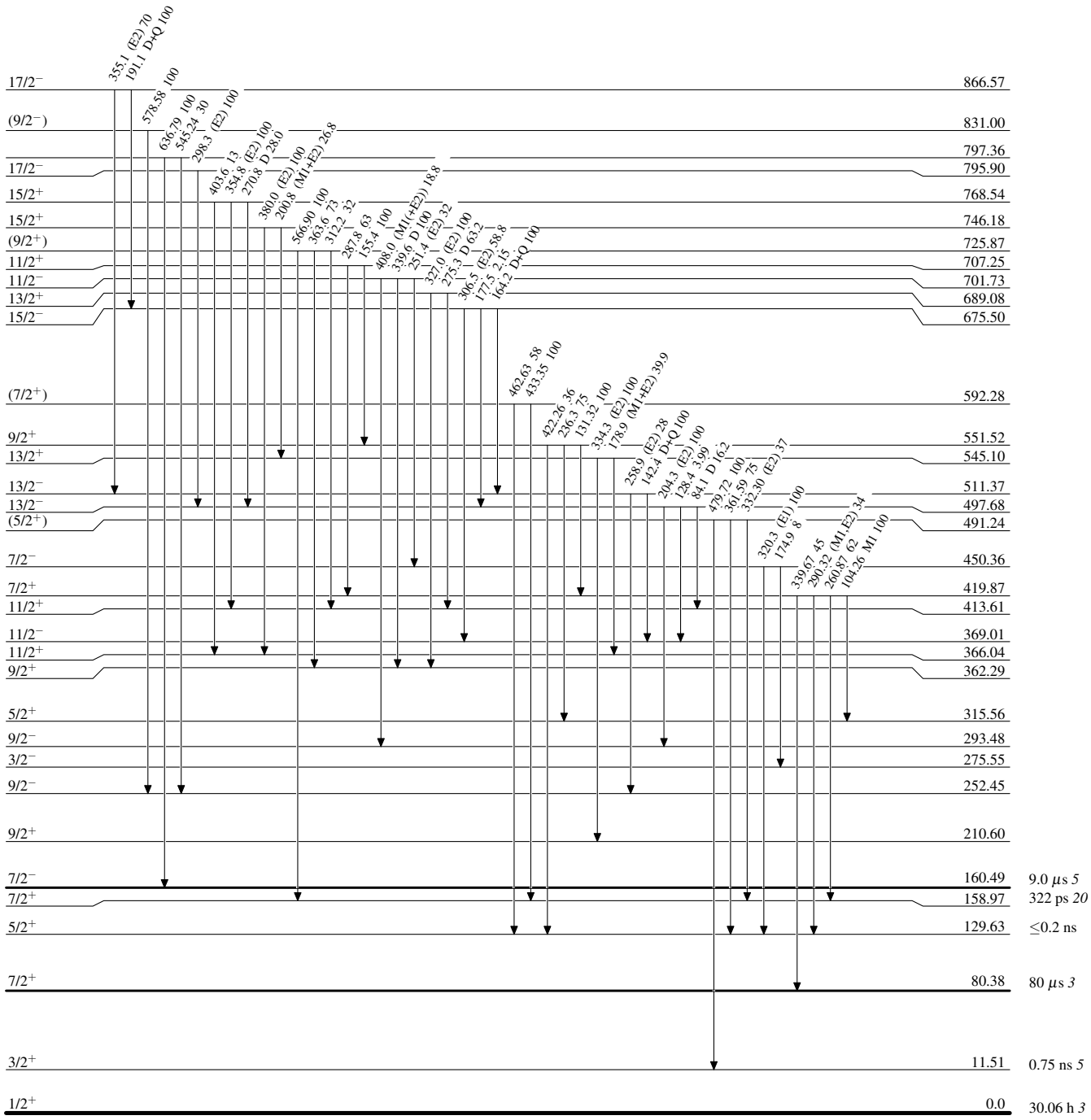


$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{165}_{69}Tm_{96}$

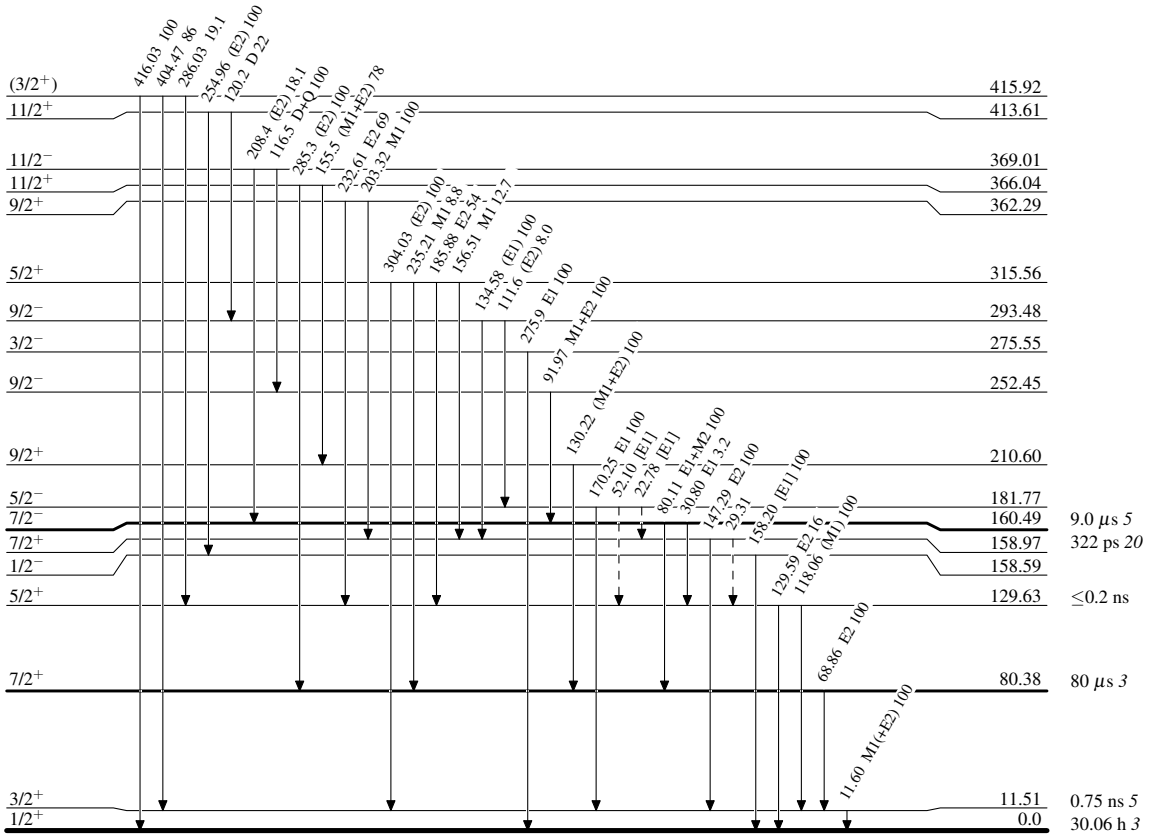
Adopted Levels, Gammas

Legend

Level Scheme (continued)

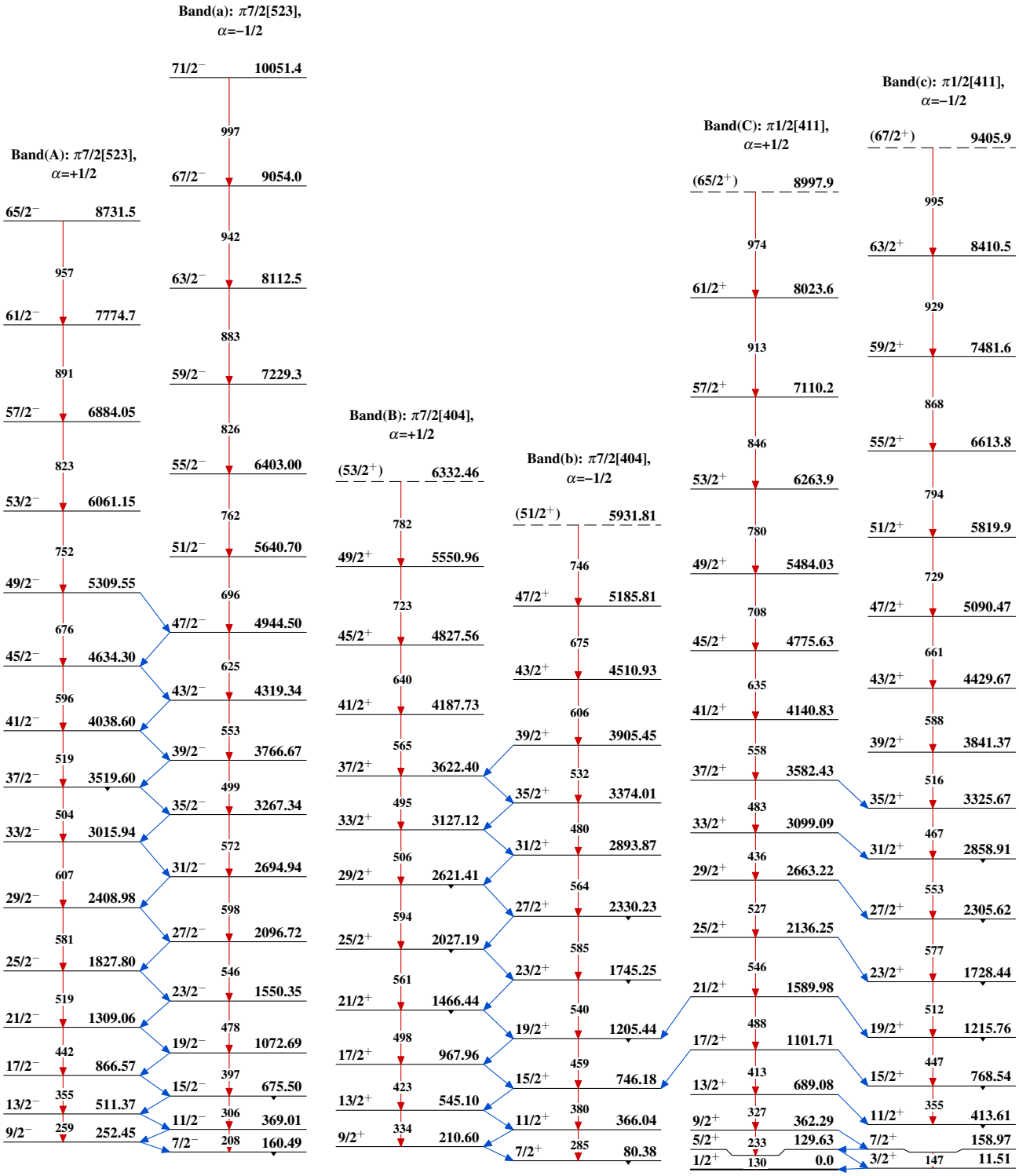
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



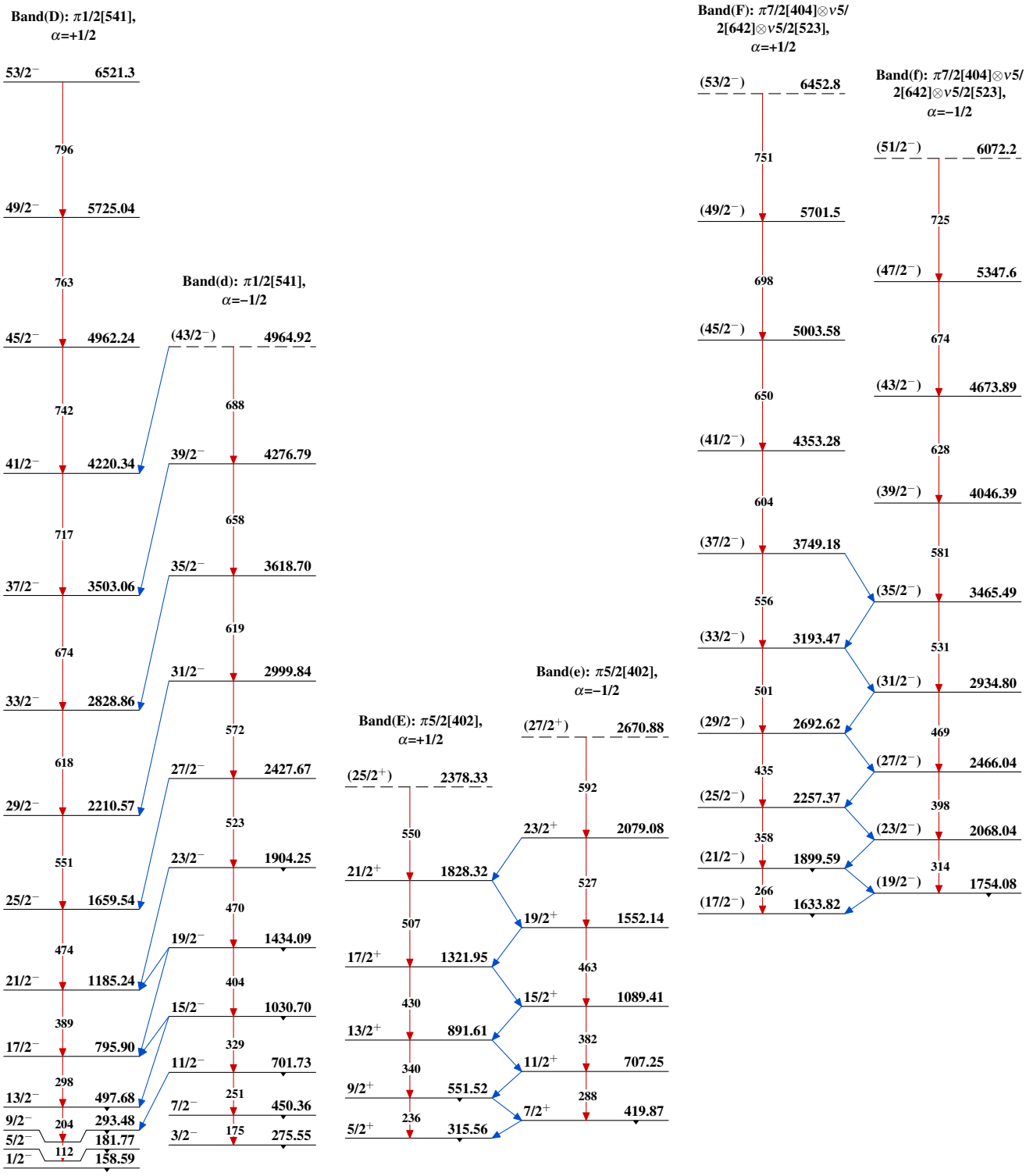
$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas



$^{165}_{69}Tm_{96}$

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)