Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 2033 (2008)	15-Jun-2008

Q(β^-)=−3.37×10^3 *3*; S(n)=9.09×10^3 *4*; S(p)=3792 *3*; Q(α)=2420 *4* 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β^-)=−3360 *28*; S(n)=9080 *50*; S(p)=3792 *3*; Q(α)=2434 *5* 2003Au03
For isotope shift data see, e.g., 1998Ge13.

^{169}Lu Levels

Cross Reference (XREF) Flags

A	^{169}Lu IT decay (160 s)	D	^{169}Tm(α,4nγ), ^{171}Yb(p,3nγ)
B	^{169}Hf ε decay	E	^{154}Sm(^{19}F,4nγ)
C	^{168}Yb(p,p) IAR		

E(level)†	J$^\pi$‡	T$_{1/2}$	XREF	Comments
0.0@	7/2$^+$	34.06 h *5*	AB DE	%ε+%β^+=100 μ=2.295 *4* (1998Ge13); Q=3.480 *25* (1998Ge13) Δ<r^2>(170,169)=−0.078 *8* (1998Ge13). μ: From collinear laser spectroscopy. Other μ: 2.297 *13* from NMR on oriented nuclei (1996Ko26). Q: From collinear laser spectroscopy. Other μ: 3.42 *12* from NMR on oriented nuclei (1996Ko26). <r^2>$^{1/2}$(CHARGE)=5.329 *4* (2004An14). J$^\pi$: atomic beam (1976Fu06); parity from comparison between μ and theoretical value for 7/2[404] orbital. T$_{1/2}$: from 1970Ka23. Others: 1955Ne03, 1957Go40, 1957Go72, 1957Mi67, 1959Dz01, 1960Dz02, 1961Me05, 1964Dz02, 1964Dz06, 1971DzZO.
29.0& *5*	1/2$^-$	160 s *10*	AB D	%IT=100 μ=0.538 *7* (1998Ge13) Δ<r^2>(170,169)=+0.130 *13* (1998Ge13). μ: From collinear laser spectroscopy. J$^\pi$: E3 γ to 7/2$^+$; large cross section for (p,2n) on J=0 target (≈20 mb at E(p)=12 MeV) for production of isomer rules out 13/2$^-$; μ=0.54 cf. 0.70 expected for 1/2[541] orbital. T$_{1/2}$: from ^{169}Lu IT decay (160 s) (1965Bj01).
43.1& *6*	(5/2$^-$)		B DE	
97.4b *5*	(1/2$^+$)		B D	J$^\pi$: (E1) γ to 1/2$^-$; 1/2$^+$ consistent with band assignment.
113.8c *6*	(3/2$^+$)		B DE	
123.45# *9*	(9/2)$^+$		B DE	J$^\pi$: M1,E2 γ to 7/2$^+$ g.s.; 9/2$^+$ consistent with band assignment.
140.8& *6*	(9/2$^-$)		DE	
157.5?a *6*	(3/2$^-$)		D	
185.8d *8*	(5/2$^+$)		B DE	
225.1b *6*	(5/2$^+$)		DE	
260.6c *6*	(7/2$^+$)		DE	
270.60@ *13*	(11/2$^+$)		DE	
288.1e *8*	(7/2$^+$)		DE	
328.4?a *6*	(7/2$^-$)		D	
330.4& *7*	(13/2$^-$)		DE	
414.3d *8*	(9/2$^+$)		DE	

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Adopted Levels, Gammas (continued)

^{169}Lu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
439.09[f] *16*	(9/2⁻)	DE	
439.69[#] *14*	(13/2⁺)	DE	
449.0?[b] *7*	(9/2⁺)	DE	
492.88 *9*	7/2⁻	B	Jπ: E1 γ to 7/2⁺; allowed, unhindered ε decay (log *ft*<4.5) from ^{169}Hf supports assignment of ν 5/2[523] Nilsson orbital to ^{169}Hf(g.s.) and π 7/2[523] to ^{169}Lu(492.9 level); consistent with systematics of 97-neutron nuclei.
508.4[c] *6*	(11/2⁺)	DE	
546.08[g] *16*	(11/2⁻)	DE	
568.4[e] *8*	(11/2⁺)	DE	
576.1?[a] *6*	(11/2⁻)	D	
610.8[&] *7*	(17/2⁻)	DE	
628.89[@] *18*	(15/2⁺)	DE	
683.31[f] *18*	(13/2⁻)	DE	
733.1[d] *8*	(13/2⁺)	DE	
763.1[b] *7*	(13/2⁺)	DE	
836.38[#] *20*	(17/2⁺)	DE	
842.2[c] *7*	(15/2⁺)	DE	
844.67[g] *20*	(15/2⁻)	DE	
896.2[a] *7*	(15/2⁻)	DE	
937.3[e] *9*	(15/2⁺)	DE	
977.6[&] *8*	(21/2⁻)	DE	
1031.58[f] *24*	(17/2⁻)	DE	
1060.4[@] *3*	(19/2⁺)	DE	
1116.5[d] *8*	(17/2⁺)	E	
1151.3[b] *8*	(17/2⁺)	DE	
1235.0[g] *3*	(19/2⁻)	DE	
1244.0[c] *7*	(19/2⁺)	DE	
1288.6[a] *7*	(19/2⁻)	DE	
1298.5[#] *3*	(21/2⁺)	DE	
1423.2[&] *8*	(25/2⁻)	DE	
1462.0[f] *3*	(21/2⁻)	DE	
1549.3[@] *3*	(23/2⁺)	DE	
1550.4[d] *9*	(21/2⁺)	E	
1697.2[g] *4*	(23/2⁻)	DE	
1698.2[c] *7*	(23/2⁺)	DE	
1747.2[a] *8*	(23/2⁻)	DE	
1810.2[#] *4*	(25/2⁺)	DE	
1935.8[&] *9*	(29/2⁻)	DE	
1955.9[f] *4*	(25/2⁻)	DE	
2027.3[d] *10*	(25/2⁺)	E	
2080.9[@] *4*	(27/2⁺)	DE	
2196.6[c] *8*	(27/2⁺)	DE	
2214.9[g] *8*	(27/2⁻)	E	
2259.5?[a] *9*	(27/2⁻)	D	
2357.5[#] *6*	(29/2⁺)	DE	
2495.8[f] *9*	(29/2⁻)	E	
2505.8[&] *10*	(33/2⁻)	DE	

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Adopted Levels, Gammas (continued)

^{169}Lu Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	XREF	Comments
2541.9[d] *10*	(29/2$^+$)		E	
2644.4[@] *8*	(31/2$^+$)		E	
2739.5[c] *10*	(31/2$^+$)		E	
2772.2[g] *10*	(31/2$^-$)		E	
2931.3[#] *9*	(33/2$^+$)		E	
3065.6[f] *11*	(33/2$^-$)		E	
3090.8[d] *11*	(33/2$^+$)		E	
3124.1[&] *13*	(37/2$^-$)		E	
3231.5[@] *10*	(35/2$^+$)		E	
3328.4[c] *11*	(35/2$^+$)		E	
3352.4[g] *12*	(35/2$^-$)		E	
3528.5[#] *11*	(37/2$^+$)		E	
3647.9[f] *13*	(37/2$^-$)		E	
3672.5[d] *15*	(37/2$^+$)		E	
3788.6[&] *15*	(41/2$^-$)		E	
3843.8[@] *12*	(39/2$^+$)		E	
3937.2[g] *13*	(39/2$^-$)		E	
3963.1[c] *13*	(39/2$^+$)		E	
4157.5[#] *15*	(41/2$^+$)		E	
4240.7[f] *14*	(41/2$^-$)		E	
4292.6[d] *18*	(41/2$^+$)		E	
4495.8[@] *16*	(43/2$^+$)		E	
4502.1[&] *16*	(45/2$^-$)		E	
4542.7[g] *15*	(43/2$^-$)		E	
4643.3[c] *15*	(43/2$^+$)		E	
4836.8[#] *18*	(45/2$^+$)		E	
4879.6[f] *16*	(45/2$^-$)		E	
4962.6[d] *21*	(45/2$^+$)		E	
5203.8[@] *19*	(47/2$^+$)		E	
5204.4[g] *16*	(47/2$^-$)		E	
5269.0[&] *19*	(49/2$^-$)		E	
5369.9[c] *16*	(47/2$^+$)		E	
5578.8[#] *21*	(49/2$^+$)		E	
5688.6?[d] *23*	(49/2$^+$)		E	
5975.8[@] *21*	(51/2$^+$)		E	
6090.7[&] *22*	(53/2$^-$)		E	
6127.0?[c] *19*	(51/2$^+$)		E	
6382.8[#] *23*	(53/2$^+$)		E	
6902.7?[c] *22*	(55/2$^+$)		E	
6962.8[&] *24*	(57/2$^-$)		E	
14065 *20*	1/2$^-$	53 keV	C	E(level): from ^{168}Yb(p,p) IAR. Γ_p=5.9 keV, Γ=53 keV. J$^{\pi}$: Analog of 1/2$^-$ 24.2 level in ^{169}Yb.

[†] From least-squares fit to adopted Eγ, assigning 1 keV uncertainty to data for which the authors did not state uncertainty and excluding the 188.80γ and 433.23γ whose energies are At least 5σ from the least-squares adjusted values. exceptions are noted.

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Adopted Levels, Gammas (continued)

^{169}Lu Levels (continued)

‡ Values given without comment are from ^{154}Sm(^{19}F,4nγ), based on deduced band structure, analogy to neighboring nuclides and alignment gains, band crossing frequencies and B(M1)/B(E2) ratios for intraband transitions, when available.
# Band(A): 7/2[404] α=+1/2 band (1993Og01). First band crossing At ħω≈0.28 MeV, alignment gain≈6.2ħ. Band assignment supported by observed B(M1)/B(E2) ratios for intraband transitions.
@ Band(a): 7/2[404] α=−1/2 band (1993Og01). See comment on signature partner band.
& Band(B): 1/2[541] α=+1/2 band (1993Og01). (α=9.7, a=3.2 (1/2, 3/2, 5/2, 7/2, 9/2 levels)). First band crossing At ħω≈0.32 MeV, alignment gain≈3.5ħ. Average Q(transition)=7.5 b *10* for J=33/2 through 57/2 band members (1993Og01).
a Band(b): 1/2[541] α=−1/2 band (1973Fo03).
b Band(C): 1/2[411] α=+1/2 band (1993Og01). Band parameters: α=13.3, a=−0.59 (1/2, 3/2, 5/2, 7/2, 9/2 levels). Strongly mixed with 5/2[402] α=+1/2 band.
c Band(c): 1/2[411] α=−1/2 band (1993Og01). First band crossing At ħω≈0.28 MeV, alignment gain≥7.9ħ.
d Band(D): 5/2[402] α=+1/2 band (1993Og01). Band parameters: α=14.8, β=−13.9 (5/2, 7/2, 9/2, 11/2 levels). Strongly mixed with 1/2[411] α=+1/2 band. First band crossing At ħω≈0.26 MeV, alignment gain≈6.1ħ.
e Band(d): 5/2[402] α=−1/2 band (1993Og01).
f Band(E): 9/2[514] α=+1/2 band (1993Og01). First band crossing At ħω≈0.27 MeV, alignment gain≥6.2ħ. Band parameters: α=8.8, β=18.2 (9/2, 11/2, 13/2, 15/2 levels).
g Band(e): 9/2[514] α=−1/2 band (1993Og01). See comment on signature partner band.

γ(^{169}Lu)

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult.†	α[c]	Comments
29.0	1/2−	29.0 *5*	100	0.0	7/2+	E3	9.4×10^4 *11*	B(E3)(W.u.)=0.0028 *5* E_γ,Mult.: from ^{169}Lu IT decay (160 s).
43.1	(5/2−)	(14.1 *8*)	100	29.0	1/2−			E_γ: from level energy difference.
97.4	(1/2+)	68.4 *1*	100	29.0	1/2−	(E1)&	0.931	
113.8	(3/2+)	(16.4 *8*)		97.4	(1/2+)			E_γ: from level energy difference.
		70.9b&f *2*		43.1	(5/2−)	[E1]	0.851 *14*	
		84.8b&f *2*		29.0	1/2−	[E1]	0.538 *9*	
123.45	(9/2)+	123.5 *1*	100	0.0	7/2+	M1,E2@	1.8a *3*	
140.8	(9/2−)	97.7& *1*	100	43.1	(5/2−)			
157.5?	(3/2−)	114.4&f *2*	100	43.1	(5/2−)			
185.8	(5/2+)	72.9b& *2*	100	113.8	(3/2+)	[M1,E2]	10.6 *15*	
225.1	(5/2+)	111.5& *2*		113.8	(3/2+)			
		181.9b& *2*		43.1	(5/2−)			
260.6	(7/2+)	120.0b& *2*		140.8	(9/2−)			
		146.8& *2*	100 *7*	113.8	(3/2+)			
		217.3& *3*	≤6.3	43.1	(5/2−)			
270.60	(11/2+)	147.2& *2*	85 *5*	123.45	(9/2)+			
		270.5& *2*	100 *5*	0.0	7/2+			
288.1	(7/2+)	102.3& *1*	100	185.8	(5/2+)			
328.4?	(7/2−)	170.8&f *3*		157.5?	(3/2−)			
		188.8&#f *2*		140.8	(9/2−)			
		285.6e& *3*	e	43.1	(5/2−)			
330.4	(13/2−)	189.0	100	140.8	(9/2−)			
414.3	(9/2+)	126.1& *1*	100 *13*	288.1	(7/2+)			
		153.8	13 *4*	260.6	(7/2+)			
		228.5& *2*	≤24	185.8	(5/2+)			Other Iγ: 79 in (α,4nγ), (p,3nγ).

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Adopted Levels, Gammas (continued)

γ(^{169}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[†]	α[c]	Comments
439.09	(9/2⁻)	315.7[&] *2*	100 *4*	123.45	(9/2)⁺			
		439.0[&] *3*	42.8 *15*	0.0	7/2⁺			
439.69	(13/2⁺)	169.1[&] *1*	56.9 *27*	270.60	(11/2⁺)			
		316.2[&] *2*	100 *3*	123.45	(9/2)⁺			
449.0?	(9/2⁺)	188.7	90 *14*	260.6	(7/2⁺)			
		224.0	100 *14*	225.1	(5/2⁺)			
		263.5	29 *10*	185.8	(5/2⁺)			
492.88	7/2⁻	369.5[@] *2*	11.6[@] *10*	123.45	(9/2)⁺	[E1]	0.01253	
		492.86[@] *10*	100[@]	0.0	7/2⁺	E1[@]	0.00651	
508.4	(11/2⁺)	93.1[&f]	≤2.1	414.3	(9/2⁺)			
		247.8[d&] *1*	100 *5*	260.6	(7/2⁺)			
		367.5[&f] *2*		140.8	(9/2⁻)			E_γ: for multiply-placed G.
546.08	(11/2⁻)	107.0[b&] *2*	<190[&]	439.09	(9/2⁻)			
		275.0[b&] *3*	<150[&]	270.60	(11/2⁺)			
		422.8[&] *3*	≈100[&]	123.45	(9/2)⁺			
568.4	(11/2⁺)	154.0[&] *2*	100[&] *23*	414.3	(9/2⁺)			
		280.6[&] *2*	36 *9*	288.1	(7/2⁺)			
576.1?	(11/2⁻)	245.3[b&f] *3*	70[&]	330.4	(13/2⁻)			
		247.8[d&f] *1*		328.4?	(7/2⁻)			
		433.2[#b&f] *3*	100[&]	140.8	(9/2⁻)			
610.8	(17/2⁻)	280.6[e&] *2*	100[e]	330.4	(13/2⁻)			
628.89	(15/2⁺)	189.2[&] *2*	41.7[&] *26*	439.69	(13/2⁺)			I_γ: other Iγ:≈29 from (α,4nγ).
		358.3[&] *2*	100[&] *5*	270.60	(11/2⁺)			
683.31	(13/2⁻)	137.2[&] *1*	100 *5*	546.08	(11/2⁻)			
		243.6[&] *4*	79 *11*	439.69	(13/2⁺)			
		244.1		439.09	(9/2⁻)			
		413.1[&] *4*	36 *3*	270.60	(11/2⁺)			
733.1	(13/2⁺)	164.7[&] *1*	100 *7*	568.4	(11/2⁺)			
		224.8	27 *3*	508.4	(11/2⁺)			
		284.3	12 *3*	449.0?	(9/2⁺)			
		318.5[&] *3*	55 *3*	414.3	(9/2⁺)			
763.1	(13/2⁺)	254.6[&] *3*	49 *6*	508.4	(11/2⁺)			
		314.1[&] *3*	100 *9*	449.0?	(9/2⁺)			
		349.2	31 *6*	414.3	(9/2⁺)			
836.38	(17/2⁺)	207.4[&] *2*	34.5 *24*	628.89	(15/2⁺)			
		396.7[&] *2*	100.0 *21*	439.69	(13/2⁺)			
842.2	(15/2⁺)	333.7[&] *3*	100.0 *22*	508.4	(11/2⁺)	(E2)	0.0558	
		512.5	8.3 *18*	330.4	(13/2⁻)			
844.67	(15/2⁻)	161.3[&] *2*	100.0 *24*	683.31	(13/2⁻)			
		215.7		628.89	(15/2⁺)			
		298.6[&] *2*	33.1 *21*	546.08	(11/2⁻)			
		405.4	24 *3*	439.69	(13/2⁺)			
896.2	(15/2⁻)	285.6[e&] *3*	<12[e&]	610.8	(17/2⁻)			
		319.9[b&] *3*	100[&]	576.1?	(11/2⁻)			
		565.6[&] *4*		330.4	(13/2⁻)			
937.3	(15/2⁺)	203.8	100 *6*	733.1	(13/2⁺)			
		369.0	95 *5*	568.4	(11/2⁺)			

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Adopted Levels, Gammas (continued)

γ(^{169}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[†]	α[c]	Comments
977.6	(21/2⁻)	367.6	100	610.8	(17/2⁻)	(E2)	0.0423	
1031.58	(17/2⁻)	186.9[&] *2*	100 *3*	844.67	(15/2⁻)			
		197.0		836.38	(17/2⁺)			
		348.3[&] *3*	44 *5*	683.31	(13/2⁻)			Other Iγ: 134 in (α,4nγ), (p,3nγ).
		403.0	18.4 *23*	628.89	(15/2⁺)			
1060.4	(19/2⁺)	224.1	26.6 *14*	836.38	(17/2⁺)			other Iγ: >44 In (α,4nγ).
		431.7[&] *3*	100.0 *23*	628.89	(15/2⁺)			
1116.5	(17/2⁺)	179.0	34 *3*	937.3	(15/2⁺)			
		274.3	37 *3*	842.2	(15/2⁺)			
		353.3	36 *3*	763.1	(13/2⁺)			
		383.3	100 *6*	733.1	(13/2⁺)			
1151.3	(17/2⁺)	388.2[&] *4*	100	763.1	(13/2⁺)			
1235.0	(19/2⁻)	175.0[f]		1060.4	(19/2⁺)			
		203.2	100.0 *20*	1031.58	(17/2⁻)			
		390.3[&] *3*	62 *4*	844.67	(15/2⁻)			
		397.0	6.5 *15*	836.38	(17/2⁺)			
1244.0	(19/2⁺)	401.7[&] *3*	100 *3*	842.2	(15/2⁺)	Q		Mult.: from (^{19}F,4nγ).
		635.0	20 *4*	610.8	(17/2⁻)			
1288.6	(19/2⁻)	≈310[&]		977.6	(21/2⁻)			
		392.2[&] *4*		896.2	(15/2⁻)			
		677.6[&] *5*		610.8	(17/2⁻)			
1298.5	(21/2⁺)	238.3[&] *3*	21.7 *12*	1060.4	(19/2⁺)			
		462.0[&] *2*	100 *5*	836.38	(17/2⁺)			
1423.2	(25/2⁻)	445.6[&] *2*	100	977.6	(21/2⁻)			
1462.0	(21/2⁻)	226.9[&] *2*	100 *7*	1235.0	(19/2⁻)			
		430.6[&] *3*	74.6 *21*	1031.58	(17/2⁻)			
1549.3	(23/2⁺)	250.8[&] *3*	19.6 *6*	1298.5	(21/2⁺)			
		488.9[&] *2*	100 *3*	1060.4	(19/2⁺)			
1550.4	(21/2⁺)	306.7	28.8 *25*	1244.0	(19/2⁺)			
		433.6	100 *8*	1116.5	(17/2⁺)			
1697.2	(23/2⁻)	235.2[&] *2*	100 *5*	1462.0	(21/2⁻)			
		462.5	83 *6*	1235.0	(19/2⁻)			
1698.2	(23/2⁺)	454.2[&] *3*	100 *5*	1244.0	(19/2⁺)	(E2)		
		720.8	18.5 *25*	977.6	(21/2⁻)			
1747.2	(23/2⁻)	324.0[db&] *5*		1423.2	(25/2⁻)			
		458.5[&] *3*	100	1288.6	(19/2⁻)			
1810.2	(25/2⁺)	261.0[&] *3*	20.5 *18*	1549.3	(23/2⁺)			
		511.3	100 *4*	1298.5	(21/2⁺)			
1935.8	(29/2⁻)	513.4	100	1423.2	(25/2⁻)			
1955.9	(25/2⁻)	258.7[&] *3*	98 *8*	1697.2	(23/2⁻)			
		494.0[&] *4*	100 *5*	1462.0	(21/2⁻)			
2027.3	(25/2⁺)	329.4	17.8 *17*	1698.2	(23/2⁺)			
		476.8	100 *6*	1550.4	(21/2⁺)			
2080.9	(27/2⁺)	270.7	16.7 *14*	1810.2	(25/2⁺)			
		531.6[&] *3*	100.0 *24*	1549.3	(23/2⁺)			
2196.6	(27/2⁺)	498.5[&] *3*	100 *6*	1698.2	(23/2⁺)			
		773.1	31 *4*	1423.2	(25/2⁻)			
2214.9	(27/2⁻)	258.9	85 *9*	1955.9	(25/2⁻)			
		517.7	100 *10*	1697.2	(23/2⁻)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{169}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[†]	Comments
2259.5?	(27/2$^-$)	324.0[d&f] *5*		1935.8	(29/2$^-$)		
		512.0[d&f] *5*		1747.2	(23/2$^-$)		
2357.5	(29/2$^+$)	276.4	16.6 *12*	2080.9	(27/2$^+$)		
		547.4[&] *4*	100 *5*	1810.2	(25/2$^+$)		
2495.8	(29/2$^-$)	281.0	79 *11*	2214.9	(27/2$^-$)	D+Q	Mult.: from (^{19}F,4nγ).
		539.8	100 *10*	1955.9	(25/2$^-$)		
2505.8	(33/2$^-$)	569.9[&] *4*	100	1935.8	(29/2$^-$)		
2541.9	(29/2$^+$)	345.3	12.2 *22*	2196.6	(27/2$^+$)		
		514.8	100 *11*	2027.3	(25/2$^+$)		
2644.4	(31/2$^+$)	286.9	22.7 *15*	2357.5	(29/2$^+$)		
		563.2	100 *6*	2080.9	(27/2$^+$)		
2739.5	(31/2$^+$)	543.2	100 *7*	2196.6	(27/2$^+$)		
		803.2	27 *5*	1935.8	(29/2$^-$)		
2772.2	(31/2$^-$)	276.5	79 *5*	2495.8	(29/2$^-$)	D+Q	Mult.: from (^{19}F,4nγ).
		557.2	100 *3*	2214.9	(27/2$^-$)		
2931.3	(33/2$^+$)	286.5	14 *3*	2644.4	(31/2$^+$)		
		574.1	100.0 *16*	2357.5	(29/2$^+$)		
3065.6	(33/2$^-$)	293.5	100 *13*	2772.2	(31/2$^-$)		
		569.8	97 *9*	2495.8	(29/2$^-$)		
3090.8	(33/2$^+$)	351.2	17 *5*	2739.5	(31/2$^+$)		
		549.1	100 *17*	2541.9	(29/2$^+$)		
3124.1	(37/2$^-$)	618.4	100	2505.8	(33/2$^-$)		
3231.5	(35/2$^+$)	300.0	15 *3*	2931.3	(33/2$^+$)		
		587.3	100 *6*	2644.4	(31/2$^+$)		
3328.4	(35/2$^+$)	589.0	100 *8*	2739.5	(31/2$^+$)		
		822.4	16 *4*	2505.8	(33/2$^-$)		
3352.4	(35/2$^-$)	286.8	89 *4*	3065.6	(33/2$^-$)	D+Q	Mult.: from (^{19}F,4nγ).
		580.2	100 *5*	2772.2	(31/2$^-$)		
3528.5	(37/2$^+$)	297.0	14 *4*	3231.5	(35/2$^+$)		
		597.2	100 *6*	2931.3	(33/2$^+$)		
3647.9	(37/2$^-$)	295.5	88 *8*	3352.4	(35/2$^-$)		
		582.3	100 *7*	3065.6	(33/2$^-$)		
3672.5	(37/2$^+$)	581.7	100	3090.8	(33/2$^+$)		
3788.6	(41/2$^-$)	664.7	100	3124.1	(37/2$^-$)		
3843.8	(39/2$^+$)	315.3		3528.5	(37/2$^+$)		
		612.3	100 *7*	3231.5	(35/2$^+$)		
3937.2	(39/2$^-$)	289.3	80 *8*	3647.9	(37/2$^-$)		
		584.8	100 *11*	3352.4	(35/2$^-$)		
3963.1	(39/2$^+$)	634.7	100 *18*	3328.4	(35/2$^+$)		
		839.0	25 *8*	3124.1	(37/2$^-$)		
4157.5	(41/2$^+$)	629.0	100	3528.5	(37/2$^+$)		
4240.7	(41/2$^-$)	303.5	100 *10*	3937.2	(39/2$^-$)		
		592.7	93 *15*	3647.9	(37/2$^-$)		
4292.6	(41/2$^+$)	620.1	100	3672.5	(37/2$^+$)		
4495.8	(43/2$^+$)	652.0	100	3843.8	(39/2$^+$)		
4502.1	(45/2$^-$)	713.4	100	3788.6	(41/2$^-$)		
4542.7	(43/2$^-$)	302.0	71 *14*	4240.7	(41/2$^-$)		
		605.7	100 *14*	3937.2	(39/2$^-$)		
4643.3	(43/2$^+$)	680.0	100 *16*	3963.1	(39/2$^+$)		
		855.0	25 *5*	3788.6	(41/2$^-$)		
4836.8	(45/2$^+$)	679.3	100	4157.5	(41/2$^+$)		
4879.6	(45/2$^-$)	337.0	98 *49*	4542.7	(43/2$^-$)		
		638.8	100 *37*	4240.7	(41/2$^-$)		
4962.6	(45/2$^+$)	670.0	100	4292.6	(41/2$^+$)		
5203.8	(47/2$^+$)	708.0	100	4495.8	(43/2$^+$)		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{169}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
5204.4	(47/2$^-$)	325.0	75 *45*	4879.6	(45/2$^-$)	5975.8	(51/2$^+$)	772.0	100	5203.8	(47/2$^+$)
		661.6	100 *34*	4542.7	(43/2$^-$)	6090.7	(53/2$^-$)	821.7	100	5269.0	(49/2$^-$)
5269.0	(49/2$^-$)	766.9	100	4502.1	(45/2$^-$)	6127.0?	(51/2$^+$)	757.1[f]	100	5369.9	(47/2$^+$)
5369.9	(47/2$^+$)	726.7	100 *24*	4643.3	(43/2$^+$)	6382.8	(53/2$^+$)	804.0	100	5578.8	(49/2$^+$)
		867.6	≤18	4502.1	(45/2$^-$)	6902.7?	(55/2$^+$)	775.7[f]	100	6127.0?	(51/2$^+$)
5578.8	(49/2$^+$)	742.0	100	4836.8	(45/2$^+$)	6962.8	(57/2$^-$)	872.0	100	6090.7	(53/2$^-$)
5688.6?	(49/2$^+$)	726.0[f]	100	4962.6	(45/2$^+$)						

† From ^{154}Sm(^{19}F,4nγ), except where noted. Multipolarities are based on DCO ratio measurements, assigning Δπ=(No) to intraband transitions, except As noted.

‡ Relative photon branching from each level; values are from ^{154}Sm(^{19}F,4nγ), except as noted.

Energy differs from least-squares adjusted value by At least 5σ; datum excluded from least-squares fit.

@ From ^{169}Hf ε decay.

& From ^{169}Tm(α,4nγ), ^{171}Yb(p,3nγ).

[a] Value and uncertainty cover combined range for M1 and E2.

[b] Assignment to ^{169}Lu uncertain.

[c] 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.

[d] Multiply placed.

[e] Multiply placed with undivided intensity.

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

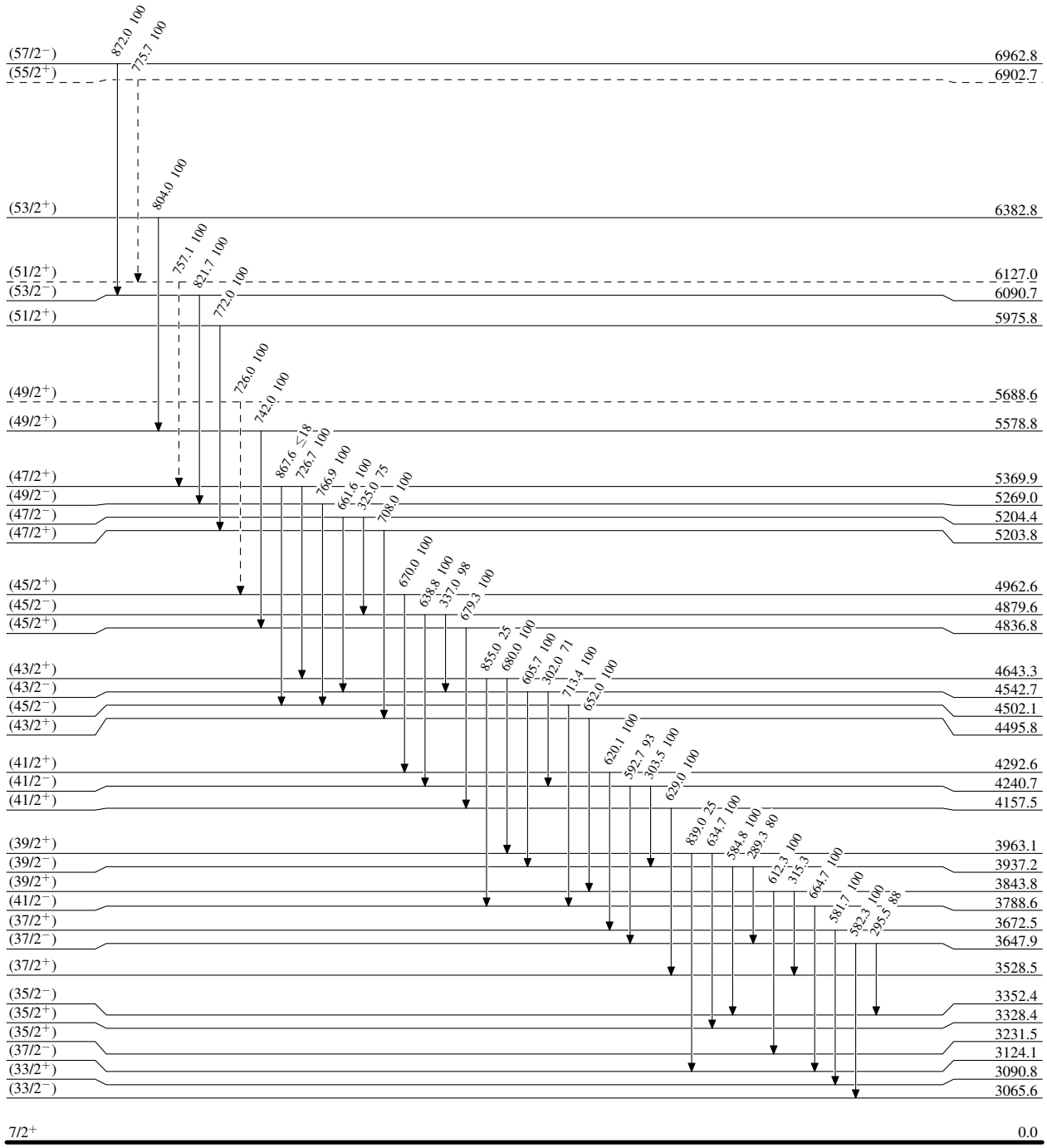
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{169}_{71}Lu_{98}$

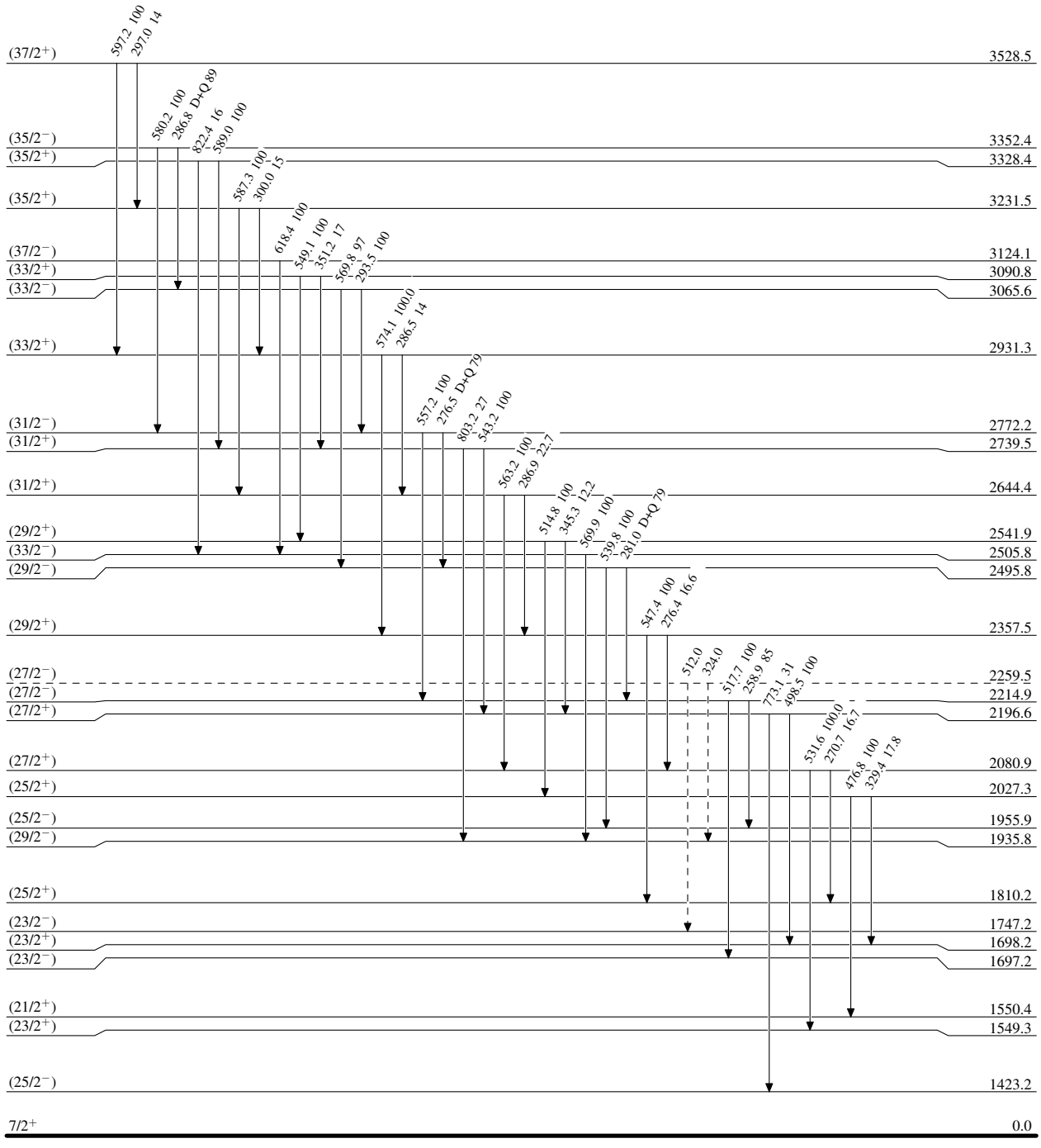
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{169}_{71}Lu_{98}$

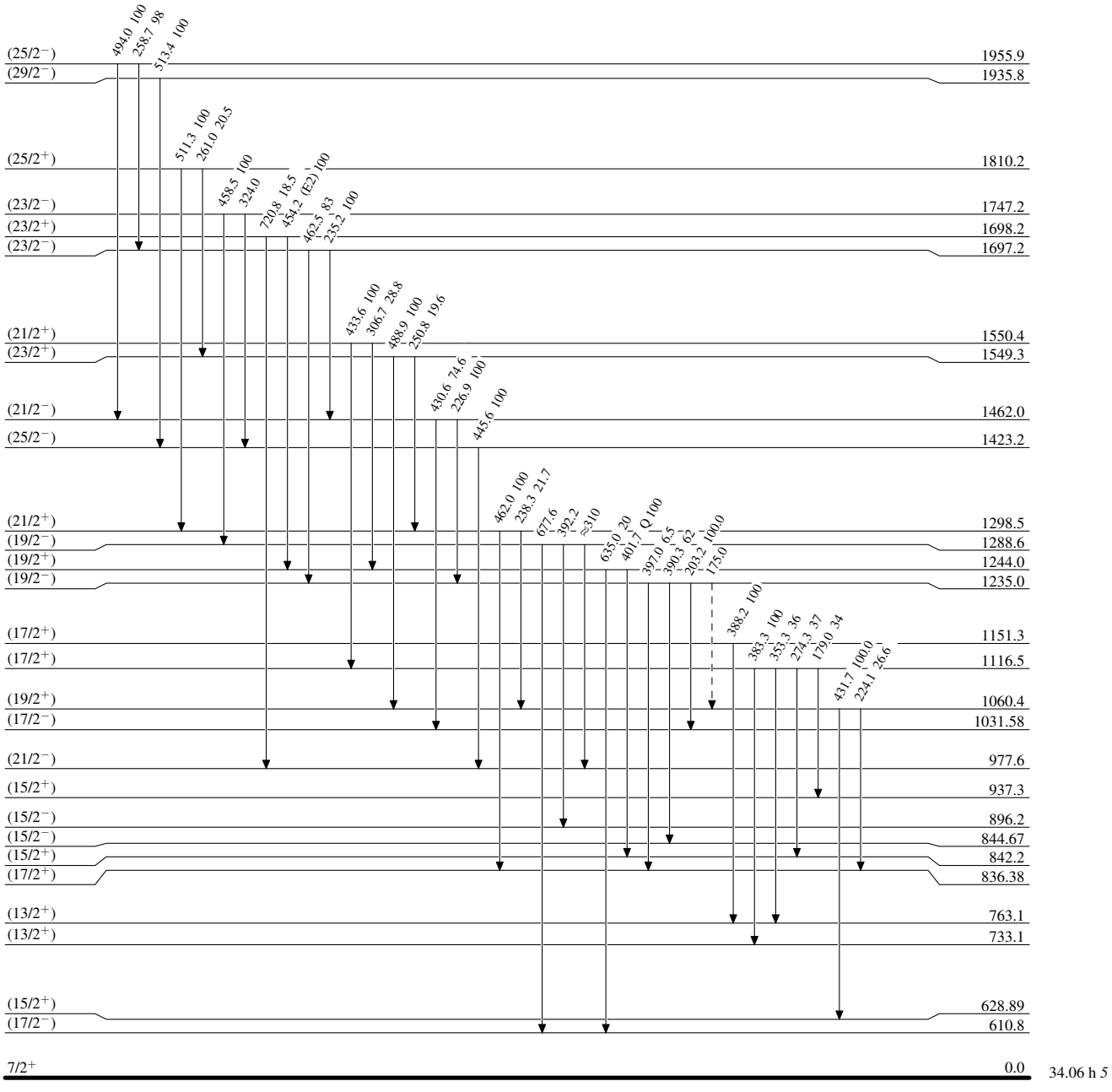
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{169}_{71}Lu_{98}$

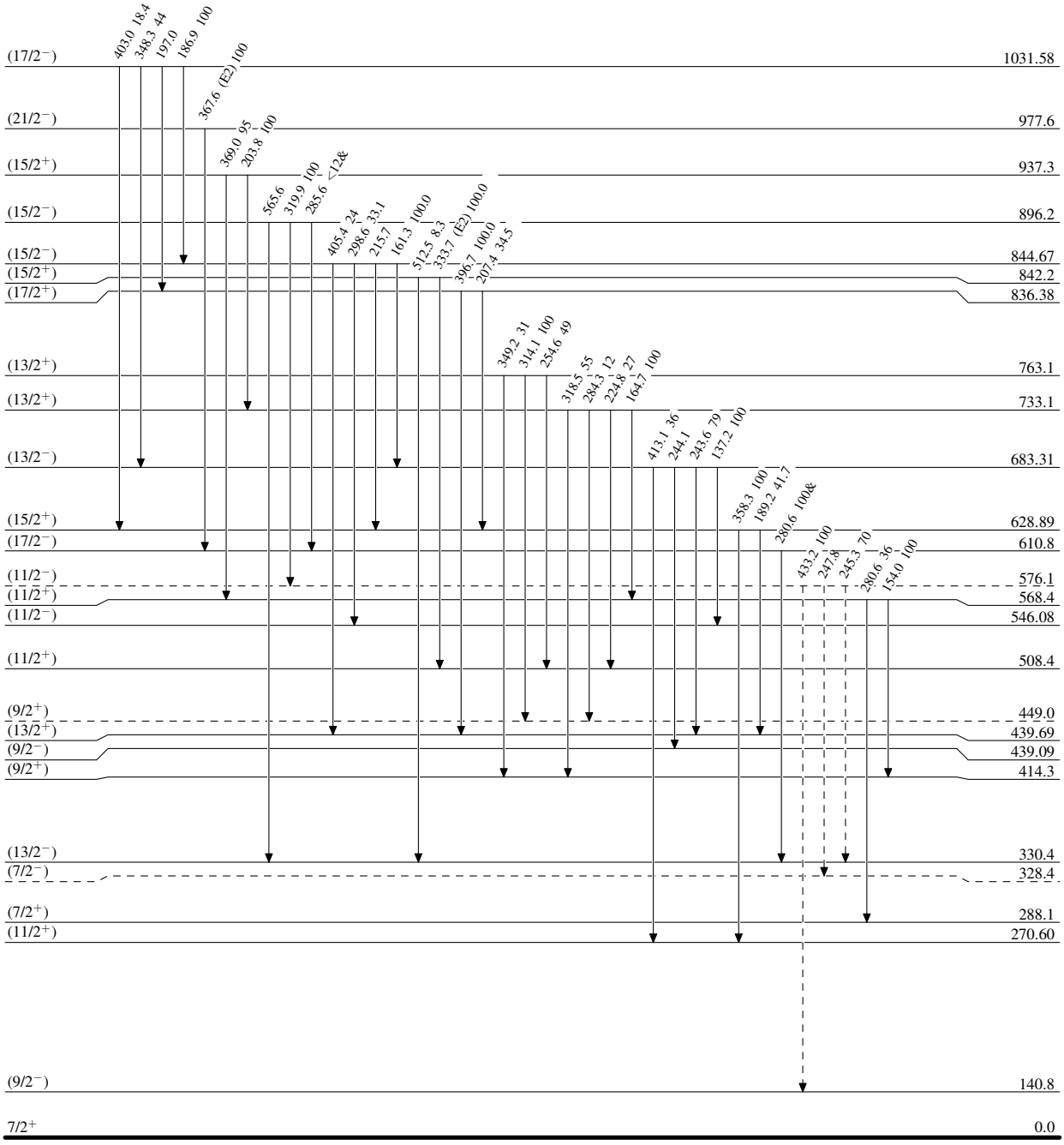
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{169}_{71}Lu_{98}$

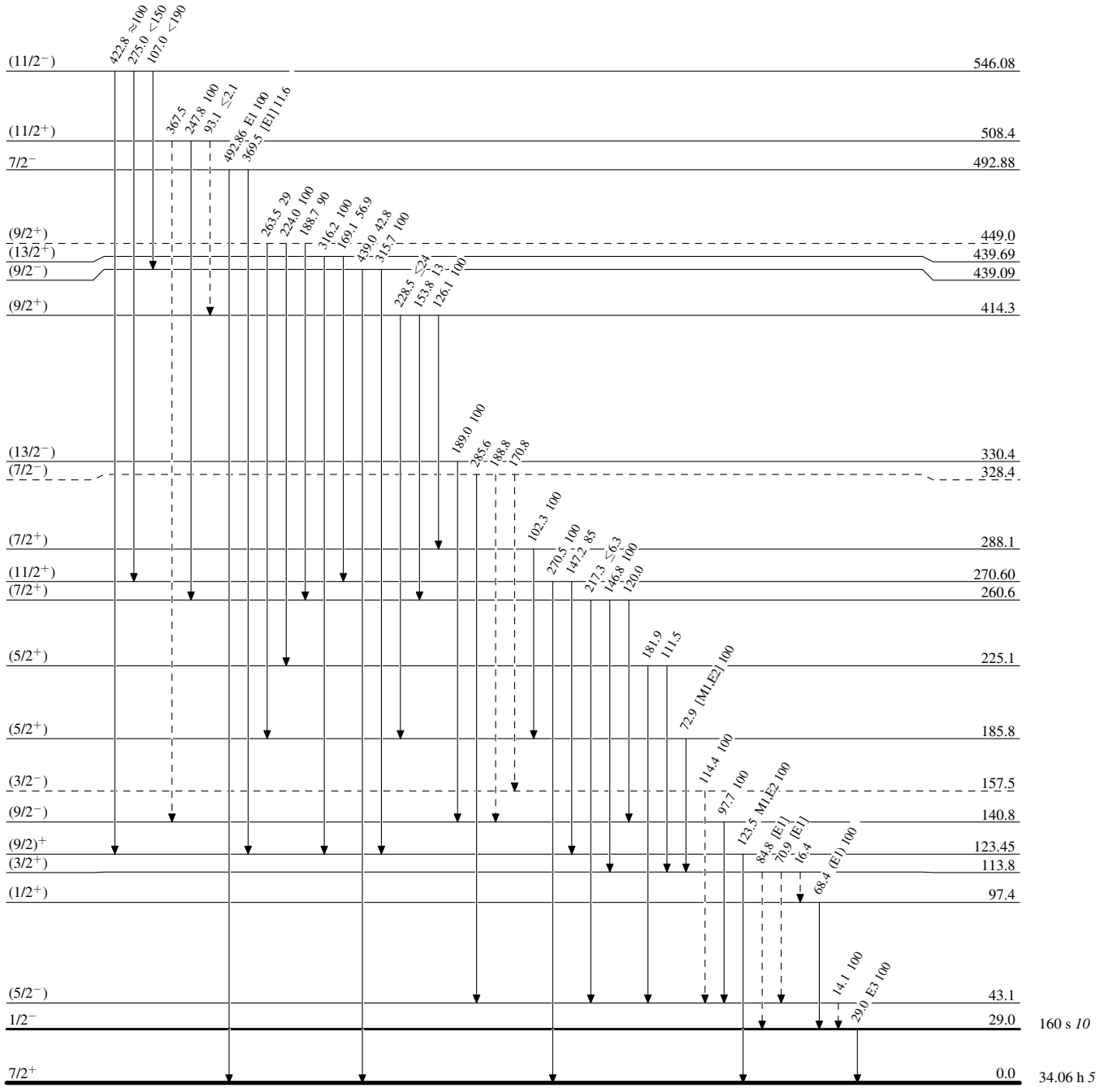
Adopted Levels, Gammas

Legend

Level Scheme (continued)

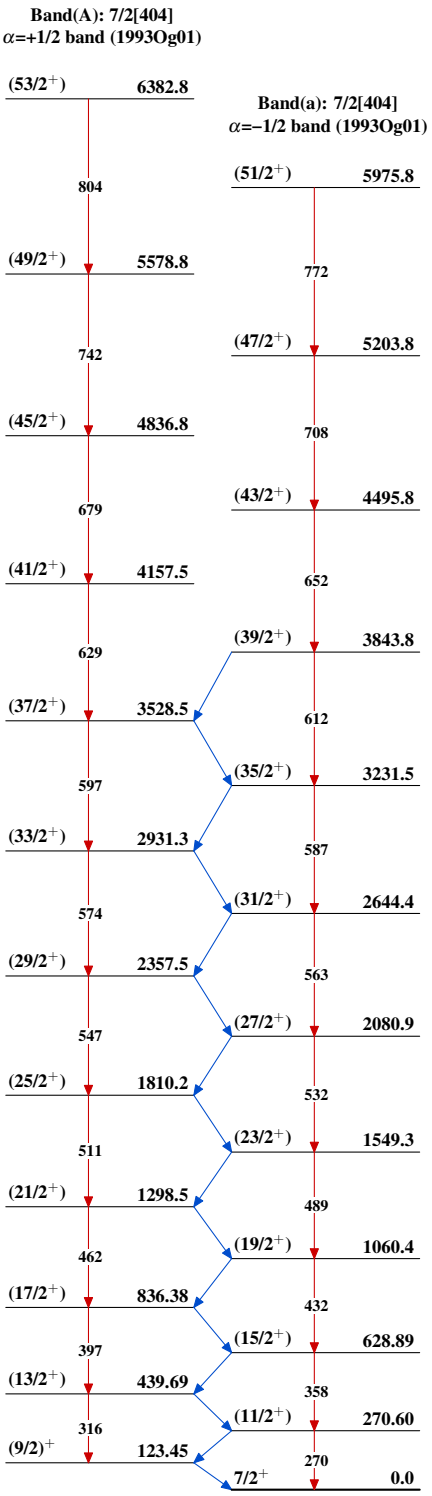
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

- - - - - - ► γ Decay (Uncertain)



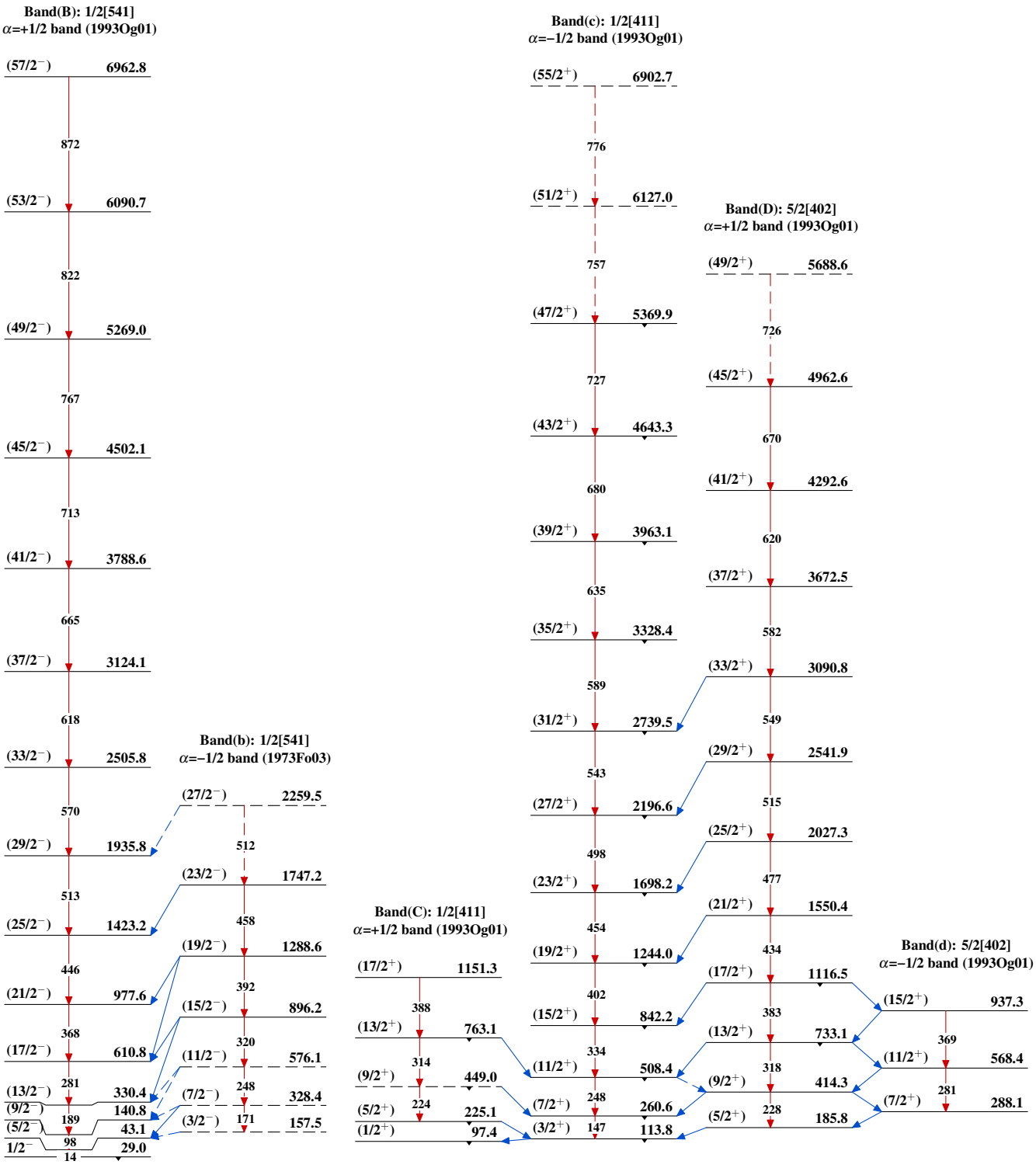
$^{169}_{71}Lu_{98}$

Adopted Levels, Gammas



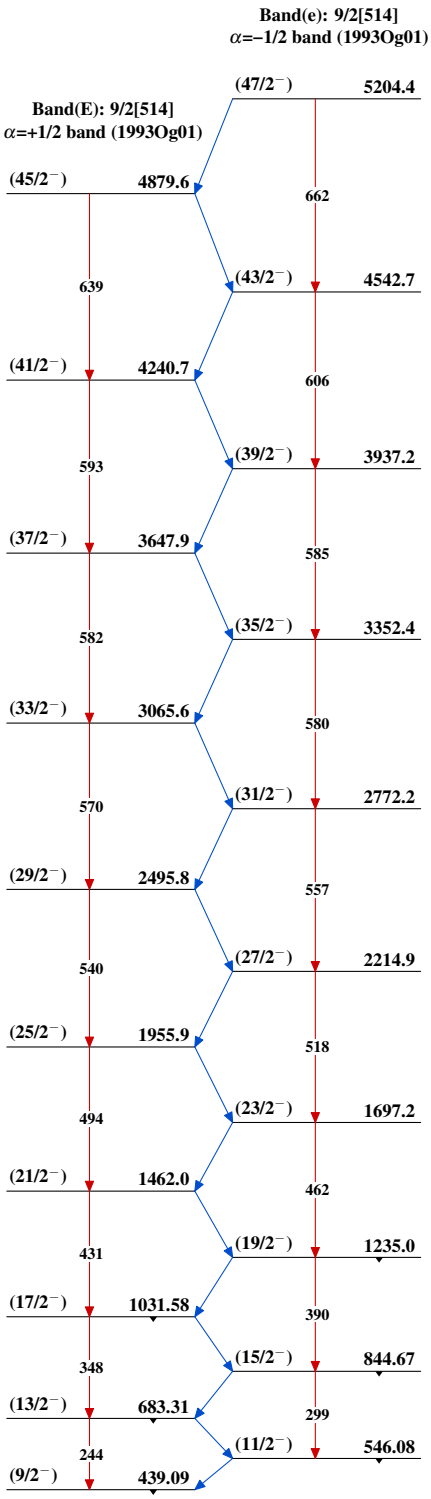
$^{169}_{71}Lu_{98}$

Adopted Levels, Gammas (continued)



$^{169}_{71}Lu_{98}$

Adopted Levels, Gammas (continued)



$^{169}_{71}Lu_{98}$