Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111,1807 (2010)	15-Jun-2010

Q(β^-)=−1.71×10^3 *5*; S(n)=7.64×10^3 *5*; S(p)=3.77×10^3 *4*; Q(α)=2.41×10^3 *5* 2012Wa38
Note: Current evaluation has used the following Q record −1700 507630 60 *3760* 50 *2416* 53 2003Au03,2009AuZZ.
Q(α): From 2009AuZZ; 2400 *50* from 2003Au03.
A $T_{1/2}$≈2 h activity (Eγ≈88), attributed to ^{168}Lu by 1961Gr08 and possibly also seen by 1969Wi08, was not confirmed by 1966Ha23 or 1972Ch44, and 1983Zy02 report a negative result from their search for new ^{168}Lu isomers with $T_{1/2}$>2 min using (HI,xnγ) reactions. The evaluator concludes that original attribution to ^{168}Lu was incorrect, consistent with tentative conclusions by 1965Gr17.
For isotope shift data, see 1998Ge13.
Other Reactions:

^{159}Tb(^{16}O,α3nγ), E≈90 MeV (2007Si30): produced 6.7 min isomer; observed two known lines following ε decay.

^{168}Lu Levels

Cross Reference (XREF) Flags

A ^{168}Hf ε decay
B ^{159}Tb(^{13}C,4nγ),
C ^{168}Lu IT decay

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0	6$^{(-)}$	5.5 min *1*	ABC	%ε+%β^+=100 μ=3.016 *25* (1998Ge13); Q=+4.77 *6* (1998Ge13) μ, Q: from collinear LASER spectroscopy; relative to ^{175}Lu. $\Delta\langle r^2\rangle(^{170}Lu,^{168}Lu)$=−0.144 *14* (1998Ge13). $\langle r^2\rangle^{1/2}$(charge)=5.323 *4* (2004An14). J$^\pi$: J from collinear LASER spectroscopy (1998Ge13); π from consistency between measured μ and that calculated for K^π=6$^-$ ((π 7/2[404])+(ν 5/2[523])) configuration suggested by 1997Ba26. Structure analogous to ^{164}Tm(5.1 min). $T_{1/2}$: from 1972Ch44. Other: 5.15 min *12* (1970ChYY).
0.0+x	(6)		B	
0.0+y[a]	(9$^-$)		B	
0.0+z	(6)		B	
0.0+u[d]	(8$^+$)		B	
21.3+z[b]	(6$^-$)		B	
28.2+x[#]	(6$^+$)		B	
92.0+x[@]	(7$^+$)		B	
95.3+u[e]	(9$^+$)		B	
102.1+z[c]	(7$^-$)		B	
111.0+y[&]	(10$^-$)		B	
165.9+z[b]	(8$^-$)		B	
171.6+x[#]	(8$^+$)		B	
202.81 *12*	3$^+$	6.7 min *4*	A C	%ε+%β^+>99.6 *4*; %IT<0.8 μ=1.221 *5* (1998Ge13); Q=+2.431 *19* (1998Ge13) %IT: From 1999Ba65. Other: limit of 5% set to account for the presence of transitions from ^{168}Lu(5.5 min) in sources of pure ^{168}Lu(6.7 min) (1972Ch44). μ, Q: from collinear LASER spectroscopy; relative to ^{175}Lu. $\Delta\langle r^2\rangle(^{170}Lu,^{168}Lu)$=−0.024 *2* (1998Ge13). E(level): tentative value; from ^{168}Lu IT decay. E=220 *130* from difference in Q(β^-)

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Adopted Levels, Gammas (continued)

^{168}Lu Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
			values as determined for ^{168}Lu(5.5 min) and ^{168}Lu(6.7 min) ($\beta\gamma$ coin, 1972Ch44).
			J$^{\pi}$: J from atomic beam (1974Ek03); π from log *ft*=5.0 ε branch to π=+ 2204 level in ^{168}Yb.
			configuration: Measured μ consistent with that expected for $K^{\pi}=3^+$ ((π 1/2[541])+(ν 5/2[523])) configuration.
			T$_{1/2}$: average of 7.1 min *2* (1960Wi09), 6.05 min *14* (1970ChYY), 6.7 min *2* (1972Ch44), 6.0 min *2* (1981By04). Other: 7.0 min (1961Me05).
211.00 *3*	(1$^+$,2$^+$)	A	J$^{\pi}$: (M1) 584γ from 1$^+$ 795; presumed 8γ to 3$^+$ 203.
			Suggested configuration: $K^{\pi}=1^+$ (π 7/2[404])-(ν 5/2[642])? (1997Ba26).
218.20 *4*	(0$^+$,1$^+$,2$^+$)	A	J$^{\pi}$: (M1) 576γ from 1$^+$ 795.
			Suggested configuration: $K^{\pi}=2^+$ (π 1/2[411])-(ν 5/2[642])? (1997Ba26).
220.8+u[d]	(10$^+$)	B	
238.89 *4*	(1$^+$,2,3)	A	J$^{\pi}$: 28γ to (1$^+$,2$^+$) 211; 36γ to 3$^+$ 203; 116γ from (0$^-$,1$^-$,2$^-$) 355.
			Suggested configuration: $K^{\pi}=2^-$ (π 1/2[541])-(ν 5/2[642])? (1997Ba26).
240.85 *3*	(1$^+$,2,3)	A	J$^{\pi}$: 30γ to (1$^+$,2$^+$) 211; 36γ to 3$^+$ 203; 79γ from (2)$^-$ 320.
			Suggested configuration: $K^{\pi}=2^-$ (π 7/2[404])-(ν 3/2[521])? (1997Ba26).
241.5+y[a]	(11$^-$)	B	
257.85 *3*	(2)$^+$	A	J$^{\pi}$: M1+E2 55γ to 3$^+$ 203; (M1) 184γ from 1$^+$ 442.
			Suggested configuration: $K^{\pi}=2^+$ (π 1/2[541])-(ν 5/2[523]) (1997Ba26).
260.12 *4*	(2$^-$)	A	J$^{\pi}$: (E1) 57γ to 3$^+$ 203; (E1) 182γ from 1$^+$ 442.
			Suggested configuration: $K^{\pi}=2^-$ (π 1/2[411])-(ν 5/2[523]) (1997Ba26).
273.52 *10*		A	
286.2+x[@]	(9$^+$)	B	
296.4+z[c]	(9$^-$)	B	
303.71 *4*	(0$^-$,1$^-$,2$^-$)	A	J$^{\pi}$: (E1) 138γ from 1$^+$ 442.
			Suggested configuration: $K^{\pi}=1^-$ (π 7/2[404])-(ν 5/2[512]) (1997Ba26); alternatively, the 350 level could have this configuration.
320.056 *23*	(2)$^-$	A	J$^{\pi}$: E1+M2 32γ to (2)$^+$ 258; (E1+M2) 117γ to 3$^+$ 203; 475γ from 1$^+$ 795.
			Suggested configuration: $K^{\pi}=2^-$ (π 1/2[411])-(ν 5/2[512]) (1997Ba26).
350.11 *5*	(≤3)	A	J$^{\pi}$: 445γ from 1$^+$ 795;
			See comment on 304 level configuration.
354.84 *4*	(0$^-$,1$^-$,2$^-$)	A	J$^{\pi}$: (E1) 87γ from 1$^+$ 442.
			Suggested configuration: $K^{\pi}=1^-$ (π 7/2[404])-(ν 5/2[523]) (1997Ba26).
360.61 *4*	(0$^-$,1$^-$,2$^-$)	A	J$^{\pi}$: (E1) 434γ from 1$^+$ 795.
			Suggested configuration: $K^{\pi}=0^-$ (π 5/2[402])-(ν 5/2[523]) (1997Ba26).
363.40 *3*	(1$^+$,2$^-$)	A	J$^{\pi}$: 106γ to (2)$^+$ 258; 161γ to 3$^+$ 203; fed in ε decay from 0$^+$.
370.48 *6*	(≤3)	A	J$^{\pi}$: 424γ from 1$^+$ 795;
375.1+u[e]	(11$^+$)	B	
376.74 *6*	(≤3)	A	J$^{\pi}$: 418γ from 1$^+$ 795;
384.0+z[b]	(10$^-$)	B	
393.44 *6*	(≤3)	A	J$^{\pi}$: 401γ from 1$^+$ 795.
395.18 *6*	(0,1,2$^-$)	A	J$^{\pi}$: 75γ to (2$^-$) 320; fed in ε decay from 0$^+$.
402.8+y[&]	(12$^-$)	B	
417.50 *3*	1$^+$,2$^+$	A	J$^{\pi}$: M1+E2 24γ from 1$^+$ 442.
			Suggested configuration: $K^{\pi}=2^+$ (π 1/2[541])-(ν 5/2[512]) (1997Ba26).
426.33 *4*	(1$^+$)	A	J$^{\pi}$: 224γ to 3$^+$ 203; 368γ from 1$^+$ 795; log $f^{1u}t$<8.5 (log *ft*≈6.9) from 0$^+$.
			Suggested configuration: $K^{\pi}=1^+$ (π 1/2[541])-(ν 3/2[521]) (1997Ba26).
428.15 *3*	(1$^+$)	A	J$^{\pi}$: 108γ to (2$^-$) 220; 225γ to 3$^+$ 203; 217γ to (1$^+$,2$^+$) 211; log $f^{1u}t$<8.5 (log *ft*≈6.4) from 0$^+$.
			Suggested configuration: $K^{\pi}=1^+$ (π 1/2[541])+(ν 1/2[521]) (1997Ba26).
430.2+x[#]	(10$^+$)	B	
431.29 *5*	(0$^-$,1)	A	J$^{\pi}$: 171γ to (2$^-$) 260; 363γ from 1$^+$ 795; log $f^{1u}t$<8.5 (log *ft*≈6.9) from 0$^+$.
441.78 *3*	1$^+$	A	J$^{\pi}$: log *ft*<5.9 from 0$^+$.

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Adopted Levels, Gammas (continued)

^{168}Lu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
			Suggested configuration: $K^{\pi}=1^{+}$ (π 7/2[523])-(ν 5/2[523]) (1997Ba26).
480.10 *6*		A	Jπ: 277γ to 3^{+} 203, so J=(1 to 5).
548.0+u[d]	(12^{+})	B	
572.5+z[c]	(11^{-})	B	
584.32 *6*	(≤4)	A	Jπ: 324γ to (2^{-}) 260.
585.59 *5*	(0,1)	A	Jπ: 231γ to (0^{-},1^{-},2^{-}) 355; log1ut<8.5 from 0^{+} in ε decay.
587.2+y[a]	(13^{-})	B	
595.00 *6*	(0,1,2^{-})	A	Jπ: 240γ to (0^{-},1^{-},2^{-}) 355; fed in ε decay from 0^{+}.
600.7+x[@]	(11^{+})	B	
605.15 *6*	(≤3)	A	Jπ: 345γ to (2^{-}) 260; 189γ from 1^{+} 795.
687.9+z[b]	(12^{-})	B	
719.50 *11*	(≤4)	A	Jπ: 231γ to (0,1,2) 370.
753.3+u[e]	(13^{+})	B	
780.29 *6*	(≤3)	A	Jπ: 14γ from 1^{+} 795.
793.8+x[#]	(12^{+})	B	
794.64 *3*	1^{+}	A	Jπ: log *ft*<5.9 from 0^{+}; (E1) 534γ to (2^{-}) 260. Suggested configuration: $K^{\pi}=1^{+}$ (π 7/2[523])-(ν 5/2[512]) (1997Ba26).
798.4+y[&]	(14^{-})	B	
932.4+z[c]	(13^{-})	B	
957.9+u[d]	(14^{+})	B	
1009.4+x[@]	(13^{+})	B	
1029.6+y[a]	(15^{-})	B	
1044.75 *7*	(0,1,2^{-})	A	Jπ: 725γ to (2^{-}) 320; fed from 0^{+} in ε decay.
1081.5+z[b]	(14^{-})	B	
1172.7 *3*	(≤4)	A	Jπ: 391γ to (2^{-}) 260.
1175.82 *16*	(≤4)	A	Jπ: 872γ to (0^{-},1^{-},2^{-}) 304.
1214.2+u[e]	(15^{+})	B	
1220.59 *11*		A	
1241.23 *10*	(0,1,2^{-})	A	Jπ: fed from 0^{+} in ε decay.
1242.9+x[#]	(14^{+})	B	
1281.3+y[&]	(16^{-})	B	
1307.93 *12*	(0,1)	A	Jπ: 866γ to 1^{+} 442; 988γ to (2^{-}) 320; log $f^{1u}t$<8.5 from 0^{+}.
1331.49 *10*	(0,1,2^{-})	A	Jπ: 1072γ to (2^{-}) 260; fed from 0^{+} in ε decay.
1349.3 *3*	(0,1)	A	Jπ: 1091γ to 2^{+} 258; log $f^{1u}t$<8.5 from 0^{+}.
1371.5+z[c]	(15^{-})	B	
1435.9+u[d]	(16^{+})	B	
1495.9+x[@]	(15^{+})	B	
1552.8+y[a]	(17^{-})	B	
1563.5+z[b]	(16^{-})	B	
1742.5+u[e]	(17^{+})	B	
1760.6+x[#]	(16^{+})	B	
1836.7+y[&]	(18^{-})	B	
1885.1+z[c]	(17^{-})	B	
1971.2+u[d]	(18^{+})	B	
2046.3+x[@]	(17^{+})	B	
2127.8+z[b]	(18^{-})	B	
2135.8+y[a]	(19^{-})	B	
2322.1+u[e]	(19^{+})	B	
2335.0+x[#]	(18^{+})	B	

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Adopted Levels, Gammas (continued)

^{168}Lu Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
2447.1+y[&]	(20⁻)	B	3113.4+z[c]	(21⁻)	B	3960.2+x[@]	(23⁺)	B
2471.4+z[c]	(19⁻)	B	3173.4+u[d]	(22⁺)	B	4237.5+z[b]	(24⁻)	B
2552.8+u[d]	(20⁺)	B	3286.2+x[@]	(21⁺)	B	4300.7+x[#]	(24⁺)	B
2646.9+x[@]	(19⁺)	B	3456.5+y[a]	(23⁻)	B	4679.4+x[@]	(25⁺)	B
2764.3+z[b]	(20⁻)	B	3473.7+z[b]	(22⁻)	B	5048.2+x[#]	(26⁺)	B
2770.7+y[a]	(21⁻)	B	3581.6+u[e]	(23⁺)	B	5455.2+x[@]	(27⁺)	B
2932.8+u[e]	(21⁺)	B	3605.5+x[#]	(22⁺)	B	5855+x?[#]	(28⁺)	B
2952.1+x[#]	(20⁺)	B	3790.3+y[&]	(24⁻)	B	6293+x?[@]	(29⁺)	B
3095.7+y[&]	(22⁻)	B	3810.4+z?[c]	(23⁻)	B			

† From least-squares fit to Eγ, except as noted.

‡ Values given without further comment are based on band structure proposed in ^{159}Tb(^{13}C,4nγ).

[#] Band(A): $K^\pi=6^+$, α=0 band (2002Ha33). Configuration: (π 7/2[404])+(ν 5/2[642]). Also reported in 1999Ka17, but suggested J values are one unit lower there. Alignment≈5ħ at ħω=0.2 MeV, consistent with sum of alignments of neighboring odd-Z and odd-N nuclei. Level energies consistent with systematics for $\pi g_{7/2}\otimes\nu i_{13/2}$ bands in Lu and Tm.

[@] Band(a): $K^\pi=6^+$, α=1 band (2002Ha33). Configuration: (π 7/2[404])+(ν 5/2[642]). See comment on signature partner of this band.

[&] Band(B): $K^\pi=7^-$, α=0 band (2002Ha33). Configuration: (π 9/2[514])+(ν 5/2[642]). Alignment=6.2 ħ at ħω=0.2 MeV, consistent with that expected for this configuration using the additivity rule. Lowest observed J=10.

[a] Band(b): $K^\pi=7^-$, α=1 band (2002Ha33). Configuration: (π 9/2[514])+(ν 5/2[642]). See comment on signature partner of this band. Lowest observed J=9.

[b] Band(C): $K^\pi=3^-$, α=0 band (2002Ha33). Configuration: (π 1/2[541])+(ν 5/2[642]). Large signature splitting, suggesting presence of a low-Ω orbital in configuration. J lower by 3ħ than values proposed by 1998Ha17 in order to satisfy alignment additivity relation. Lowest observed J=6.

[c] Band(c): $K^\pi=3^-$, α=1 band (2002Ha33). Configuration: (π 1/2[541])+(ν 5/2[642]). See comment on signature partner of this band. Lowest observed J=7.

[d] Band(D): $K^\pi=5^+$, α=0 band (2002Ha33). Configuration: (π 5/2[402])+(ν 5/2[642]). Lowest-energy state observed has J=8. Band exhibits signature splitting and is thought to Be mixed with neighboring (π 1/2[411]) orbital. Band crossing frequency ≈0.27 MeV. Lowest observed J=8.

[e] Band(d): $K^\pi=5^+$, α=1 band (2002Ha33). Configuration: (π 5/2[402])+(ν 5/2[642]). See comment on signature partner of this band. Lowest observed J=9.

Adopted Levels, Gammas (continued)

$\gamma(^{168}Lu)$

E,RI,M,MR From ^{168}Hf ε decay, except as noted.

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	δ	α[@]	Comments
92.0+x	(7^+)	63.8[‡]	100[‡]	28.2+x	(6^+)	(M1)[#]			
		92.0[‡]	15[‡] *6*	0.0+x	(6)	D[#]			
95.3+u	(9^+)	95.3[‡]	100[‡]	0.0+u	(8^+)	(M1)[#]		4.22	
102.1+z	(7^-)	80.8[‡]	100[‡] *8*	21.3+z	(6^-)	(M1)[#]		6.79	
		102.1[‡]	31[‡] *3*	0.0+z	(6)	D[#]			
111.0+y	(10^-)	111.0[‡]	100[‡]	0.0+y	(9^-)	(M1)[#]		2.73	
165.9+z	(8^-)	63.8[‡]	100[‡]	102.1+z	(7^-)				
171.6+x	(8^+)	79.6[‡]	100[‡]	92.0+x	(7^+)				
202.81	3^+	202.81[&] *12*	100	0.0	$6^{(-)}$	[E3]		1.83	E_γ: from ^{168}Lu IT decay. Identification of γ as isomeric transition is tentative.
211.00	$(1^+,2^+)$	(8.2[†])	100	202.81	3^+				
218.20	$(0^+,1^+,2^+)$	(7.2[†])		211.00	$(1^+,2^+)$				
		(15.4[†])		202.81	3^+				
220.8+u	(10^+)	125.5[‡]	100[‡] *11*	95.3+u	(9^+)	(M1)[#]		1.92	
		220.8[‡]	18.1[‡] *15*	0.0+u	(8^+)				
238.89	$(1^+,2,3)$	27.82 *7*	100 *17*	211.00	$(1^+,2^+)$				
		35.9 *5*	<58	202.81	3^+				
240.85	$(1^+,2,3)$	29.80 *7*	62 *8*	211.00	$(1^+,2^+)$				
		38.04 *5*	100 *15*	202.81	3^+				
241.5+y	(11^-)	130.5[‡]	100[‡] *9*	111.0+y	(10^-)	(M1)[#]		1.719	
		241.5[‡]	9.3[‡] *11*	0.0+y	(9^-)				
257.85	$(2)^+$	17.53[&] *9*	2.8 *3*	240.85	$(1^+,2,3)$				
		55.03 *10*	100.0 *7*	202.81	3^+	M1+E2	0.16	4.41	
260.12	(2^-)	49.0 *5*	<0.51	211.00	$(1^+,2^+)$	[E1]		0.447 *15*	
		57.30 *10*	100.0 *7*	202.81	3^+	(E1)		0.290	
273.52		(13.2[†])	100	260.12	(2^-)				
286.2+x	(9^+)	114.6[‡]	90[‡] *8*	171.6+x	(8^+)				
		194.2[‡]	100[‡] *7*	92.0+x	(7^+)	(E2)[#]		0.306	
296.4+z	(9^-)	130.5[‡]	71[‡] *6*	165.9+z	(8^-)	(M1)[#]		1.719	
		194.3[‡]	100[‡] *6*	102.1+z	(7^-)				
303.71	$(0^-,1^-,2^-)$	43.07[&] *12*	4.8 *4*	260.12	(2^-)	[M1,E2]		$7.\times10^1$ *7*	
		85.47 *3*	85 *5*	218.20	$(0^+,1^+,2^+)$	(E1)		0.527	

$^{168}_{71}Lu_{97}$-5

Adopted Levels, Gammas (continued)

γ(^{168}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	δ	α[@]
303.71	(0⁻,1⁻,2⁻)	92.68 *3*	100 *6*	211.00	(1⁺,2⁺)	(E1)		0.427
320.056	(2)⁻	61.92 *10*	12.2 *11*	257.85	(2)⁺	E1+M2	0.29	6.06 *10*
		79.05 *7*	3.0 *3*	240.85	(1⁺,2,3)			
		117.30 *3*	100 *5*	202.81	3⁺	(E1+M2)	0.56	4.66
350.11	(≤3)	46.31 *6*	69 *9*	303.71	(0⁻,1⁻,2⁻)			
		111.32 *6*	77 *9*	238.89	(1⁺,2,3)			
		131.81	100 *9*	218.20	(0⁺,1⁺,2⁺)			
		139.07 *10*	77 *29*	211.00	(1⁺,2⁺)			
354.84	(0⁻,1⁻,2⁻)	51.2 *5*	31 *5*	303.71	(0⁻,1⁻,2⁻)	[M1,E2]		$3.\times10^{1}$ *3*
		115.84 *5*	15.5 *16*	238.89	(1⁺,2,3)			
		136.74	98 *7*	218.20	(0⁺,1⁺,2⁺)	[E1]		0.1540
		143.91 *3*	100 *6*	211.00	(1⁺,2⁺)	(E1)		0.1347
360.61	(0⁻,1⁻,2⁻)	(5.7†)		354.84	(0⁻,1⁻,2⁻)			
		56.9 *5*	33 *7*	303.71	(0⁻,1⁻,2⁻)	(M1)		3.15 *10*
		142.44 *3*	100 *6*	218.20	(0⁺,1⁺,2⁺)	(E1)		0.1384
		149.64 *3*	93 *5*	211.00	(1⁺,2⁺)	(E1)		0.1216
363.40	(1⁺,2⁻)	105.76 *8*	14.7 *20*	257.85	(2)⁺			
		122.56 *3*	100 *6*	240.85	(1⁺,2,3)			
		160.59 *6*	55 *5*	202.81	3⁺			
370.48	(≤3)	152.31 *5*	100 *7*	218.20	(0⁺,1⁺,2⁺)			
		159.4 *5*	43 *14*	211.00	(1⁺,2⁺)			
375.1+u	(11⁺)	154.3‡	63‡ *7*	220.8+u	(10⁺)			
		279.8‡	100‡ *7*	95.3+u	(9⁺)			
376.74	(≤3)	(16.0†)		360.61	(0⁻,1⁻,2⁻)			
		72.94 *5*	100	303.71	(0⁻,1⁻,2⁻)			
384.0+z	(10⁻)	87.6‡	100‡ *9*	296.4+z	(9⁻)			
		218.1‡	53‡ *4*	165.9+z	(8⁻)	(E2)#		0.209
393.44	(≤3)	89.57 *8*	43 *4*	303.71	(0⁻,1⁻,2⁻)			
		119.92 *8*	57 *4*	273.52				
		154.72 *8*	100 *9*	238.89	(1⁺,2,3)			
395.18	(0,1,2⁻)	74.94 *8*	100 *10*	320.056	(2)⁻			
		91.58 *6*	11.9 *13*	303.71	(0⁻,1⁻,2⁻)			
402.8+y	(12⁻)	161.3‡	100‡ *8*	241.5+y	(11⁻)			
		291.8‡	33‡ *3*	111.0+y	(10⁻)			
417.50	1⁺,2⁺	97.46 *3*	99 *6*	320.056	(2)⁻	(E1+M2)	0.45	6.63
		113.68 *6*	4.6 *4*	303.71	(0⁻,1⁻,2⁻)	(E1)		0.250
		157.41 *3*	100 *6*	260.12	(2⁻)	(E1)		0.1065
		159.66 *3*	58 *4*	257.85	(2)⁺	(M1+E2)	0.62	0.869
		199.33 *5*	13.4 *11*	218.20	(0⁺,1⁺,2⁺)	(M1)		0.523

$^{168}_{71}Lu_{97}$-6

Adopted Levels, Gammas (continued)

γ(^{168}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	δ	α[@]	Comments
417.50	1$^+$,2$^+$	206.46 *6*	44.5 *14*	211.00	(1$^+$,2$^+$)	(M1)		0.474	
		214.56 *8*	4.4 *4*	202.81	3$^+$	[M1,E2]		0.32 *11*	
426.33	(1$^+$)	208.14 *5*	67 *7*	218.20	(0$^+$,1$^+$,2$^+$)				
		223.51 *5*	100 *11*	202.81	3$^+$				
428.15	(1$^+$)	64.81 *4*	27 *3*	363.40	(1$^+$,2$^-$)				
		108.10 *3*	47 *3*	320.056	(2)$^-$				
		217.13 *6*	100 *6*	211.00	(1$^+$,2$^+$)				
		225.23 *6*	74 *5*	202.81	3$^+$				
430.2+x	(10$^+$)	144.0[‡]	100[‡] *9*	286.2+x	(9$^+$)				
		258.6[‡]	82[‡] *5*	171.6+x	(8$^+$)	(E2)[#]		0.1208	
431.29	(0$^-$,1)	68.23 *15*	8.8 *7*	363.40	(1$^+$,2$^-$)				
		70.96 *9*	<20.4	360.61	(0$^-$,1$^-$,2$^-$)				E$_\gamma$,I$_\gamma$: doublet.
		171.13 *15*	22.4 *20*	260.12	(2$^-$)				
		192.33 *5*	100 *8*	238.89	(1$^+$,2,3)				
		213.01 *9*	13.6 *14*	218.20	(0$^+$,1$^+$,2$^+$)				
		220.23 *10*	4.8 *7*	211.00	(1$^+$,2$^+$)				
441.78	1$^+$	24.25 *3*	13.1 *15*	417.50	1$^+$,2$^+$	M1+E2	0.084	55.0	
		86.96 *6*	12.8 *8*	354.84	(0$^-$,1$^-$,2$^-$)	(E1)		0.504	
		138.38 *11*	3.4 *10*	303.71	(0$^-$,1$^-$,2$^-$)	(E1)		0.1493	
		181.65 *3*	66 *4*	260.12	(2$^-$)	(E1)		0.0733	
		183.93 *3*	100.0 *10*	257.85	(2)$^+$	(M1)		0.654	
480.10		277.29 *6*	100	202.81	3$^+$				
548.0+u	(12$^+$)	172.9[‡]	57[‡] *6*	375.1+u	(11$^+$)				
		327.2[‡]	100[‡] *11*	220.8+u	(10$^+$)	(E2)[#]		0.0591	
572.5+z	(11$^-$)	188.6[‡]	100[‡] *7*	384.0+z	(10$^-$)	(M1)[#]		0.610	
		276.2[‡]	27.1[‡] *20*	296.4+z	(9$^-$)	(E2)[#]		0.0984	
584.32	(≤4)	324.11 *5*	100	260.12	(2$^-$)				
585.59	(0,1)	230.75 *3*	100	354.84	(0$^-$,1$^-$,2$^-$)				
587.2+y	(13$^-$)	184.4[‡]	100[‡] *8*	402.8+y	(12$^-$)	(E2)[#]		0.365	
		345.7[‡]	34[‡] *8*	241.5+y	(11$^-$)	(E2)[#]		0.0504	
595.00	(0,1,2$^-$)	234.41 *8*	56 *5*	360.61	(0$^-$,1$^-$,2$^-$)				
		240.15 *6*	100 *9*	354.84	(0$^-$,1$^-$,2$^-$)				
600.7+x	(11$^+$)	170.5[‡]	35[‡] *3*	430.2+x	(10$^+$)				
		314.5[‡]	100[‡] *7*	286.2+x	(9$^+$)	(E2)[#]		0.0665	
605.15	(≤3)	345.08 *6*	100	260.12	(2$^-$)				
687.9+z	(12$^-$)	115.5[‡]	100[‡] *9*	572.5+z	(11$^-$)				
		303.6[‡]	74[‡] *5*	384.0+z	(10$^-$)	(E2)[#]		0.0738	
719.50	(≤4)	349.02 *9*	100	370.48	(≤3)				

$^{168}_{71}Lu_{97}$-7

Adopted Levels, Gammas (continued)

γ(^{168}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[@]
753.3+u	(13$^+$)	205.3[‡]	86[‡] *11*	548.0+u	(12$^+$)		
		378.2[‡]	100[‡] *17*	375.1+u	(11$^+$)	(E2)[#]	0.0391
780.29	(≤3)	175.60 *16*	100	605.15	(≤3)		
793.8+x	(12$^+$)	193.1[‡]	100[‡] *6*	600.7+x	(11$^+$)		
		363.6[‡]	98[‡] *6*	430.2+x	(10$^+$)	(E2)[#]	0.0436
794.64	1$^+$	14.40 *5*	2.8 *3*	780.29	(≤3)		
		189.46 *15*	13.8 *14*	605.15	(≤3)		
		210.07 *9*	11.8 *11*	584.32	(≤4)		
		352.87 *9*	18.0 *14*	441.78	1$^+$	(M1)	0.1107
		363.36 *6*	43 *3*	431.29	(0$^-$,1)		
		368.33 *9*	16.0 *14*	426.33	(1$^+$)	[M1,E2]	0.07 *3*
		377.50 *14*	25.8 *20*	417.50	1$^+$,2$^+$	(M1)	0.0926
		401.21 *9*	21.1 *17*	393.44	(≤3)		
		417.62 *9*	62 *4*	376.74	(≤3)		
		424.26 *9*	10.4 *11*	370.48	(≤3)		
		434.14 *6*	100 *7*	360.61	(0$^-$,1$^-$,2$^-$)	(E1)	0.00728
		439.94 *8*	25.3 *22*	354.84	(0$^-$,1$^-$,2$^-$)	(E1)	0.00707
		444.54	43 *3*	350.11	(≤3)		
		474.62 *6*	15.2 *11*	320.056	(2)$^-$	[E1]	
		490.87 *6*	82 *6*	303.71	(0$^-$,1$^-$,2$^-$)	(E1)	0.00555
		534.45 *6*	54 *4*	260.12	(2$^-$)	(E1)	0.00461
		536.76 *9*	9.3 *8*	257.85	(2)$^+$	(M1)	0.0370
		576.42 *6*	23.6 *20*	218.20	(0$^+$,1$^+$,2$^+$)	(M1)	0.0308
		583.59 *9*	5.6 *6*	211.00	(1$^+$,2$^+$)	(M1)	0.0298
798.4+y	(14$^-$)	211.2[‡]	100[‡] *9*	587.2+y	(13$^-$)	(M1)[#]	0.445
		395.6[‡]	86[‡] *9*	402.8+y	(12$^-$)		
932.4+z	(13$^-$)	244.5[‡]	70[‡] *6*	687.9+z	(12$^-$)	(M1)[#]	0.298
		360.0[‡]	100[‡] *6*	572.5+z	(11$^-$)	(E2)[#]	0.0449
957.9+u	(14$^+$)	204.6[‡]	91[‡] *12*	753.3+u	(13$^+$)		
		409.9[‡]	100[‡] *15*	548.0+u	(12$^+$)		
1009.4+x	(13$^+$)	215.6[‡]	62[‡] *7*	793.8+x	(12$^+$)		
		408.7[‡]	100[‡] *15*	600.7+x	(11$^+$)		
1029.6+y	(15$^-$)	231.2[‡]	74[‡] *8*	798.4+y	(14$^-$)		
		442.4[‡]	100[‡] *19*	587.2+y	(13$^-$)	(E2)[#]	0.0255
1044.75	(0,1,2$^-$)	724.69 *6*	100	320.056	(2)$^-$		
1081.5+z	(14$^-$)	149.1[‡]	16.2[‡] *18*	932.4+z	(13$^-$)		
		393.6[‡]	100[‡] *8*	687.9+z	(12$^-$)	(E2)[#]	0.0350

$^{168}_{71}Lu_{97}$-8

Adopted Levels, Gammas (continued)

γ(^{168}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[@]
1172.7	(≤4)	391.37[&] *9*	100 *12*	780.29	(≤3)		
		912.6 *3*	62 *8*	260.12	(2$^-$)		
1175.82	(≤4)	872.11 *15*	100	303.71	(0$^-$,1$^-$,2$^-$)		
1214.2+u	(15$^+$)	256.3[‡]	100[‡] *10*	957.9+u	(14$^+$)		
		460.9[‡]	38[‡] *22*	753.3+u	(13$^+$)	(E2)[#]	0.0229
1220.59		740.49 *9*	100	480.10			
1241.23	(0,1,2$^-$)	937.52 *9*	100	303.71	(0$^-$,1$^-$,2$^-$)		
1242.9+x	(14$^+$)	232.8[‡]	12[‡] *5*	1009.4+x	(13$^+$)		
		448.5[‡]	100[‡] *9*	793.8+x	(12$^+$)		
1281.3+y	(16$^-$)	251.8[‡]	92[‡] *6*	1029.6+y	(15$^-$)	(M1)[#]	0.275
		483.0[‡]	100[‡] *12*	798.4+y	(14$^-$)		
1307.93	(0,1)	866.14 *15*	85 *8*	441.78	1$^+$		
		988.0 *3*	100 *12*	320.056	(2)$^-$		
		1004.0 *3*	65 *8*	303.71	(0$^-$,1$^-$,2$^-$)		
		1047.9 *3*	69 *8*	260.12	(2$^-$)		
1331.49	(0,1,2$^-$)	747.15 *9*	38 *3*	584.32	(≤4)		
		1071.6 *3*	100 *10*	260.12	(2$^-$)		
1349.3	(0,1)	765.19	25.0 *17*	584.32	(≤4)		
		1091.4 *3*	100 *8*	257.85	(2)$^+$		
1371.5+z	(15$^-$)	290.1[‡]	43[‡] *4*	1081.5+z	(14$^-$)	(M1)[#]	0.187
		439.1[‡]	100[‡] *7*	932.4+z	(13$^-$)		
1435.9+u	(16$^+$)	221.7[‡]	100[‡] *6*	1214.2+u	(15$^+$)		
		478.0[‡]	35[‡] *5*	957.9+u	(14$^+$)	(E2)[#]	0.0208
1495.9+x	(15$^+$)	253.8[‡]	100[‡] *6*	1242.9+x	(14$^+$)		
		486.4[‡]	46[‡] *8*	1009.4+x	(13$^+$)	(E2)[#]	0.0199
1552.8+y	(17$^-$)	271.2[‡]	100[‡] *6*	1281.3+y	(16$^-$)		
		523.0[‡]	41[‡] *5*	1029.6+y	(15$^-$)	(E2)[#]	0.01659
1563.5+z	(16$^-$)	192.1[‡]		1371.5+z	(15$^-$)		
		482.0[‡]		1081.5+z	(14$^-$)	(E2)[#]	0.0204
1742.5+u	(17$^+$)	306.6[‡]	14.7[‡] *16*	1435.9+u	(16$^+$)		
		528.3[‡]	100[‡] *19*	1214.2+u	(15$^+$)	(E2)[#]	0.01618
1760.6+x	(16$^+$)	264.6[‡]	20[‡] *5*	1495.9+x	(15$^+$)		
		518.4[‡]	100[‡] *9*	1242.9+x	(14$^+$)	(E2)[#]	0.01696
1836.7+y	(18$^-$)	284.5[‡]	100[‡] *8*	1552.8+y	(17$^-$)		
		555.7[‡]	28[‡] *3*	1281.3+y	(16$^-$)		

$^{168}_{71}Lu_{97}$-9

Adopted Levels, Gammas (continued)

γ(^{168}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[@]
1885.1+z	(17⁻)	321.5[‡]	71[‡] *30*	1563.5+z	(16⁻)	(M1)[#]	0.1420
		513.5[‡]	100[‡] *9*	1371.5+z	(15⁻)	(E2)[#]	0.01737
1971.2+u	(18⁺)	535.3[‡]	100[‡]	1435.9+u	(16⁺)		
2046.3+x	(17⁺)	285.7[‡]	100[‡] *8*	1760.6+x	(16⁺)		
		550.3[‡]	9[‡] *7*	1495.9+x	(15⁺)	(E2)[#]	0.01464
2127.8+z	(18⁻)	242.2[‡]		1885.1+z	(17⁻)		
		564.5[‡]		1563.5+z	(16⁻)	(E2)[#]	0.01376
2135.8+y	(19⁻)	300[‡]		1836.7+y	(18⁻)		
		582.1[‡]		1552.8+y	(17⁻)		
2322.1+u	(19⁺)	579.6[‡]	100[‡]	1742.5+u	(17⁺)		
2335.0+x	(18⁺)	288.6[‡]	100[‡] *23*	2046.3+x	(17⁺)		
		574.5[‡]	13[‡] *3*	1760.6+x	(16⁺)	(E2)[#]	0.01319
2447.1+y	(20⁻)	610.4[‡]	100[‡]	1836.7+y	(18⁻)		
2471.4+z	(19⁻)	343.2[‡]		2127.8+z	(18⁻)		
		586.5[‡]		1885.1+z	(17⁻)		
2552.8+u	(20⁺)	581.6[‡]	100[‡]	1971.2+u	(18⁺)		
2646.9+x	(19⁺)	312.0[‡]	90[‡] *10*	2335.0+x	(18⁺)		
		600.6[‡]	100[‡] *8*	2046.3+x	(17⁺)		
2764.3+z	(20⁻)	292.8[‡]		2471.4+z	(19⁻)		
		636.7[‡]		2127.8+z	(18⁻)		
2770.7+y	(21⁻)	634.9[‡]	100[‡]	2135.8+y	(19⁻)		
2932.8+u	(21⁺)	610.7[‡]	100[‡]	2322.1+u	(19⁺)		
2952.1+x	(20⁺)	305.1[‡]	100[‡] *46*	2646.9+x	(19⁺)		
		617.1[‡]	92[‡] *31*	2335.0+x	(18⁺)		
3095.7+y	(22⁻)	648.6[‡]	100[‡]	2447.1+y	(20⁻)		
3113.4+z	(21⁻)	350[‡&]		2764.3+z	(20⁻)		
		642.0[‡]		2471.4+z	(19⁻)	(E2)[#]	0.01015
3173.4+u	(22⁺)	620.6[‡]	100[‡]	2552.8+u	(20⁺)		
3286.2+x	(21⁺)	334.2[‡]	100[‡] *5*	2952.1+x	(20⁺)		
		639.3[‡]	57[‡] *8*	2646.9+x	(19⁺)		
3456.5+y	(23⁻)	685.8[‡]	100[‡]	2770.7+y	(21⁻)		
3473.7+z	(22⁻)	709.4[‡]	100[‡]	2764.3+z	(20⁻)		

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Adopted Levels, Gammas (continued)

γ(^{168}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
3581.6+u	(23$^+$)	648.8‡	‡	2932.8+u	(21$^+$)	4300.7+x	(24$^+$)	339.9‡&		3960.2+x	(23$^+$)
3605.5+x	(22$^+$)	319.2‡	100‡ *8*	3286.2+x	(21$^+$)			694.9‡		3605.5+x	(22$^+$)
		653.4‡	22‡ *3*	2952.1+x	(20$^+$)	4679.4+x	(25$^+$)	378.5‡		4300.7+x	(24$^+$)
3790.3+y	(24$^-$)	694.6‡	100‡	3095.7+y	(22$^-$)			719.4‡		3960.2+x	(23$^+$)
3810.4+z?	(23$^-$)	697.0‡&	100‡	3113.4+z	(21$^-$)	5048.2+x	(26$^+$)	747.5‡	100‡	4300.7+x	(24$^+$)
3960.2+x	(23$^+$)	355.0‡&		3605.5+x	(22$^+$)	5455.2+x	(27$^+$)	775.8‡	100‡	4679.4+x	(25$^+$)
		674.2‡		3286.2+x	(21$^+$)	5855+x?	(28$^+$)	807.0‡&	100‡	5048.2+x	(26$^+$)
4237.5+z	(24$^-$)	763.8‡	100‡	3473.7+z	(22$^-$)	6293+x?	(29$^+$)	838.0‡&	100‡	5455.2+x	(27$^+$)

† From level-energy difference. Transition expected and included in fig. 2 of 1997Ba26, but it has not yet been observed.
‡ From ^{159}Tb(^{13}C,4nγ).
# From DCO in ^{159}Tb(^{13}C,4nγ), assigning Δπ=(no) to in-band transitions.
@ 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.
& Placement of transition in the level scheme is uncertain.

$^{168}_{71}Lu_{97}$-11

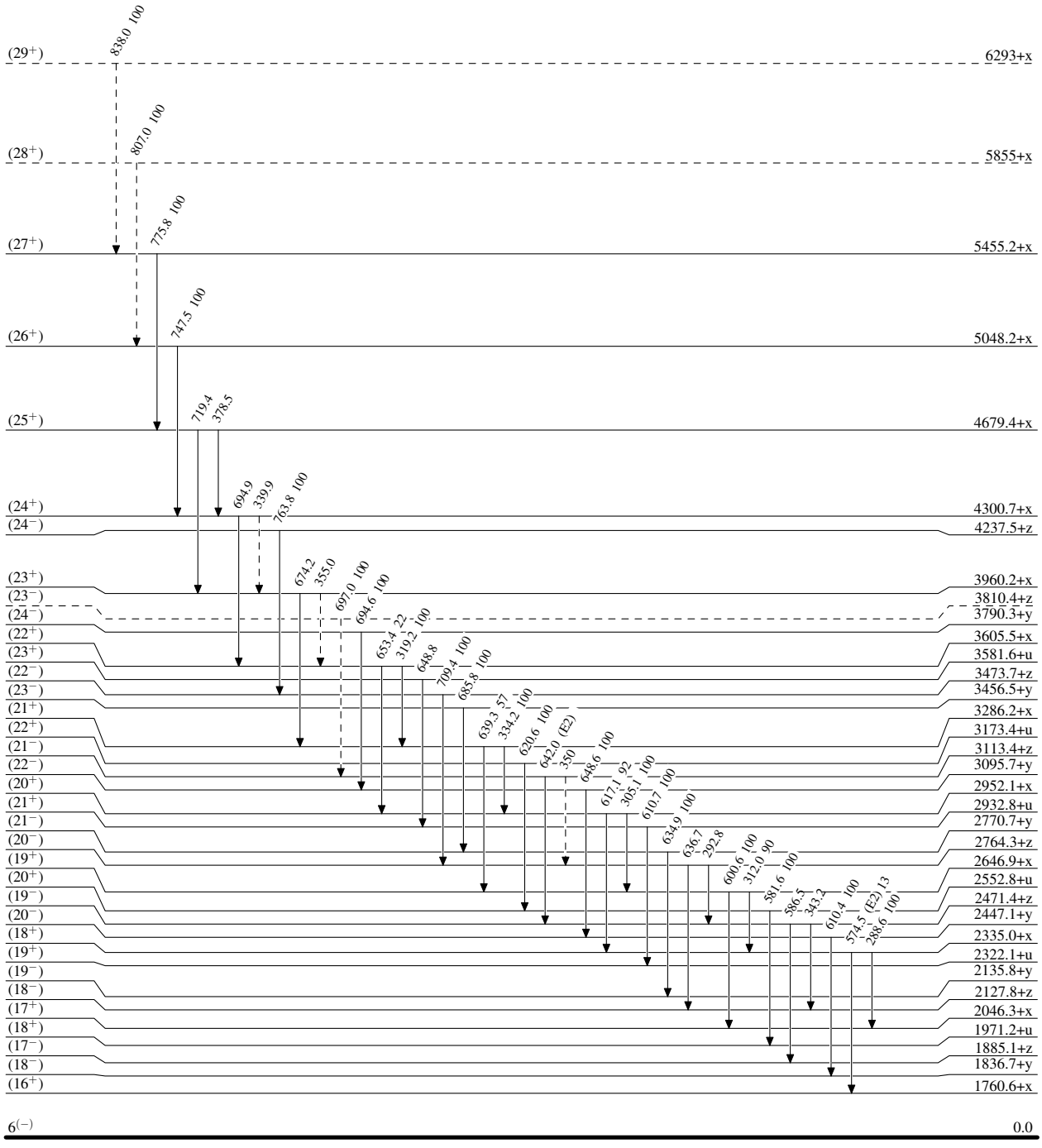
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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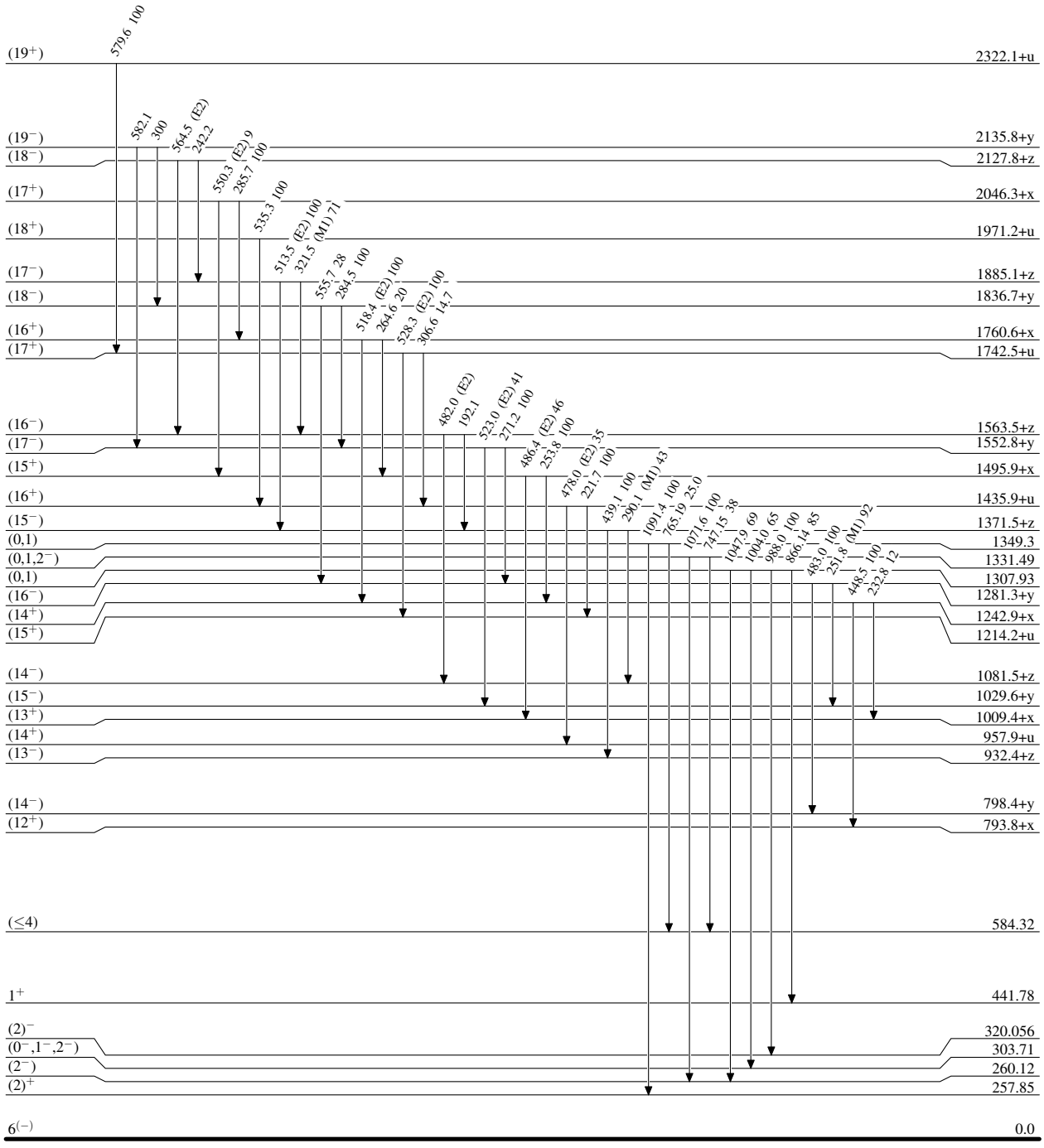
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{168}_{71}Lu_{97}$

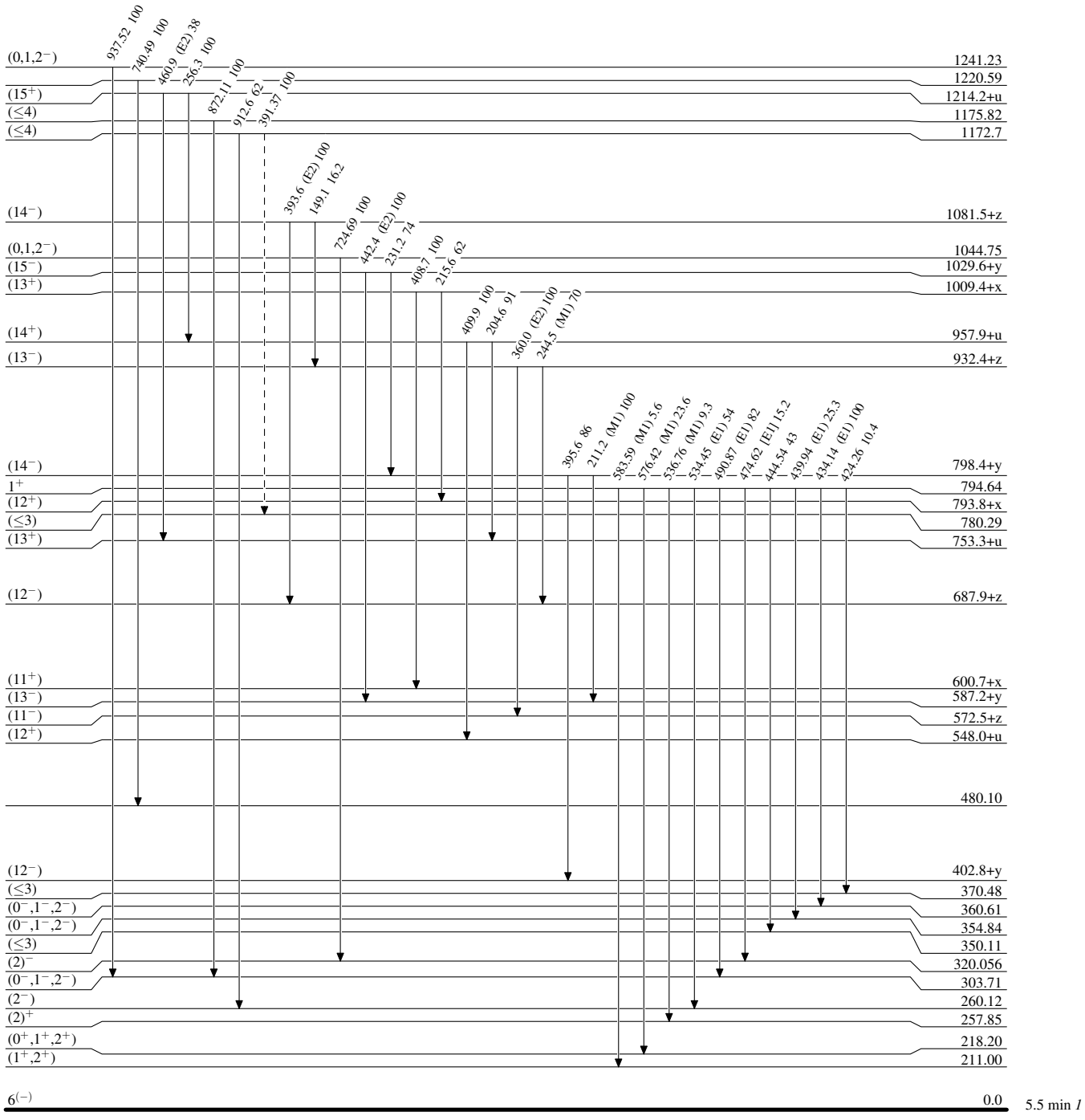
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

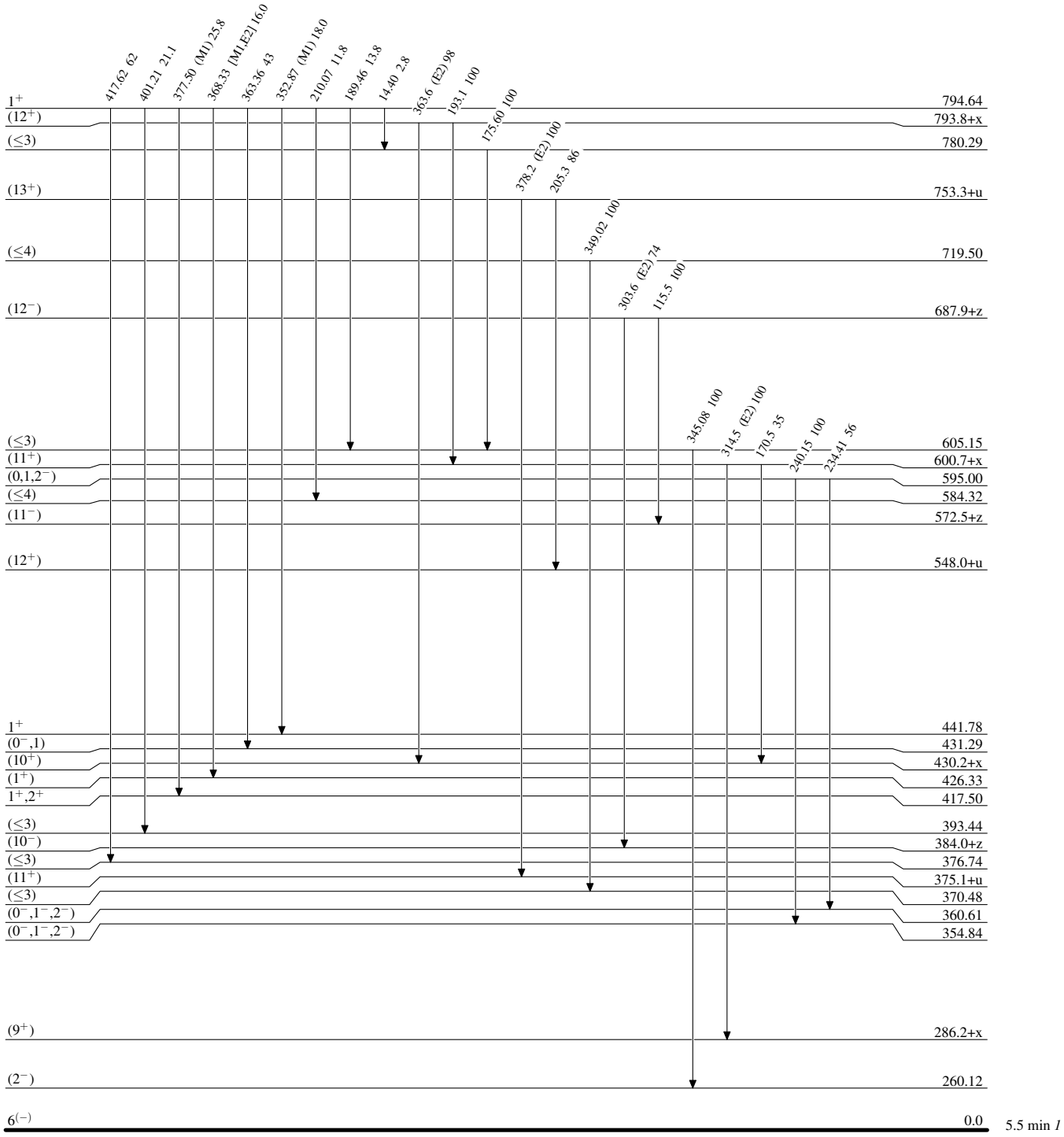


$^{168}_{71}Lu_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

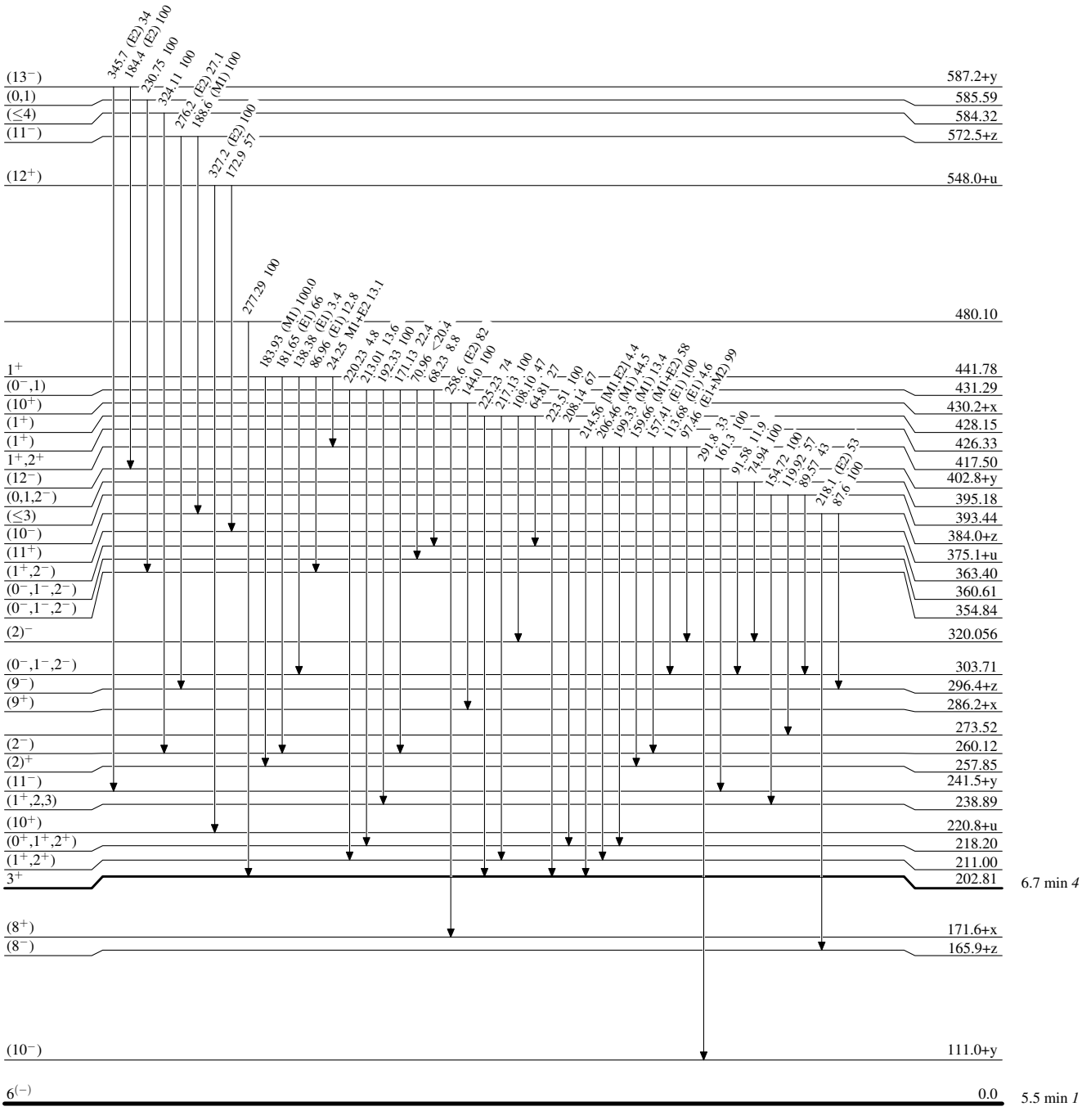


$^{168}_{71}Lu_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{168}_{71}Lu_{97}$

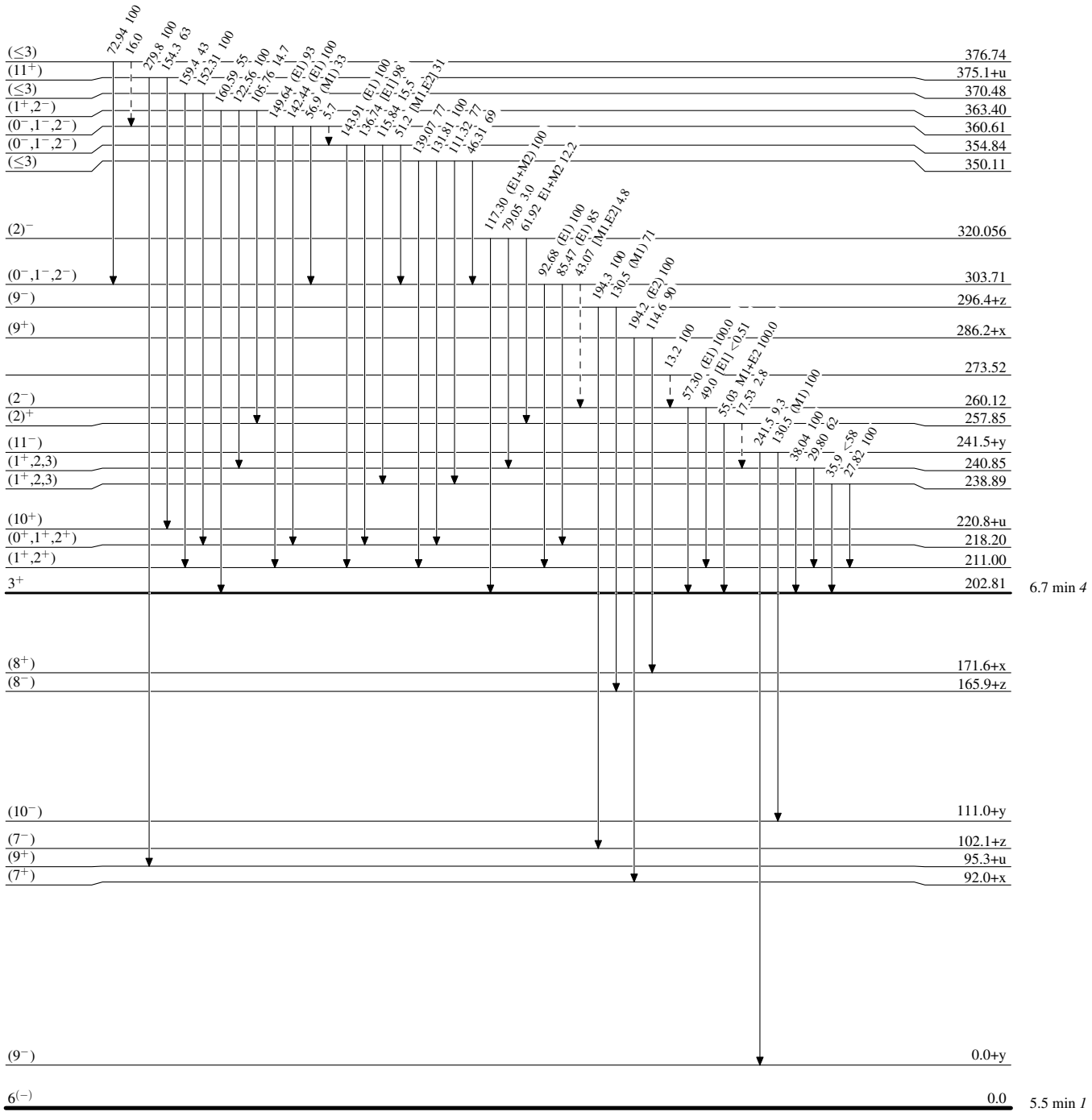
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



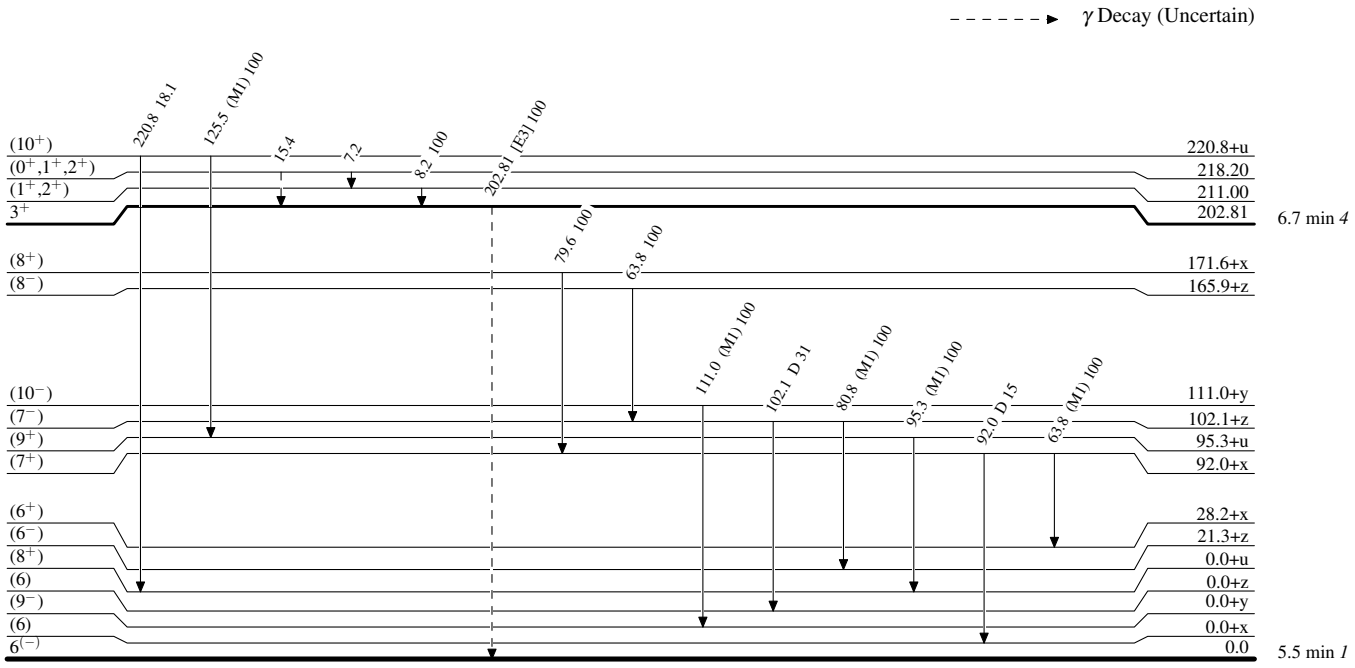
$^{168}_{71}Lu_{97}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



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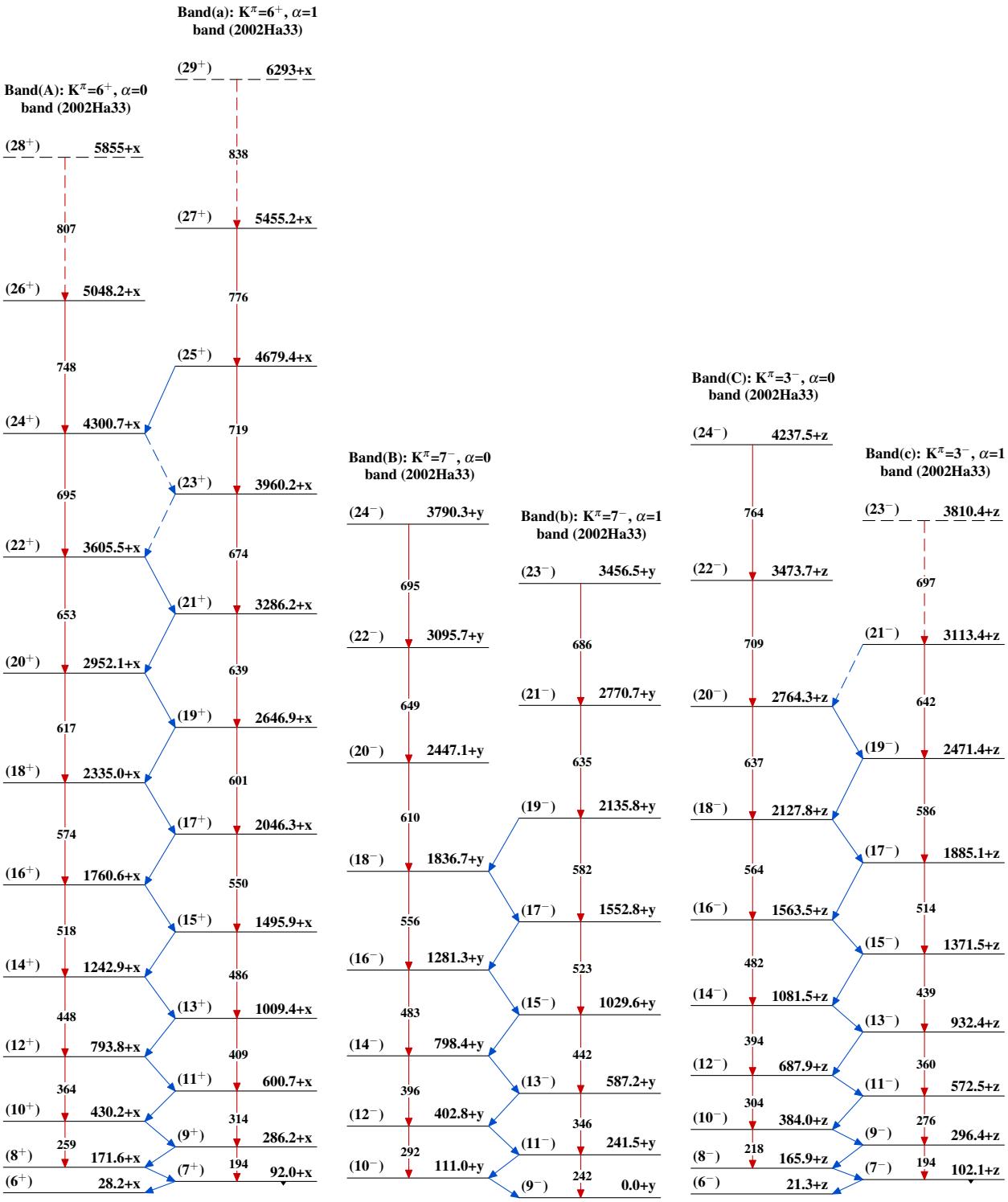
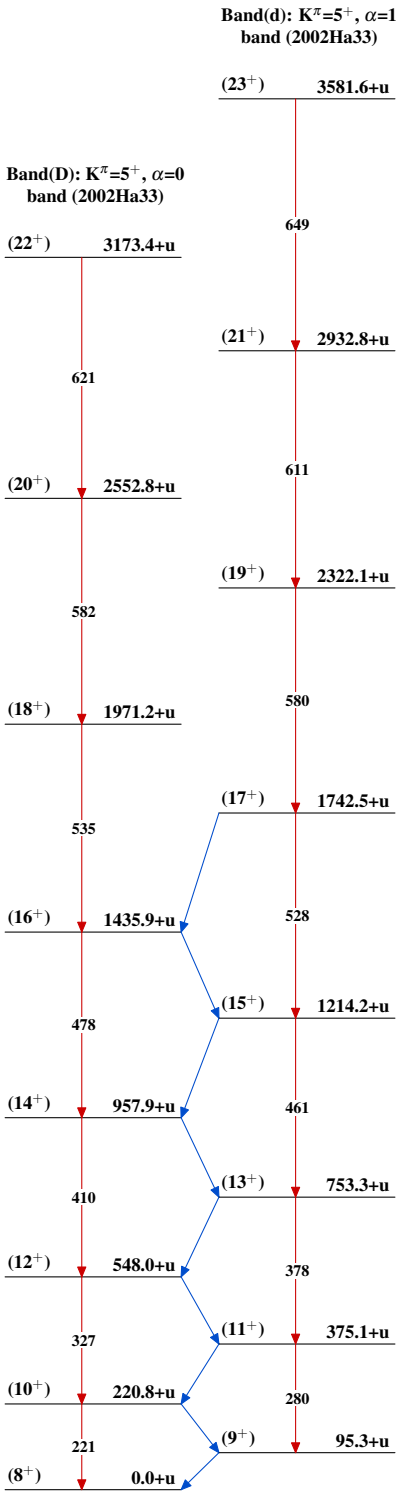
Adopted Levels, Gammas



$^{168}_{71}Lu_{97}$

Adopted Levels, Gammas (continued)



$^{168}_{71}Lu_{97}$