Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 112,2497 (2011)	1-Jun-2011

Q(β^-)=−6.25×10^3 *4*; S(n)=1.036×10^4 *7*; S(p)=1.69×10^3 *4*; Q(α)=3.75×10^3 *4* 2012Wa38
Note: Current evaluation has used the following Q record $ −6244 36 *10364* 63 *1683* 32 *3722* 39 2009AuZZ.
2003Au03 report the following values: for Q(β^-), 6240 *40*; for S(n), 10360 *60*; for S(p), 1680 *30*; and, for Q(α), 3720 *40*.
Additional information 1.

^{161}Lu Levels

Nomenclature for quasiparticle labels:
A: $\nu i_{13/2}$1/2[660], α=+1/2.
B: $\nu i_{13/2}$1/2[660], α=−1/2.
C: $\nu i_{13/2}$, α=+1/2.
D: $\nu i_{13/2}$, α=−1/2.
E: $\nu h_{9/2}$3/2[521], α=+1/2.
F: $\nu h_{9/2}$3/2[521], α=−1/2.
a: $\pi d_{3/2}$1/2[411], α=+1/2.
b: $\pi d_{3/2}$1/2[411], α=−1/2.
c: $\pi g_{7/2}$7/2[404], α=+1/2.
d: $\pi g_{7/2}$7/2[404], α=−1/2.
e: $\pi h_{11/2}$9/2[514], α=+1/2.
f: $\pi h_{11/2}$9/2[514], α=−1/2.
i: $\pi d_{5/2}$5/2[402], α=+1/2.
j: $\pi d_{5/2}$5/2[402], α=−1/2.

Cross Reference (XREF) Flags

A ^{161}Lu IT decay (7.3 ms)
B ^{161}Hf ε decay
C ^{120}Sn(^{45}Sc,4nγ)
D ^{139}La(^{28}Si,6nγ)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0[l]	1/2$^+$	77 s *2*		%ε+%β^+=100 μ=+0.223 *3* (1998Ge13) Level not reported in the indicated studies, but it should be populated (at least via the decay of the first excited state (J^π=3/2$^+$)). J$^\pi$: measured value from collinear laser spectroscopy (1998Ge13). The proposed Nilsson-orbital assignment 1/2[411] is consistent with the measured μ value (1998Ge13). From an evaluation of data on nuclear rms charge radii, 2004An14 report <r^2>$^{1/2}$=5.231 fm 11. $T_{1/2}$: weighted average of 72 s *6* (1979Al16,1980Be39) and 78 s *2* (1981RaZH,1983Ge08). %ε+%β^+: evaluator assumes that the α decay of this level is negligible. μ: from 1998Ge13, collinear laser spectroscopy. See also the compilation by 2005St24.
0+x[l]	(3/2$^+$)		AB D	Additional information 2. E(level): x ≈ 15 keV from trend of 3/2$^+$ to 1/2$^+$ spacings for the 1/2[411] band in selected odd-A Lu (A=163, 167, 169) nuclei. J$^\pi$: from 2005Br14, probable member of the 1/2[411] band.
66.6+x[l] *5*	(5/2$^+$)		B D	

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Adopted Levels, Gammas (continued)

^{161}Lu Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	XREF	Comments
135.6+x[i] *3*	(5/2$^+$)		AB D	
166.5+x[c] *8*	(9/2$^-$)	7.3 ms *4*	A D	%IT≈100 The evaluator assumes that the ε decay of this level is negligible. E(level): the evaluator assumes that this level corresponds to the 7.4-ms isomer discovered by 1973An10.
204.0+x[d] *7*	(11/2$^-$)		CD	
226.6+x[h] *4*	(7/2$^+$)		B D	
275.8+x[@] *4*	(7/2$^+$)		B D	
334.9+x[l] *4*	(7/2$^+$)		B D	
443.5+x[i] *4*	(9/2$^+$)		B D	
469.9+x[c] *6*	(13/2$^-$)		CD	
579.0+x[d] *7*	(15/2$^-$)		CD	
677.5+x[h] *5*	(11/2$^+$)		D	
695.5+x[@] *5*	(11/2$^+$)		D	
935.2+x[i] *5*	(13/2$^+$)		D	
962.2+x[c] *6*	(17/2$^-$)		CD	
1087.1+x[d] *6*	(19/2$^-$)		CD	
1200.3+x[@] *5*	(15/2$^+$)		D	
1227.3+x[h] *7*	(15/2$^+$)		D	
1505.2+x[i] *6*	(17/2$^+$)		D	
1561.8+x[c] *6*	(21/2$^-$)		CD	
1692.1+x[d] *6*	(23/2$^-$)		CD	
1739.8+x[@] *6*	(19/2$^+$)		D	
1833.1+x[h] *7*	(19/2$^+$)		D	
2030.6+x[&] *6*	(21/2$^+$)		CD	
2133.1+x[i] *7*	(21/2$^+$)		D	
2213.9+x[@] *6*	(23/2$^+$)		CD	
2224.4+x *7*	(21/2$^+$)		D	
2229.5+x[c] *7*	(25/2$^-$)		CD	
2298.4+x *6*	(23/2$^+$)		D	
2364.4+x[d] *7*	(27/2$^-$)		CD	
2393.1+x[h] *6*	(23/2$^+$)		D	
2396.6+x[&] *6*	(25/2$^+$)		CD	
2489.5+x[j] *7*	(23/2$^+$)		D	
2514.5+x[k] *7*	(25/2$^+$)		D	
2527.3+x[@] *7*	(27/2$^+$)		CD	
2634.6+x[j] *7*	(27/2$^+$)		D	
2687.9+x[&] *7*	(29/2$^+$)		CD	
2786.8+x[b] *7*	(25/2$^+$)		D	
2866.4+x[k] *7*	(29/2$^+$)		D	
2883.2+x[c] *8*	(29/2$^-$)		CD	
2902.6+x[@] *7*	(31/2$^+$)		CD	
3008.7+x[b] *7*	(29/2$^+$)		D	
3022.7+x[d] *8*	(31/2$^-$)		CD	
3045.3+x[j] *7*	(31/2$^+$)		D	
3144.3+x *8*	(31/2$^-$)		D	

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Adopted Levels, Gammas (continued)

^{161}Lu Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
3153.2+x& 7	(33/2+)	CD	6829.6+x[d] 11	(55/2−)	CD
3249.1+x[c] 8	(33/2−)	CD	6875.8+x& 9	(53/2+)	D
3279.3+x[a] 7	(31/2+)	D	6994.1+x[k] 12	(53/2+)	D
3329.4+x[k] 7	(33/2+)	D	7096.4+x[g] 11	(55/2−)	D
3407.9+x@ 7	(35/2+)	CD	7143.5+x[a] 11	(55/2+)	CD
3466.3+x[d] 8	(35/2−)	CD	7252.7+x[c] 11	(57/2−)	CD
3469.0+x[b] 8	(33/2+)	D	7269.8+x@ 10	(55/2+)	D
3599.1+x[j] 8	(35/2+)	D	7568.0+x[f] 11	(57/2−)	D
3706.0+x[c] 9	(37/2−)	CD	7649.7+x& 10	(57/2+)	D
3743.5+x& 8	(37/2+)	CD	7734.3+x[d] 11	(59/2−)	CD
3782.2+x[a] 7	(35/2+)	D	7768.1+x[k] 13	(57/2+)	D
3909.2+x[k] 8	(37/2+)	D	7953.4+x[a] 12	(59/2+)	D
3988.4+x[d] 9	(39/2−)	CD	7997.2+x[g] 12	(59/2−)	D
4037.0+x@ 8	(39/2+)	CD	8076.3+x@ 10	(59/2+)	D
4271.0+x[c] 9	(41/2−)	CD	8192.2+x[c] 12	(61/2−)	CD
4272.2+x[j] 8	(39/2+)	D	8489.0+x& 10	(61/2+)	D
4332.3+x[a] 8	(39/2+)	D	8503.0+x[f] 12	(61/2−)	D
4439.4+x& 8	(41/2+)	CD	8700.0+x[d] 12	(63/2−)	CD
4510.1+x[g] 10	(39/2−)	D	8800.2+x[a] 13	(63/2+)	CD
4587.8+x[d] 10	(43/2−)	CD	8963.4+x@ 11	(63/2+)	D
4595.3+x[k] 8	(41/2+)	D	8973.2+x[g] 13	(63/2−)	D
4723.1+x[f] 9	(41/2−)	D	9196.4+x[c] 12	(65/2−)	CD
4772.3+x@ 8	(43/2+)	CD	9391.2+x& 11	(65/2+)	D
4911.6+x[c] 10	(45/2−)	CD	9438.0+x[f] 13	(65/2−)	D
4959.7+x[g] 9	(43/2−)	D	9701.2+x[a] 14	(67/2+)	CD
4960.3+x[a] 9	(43/2+)	D	9727.9+x[d] 12	(67/2−)	CD
5036.0+x[j] 9	(43/2+)	D	9908.9+x@ 11	(67/2+)	D
5216.1+x& 9	(45/2+)	CD	10027.2+x[g] 14	(67/2−)	D
5264.9+x[d] 10	(47/2−)	CD	10219.9+x[e] 13	(69/2−)	CD
5266.7+x[f] 9	(45/2−)	D	10308.8+x[c] 13	(69/2−)	D
5358.0+x[k] 10	(45/2+)	D	10345.8+x& 12	(69/2+)	D
5581.7+x@ 9	(47/2+)	CD	10649.7+x[a] 15	(71/2+)	CD
5586.8+x[g] 10	(47/2−)	D	10818.1+x[d] 13	(71/2−)	D
5621.3+x[c] 10	(49/2−)	CD	10904.9+x@ 12	(71/2+)	D
5655.7+x[a] 9	(47/2+)	D	11210.0+x[e] 14	(73/2−)	CD
5865.3+x[j] 10	(47/2+)	D	11358.8+x& 13	(73/2+)	D
5968.3+x[f] 10	(49/2−)	D	11442.9+x[c] 14	(73/2−)	D
6012.5+x[d] 11	(51/2−)	CD	11633.5+x[a] 15	(75/2+)	CD
6058.2+x& 9	(49/2+)	CD	11937.1+x[d] 14	(75/2−)	D
6155.0+x[k] 11	(49/2+)	D	11948.9+x@ 13	(75/2+)	D
6294.2+x[g] 10	(51/2−)	D	12247.9+x[e] 15	(77/2−)	D
6363.0+x[a] 9	(51/2+)	CD	12672.7+x[a] 16	(79/2+)	CD
6398.9+x[c] 11	(53/2−)	CD	13309.9+x[e] 16	(81/2−)	CD
6492.4+x@ 9	(51/2+)	D	13742.9+x[a] 17	(83/2+)	D
6643.3+x[j] 11	(51/2+)	D	14817.9+x[a] 18	(87/2+)	CD
6726.6+x[f] 11	(53/2−)	D	15942.9+x[a] 19	(91/2+)	D

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Adopted Levels, Gammas (continued)

^{161}Lu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
y[m]	(21/2$^+$)	D	Additional information 3.
308.3+y[m] 5	(25/2$^+$)[#]	D	
689.0+y[m] 7	(29/2$^+$)	D	
1139.8+y[m] 9	(33/2$^+$)	D	
1304.0+y[n] 9	(31/2$^+$)	D	
1658.4+y[m] 10	(37/2$^+$)	D	
1781.0+y[n] 10	(35/2$^+$)	D	
2244.2+y[m] 11	(41/2$^+$)	D	
2324.2+y[n] 10	(39/2$^+$)	D	
2893.6+y[m] 12	(45/2$^+$)	D	
2930.2+y[n] 11	(43/2$^+$)	D	
3597.2+y[n] 12	(47/2$^+$)	D	
3604.2+y[m] 13	(49/2$^+$)	D	
4322.2+y[n] 13	(51/2$^+$)	D	
4372.9+y[m] 14	(53/2$^+$)	D	
5103.2+y[n] 14	(55/2$^+$)	D	
5196.7+y[m] 15	(57/2$^+$)	D	
5936.2+y[n] 15	(59/2$^+$)	D	
6072.6+y[m] 16	(61/2$^+$)	D	
6820.2+y[n] 16	(63/2$^+$)	D	
6997.0+y[m] 16	(65/2$^+$)	D	
7770.2+y[n] 17	(67/2$^+$)	D	
7963.9+y[m] 17	(69/2$^+$)	D	
8743.2+y[n] 17	(71/2$^+$)	D	
8961.3+y[m] 18	(73/2$^+$)	D	
9751.2+y[n] 18	(75/2$^+$)	D	
9985.3+y[m] 19	(77/2$^+$)	D	
10793.2+y[n] 19	(79/2$^+$)	D	
11044.1+y[m] 19	(81/2$^+$)	D	
12139.6+y[m] 20	(85/2$^+$)	D	
13270.6+y[m] 21	(89/2$^+$)	D	

[†] From least-squares fit to Eγ′s, assuming 0.5 keV uncertainty for Eγ, when not stated.

[‡] As proposed by 2006Br12 in ^{139}La(^{28}Si,6nγ) based on γ cascades defining band structures and comparisons with cranked-shell model calculations. For selected transitions the assignments are also supported by angular correlation results from ^{120}Sn(^{45}Sc,4nγ). All assignments are given in parentheses here since strong arguments for bandheads are lacking.

[#] The 308.5 transition is assigned by 2003Br03 as 25/2$^+$ to 21/2$^+$ transition in comparison with isospectral triaxial SD-1 band in ^{163}Lu. All other intraband transitions were proposed to be stretched quadrupole transitions from γγ(θ)(DCO) data (2003Br03).

[@] Band(A): π7/2[404], α=−1/2. At higher spins, crossed by 7/2[404]⊗AB band, and second crossing by 7/2[404]ABef.

[&] Band(a): π7/2[404], α=+1/2. At higher spins crossed by 7/2[404]⊗AB band, and second crossing by 7/2[404]ABef.

[a] Band(b): Triaxial band, α=−1/2. The alignment is similar to TSD bands, thus it is expected to have a larger deformation.

[b] Band(B): α=+1/2.

[c] Band(C): π9/2[514], α=+1/2. At higher spins crossed by 9/2[514]⊗AB band.

[d] Band(c): π9/2[514], α=−1/2. At higher spins crossed by 9/2[514]⊗AB band.

[e] Band(D): 1/2[541]⊗ABef, α=+1/2.

[f] Band(E): 7/2[523]⊗AB, α=+1/2.

[g] Band(e): 7/2[523]⊗AB, α=−1/2.

[h] Band(F): π5/2[402], α=−1/2. At higher spins crossed by 5/2[404]⊗AB band.

[i] Band(f): π5/2[402], α=+1/2. At higher spins crossed by 5/2[404]⊗AB band.

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Adopted Levels, Gammas (continued)

^{161}Lu Levels (continued)

[j] Band(G): 5/2[402]⊗AB, α=−1/2.
[k] Band(g): 5/2[402]⊗AB, α=+1/2.
[l] Band(H): π1/2[411].
[m] Band(I): Triaxial (wobbling mode) SD-1 band, α=+1/2. Band from 2006Br12 (also 2005Br14,2003Br03). Configuration=$\pi i_{13/2}\otimes\nu i^2_{13/2}$, phonon quantum number=0. Population intensity=1.4% of the reaction channel. This band is isospectral to triaxial SD-1 band in ^{163}Lu. On this basis, the 308.5 transition is proposed (by 2003Br03) as the $25/2^+$ to $21/2^+$ transition. The 308.5γ is also in coin with the 266.3, 375.3, 508.4 and 604.9 transitions in normal-deformed structures. See also 2005Ha24 and 2004Ha21 for discussion of triaxial SD bands.
[n] Band(i): Triaxial (wobbling mode) SD-2 band, α=−1/2. Band from 2006Br12 (also 2005Br14,2003Br03). Configuration=$\pi i_{13/2}\otimes\nu i^2_{13/2}$, phonon quantum number=1. Wobbling excitation built on triaxial SD-1 band. Population intensity=0.6% of the reaction channel. See also 2005Ha24, 2004Be53, 2004Ma34, 2004Ha21 and 1999Li39 for discussions and calculations related to triaxial SD bands and wobbling mode of excitation.

Adopted Levels, Gammas (continued)

γ(^{161}Lu)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[@]	δ	α[a]	Comments
135.6+x	(5/2$^+$)	135.6[#] *3*	100[#]	0+x	(3/2$^+$)	M1(+E2)	0.6 *6*	1.42 *16*	Mult.: 1973An10 report multipolarity from α(K)exp after rejecting the possibility of an E3 transition with a half-life of 7 ms.
									δ: see the comment in the ^{161}Lu IT decay data set.
166.5+x	(9/2$^-$)	(30.9)		135.6+x	(5/2$^+$)	[M2]		1715	E_γ: the evaluator assumes that the isomer decays to 135.6+x, (5/2$^+$) through an M2 transition. This energy is consistent with a low-energy transition, below the K-shell binding energy of 63 keV as postulated by 1973An10. Transitions to other levels will be higher in energy than the K-shell binding energy. The M2 transition rate is consistent with RUL(M2)=1.
226.6+x	(7/2$^+$)	90.9[#] *5*	100[#]	135.6+x	(5/2$^+$)				
		160[c]		66.6+x	(5/2$^+$)				
275.8+x	(7/2$^+$)	209.2[#] *5*	95[#] *14*	66.6+x	(5/2$^+$)				
		275.9[#] *5*	100[#] *14*	0+x	(3/2$^+$)				
334.9+x	(7/2$^+$)	199.4[#] *4*	100[#]	135.6+x	(5/2$^+$)				
		335[c]		0+x	(3/2$^+$)				
443.5+x	(9/2$^+$)	108.6		334.9+x	(7/2$^+$)				
		217.0[#] *4*	100[#]	226.6+x	(7/2$^+$)				
		307.5		135.6+x	(5/2$^+$)				
469.9+x	(13/2$^-$)	265.9		204.0+x	(11/2$^-$)	D			
		303.4		166.5+x	(9/2$^-$)				
579.0+x	(15/2$^-$)	108.7	19 *4*	469.9+x	(13/2$^-$)	D			
		375.0[b]	100	204.0+x	(11/2$^-$)	Q			
677.5+x	(11/2$^+$)	234.0		443.5+x	(9/2$^+$)				
		343		334.9+x	(7/2$^+$)				
		450.5		226.6+x	(7/2$^+$)				
695.5+x	(11/2$^+$)	419.9		275.8+x	(7/2$^+$)				
935.2+x	(13/2$^+$)	257.7		677.5+x	(11/2$^+$)				
		491.7		443.5+x	(9/2$^+$)				
962.2+x	(17/2$^-$)	383.1	100	579.0+x	(15/2$^-$)	D			
		492.2	68 *4*	469.9+x	(13/2$^-$)	Q			
1087.1+x	(19/2$^-$)	124.5	5.7 *8*	962.2+x	(17/2$^-$)	D			
		508.0	100	579.0+x	(15/2$^-$)	Q			
1200.3+x	(15/2$^+$)	264.5		935.2+x	(13/2$^+$)				
		504.8		695.5+x	(11/2$^+$)				
		522.6		677.5+x	(11/2$^+$)	Q			
		730.7		469.9+x	(13/2$^-$)				
1227.3+x	(15/2$^+$)	532.0		695.5+x	(11/2$^+$)				
		550[c]		677.5+x	(11/2$^+$)				

$^{161}_{71}Lu_{90}$-6

Adopted Levels, Gammas (continued)

γ(^{161}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[@]
1505.2+x	(17/2$^+$)	570.5		935.2+x	(13/2$^+$)	
1561.8+x	(21/2$^-$)	474.7	65 *11*	1087.1+x	(19/2$^-$)	D
		599.4	100	962.2+x	(17/2$^-$)	Q
1692.1+x	(23/2$^-$)	130.3	2.3 *8*	1561.8+x	(21/2$^-$)	
		604.8	100	1087.1+x	(19/2$^-$)	Q
1739.8+x	(19/2$^+$)	539.1		1200.3+x	(15/2$^+$)	
		777.9		962.2+x	(17/2$^-$)	
1833.1+x	(19/2$^+$)	605.9		1227.3+x	(15/2$^+$)	
2030.6+x	(21/2$^+$)	290.8		1739.8+x	(19/2$^+$)	
		525.6		1505.2+x	(17/2$^+$)	
		943.3		1087.1+x	(19/2$^-$)	D[&]
2133.1+x	(21/2$^+$)	628.3		1505.2+x	(17/2$^+$)	
2213.9+x	(23/2$^+$)	183.5	<140	2030.6+x	(21/2$^+$)	
		474.3		1739.8+x	(19/2$^+$)	
		522[bc]		1692.1+x	(23/2$^-$)	
		651.9	100 *16*	1561.8+x	(21/2$^-$)	D[&]
2224.4+x	(21/2$^+$)	1137.2		1087.1+x	(19/2$^-$)	
2229.5+x	(25/2$^-$)	537.4		1692.1+x	(23/2$^-$)	
		667.6		1561.8+x	(21/2$^-$)	
2298.4+x	(23/2$^+$)	74.0		2224.4+x	(21/2$^+$)	
		165.2		2133.1+x	(21/2$^+$)	
		558.7		1739.8+x	(19/2$^+$)	
		736.6		1561.8+x	(21/2$^-$)	
2364.4+x	(27/2$^-$)	134.9		2229.5+x	(25/2$^-$)	
		672.3		1692.1+x	(23/2$^-$)	Q
2393.1+x	(23/2$^+$)	362.4		2030.6+x	(21/2$^+$)	
		560.2		1833.1+x	(19/2$^+$)	
		653.2		1739.8+x	(19/2$^+$)	
2396.6+x	(25/2$^+$)	98.0		2298.4+x	(23/2$^+$)	
		172		2224.4+x	(21/2$^+$)	
		182.8		2213.9+x	(23/2$^+$)	
		263.6		2133.1+x	(21/2$^+$)	
		366.1		2030.6+x	(21/2$^+$)	
		704.1		1692.1+x	(23/2$^-$)	D[&]
2489.5+x	(23/2$^+$)	797.3		1692.1+x	(23/2$^-$)	
2514.5+x	(25/2$^+$)	121.2		2393.1+x	(23/2$^+$)	
		822.6		1692.1+x	(23/2$^-$)	D[&]
2527.3+x	(27/2$^+$)	130.4		2396.6+x	(25/2$^+$)	D
		313.5		2213.9+x	(23/2$^+$)	
2634.6+x	(27/2$^+$)	119.7		2514.5+x	(25/2$^+$)	
2634.6+x	(27/2$^+$)	145.1		2489.5+x	(23/2$^+$)	
		238.2		2396.6+x	(25/2$^+$)	
2687.9+x	(29/2$^+$)	160.5	100	2527.3+x	(27/2$^+$)	D
		291.1	19 *3*	2396.6+x	(25/2$^+$)	
2786.8+x	(25/2$^+$)	654[c]		2133.1+x	(21/2$^+$)	
2866.4+x	(29/2$^+$)	231.6		2634.6+x	(27/2$^+$)	
		339[c]		2527.3+x	(27/2$^+$)	
		352.3		2514.5+x	(25/2$^+$)	
2883.2+x	(29/2$^-$)	518.8[b]	43 *4*	2364.4+x	(27/2$^-$)	
		653.7	100 *5*	2229.5+x	(25/2$^-$)	
2902.6+x	(31/2$^+$)	214.6		2687.9+x	(29/2$^+$)	
		375.0[b]		2527.3+x	(27/2$^+$)	
3008.7+x	(29/2$^+$)	222.3		2786.8+x	(25/2$^+$)	
		374		2634.6+x	(27/2$^+$)	
3022.7+x	(31/2$^-$)	139.4	9 *5*	2883.2+x	(29/2$^-$)	
		658.4	100	2364.4+x	(27/2$^-$)	Q
3045.3+x	(31/2$^+$)	179.1		2866.4+x	(29/2$^+$)	
		410.6		2634.6+x	(27/2$^+$)	
3144.3+x	(31/2$^-$)	121.5		3022.7+x	(31/2$^-$)	
		779.9		2364.4+x	(27/2$^-$)	
3153.2+x	(33/2$^+$)	250.4	95 *8*	2902.6+x	(31/2$^+$)	D
		465.3	100	2687.9+x	(29/2$^+$)	Q
3249.1+x	(33/2$^-$)	104.7		3144.3+x	(31/2$^-$)	
		226.5	100	3022.7+x	(31/2$^-$)	D
		365.9	14 *1*	2883.2+x	(29/2$^-$)	Q
3279.3+x	(31/2$^+$)	270.8		3008.7+x	(29/2$^+$)	
		413		2866.4+x	(29/2$^+$)	
3329.4+x	(33/2$^+$)	284.3		3045.3+x	(31/2$^+$)	
		426.8		2902.6+x	(31/2$^+$)	
		463.1		2866.4+x	(29/2$^+$)	
3407.9+x	(35/2$^+$)	254.6	83 *7*	3153.2+x	(33/2$^+$)	D
		505.1	100	2902.6+x	(31/2$^+$)	Q
3466.3+x	(35/2$^-$)	217.0	100	3249.1+x	(33/2$^-$)	D
		323[c]		3144.3+x	(31/2$^-$)	
		443.7	44 *2*	3022.7+x	(31/2$^-$)	Q
3469.0+x	(33/2$^+$)	460.2		3008.7+x	(29/2$^+$)	
3599.1+x	(35/2$^+$)	269.5		3329.4+x	(33/2$^+$)	
		553.5		3045.3+x	(31/2$^+$)	
3706.0+x	(37/2$^-$)	239.6	100	3466.3+x	(35/2$^-$)	D
		457.0	40 *2*	3249.1+x	(33/2$^-$)	Q

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Adopted Levels, Gammas (continued)

γ(^{161}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[@]
3743.5+x	(37/2$^+$)	335.5	69 *7*	3407.9+x	(35/2$^+$)	
		590.1	100	3153.2+x	(33/2$^+$)	Q
3782.2+x	(35/2$^+$)	313.2		3469.0+x	(33/2$^+$)	
		453		3329.4+x	(33/2$^+$)	
		503.3		3279.3+x	(31/2$^+$)	
3909.2+x	(37/2$^+$)	310.0		3599.1+x	(35/2$^+$)	
		501.3		3407.9+x	(35/2$^+$)	
		580.4		3329.4+x	(33/2$^+$)	
3988.4+x	(39/2$^-$)	282.5	100	3706.0+x	(37/2$^-$)	
		522.0	50 *10*	3466.3+x	(35/2$^-$)	
4037.0+x	(39/2$^+$)	293.5	42 *4*	3743.5+x	(37/2$^+$)	D
		628.9	100	3407.9+x	(35/2$^+$)	Q
4271.0+x	(41/2$^-$)	282.7	100	3988.4+x	(39/2$^-$)	D
		564.8	78 *11*	3706.0+x	(37/2$^-$)	Q
4272.2+x	(39/2$^+$)	362.8		3909.2+x	(37/2$^+$)	
		672.8		3599.1+x	(35/2$^+$)	
4332.3+x	(39/2$^+$)	550.5		3782.2+x	(35/2$^+$)	
4439.4+x	(41/2$^+$)	402.2	53 *11*	4037.0+x	(39/2$^+$)	
		695.8[b]	100	3743.5+x	(37/2$^+$)	Q
4510.1+x	(39/2$^-$)	522[bc]		3988.4+x	(39/2$^-$)	
		804.2		3706.0+x	(37/2$^-$)	
4587.8+x	(43/2$^-$)	316.7	100	4271.0+x	(41/2$^-$)	D
		599.5	85 *7*	3988.4+x	(39/2$^-$)	Q
4595.3+x	(41/2$^+$)	323.1		4272.2+x	(39/2$^+$)	
		686.6		3909.2+x	(37/2$^+$)	
4723.1+x	(41/2$^-$)	213.1		4510.1+x	(39/2$^-$)	
		452.1		4271.0+x	(41/2$^-$)	
		734.8		3988.4+x	(39/2$^-$)	
		1017.3		3706.0+x	(37/2$^-$)	
4772.3+x	(43/2$^+$)	332.8	27 *3*	4439.4+x	(41/2$^+$)	
		735.2	100	4037.0+x	(39/2$^+$)	Q
4911.6+x	(45/2$^-$)	323.8	100	4587.8+x	(43/2$^-$)	D
		640.6	86 *7*	4271.0+x	(41/2$^-$)	Q
4959.7+x	(43/2$^-$)	236.8		4723.1+x	(41/2$^-$)	
		688.5		4271.0+x	(41/2$^-$)	(Q)
		971.1		3988.4+x	(39/2$^-$)	Q
4960.3+x	(43/2$^+$)	628.5		4332.3+x	(39/2$^+$)	
5036.0+x	(43/2$^+$)	441.1		4595.3+x	(41/2$^+$)	
		763.3		4272.2+x	(39/2$^+$)	
5216.1+x	(45/2$^+$)	443.8		4772.3+x	(43/2$^+$)	
		776.4		4439.4+x	(41/2$^+$)	
5264.9+x	(47/2$^-$)	353.5	88 *5*	4911.6+x	(45/2$^-$)	D
		677.0	100	4587.8+x	(43/2$^-$)	Q
5266.7+x	(45/2$^-$)	306.8		4959.7+x	(43/2$^-$)	
		543.7		4723.1+x	(41/2$^-$)	
		679[c]		4587.8+x	(43/2$^-$)	
		995.8		4271.0+x	(41/2$^-$)	
5358.0+x	(45/2$^+$)	321[c]		5036.0+x	(43/2$^+$)	
		762.7		4595.3+x	(41/2$^+$)	
5581.7+x	(47/2$^+$)	365.5		5216.1+x	(45/2$^+$)	
		809.3		4772.3+x	(43/2$^+$)	Q
5586.8+x	(47/2$^-$)	319.9		5266.7+x	(45/2$^-$)	
		627.0		4959.7+x	(43/2$^-$)	
		675[c]		4911.6+x	(45/2$^-$)	
5621.3+x	(49/2$^-$)	356.4	81 *5*	5264.9+x	(47/2$^-$)	D
		709.6	100	4911.6+x	(45/2$^-$)	Q
5655.7+x	(47/2$^+$)	695.8[b]		4960.3+x	(43/2$^+$)	
		883.1		4772.3+x	(43/2$^+$)	
5865.3+x	(47/2$^+$)	829.3		5036.0+x	(43/2$^+$)	
5968.3+x	(49/2$^-$)	381.5		5586.8+x	(47/2$^-$)	
		701.8		5266.7+x	(45/2$^-$)	
6012.5+x	(51/2$^-$)	391.1	79 *6*	5621.3+x	(49/2$^-$)	
		747.6	100	5264.9+x	(47/2$^-$)	Q
6058.2+x	(49/2$^+$)	476.6		5581.7+x	(47/2$^+$)	
		842.1		5216.1+x	(45/2$^+$)	
6155.0+x	(49/2$^+$)	797		5358.0+x	(45/2$^+$)	
6294.2+x	(51/2$^-$)	325.9		5968.3+x	(49/2$^-$)	
		672[c]		5621.3+x	(49/2$^-$)	
		707.3		5586.8+x	(47/2$^-$)	
6363.0+x	(51/2$^+$)	707.8		5655.7+x	(47/2$^+$)	
		780.8		5581.7+x	(47/2$^+$)	Q
6398.9+x	(53/2$^-$)	386.4	77 *8*	6012.5+x	(51/2$^-$)	D
		777.7	100	5621.3+x	(49/2$^-$)	Q
6492.4+x	(51/2$^+$)	434.1		6058.2+x	(49/2$^+$)	
		836.5		5655.7+x	(47/2$^+$)	
		910.8		5581.7+x	(47/2$^+$)	
6643.3+x	(51/2$^+$)	778[c]		5865.3+x	(47/2$^+$)	
6726.6+x	(53/2$^-$)	432.2		6294.2+x	(51/2$^-$)	
		758.4		5968.3+x	(49/2$^-$)	
6829.6+x	(55/2$^-$)	430.6	81 *8*	6398.9+x	(53/2$^-$)	D
		817.1	100	6012.5+x	(51/2$^-$)	Q
6875.8+x	(53/2$^+$)	383.6		6492.4+x	(51/2$^+$)	

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Adopted Levels, Gammas (continued)

γ(^{161}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[@]
6875.8+x	(53/2$^+$)	817.7		6058.2+x	(49/2$^+$)	
6994.1+x	(53/2$^+$)	839		6155.0+x	(49/2$^+$)	
7096.4+x	(55/2$^-$)	370.0		6726.6+x	(53/2$^-$)	
		802.1		6294.2+x	(51/2$^-$)	
7143.5+x	(55/2$^+$)	651[c]		6492.4+x	(51/2$^+$)	
		780.5		6363.0+x	(51/2$^+$)	Q
7252.7+x	(57/2$^-$)	423.2	62 *6*	6829.6+x	(55/2$^-$)	
		853.8	100	6398.9+x	(53/2$^-$)	
7269.8+x	(55/2$^+$)	394.2		6875.8+x	(53/2$^+$)	
		777.1		6492.4+x	(51/2$^+$)	
7568.0+x	(57/2$^-$)	471.8		7096.4+x	(55/2$^-$)	
		841.3		6726.6+x	(53/2$^-$)	
7649.7+x	(57/2$^+$)	380.0		7269.8+x	(55/2$^+$)	
		774.0		6875.8+x	(53/2$^+$)	
7734.3+x	(59/2$^-$)	481.6	70 *5*	7252.7+x	(57/2$^-$)	
		904.6	100	6829.6+x	(55/2$^-$)	
7768.1+x	(57/2$^+$)	774		6994.1+x	(53/2$^+$)	
7953.4+x	(59/2$^+$)	809.9		7143.5+x	(55/2$^+$)	
7997.2+x	(59/2$^-$)	429[c]		7568.0+x	(57/2$^-$)	
		900.8		7096.4+x	(55/2$^-$)	
8076.3+x	(59/2$^+$)	426.6		7649.7+x	(57/2$^+$)	
		806.4		7269.8+x	(55/2$^+$)	
8192.2+x	(61/2$^-$)	457.9	52 *8*	7734.3+x	(59/2$^-$)	
		939.5	100	7252.7+x	(57/2$^-$)	
8489.0+x	(61/2$^+$)	412.7		8076.3+x	(59/2$^+$)	
		839.3		7649.7+x	(57/2$^+$)	
8503.0+x	(61/2$^-$)	935[b]		7568.0+x	(57/2$^-$)	
8700.0+x	(63/2$^-$)	508		8192.2+x	(61/2$^-$)	
		965.7		7734.3+x	(59/2$^-$)	
8800.2+x	(63/2$^+$)	846.8	100	7953.4+x	(59/2$^+$)	Q
8963.4+x	(63/2$^+$)	474.4		8489.0+x	(61/2$^+$)	
		887.1		8076.3+x	(59/2$^+$)	
8973.2+x	(63/2$^-$)	976		7997.2+x	(59/2$^-$)	
9196.4+x	(65/2$^-$)	496		8700.0+x	(63/2$^-$)	
		1004.2		8192.2+x	(61/2$^-$)	
9391.2+x	(65/2$^+$)	427.7		8963.4+x	(63/2$^+$)	
		902.2		8489.0+x	(61/2$^+$)	
9438.0+x	(65/2$^-$)	935[bc]		8503.0+x	(61/2$^-$)	
9701.2+x	(67/2$^+$)	901.0	100	8800.2+x	(63/2$^+$)	Q
9727.9+x	(67/2$^-$)	531		9196.4+x	(65/2$^-$)	
		1028.3		8700.0+x	(63/2$^-$)	
9908.9+x	(67/2$^+$)	517.7		9391.2+x	(65/2$^+$)	
		945.5		8963.4+x	(63/2$^+$)	
10027.2+x	(67/2$^-$)	1054[c]		8973.2+x	(63/2$^-$)	
10219.9+x	(69/2$^-$)	1023.5		9196.4+x	(65/2$^-$)	Q
10308.8+x	(69/2$^-$)	581		9727.9+x	(67/2$^-$)	
		1112.4		9196.4+x	(65/2$^-$)	
10345.8+x	(69/2$^+$)	954.6		9391.2+x	(65/2$^+$)	
10649.7+x	(71/2$^+$)	948.5	100	9701.2+x	(67/2$^+$)	Q
10818.1+x	(71/2$^-$)	506[c]		10308.8+x	(69/2$^-$)	
		1090.2		9727.9+x	(67/2$^-$)	
10904.9+x	(71/2$^+$)	996		9908.9+x	(67/2$^+$)	
11210.0+x	(73/2$^-$)	990.1	100	10219.9+x	(69/2$^-$)	
11358.8+x	(73/2$^+$)	1013		10345.8+x	(69/2$^+$)	
11442.9+x	(73/2$^-$)	1134		10308.8+x	(69/2$^-$)	
11633.5+x	(75/2$^+$)	983.8	100	10649.7+x	(71/2$^+$)	
11937.1+x	(75/2$^-$)	1119		10818.1+x	(71/2$^-$)	
11948.9+x	(75/2$^+$)	1044		10904.9+x	(71/2$^+$)	
12247.9+x	(77/2$^-$)	1037.9		11210.0+x	(73/2$^-$)	
12672.7+x	(79/2$^+$)	1039.2		11633.5+x	(75/2$^+$)	
13309.9+x	(81/2$^-$)	1062		12247.9+x	(77/2$^-$)	
13742.9+x	(83/2$^+$)	1070.2		12672.7+x	(79/2$^+$)	
14817.9+x	(87/2$^+$)	1075		13742.9+x	(83/2$^+$)	
15942.9+x	(91/2$^+$)	1125		14817.9+x	(87/2$^+$)	
308.3+y	(25/2$^+$)	308.3		y	(21/2$^+$)	
689.0+y	(29/2$^+$)	380.7		308.3+y	(25/2$^+$)	
1139.8+y	(33/2$^+$)	450.8		689.0+y	(29/2$^+$)	
1304.0+y	(31/2$^+$)	615[c]		689.0+y	(29/2$^+$)	
1658.4+y	(37/2$^+$)	518.8[b]		1139.8+y	(33/2$^+$)	
1781.0+y	(35/2$^+$)	478[c]		1304.0+y	(31/2$^+$)	
		641		1139.8+y	(33/2$^+$)	
2244.2+y	(41/2$^+$)	585.8		1658.4+y	(37/2$^+$)	
2324.2+y	(39/2$^+$)	543		1781.0+y	(35/2$^+$)	
		666		1658.4+y	(37/2$^+$)	
2893.6+y	(45/2$^+$)	649.4		2244.2+y	(41/2$^+$)	
2930.2+y	(43/2$^+$)	606		2324.2+y	(39/2$^+$)	
		686		2244.2+y	(41/2$^+$)	
3597.2+y	(47/2$^+$)	667		2930.2+y	(43/2$^+$)	
		704[c]		2893.6+y	(45/2$^+$)	
3604.2+y	(49/2$^+$)	710.6		2893.6+y	(45/2$^+$)	
4322.2+y	(51/2$^+$)	725		3597.2+y	(47/2$^+$)	
4372.9+y	(53/2$^+$)	768.7		3604.2+y	(49/2$^+$)	

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Adopted Levels, Gammas (continued)

γ(^{161}Lu) (continued)

E_i(level)	J_i^π	E_γ †	E_f	J_f^π	E_i(level)	J_i^π	E_γ †	E_f	J_f^π
5103.2+y	(55/2$^+$)	781	4322.2+y	(51/2$^+$)	8743.2+y	(71/2$^+$)	973	7770.2+y	(67/2$^+$)
5196.7+y	(57/2$^+$)	823.8	4372.9+y	(53/2$^+$)	8961.3+y	(73/2$^+$)	997.4	7963.9+y	(69/2$^+$)
5936.2+y	(59/2$^+$)	833	5103.2+y	(55/2$^+$)	9751.2+y	(75/2$^+$)	1008	8743.2+y	(71/2$^+$)
6072.6+y	(61/2$^+$)	875.9	5196.7+y	(57/2$^+$)	9985.3+y	(77/2$^+$)	1024.0	8961.3+y	(73/2$^+$)
6820.2+y	(63/2$^+$)	884	5936.2+y	(59/2$^+$)	10793.2+y	(79/2$^+$)	1042	9751.2+y	(75/2$^+$)
6997.0+y	(65/2$^+$)	924.4	6072.6+y	(61/2$^+$)	11044.1+y	(81/2$^+$)	1058.8	9985.3+y	(77/2$^+$)
7770.2+y	(67/2$^+$)	950	6820.2+y	(63/2$^+$)	12139.6+y	(85/2$^+$)	1095.5	11044.1+y	(81/2$^+$)
7963.9+y	(69/2$^+$)	966.9	6997.0+y	(65/2$^+$)	13270.6+y	(89/2$^+$)	1131	12139.6+y	(85/2$^+$)

† From ^{139}La(^{28}Si,6nγ) unless otherwise stated. Although some of the γ-ray energies may be more precise in ^{120}Sn(^{45}Sc,4nγ), but for the purpose of internal consistency, all γ-ray energies for high-spin (J>9/2) levels have been taken from ^{139}La(^{28}Si,6nγ), since it provides a much larger inventory of γ rays than the ^{120}Sn(^{45}Sc,4nγ) data set.

‡ From ^{120}Sn(^{45}Sc,4nγ) unless otherwise stated. The adopted γ branching may differ somewhat from those listed in the ^{120}Sn(^{45}Sc,4nγ) data set, since those given here are from coincidence spectra gated on specific transitions feeding the particular level, while those in the in-beam data set are from a more general methodology (see the discussion in that data set and values of branching ratios given under comments in that data set).

Energy from average of values from from ^{161}Hf ε decay and ^{139}La(^{28}Si,6nγ), intensity from ^{161}Hf ε decay.

@ From the ^{120}Sn(^{45}Sc,4nγ) study, unless noted otherwise.

& ΔJ=1, stretched dipole interpreted as E1 in ^{139}La(^{28}Si,6nγ).

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.

c Placement of transition in the level scheme is uncertain.

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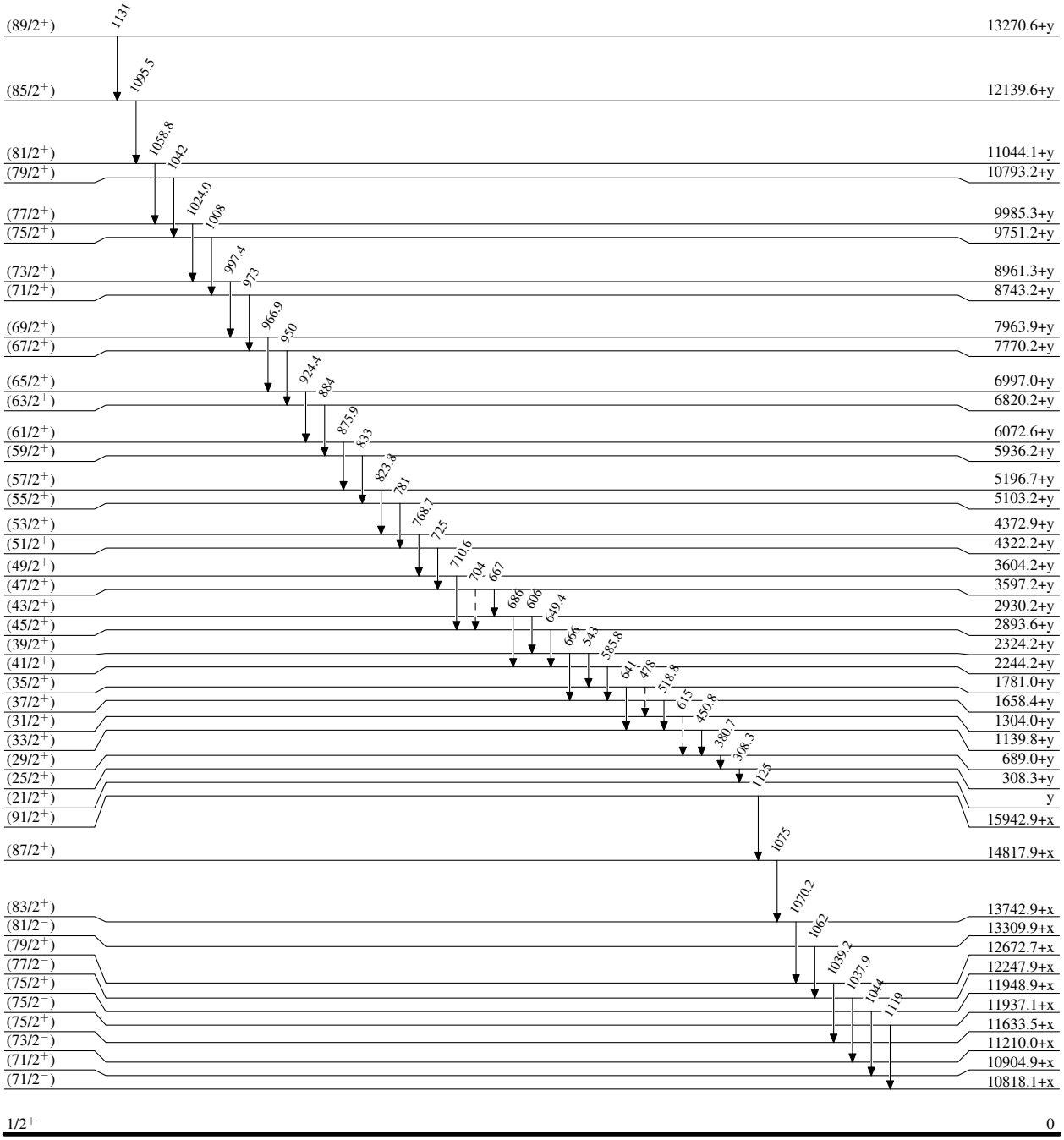
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{161}_{71}Lu_{90}$

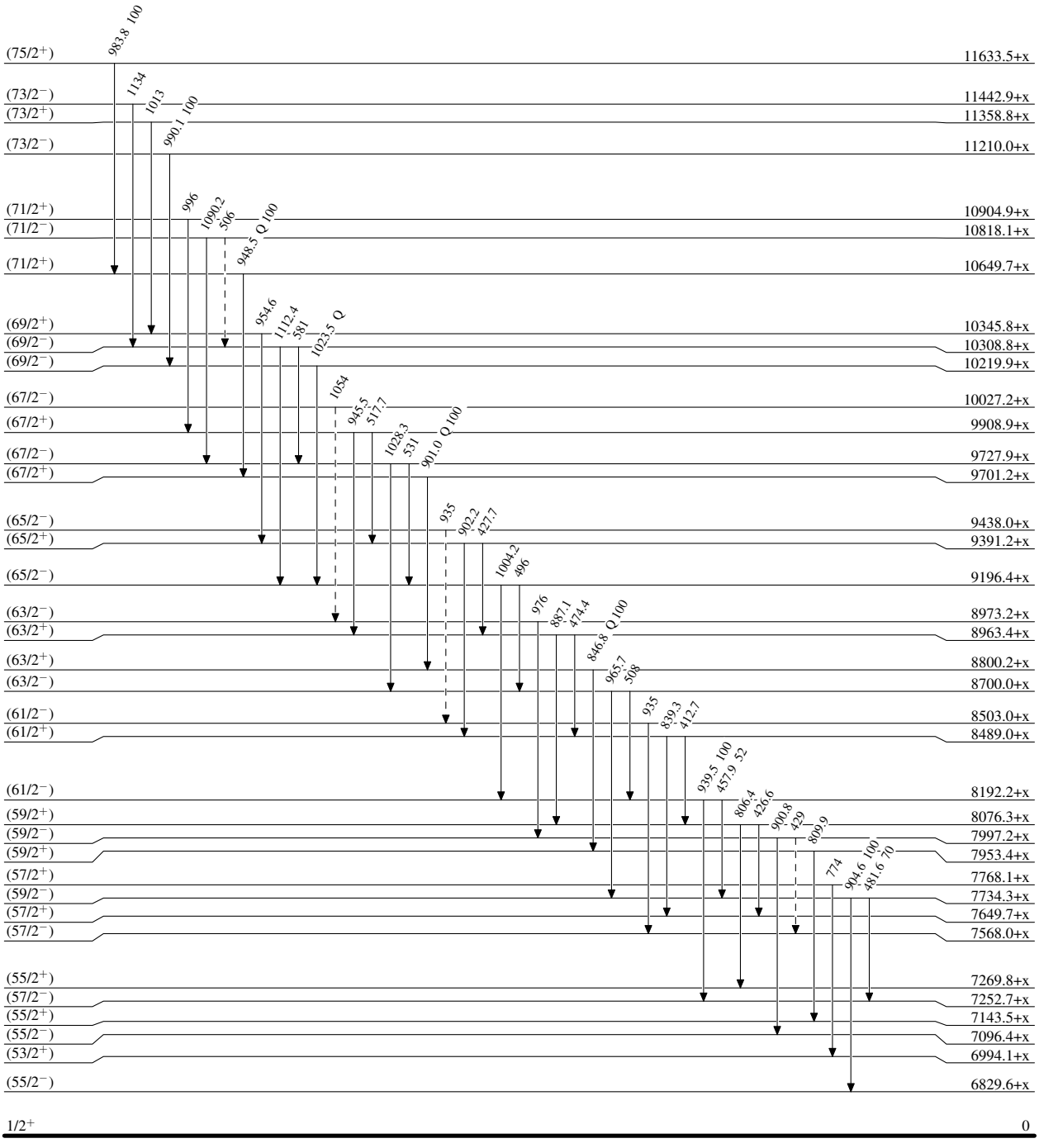
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



77 s 2

$^{161}_{71}Lu_{90}$

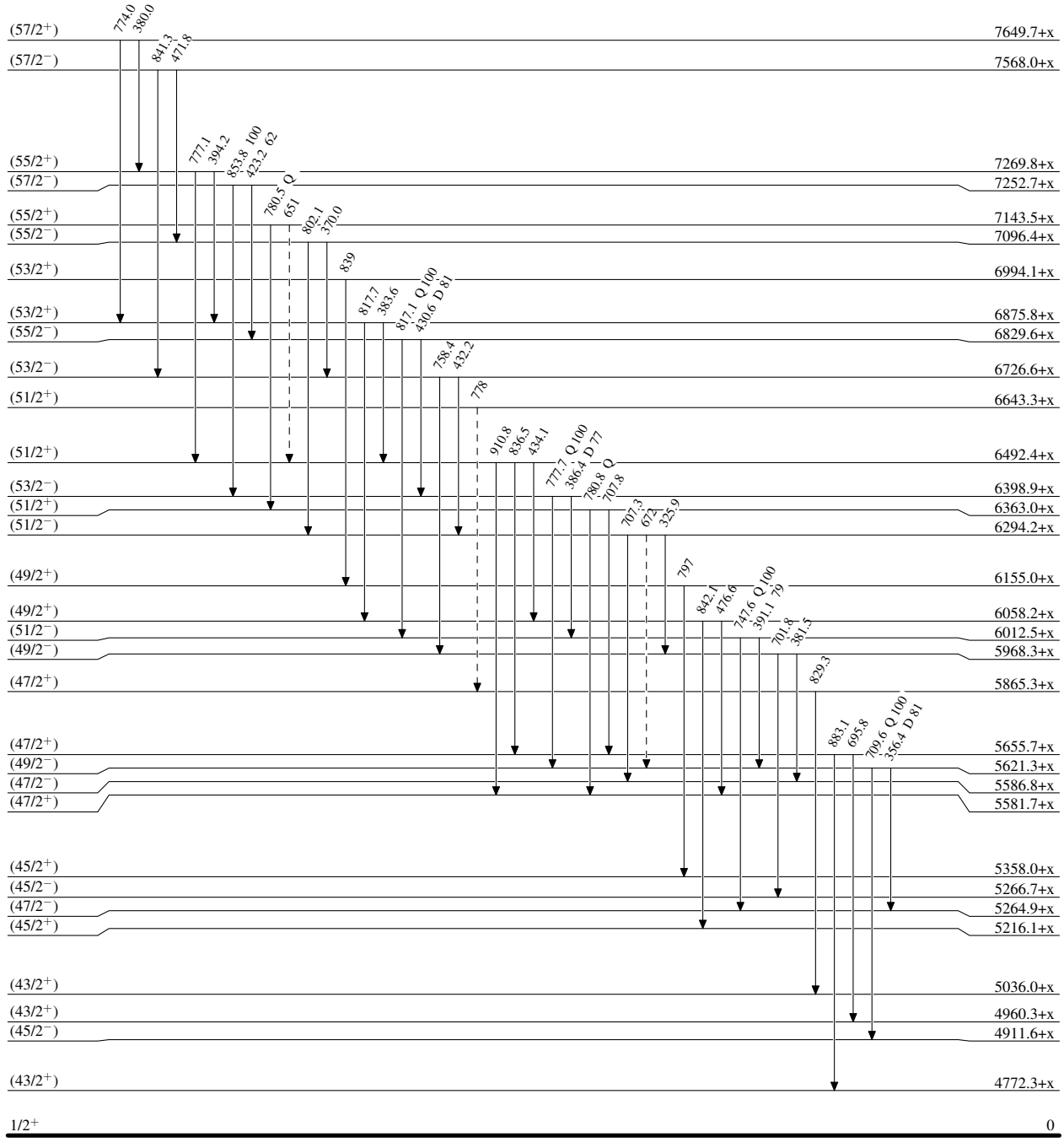
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{161}_{71}Lu_{90}$

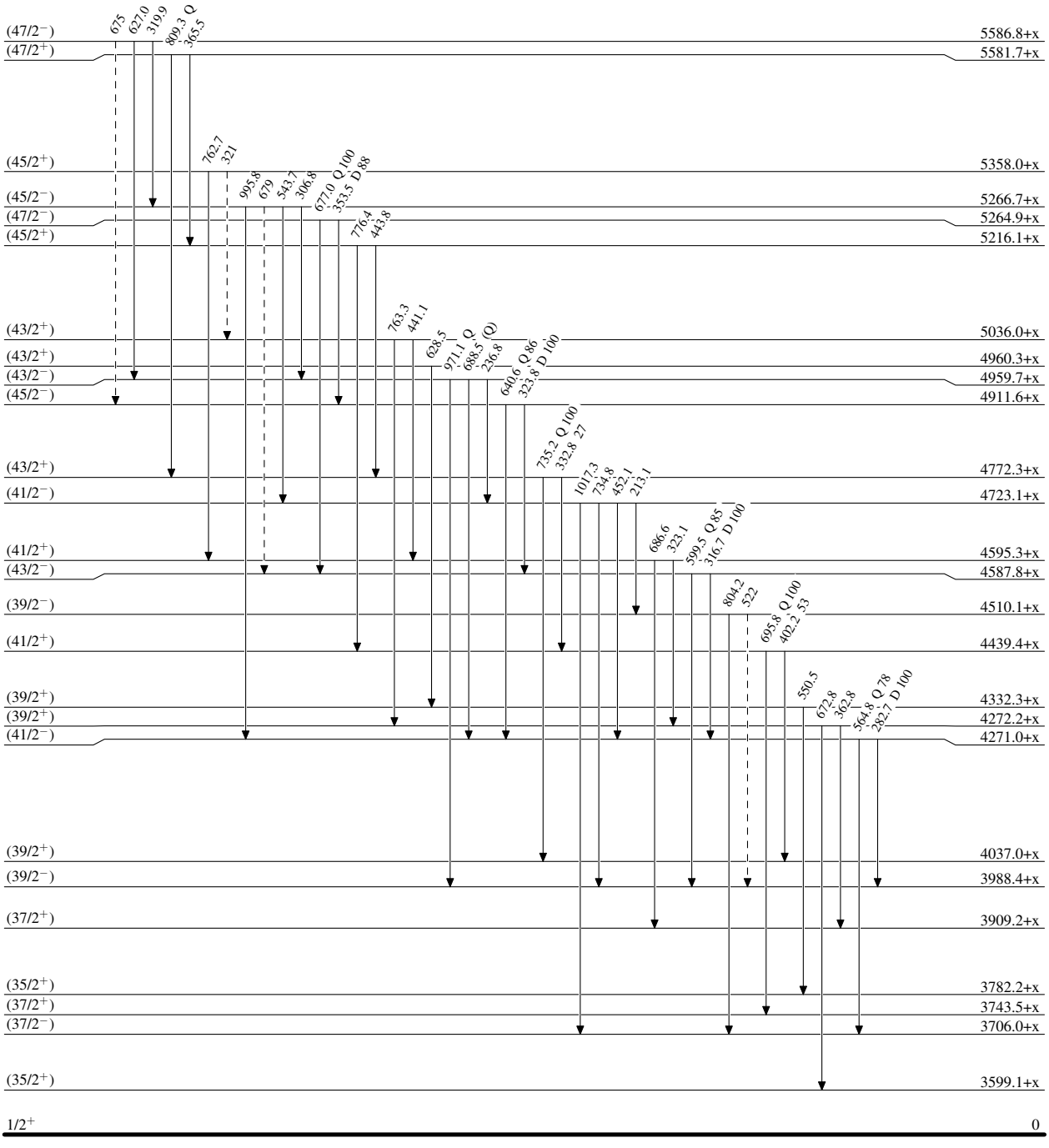
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{161}_{71}Lu_{90}$

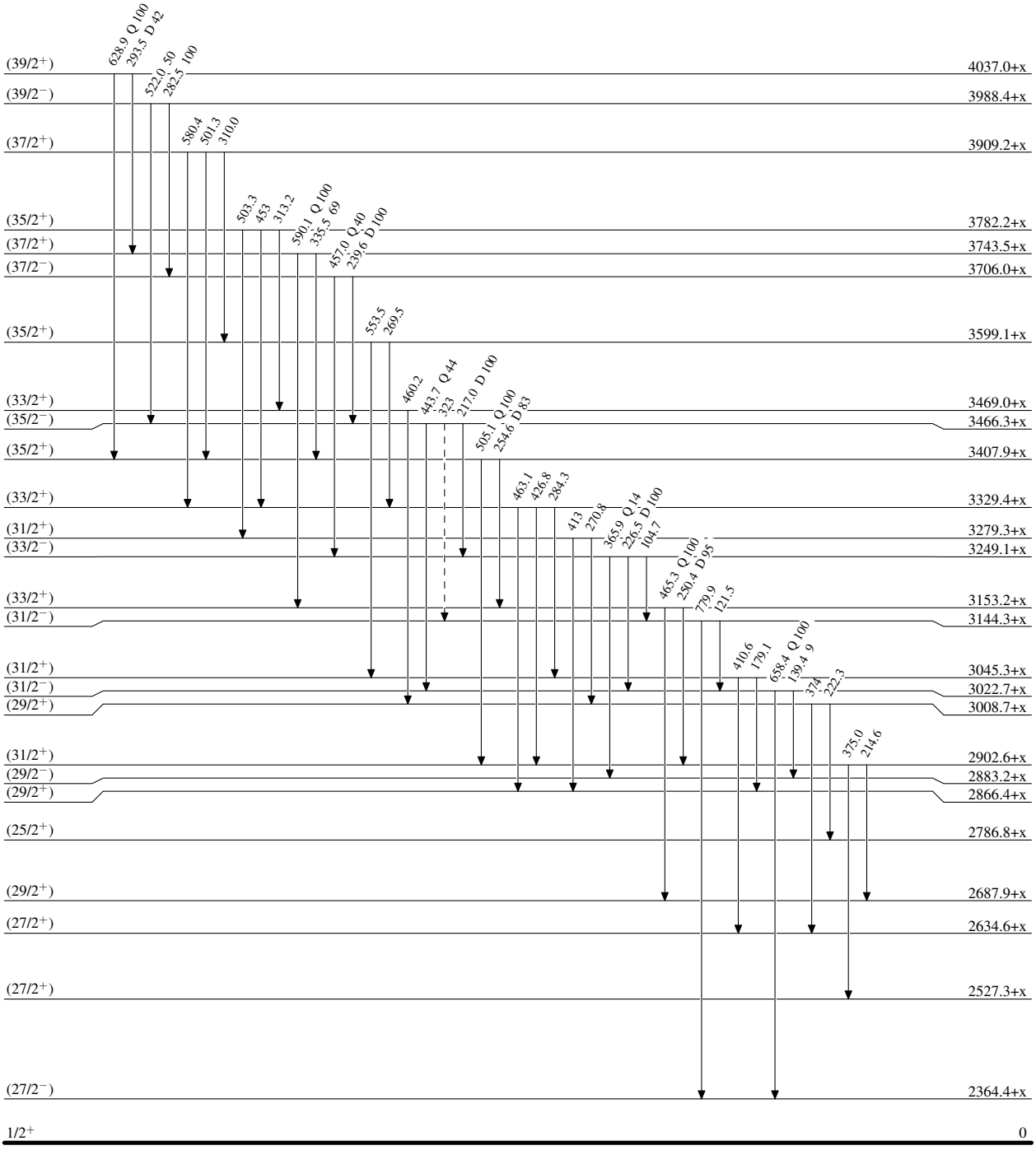
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{161}_{71}Lu_{90}$

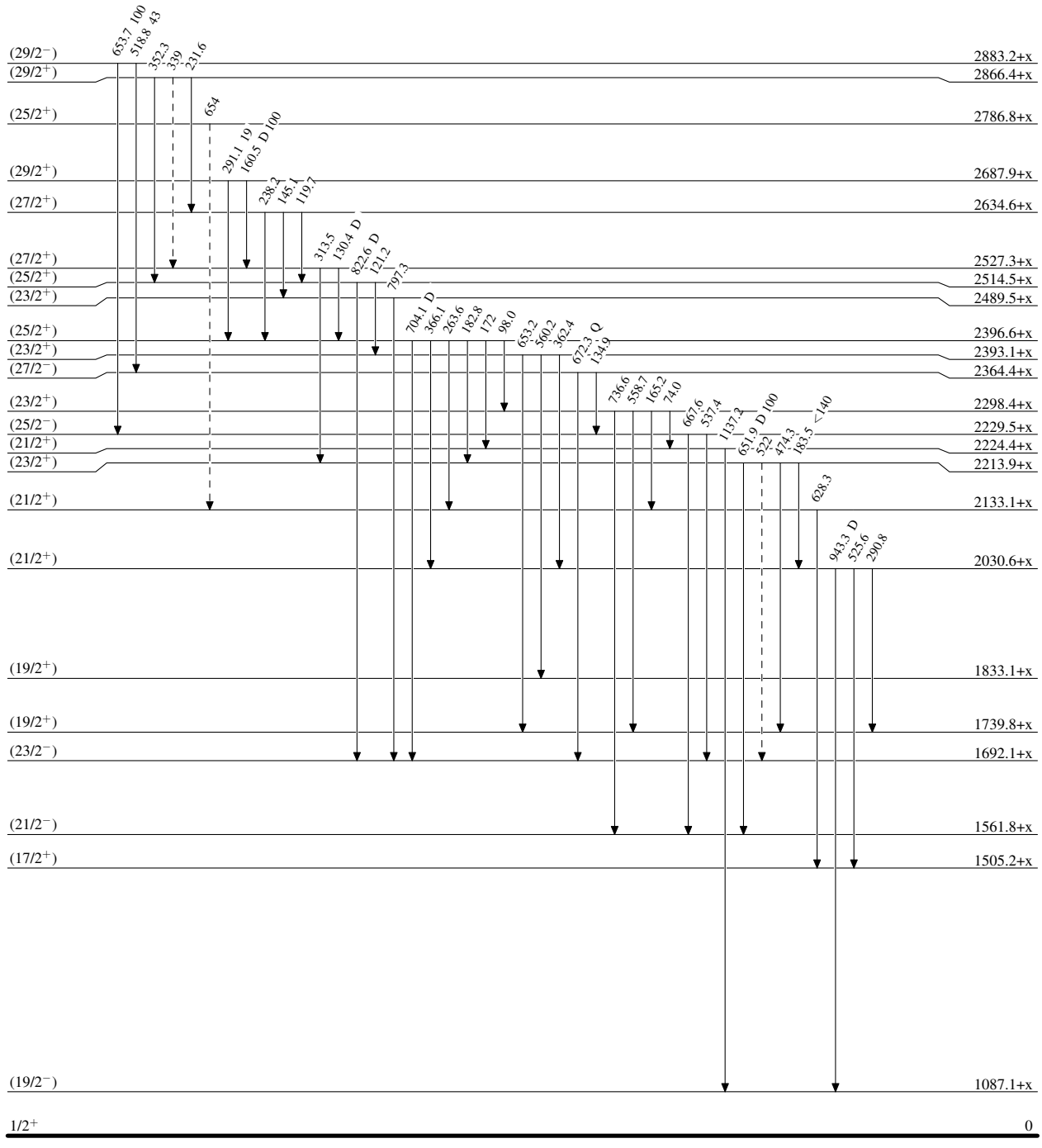
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{161}_{71}Lu_{90}$

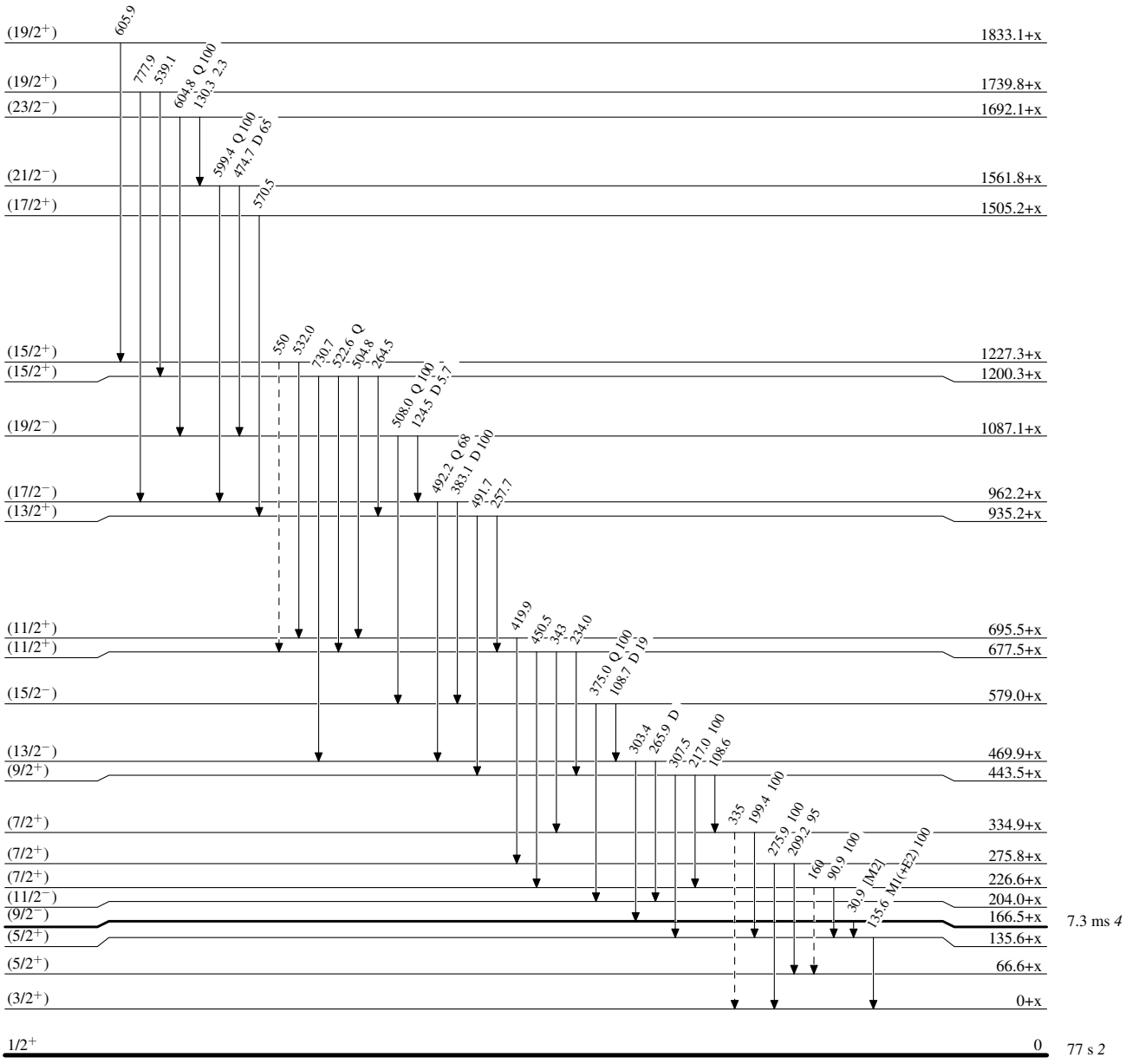
Adopted Levels, Gammas

Legend

Level Scheme (continued)

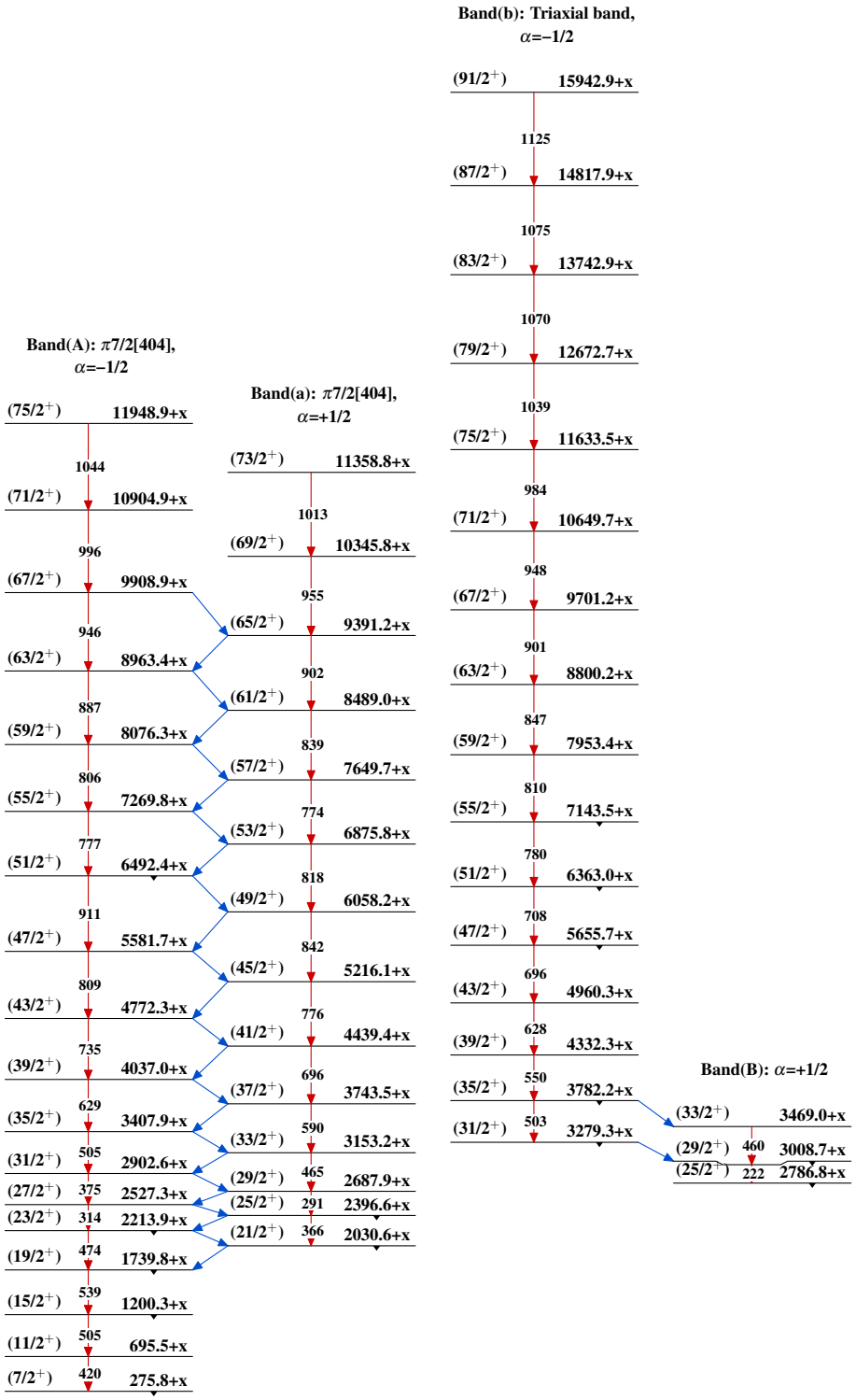
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



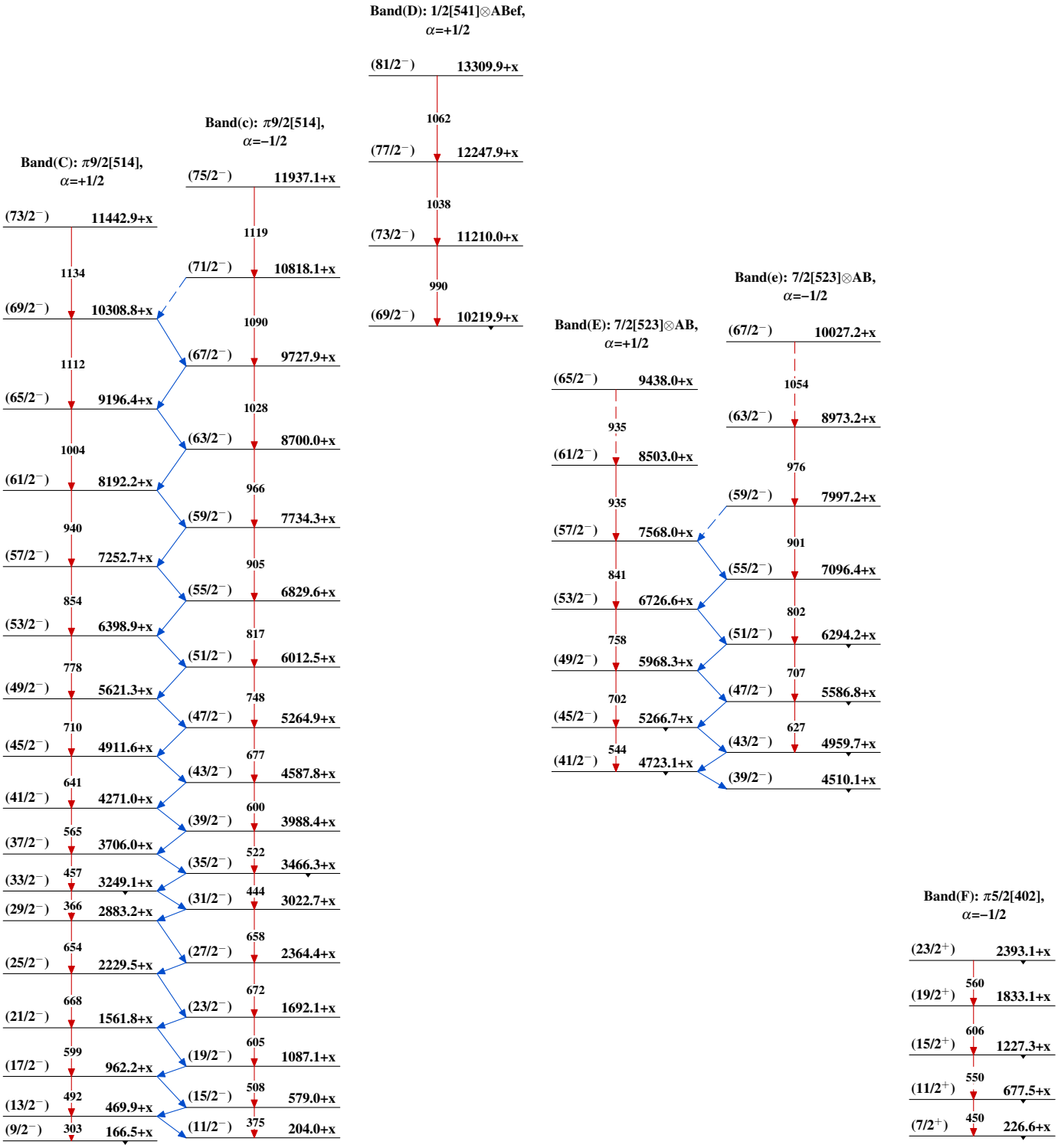
$^{161}_{71}Lu_{90}$

Adopted Levels, Gammas

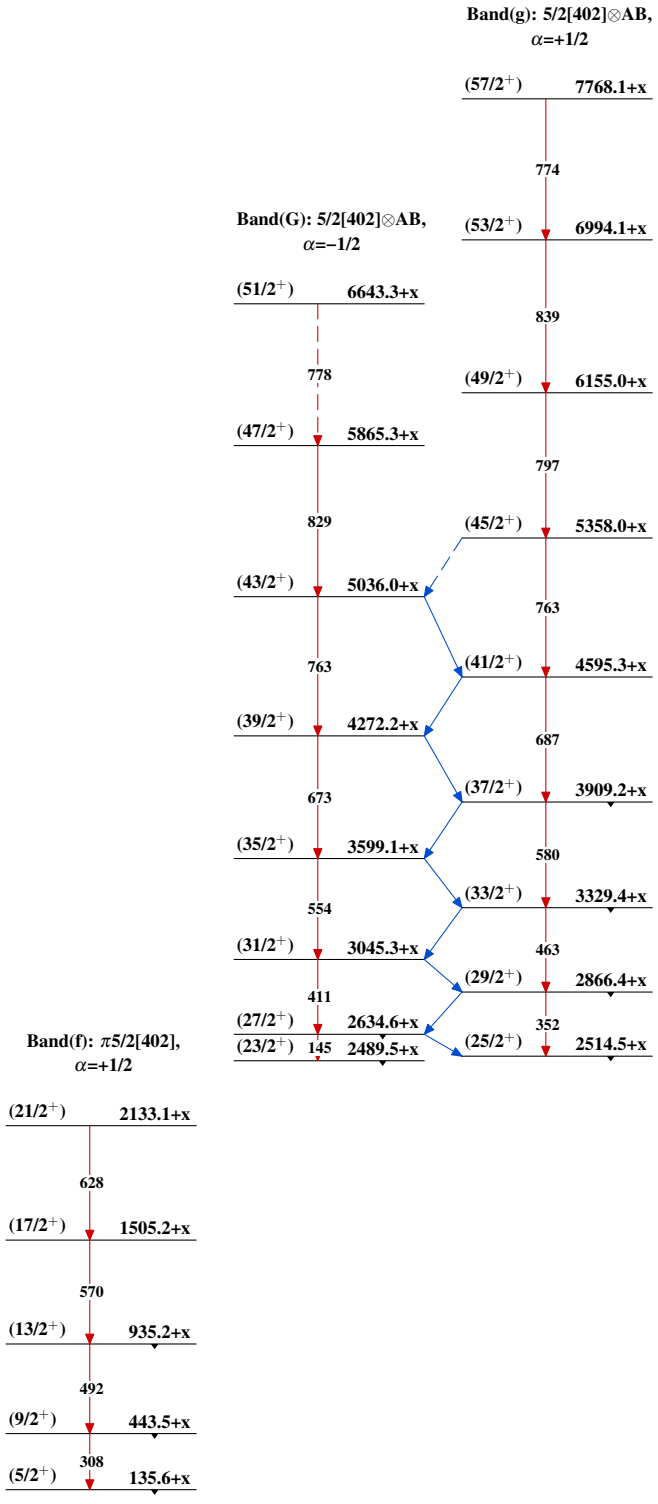


$^{161}_{71}Lu_{90}$

Adopted Levels, Gammas (continued)

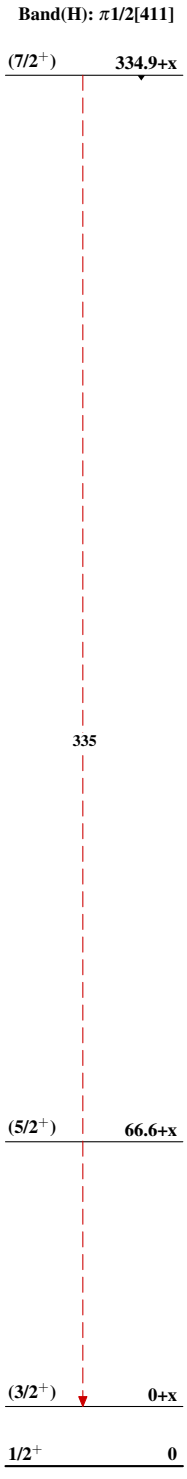


Adopted Levels, Gammas (continued)



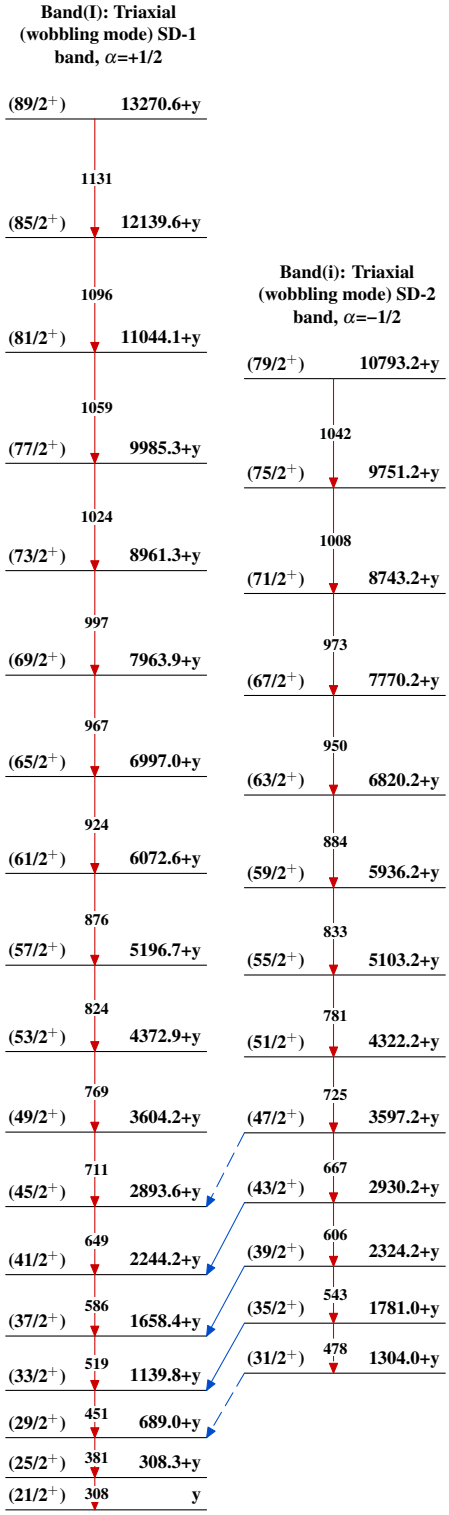
$^{161}_{71}Lu_{90}$

Adopted Levels, Gammas (continued)



$^{161}_{71}Lu_{90}$

Adopted Levels, Gammas (continued)



$^{161}_{71}Lu_{90}$