Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan	NDS 151, 334 (2018)	30-Jun-2018

Q(β^-)=96.5 *10*; S(n)=7485.8 *12*; S(p)=6390.6 *12*; Q(α)=645 *5* 2017Wa10
S(2n)=14077.7 *12*; S(2p)=14991 *20* (2017Wa10).
See, e.g., 1987Mi31 and 1988Al04 for hfs and isotope shift data.
α: Additional information 1.

^{171}Tm Levels

Cross Reference (XREF) Flags

A	^{171}Er β^- decay	E	^{176}Yb(^{136}Xe,Xγ)
B	^{170}Er(^{3}He,d), (α,t)	F	^{170}Er(^{7}Li,α2nγ) E=42 MeV
C	^{170}Er(^{7}Li,2n$\alpha\gamma$) E=27-34 MeV	G	^{170}Tm(n,γ) E=res
D	^{170}Tm(n,γ) E=thermal		

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0[@]	1/2$^+$	1.92 y *1*	ABCD F	%β^-=100 μ=−0.2303 *36* μ: from atomic beam, resonance ionization mass spectroscopy (1967Gi04, 1964Bu09). J$^\pi$: atomic beam (1976Fu06); parity from cascading M1+E2 γ's from π=+ level (1285.0 keV). $T_{1/2}$: from 1965Fl02.
5.0359[@] *11*	3/2$^+$	4.77 ns *8*	ABCD F	J$^\pi$: M1+E2 γ to 1/2$^+$. $T_{1/2}$: cece(t) in ^{171}Er β^- decay (1972TuZV). Other values (from ^{171}Er β^- decay): 3.76 ns *14* (1961Bl13), 2.88 ns *17* (1966Be51).
116.6566[@] *10*	5/2$^+$	55 ps *13*	ABCD F	μ=+0.82 *37* μ: from IPAC (1968Ka14). J$^\pi$: E1 γ from 7/2$^-$ 425, M1+E2 γ to 3/2$^+$. $T_{1/2}$: cece(t) in ^{171}Er β^- decay (1964Su05).
129.0539[@] *12*	7/2$^+$	415 ps *20*	ABCD F	μ=+1.27 *12* μ: from IPAC (1968Ka14). J$^\pi$: E1 γ from 7/2$^-$ 425, M1+E2 γ to 5/2$^+$; member of g.s. band. $T_{1/2}$: $\gamma\gamma$(t) in ^{171}Er β^- decay (1973FoZX). Other value (from ^{171}Er β^- decay): 362 ps *15* (1964Su05).
326.8107[@] *13*	9/2$^+$		ABCD	J$^\pi$: γ to 5/2$^+$; log $f^{1u}t$=10.8 from 5/2$^-$; member of g.s. band.
347.9601[@] *22*	11/2$^+$		CD	J$^\pi$: level continues established g.s. band.
424.9557[&] *15*	7/2$^-$	2.60 μs *2*	ABCD F	J$^\pi$: E3 γ to 1/2$^+$. $T_{1/2}$: $\beta\gamma$(t) in ^{171}Er β^- decay (1972Gr09). Other values (from ^{171}Er β^- decay): 2.59 μs *3* (1958Cr84), 2.63 μs *5* (1966Be51). Others: 1948De05, 1963Or01, 1970Kn04.
520.3186[&] *18*	(9/2$^-$)		BCD F	J$^\pi$: 95.4γ to 7/2$^-$; band assignment.
627.02[@] *4*	(13/2$^+$)		C	
635.5392[a] *19*	7/2$^+$	1.26 ns *6*	ABCD F	μ=+1.15 *21* μ: from IPAC (1978Ba03). J$^\pi$: E1 γ to 7/2$^-$; μ (=+1.15) agrees with μ from theory (=+1.32) for 7/2$^+$ 7/2[404] Nilsson state. $T_{1/2}$: $\gamma\gamma$(t) in ^{171}Er β^- decay (1975Go06).
637.14[&] *5*	(11/2$^-$)		C F	
658.77[@] *3*	(15/2$^+$)		C	

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Adopted Levels, Gammas (continued)

^{171}Tm Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$	XREF	Comments
675.799[b] 9	3/2+		ABCD	Jπ: M1+E2 γ to 1/2+.
737.90[b] 8	(5/2)+		ABCD	Jπ: M1 γ to 5/2+, M1 γ to 3/2+; 5/2+ consistent with band assignment.
750.109[c] 19	(5/2−)		BCD	XREF: B(751). Jπ: γ to 7/2+ and to 3/2+; J=1/2 and 5/2 members of 1/2 [541] band expected to be almost degenerate near this energy and (^{3}He,d) suggests a doublet at E=751 (1974Ch44).
752.65[a] 9	9/2+		F	a 108.23γ tentatively placed from this band member In (^{7}Li,α2nγ) E=27-34 MeV was not confirmed In (^{7}Li,α2nγ) E=42 MeV so is not adopted.
754.840[c] 5	(1/2−)		B D	XREF: B(751). Jπ: γ to 1/2+ and to 3/2+; J=1/2 and 5/2 members of 1/2 [541] band expected to be almost degenerate near this energy and (^{3}He,d) suggests a doublet at E=751 (1974Ch44).
775.87[&] 4	(13/2−)		C F	
822.432[b] 24	(7/2+)		A CD	
823.82 9	(9/2−)[#]		BC	
884.34[c] 3	(3/2)−		BCD	Jπ: L=1 in (^{3}He,d); (^{3}He,d)/(α,t) cross-section ratio favors J=3/2.
894.07[a] 8	11/2+		F	
912.947[d] 3	5/2+		ABCD	Jπ: M1+E2 γ to 3/2+, M1+E2 γ to 7/2+.
935.55[&] 8	(15/2−)		C	
984.46[c] 20	(13/2−)		C	
998.625[d] 3	(7/2)+		ABCD	Jπ: M1+E2 γ to 5/2+, (M1+E2) γ to 7/2+; 7/2+ consistent with band assignment.
1013.15[@] 7	(17/2+)		C	
1036.27[c] 24	(7/2−)		BCD	
1057.42[@] 8	(19/2+)		C	
1059.01[a] 13	13/2+		F	
1116.74[&] 10	(17/2−)		C F	
1225.7 4	(3/2+,5/2,7/2+)		A	Jπ: γ's to 3/2+ and 7/2+.
1232.17[c] 11	(17/2−)		C	
1235? 2			B	
1246.40[a] 11	15/2+		F	
1284.967 4	(5/2)+		AB D	Jπ: L=2 in (^{3}He,d); γ to 7/2−.
1296.46 20			A	
1306.96[e] 17	(11/2)−		BC	Jπ: L=5 in (^{3}He,d); (^{3}He,d)/(α,t) cross-section ratio favors J=11/2.
1316.52[&] 11	(19/2−)		C	
1391.1 4	3/2(−),5/2,7/2		A	Jπ: γ to 7/2−; log ft=6.6 and log $f^{1u}t$<8.5 from 5/2−.
1400.6 3	(5/2+)		AB	Jπ: γ's to 7/2+ and 7/2− and 1/2+.
1455.21[a] 15	17/2+		F	
1568.1 6	1/2+		B	Jπ: L=0 in (^{3}He,d).
1674.43[f] 13	19/2+	1.7 μs 2	EF	%IT=100 $T_{1/2}$: from decay curves for out-of-beam 352γ and 428γ events (2009Wa06) In (^{7}Li,α2nγ) E=42 MeV. Configuration=π7/2[523]⊗ν5/2[512]⊗ν7/2[633]. g_K-g_R=0.35 3 from branching ratios of E2 and 219.2γ (assumed to be M1), with K^π=7/2+ imposed; from (^{7}Li,α2nγ) E=42 MeV.
1685.4?[a] 5	(19/2+)		F	
1785.2 9			B	
1813.0 10			B	
1824.5 9	1/2+		B	Jπ: L=0 in (^{3}He,d).
1838.8[f] 5	(21/2+)		EF	

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Adopted Levels, Gammas (continued)

^{171}Tm Levels (continued)

E(level)†	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
1848.5 *10*	B	1979.4 *17*		B	2669.8[f] *10*	29/2+	E
1859.8 *12*	B	2015.3 *12*		B	2921.8[f] *14*	31/2+	E
1908.8 *10*	B	2020.5?[f] *7*	(23/2+)	EF	3187.8[f] *15*	33/2+	E
1925.7 *11*	B	2220.0[f] *9*	25/2+	E	3466.8[f] *17*	35/2+	E
1959.4 *13*	B	2436.1[f] *10*	27/2+	E			

† From least-squares fit to Eγ whenever γ deexcitation has been observed; from transfer reaction otherwise.
‡ From relative excitation functions and rotational structure in ^{170}Er(^{7}Li,2nαγ), except where noted.
# From (^{3}He,d) angular distributions and relative population strength in (^{3}He,d) and (α,t), supported by Nilsson calculations including Coriolis coupling (1974Ch44).
@ Band(A): 1/2[411] band. α=12.1, β=−4.0, a=−0.86, b=17.3 (1/2, 3/2, 5/2, 7/2, 9/2 levels).
& Band(B): 7/2[523] band. α=10.6, β=1.3 (7/2, 9/2, 11/2 levels).
a Band(C): 7/2[404] band. α=12.3, β=−14.9 (7/2, 9/2, 11/2 levels).
b Band(D): 3/2[411] band. α=12.4, β=−14.9 (3/2, 5/2, 7/2 levels); may contain some (1/2[411],2+) vibration (see 1971Bu16).
c Band(E): 1/2[541] band. α=7.8, β=−3.7, a=4.65, b=−243 (5/2, 9/2, 3/2, 13/2, 7/2 levels); strongly perturbed level order is result of large decoupling parameter.
d Band(F): 5/2[402] band. α=12.2 (5/2, 7/2 levels); see 1971Bu16 and 1972Kr18 for 5/2[413] alternative assignment.
e Band(G): 9/2[514] band.
f Band(H): Band based on 19/2+ isomer. Probable configuration: ν (5/2[512]+7/2[633])+π 7/2[523] (2010Dr05).

Adopted Levels, Gammas (continued)

γ(^{171}Tm)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	α	Comments
5.0359	3/2$^+$	5.025 *6*	100	0.0	1/2$^+$	M1+E2	0.021 *1*	1.29×10^3 *6*	α(M)=1.03×10^3 *5*; α(N)=236 *10*; α(O)=30.9 *12*; α(P)=1.103 *16* B(E2)(W.u.)=224 *24*; B(M1)(W.u.)=0.0282 *14*
116.6566	5/2$^+$	111.6200[b] *5*	100.0 *16*	5.0359	3/2$^+$	M1+E2	−0.160 *3*	2.26	α(K)=1.87 *3*; α(L)=0.303 *5*; α(M)=0.0680 *10*; α(N)=0.01588 *23*; α(O)=0.00225 *4* α(P)=0.0001142 *16* B(E2)(W.u.)=74 *18*; B(M1)(W.u.)=0.079 *19* I_γ: weighted average from (n,γ) E=thermal and β$^-$ decay.
		116.6570[b] *10*	11.5 *8*	0.0	1/2$^+$	E2		1.723	α(K)=0.724 *11*; α(L)=0.764 *11*; α(M)=0.187 *3*; α(N)=0.0425 *6*; α(O)=0.00497 *7* α(P)=3.05×10^{-5} *5* B(E2)(W.u.)=2.7×10^2 *7* I_γ: weighted average of 13.9 *9* in (n,γ) E=thermal and 11.2 *3* in β$^-$ decay. other: 3.6 *8* from (^{7}Li,α2nγ) E=42 MeV.
129.0539	7/2$^+$	12.385 *8*	0.335 *20*	116.6566	5/2$^+$	M1+E2	0.021 *4*	262 *11*	α(L)=203 *9*; α(M)=46.1 *20*; α(N)=10.7 *5*; α(O)=1.51 *6*; α(P)=0.0748 *11* B(E2)(W.u.)=38 *15*; B(M1)(W.u.)=0.029 *3*
		124.0184[b] *4*	100 *3*	5.0359	3/2$^+$	E2		1.376	α(K)=0.619 *9*; α(L)=0.580 *9*; α(M)=0.1414 *20*; α(N)=0.0322 *5*; α(O)=0.00378 *6* α(P)=2.62×10^{-5} *4* B(E2)(W.u.)=253 *17*
326.8107	9/2$^+$	197.7596[b] *11*	100[b] *4*	129.0539	7/2$^+$	[M1]		0.452	α(K)=0.379 *6*; α(L)=0.0568 *8*; α(M)=0.01265 *18*; α(N)=0.00296 *5*; α(O)=0.000426 *6* α(P)=2.31×10^{-5} *4*
		210.1504[b] *12*	52[b] *4*	116.6566	5/2$^+$	[E2]		0.221	α(K)=0.1419 *20*; α(L)=0.0605 *9*; α(M)=0.01449 *21*; α(N)=0.00331 *5*; α(O)=0.000406 *6* α(P)=6.73×10^{-6} *10* Other Iγ:≈26 in β$^-$ decay, 85 *5* in (^{7}Li,2nαγ).
347.9601	11/2$^+$	218.9060 *19*	100	129.0539	7/2$^+$				
424.9557	7/2$^-$	295.9010[b] *12*	47.8 *18*	129.0539	7/2$^+$	E1		0.0199	α(K)=0.01675 *24*; α(L)=0.00244 *4*; α(M)=0.000542 *8*; α(N)=0.0001257 *18* α(O)=1.752×10^{-5} *25*; α(P)=8.56×10^{-7} *12* B(E1)(W.u.)=1.03×10^{-9} *5* I_γ: unweighted average of 47.5 *25* in (n,γ) E=thermal, 44.9 *12* in β$^-$ decay, 52.9 *7* in (^{7}Li,2nαγ) E-27-34 MeV and 45.9 *9* from (^{7}Li,α2nγ) 42 MeV; the weighted average is 49.3 *21*.
		308.2996[b] *16*	100.0 *21*	116.6566	5/2$^+$	E1		0.0180	α(K)=0.01515 *22*; α(L)=0.00221 *3*; α(M)=0.000489 *7*; α(N)=0.0001134 *16* α(O)=1.583×10^{-5} *23*; α(P)=7.77×10^{-7} *11*

$^{171}_{69}Tm_{102}$-4

Adopted Levels, Gammas (continued)

γ(^{171}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α	Comments
								B(E1)(W.u.)=1.91×10^{-9} *6* I_γ: weighted average from (n,γ) E=thermal, β^- decay and (^{7}Li,2nαγ).
424.9557	7/2$^-$	419.9 *3*	0.129 *6*	5.0359	3/2$^+$	M2	0.203	α(K)=0.1651 *24*; α(L)=0.0295 *5*; α(M)=0.00673 *10*; α(N)=0.001578 *23*; α(O)=0.000225 *4* α(P)=1.166×10^{-5} *17* B(M2)(W.u.)=2.54×10^{-5} *13*
		424.9 *5*	0.035 *4*	0.0	1/2$^+$	E3	0.0856	α(K)=0.0544 *8*; α(L)=0.0239 *4*; α(M)=0.00579 *9*; α(N)=0.001334 *20*; α(O)=0.0001673 *25* α(P)=3.37×10^{-6} *5* B(E3)(W.u.)=0.025 *3*
520.3186	(9/2$^-$)	95.363[b] *1*	100	424.9557	7/2$^-$			
627.02	(13/2$^+$)	279.12 *6*	100 *12*	347.9601	11/2$^+$			
		300.20 *5*	98 *3*	326.8107	9/2$^+$			
635.5392	7/2$^+$	115.224[b] *5*	4.4 *21*	520.3186	(9/2$^-$)	[E1]	0.229	α(K)=0.191 *3*; α(L)=0.0303 *5*; α(M)=0.00674 *10*; α(N)=0.001548 *22*; α(O)=0.000207 *3* α(P)=8.67×10^{-6} *13* B(E1)(W.u.)=4.2×10^{-6} *21* I_γ: weighted average of 2.3 *8* in (n,γ) E=thermal and 6.5 *8* in (^{7}Li,2nαγ) E=27-34 MeV.
		210.5832[b] *13*	100.0 *15*	424.9557	7/2$^-$	E1	0.0470	α(K)=0.0394 *6*; α(L)=0.00589 *9*; α(M)=0.001308 *19*; α(N)=0.000303 *5*; α(O)=4.17×10^{-5} *6* α(P)=1.94×10^{-6} *3* B(E1)(W.u.)=1.58×10^{-5} *9* I_γ: weighted average from (n,γ) E=thermal and (^{7}Li,2nαγ).
		506.56 *18*	3.5 *3*	129.0539	7/2$^+$	[M1,E2]	0.027 *10*	α(K)=0.0220 *89*; α(L)=0.00358 *92*; α(M)=0.00080 *20*; α(N)=0.00019 *5*; α(O)=2.63×10^{-5} *74* α(P)=1.29×10^{-6} *57* E_γ: weighted average of 506.8 *4* and 506.5 *2* from (^{7}Li,2nαγ) At 27-34 MeV and At 42 MeV, respectively. I_γ: other: 5.3 *20* from (^{7}Li,α2nγ) E=42 MeV.
		518.92 *24*	3.7 *7*	116.6566	5/2$^+$	[M1,E2]	0.0250 *94*	α(K)=0.0207 *83*; α(L)=0.00335 *88*; α(M)=0.00075 *19*; α(N)=1.76×10^{-4} *44*; α(O)=2.47×10^{-5} *70* α(P)=1.21×10^{-6} *53* E_γ: weighted average of 519.4 *4* and 518.8 *2* from (^{7}Li,2nαγ) At 27-34 MeV and At 42 MeV, respectively. I_γ: weighted average of 4.6 *20* and 3.5 *8* from (^{7}Li,2nαγ) At 27-34 MeV and At 42 MeV, respectively.
		630.7 *2*	0.78 *16*	5.0359	3/2$^+$	[E2]	0.00969	α(K)=0.00785 *11*; α(L)=0.001426 *20*; α(M)=0.000324 *5*; α(N)=7.52×10^{-5} *11* α(O)=1.029×10^{-5} *15*; α(P)=4.39×10^{-7} *7* B(E2)(W.u.)=0.00053 *12*

$^{171}_{69}Tm_{102}$-5

Adopted Levels, Gammas (continued)

$\gamma(^{171}Tm)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	α	Comments
637.14	(11/2$^-$)	116.78 *5*	100	520.3186	(9/2$^-$)				
658.77	(15/2$^+$)	310.80 *3*	100	347.9601	11/2$^+$				
675.799	3/2$^+$	559.4 *4*	16.4 *7*	116.6566	5/2$^+$	M1		0.0284	α(K)=0.0239 *4*; α(L)=0.00348 *5*; α(M)=0.000772 *11*; α(N)=0.000181 *3*; α(O)=2.61×10^{-5} *4* α(P)=1.434×10^{-6} *21*
		670.760[b] *9*	88.9 *18*	5.0359	3/2$^+$	M1+E2	−0.05 *10*	0.0179 *4*	α(K)=0.0151 *3*; α(L)=0.00218 *4*; α(M)=0.000484 *8*; α(N)=0.0001132 *19*; α(O)=1.63×10^{-5} *3* α(P)=9.01×10^{-7} *17*
		676.0 *2*	100.0 *21*	0.0	1/2$^+$	M1+E2	+0.12 *7*	0.0174 *4*	α(K)=0.0147 *3*; α(L)=0.00213 *4*; α(M)=0.000472 *8*; α(N)=0.0001104 *19*; α(O)=1.59×10^{-5} *3* α(P)=8.78×10^{-7} *17*
737.90	(5/2)$^+$	61.5 *3*		675.799	3/2$^+$				
		608.4 *4*	≈38	129.0539	7/2$^+$				
		621.03 *23*	91 *3*	116.6566	5/2$^+$	M1		0.0217	α(K)=0.0183 *3*; α(L)=0.00266 *4*; α(M)=0.000590 *9*; α(N)=0.0001380 *20*; α(O)=1.99×10^{-5} *3* α(P)=1.097×10^{-6} *16*
		732.5 *3*	100.0 *25*	5.0359	3/2$^+$	M1		0.01435	α(K)=0.01211 *17*; α(L)=0.001745 *25*; α(M)=0.000387 *6*; α(N)=9.06×10^{-5} *13* α(O)=1.308×10^{-5} *19*; α(P)=7.23×10^{-7} *11*
750.109	(5/2$^-$)	621.1[a] *3*	<87	129.0539	7/2$^+$				
		745.071[b] *19*	100 *45*	5.0359	3/2$^+$				
752.65	9/2$^+$	117.0[@] *2*	100[@] *20*	635.5392	7/2$^+$				
		232.3[@] *2*	30[@] *10*	520.3186	(9/2$^-$)				
		327.8[@] *2*	38[@] *13*	424.9557	7/2$^-$				
754.840	(1/2$^-$)	749.808[b] *6*	76[b] *71*	5.0359	3/2$^+$				
		754.827[b] *9*	100[b] *41*	0.0	1/2$^+$				
775.87	(13/2$^-$)	138.7 *1*	100.0 *24*	637.14	(11/2$^-$)				
		255.58 *4*	29 *3*	520.3186	(9/2$^-$)				
822.432	(7/2$^+$)	84.9 *3*		737.90	(5/2)$^+$				
		187.0[c]		635.5392	7/2$^+$				
		495.63[b] *3*	15 *5*	326.8107	9/2$^+$				I_γ: weighted average of 18 *8* from I(496γ):I(706γ)=2.1 *4*:9.3 *19* in (n,γ) E=thermal and 13 *7* from β^- decay.
		693.5 *4*	100 *11*	129.0539	7/2$^+$				
		705.75[b] *4*	80 *27*	116.6566	5/2$^+$				
823.82	(9/2$^-$)	475.8[a] *1*		347.9601	11/2$^+$				
		497.2 *3*		326.8107	9/2$^+$				
		695.1 *3*		129.0539	7/2$^+$				
884.34	(3/2)$^-$	767.9 *3*	<123	116.6566	5/2$^+$				I_γ: from (n,γ) E=thermal.
		884.34[b] *3*	100[b] *29*	0.0	1/2$^+$				
894.07	11/2$^+$	141.4[@] *1*	91[@] *18*	752.65	9/2$^+$				

$^{171}_{69}Tm_{102}$-6

Adopted Levels, Gammas (continued)

γ(^{171}Tm) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	δ[#]	α	Comments
894.07	11/2$^+$	258.5[@] *1*	100[@] *9*	635.5392	7/2$^+$				
912.947	5/2$^+$	175.53 *13*	21 *5*	737.90	(5/2)$^+$				
		237.14 *4*	46.9 *14*	675.799	3/2$^+$	M1+E2	+0.13 *5*	0.272 *5*	α(K)=0.228 *4*; α(L)=0.0344 *5*; α(M)=0.00767 *11*; α(N)=0.00179 *3*; α(O)=0.000257 *4* α(P)=1.386×10^{-5} *24*
		277.4072[b] *20*	89 *3*	635.5392	7/2$^+$	(M1+E2)	−0.305 *18*	0.171 *3*	α(K)=0.1429 *22*; α(L)=0.0222 *4*; α(M)=0.00496 *7*; α(N)=0.001159 *17*; α(O)=0.0001652 *24* α(P)=8.63×10^{-6} *14*
		487.9 *2*	0.8 *3*	424.9557	7/2$^-$				
		586.1 *2*	39 *4*	326.8107	9/2$^+$				
		784.09 *17*	37.2 *8*	129.0539	7/2$^+$	M1+E2	+0.34 *10*	0.0115 *4*	α(K)=0.0097 *4*; α(L)=0.00140 *5*; α(M)=0.000311 *10*; α(N)=7.28×10^{-5} *23*; α(O)=1.05×10^{-5} *4* α(P)=5.75×10^{-7} *22*
		796.54 *11*	100 *2*	116.6566	5/2$^+$	M1+E2	+0.56 *+20−16*	0.0102 *8*	α(K)=0.0086 *7*; α(L)=0.00126 *9*; α(M)=0.000280 *18*; α(N)=6.6×10^{-5} *5*; α(O)=9.4×10^{-6} *7* α(P)=5.1×10^{-7} *5*
		907.9 *3*	98.4 *20*	5.0359	3/2$^+$	M1+E2	+0.33 *3*	0.00802 *14*	α(K)=0.00677 *12*; α(L)=0.000975 *16*; α(M)=0.000216 *4*; α(N)=5.06×10^{-5} *8*; α(O)=7.29×10^{-6} *12* α(P)=4.02×10^{-7} *7*
		912.6 *5*	11.9 *8*	0.0	1/2$^+$				
935.55	(15/2$^-$)	159.8 *1*	100 *10*	775.87	(13/2$^-$)				
		298.3 *1*	47 *2*	637.14	(11/2$^-$)				I_γ: other: 33 *13* from (^{7}Li,α2nγ) E=27-34 MeV.
984.46	(13/2$^-$)	636.5 *2*	100	347.9601	11/2$^+$				
998.625	(7/2)$^+$	85.6782[b] *11*	100 *7*	912.947	5/2$^+$	M1+E2	0.22 *4*	4.87	α(K)=3.93 *7*; α(L)=0.73 *5*; α(M)=0.167 *12*; α(N)=0.039 *3*; α(O)=0.0053 *3*; α(P)=0.000241 *5*
		261.4 *2*	<33	737.90	(5/2)$^+$				
		362.91 *14*	32.8 *18*	635.5392	7/2$^+$	[M1]		0.0873	α(K)=0.0734 *11*; α(L)=0.01083 *16*; α(M)=0.00241 *4*; α(N)=0.000563 *8*; α(O)=8.12×10^{-5} *12* α(P)=4.44×10^{-6} *7*
		573.5 *2*	16.3 *25*	424.9557	7/2$^-$				
		671.8 *2*	37 *8*	326.8107	9/2$^+$				
		869.7 *3*	92 *8*	129.0539	7/2$^+$	(M1+E2)	−0.24 *8*	0.00911 *22*	α(K)=0.00770 *19*; α(L)=0.001106 *25*; α(M)=0.000245 *6*; α(N)=5.74×10^{-5} *13* α(O)=8.28×10^{-6} *19*; α(P)=4.57×10^{-7} *12*
		881.95[b] *6*	64 *3*	116.6566	5/2$^+$	M1+E2	+0.11 *3*	0.00900	α(K)=0.00760 *11*; α(L)=0.001089 *16*; α(M)=0.000241 *4*; α(N)=5.65×10^{-5} *9*; α(O)=8.16×10^{-6} *12* α(P)=4.52×10^{-7} *7* I_γ: other: 471 *64* in (n,γ) E=thermal.
		994.0 *5*	1.0 *5*	5.0359	3/2$^+$				

$^{171}_{69}Tm_{102}$-7

Adopted Levels, Gammas (continued)

γ(^{171}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	α	Comments
1013.15	(17/2$^+$)	354.30 *8*	96 *10*	658.77	(15/2$^+$)				
		386.20 *8*	100 *5*	627.02	(13/2$^+$)				
1036.27	(7/2$^-$)	709.4 *3*		326.8107	9/2$^+$				
		919.7 *4*		116.6566	5/2$^+$				
1057.42	(19/2$^+$)	398.65[a] *7*	100	658.77	(15/2$^+$)				
1059.01	13/2$^+$	164.9[@] *2*	100[@]	894.07	11/2$^+$				
1116.74	(17/2$^-$)	181.2 *1*	100 *3*	935.55	(15/2$^-$)				I$_\gamma$: from ^{170}Er(^{7}Li,2nαγ) E=42 MeV.
		341.0[@] *2*	50[@] *13*	775.87	(13/2$^-$)				E$_\gamma$: other: 340.8 *4* In (^{7}Li,α2nγ) E=27-34 MeV for peak that is broader than expected. I$_\gamma$: other: 200 *8* In (^{7}Li,α2nγ) E=27-34 MeV for peak that is broader than expected.
1225.7	(3/2$^+$,5/2,7/2$^+$)	1096.9 *8*	16 *3*	129.0539	7/2$^+$				
		1109.0 *5*	100 *3*	116.6566	5/2$^+$				
		1220.5 *8*	41 *3*	5.0359	3/2$^+$				
1232.17	(17/2$^-$)	573.4 *1*	100	658.77	(15/2$^+$)				
1246.40	15/2$^+$	187.4[@] *1*	26[@] *4*	1059.01	13/2$^+$				
		352.3[@] *1*	100[@] *6*	894.07	11/2$^+$	E2		0.0444	α(K)=0.0333 *5*; α(L)=0.00860 *12*; α(M)=0.00201 *3*; α(N)=0.000463 *7*; α(O)=5.99×10^{-5} *9* α(P)=1.755×10^{-6} *25* Mult.: from α(K)exp(352γ)=0.025 *5* corrected for contribution from ce(M) of 296γ In (^{7}Li,α2nγ) E=42 MeV.
		470.5[@] *2*	6.5[@] *26*	775.87	(13/2$^-$)				
1284.967	(5/2)$^+$	286.5 *2*	≈3.1	998.625	(7/2)$^+$	[M1]		0.1640	α(K)=0.1377 *20*; α(L)=0.0205 *3*; α(M)=0.00456 *7*; α(N)=0.001066 *15*; α(O)=0.0001535 *22* α(P)=8.37×10^{-6} *12*
		372.0200[b] *17*	100 *4*	912.947	5/2$^+$	M1+E2	−0.28 *2*	0.0785 *12*	α(K)=0.0658 *10*; α(L)=0.00992 *15*; α(M)=0.00221 *4*; α(N)=0.000517 *8*; α(O)=7.41×10^{-5} *11* α(P)=3.97×10^{-6} *7*
		547.8 *5*	6.6 *16*	737.90	(5/2)$^+$				
		609.0 *2*	≈8	675.799	3/2$^+$				
		860.0 *2*	0.58 *9*	424.9557	7/2$^-$	[E1]		0.00190	α(K)=0.001619 *23*; α(L)=0.000222 *4*; α(M)=4.89×10^{-5} *7*; α(N)=1.139×10^{-5} *16* α(O)=1.629×10^{-6} *23*; α(P)=8.77×10^{-8} *13*
		1156.0 *5*	0.23 *6*	129.0539	7/2$^+$				
		1168.4 *5*	0.72 *6*	116.6566	5/2$^+$				
		1279.9 *5*	0.97 *8*	5.0359	3/2$^+$				
		1284.4 *5*	0.93 *8*	0.0	1/2$^+$				
1296.46		871.5 *2*	100	424.9557	7/2$^-$				

$^{171}_{69}Tm_{102}$-8

Adopted Levels, Gammas (continued)

γ(^{171}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α	Comments
1306.96	(11/2)$^-$	532.0[c] *3*	53 *6*	775.87	(13/2$^-$)			
		669.8 *2*	55 *16*	637.14	(11/2$^-$)			
		786.7 *3*	100 *11*	520.3186	(9/2$^-$)			
1316.52	(19/2$^-$)	199.78[a] *3*		1116.74	(17/2$^-$)			
		381.0 *2*		935.55	(15/2$^-$)			
1391.1	3/2$^{(-)}$,5/2,7/2	966.1 *4*	100	424.9557	7/2$^-$			
1400.6	(5/2$^+$)	976.2 *5*	25 *11*	424.9557	7/2$^-$			
		1271.2 *5*	12 *5*	129.0539	7/2$^+$			
		1395.5 *5*	100 *29*	5.0359	3/2$^+$			
		1400.5 *5*	89 *4*	0.0	1/2$^+$			
1455.21	17/2$^+$	209.0[@] *5*	50[@] *20*	1246.40	15/2$^+$			
		396.1[@] *2*	100[@] *25*	1059.01	13/2$^+$			
1674.43	19/2$^+$	219.2[@] *1*	13.4[@] *23*	1455.21	17/2$^+$	[M1]	0.340	α(K)=0.285 *4*; α(L)=0.0427 *6*; α(M)=0.00950 *14*; α(N)=0.00222 *4*; α(O)=0.000320 *5* α(P)=1.740×10^{-5} *25* B(M1)(W.u.)=1.16×10^{-7} *25*
		428.0[@] *1*	100[@] *5*	1246.40	15/2$^+$	E2	0.0258	α(K)=0.0200 *3*; α(L)=0.00449 *7*; α(M)=0.001039 *15*; α(N)=0.000240 *4*; α(O)=3.17×10^{-5} *5* α(P)=1.083×10^{-6} *16* B(E2)(W.u.)=0.00029 *4* Mult.: from α(K)exp=0.017 *3* In (^{7}Li,α2nγ) E=42 MeV.
		558.1[@] *3*	21.7[@] *28*	1116.74	(17/2$^-$)	[E1]	0.00458	α(K)=0.00388 *6*; α(L)=0.000545 *8*; α(M)=0.0001203 *17*; α(N)=2.80×10^{-5} *4*; α(O)=3.97×10^{-6} *6* α(P)=2.07×10^{-7} *3* B(E1)(W.u.)=1.13×10^{-10} *21*
1685.4?	(19/2$^+$)	230.0[@c] *5*		1455.21	17/2$^+$			
		439.0[@c] *5*		1246.40	15/2$^+$			
1838.8	(21/2$^+$)	164.3[@] *5*	100[@]	1674.43	19/2$^+$			E_γ: other: 164.8 from (^{136}Xe,Xγ).
2020.5?	(23/2$^+$)	181.6[&]		1838.8	(21/2$^+$)			E_γ: other: 184.2 *5* from (^{7}Li,α2nγ) E=42 MeV.
		346.3[&]		1674.43	19/2$^+$			
2220.0	25/2$^+$	199.6[&]	41	2020.5?	(23/2$^+$)			
		381.0[&]	100 *13*	1838.8	(21/2$^+$)			
2436.1	27/2$^+$	216.3[&]	58	2220.0	25/2$^+$			
		415.7[&]	100 *9*	2020.5?	(23/2$^+$)			
2669.8	29/2$^+$	234	100	2436.1	27/2$^+$			
		449.6[&]	100	2220.0	25/2$^+$			
2921.8	31/2$^+$	485.7[&]	100	2436.1	27/2$^+$			
3187.8	33/2$^+$	518[&]	100	2669.8	29/2$^+$			
3466.8	35/2$^+$	545[&]	100	2921.8	31/2$^+$			

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Adopted Levels, Gammas (continued)

$\gamma(^{171}Tm)$ (continued)

† Weighted average from ^{171}Er β^- decay and $^{170}Er(^7Li,2n\alpha\gamma)$ E=27-34 MeV, except as noted.
‡ Relative photon branching from each level; values are from combined fit of branchings in ^{171}Er β^- decay and $^{170}Er(^7Li,2n\alpha\gamma)$, E=27-34 MeV, except where noted.
# From ^{171}Er β^- decay, except As noted.
@ From $^{170}Er(^7Li,\alpha 2n\gamma)$ E=42 MeV.
& From $^{176}Yb(^{136}Xe,X\gamma)$.
a Complex peak (broader than normal) in $(^7Li,2n\alpha\gamma)$ E=27-34 MeV.
b From $^{170}Tm(n,\gamma)$ E=thermal.
c Placement of transition in the level scheme is uncertain.

$^{171}_{69}Tm_{102}$-10

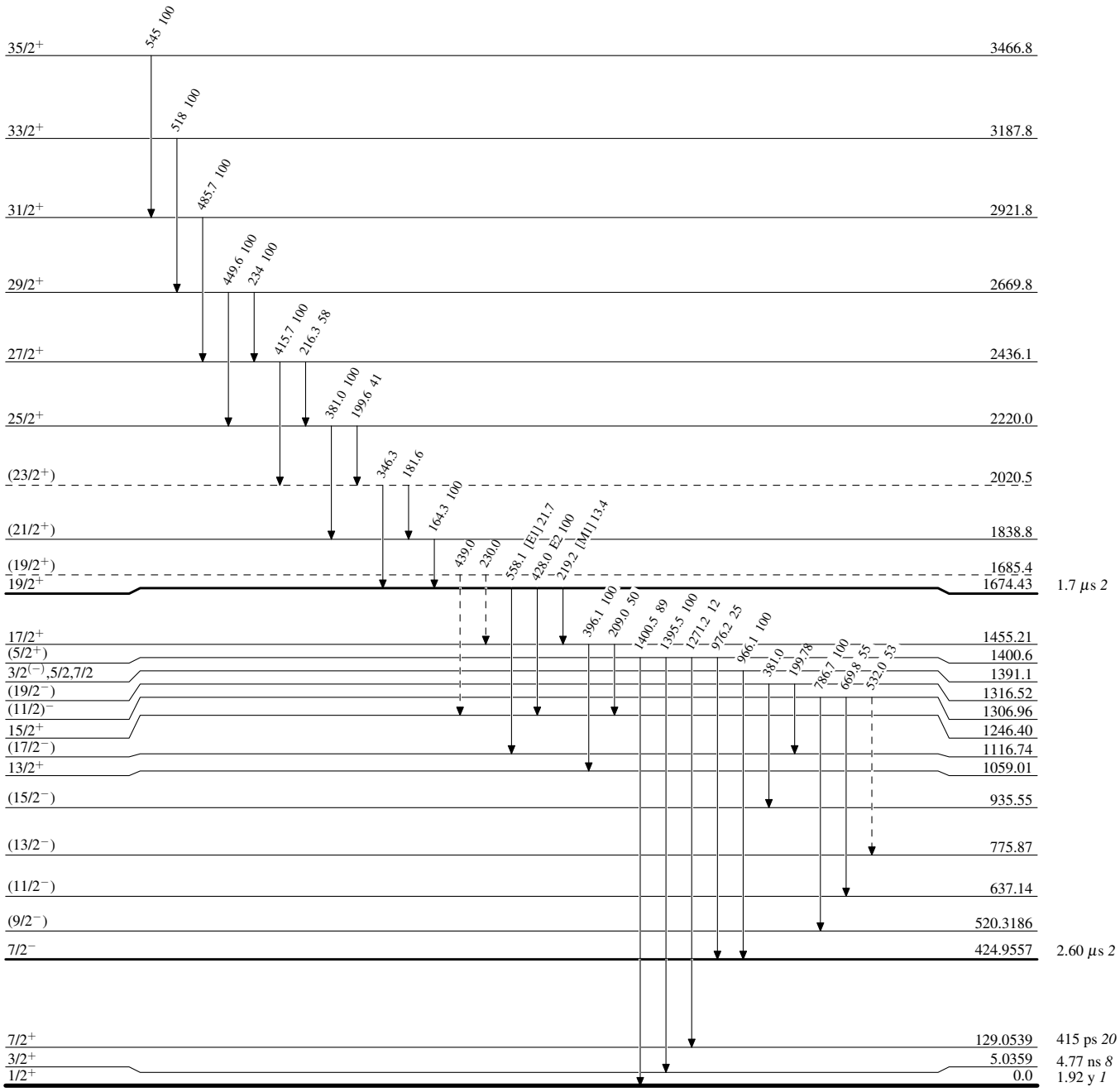
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

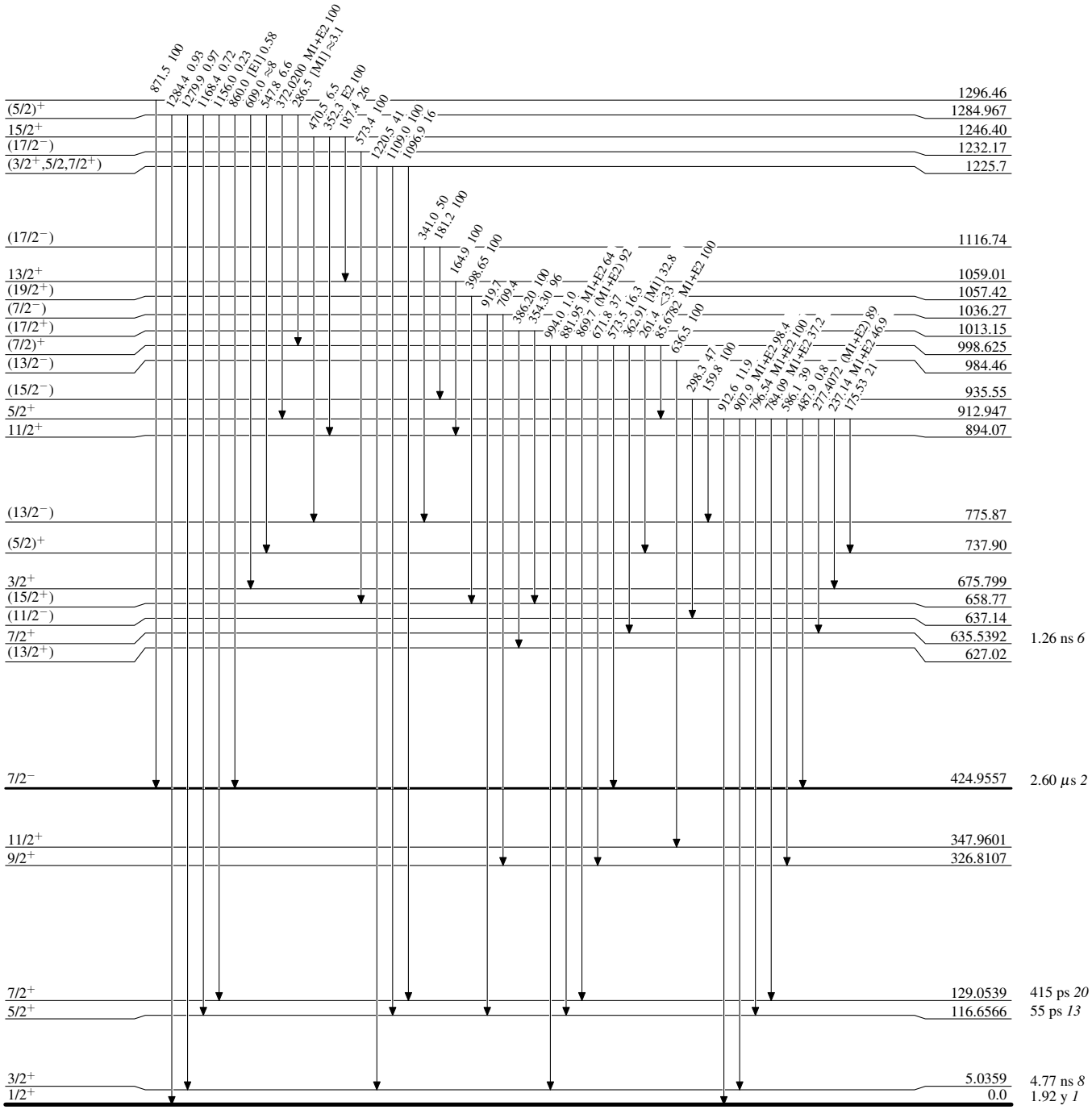


$^{171}_{69}Tm_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{171}_{69}Tm_{102}$

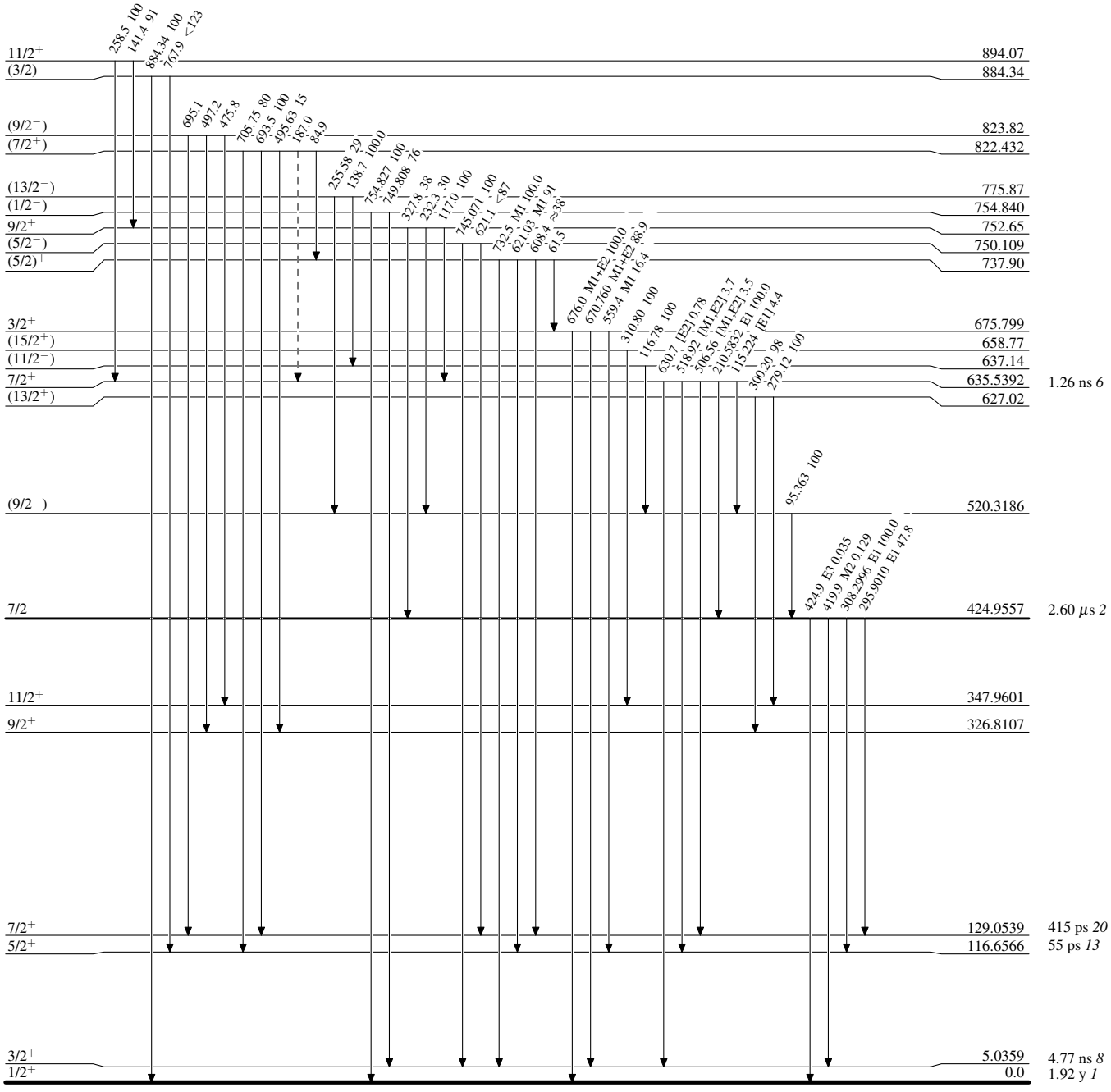
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)

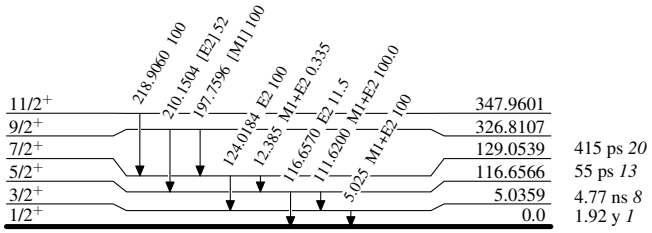


$^{171}_{69}Tm_{102}$

Adopted Levels, Gammas

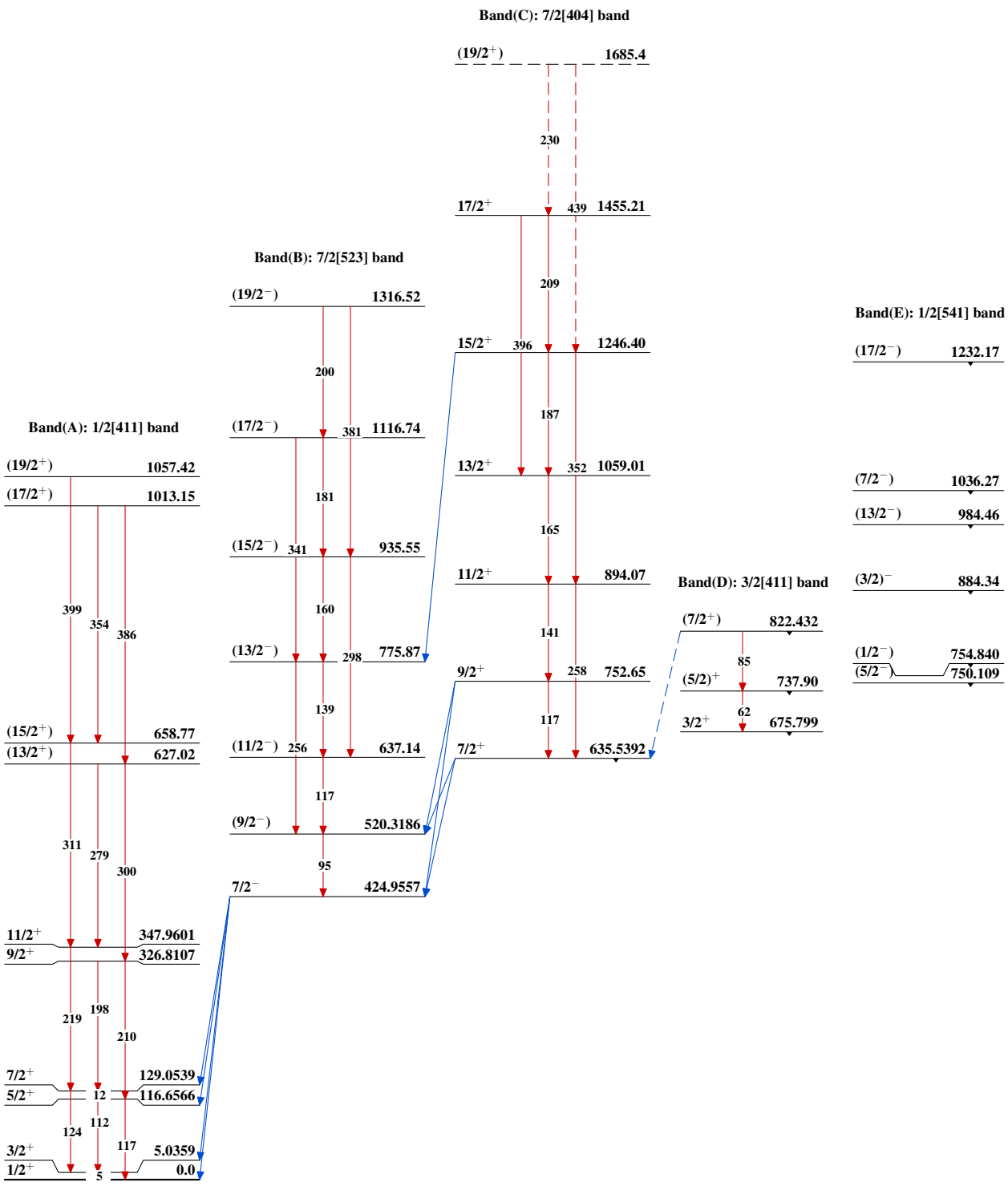
Level Scheme (continued)

Intensities: Relative photon branching from each level



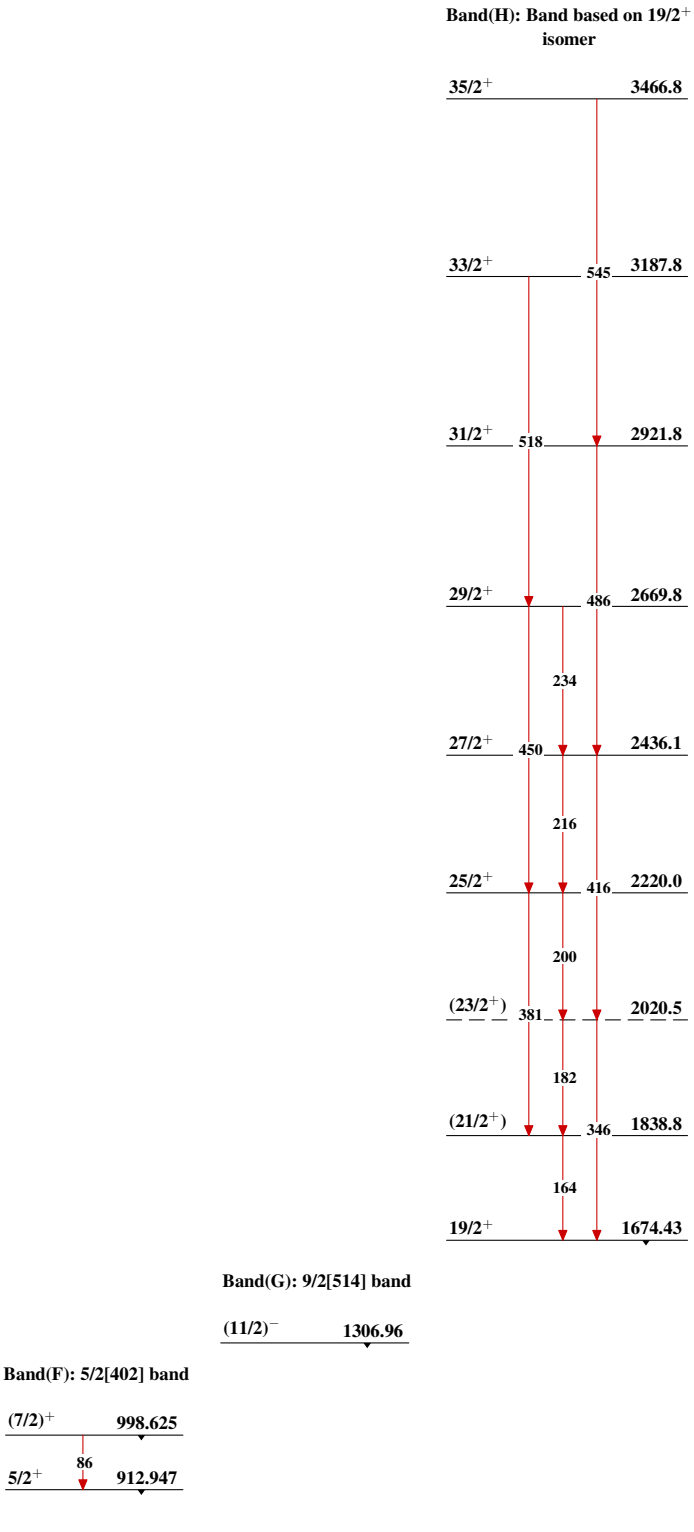
$^{171}_{69}Tm_{102}$

Adopted Levels, Gammas



$^{171}_{69}Tm_{102}$

Adopted Levels, Gammas (continued)



$^{171}_{69}Tm_{102}$