Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

Q(β^-)=−2850 *30*; S(n)=7920 *40*; S(p)=2710 *40*; Q(α)=3460 *40* 2017Wa10
S(2n)=17886 *40*; S(2p)=7648 *48*; Q(εp)=658 28 (2017Wa10).

^{170}Ta Levels

Band structure is adopted from 2010Ag06 In ^{124}Sn(^{51}V,5nγ). This is a much more extensive study than those reported from ^{159}Tb(^{16}O,5nγ) and ^{155}Gd(^{19}F,4nγ) (2001DeZX, 1997Zh17, 2001De60, 1999Zh27,1998Zh08). Note that significant differences for J>18 In the (π 9/2[514])⊗(ν 5/2[642]) band and for J>17 In the (π 1/2[541])+(ν 5/2[642]) band exist.

Nomenclature for quasiparticle orbitals:
A_p: π5/2[402],α=+1/2 from $d_{5/2}$ orbital.
B_p: π5/2[402],α=−1/2 from $d_{5/2}$ orbital.
C_p: π7/2[404],α=+1/2 from $g_{7/2}$ orbital.
D_p: π7/2[404],α=−1/2 from $g_{7/2}$ orbital.
E_p: π9/2[514],α=+1/2 from $h_{11/2}$ orbital.
F_p: π9/2[514],α=−1/2 from $h_{11/2}$ orbital.
G_p: π1/2[541],α=+1/2 from $h_{9/2}$ orbital.
H_p: π1/2[541],α=−1/2 from $h_{9/2}$ orbital.
I_p: π1/2[411],α=+1/2 from $d_{3/2}$ orbital.
J_p: π1/2[411],α=−1/2 from $d_{3/2}$ orbital.
A: ν5/2[642],α=+1/2 from $i_{13/2}$ orbital.
B: ν5/2[642],α=−1/2 from $i_{13/2}$ orbital.
C: α=+1/2 from $i_{13/2}$ orbital.
D: α=−1/2 from $i_{13/2}$ orbital.
E: ν5/2[523],α=+1/2 from $h_{9/2}$ orbital.
F: ν5/2[523],α=−1/2 from $h_{9/2}$ orbital.

Cross Reference (XREF) Flags

A ^{170}W ε decay
B ^{124}Sn(^{51}V,5nγ)
C ^{159}Tb(^{16}O,5nγ),

E(level)†	J$^\pi$#	$T_{1/2}$	XREF	Comments
0.0	(3$^+$)	6.76 min *6*	A	%ε+%β^+=100 J$^\pi$: J=(3) from log *ft*≈6.2 (log $f^{1u}t$≈8.1) to 2$^+$ 101 level and log *ft*≈6.7 (log $f^{1u}t$≈8.6) to 4$^+$ 322 level; π=(+) from probable configuration ((π 1/2[541])+(ν 5/2[523]) 3$^+$ (1976Le04), based on odd-particle configuration in N=97 odd-A isotones and in ^{172}Ta. $T_{1/2}$: from 1976Le04. Others: 7.0 min *5* (1969Ar22), 7 min *2* (1970Re11), 8.0 min *15* (1971Na28), 7.2 min *7* (1992HeZV).
0.0+x[h]	(7$^+$)		B	
32.6+x[o] *4*	(5$^+$)		B	
46.1+x[a] *6*	(6$^-$)		B	
56.7+x[&] *6*	(7$^-$)		B	
89.23+x[g] *12*	(8$^+$)		BC	
110.8+x[n] *4*	(6$^+$)		B	
131.8+x[b] *6*	(7$^-$)		B	

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Adopted Levels, Gammas (continued)

^{170}Ta Levels (continued)

E(level)†	Jπ#	XREF	E(level)†	Jπ#	XREF	E(level)†	Jπ#	XREF
145.6+x@ 6	(8−)	B	1223.36+xo 21	(13+)	B	3142.4+x& 5	(21−)	BC
170.86+xq 16	(7+)	B	1286.5+x 6		B	3144.2+xu 4		B
180.74+xi 21	(8+)	B	1297.07+xi 19	(14+)	B	3153.6+x?k 5	(20+)	B
182.6+xa 6	(8−)	BC	1320.6+x& 5	(15−)	BC	3168.8+xc 6	(20−)	B
207.6+xc 6	(6−)	B	1395.3+xb 4	(15−)	BC	3181.1+xn 4	(20+)	B
210.83+xh 13	(9+)	BC	1430.30+xp 24	(14+)	B	3219.4+xh 3	(21+)	B
211.2+xo 3	(7+)	B	1450.41+xh 22	(15+)	BC	3376.86+xj 24	(21+)	B
268.3+x& 5	(9−)	BC	1461.9+xn 3	(14+)	B	3394.99+xo 25	(21+)	B
291.31+xj 17	(9+)	B	1491.0+xc 6	(14−)	B	3416.5+xf 6	(19−)	B
312.04+xp 13	(8+)	B	1562.97+xj 21	(15+)	B	3420.0+xl 3	(21+)	B
316.2 4	(1+)	A	1587.6+x@ 5	(16−)	BC	3449.5+xq 4	(21+)	B
322.4+xb 6	(9−)	BC	1598.1+xa 5	(16−)	BC	3457.4+x@ 6	(22−)	BC
323.95+x 14		B	1645.03+xq 22	(15+)	B	3526.0+xa 6	(22−)	BC
328.2+xn 3	(8+)	B	1696.04+xo 23	(15+)	B	3559.8+xg 3	(22+)	BC
339.66+x 19		B	1728.6+xf 4	(13−)	B	3682.83+xi 25	(22+)	B
362.59+xg 14	(10+)	BC	1732.17+xg 23	(16+)	BC	3742.9+xk 4	(22+)	B
365.7+x@ 5	(10−)	BC	1846.62+xi 22	(16+)	B	3763.4+xe 6	(20−)	B
394.0+xa 5	(10−)	BC	1872.4+x& 5	(17−)	BC	3779.1+xp 4	(22+)	B
395.02+xq 14	(9+)	B	1904.6+xe 5	(14−)	B	3799.0+xb 6	(23−)	B
434.8+xc 6	(8−)	B	1909.8+xb 5	(17−)	BC	3803.8+xn 4	(22+)	B
436.67+xi 17	(10+)	B	1956.8+xp 3	(16+)	B	3805.9+x& 6	(23−)	B
462.59+x 20		B	1981.4+xn 3	(16+)	B	3824.4+xc 7	(22−)	B
473.17+xo 23	(9+)	B	1987.3+xc 6	(16−)	B	3834.2+xu 4		B
496.6+x& 5	(11−)	BC	2005.65+xh 24	(17+)	BC	3865.0+xh 3	(23+)	BC
536.37+xh 16	(11+)	BC	2137.30+xj 23	(17+)	B	3879.3+xr 4		B
584.62+xp 15	(10+)	B	2144.5+xf 5	(15−)	B	3996.62+xj 25	(23+)	B
595.6+xb 5	(11−)	BC	2170.4+x@ 5	(18−)	BC	4056.0+xo 3	(23+)	B
614.51+xj 16	(11+)	B	2175.1+xa 6	(18−)	BC	4072.5+xl 3	(23+)	B
626.21+xn 20	(10+)	B	2203.01+xq 23	(17+)	B	4110.3+xf 6	(21−)	B
626.59+x 24		B	2220.04+xo 23	(17+)	B	4118.9+xq 4	(23+)	B
637.55+x 20		B	2312.56+xg 25	(18+)	BC	4129.4+x@ 6	(24−)	BC
663.5+x@ 5	(12−)	BC	2426.1+xe 5	(16−)	B	4231.0+xg 3	(24+)	B
698.7+xa 5	(12−)	BC	2444.34+xi 24	(18+)	B	4280.8+xa 6	(24−)	BC
719.2+xc 6	(10−)	B	2482.4+x‡b 5	(19−)	B	4324.6+xi 3	(24+)	B
723.74+xq 16	(11+)	B	2494.8+x& 5	(19−)	B	4434.7+xk 4	(24+)	B
739.48+xg 16	(12+)	BC	2517.0+xp 3	(18+)	B	4469.7+xn 4	(24+)	B
810.06+xo 18	(11+)	B	2551.0+xc 6	(18−)	B	4475.9+xe 7	(22−)	B
816.99+x 21		B	2566.3+xn 4	(18+)	B	4493.6+xp 4	(24+)	B
818.76+xi 17	(12+)	B	2600.85+xh 25	(19+)	BC	4495.3+x& 6	(25−)	B
855.0+x& 5	(13−)	BC	2737.1+xf 5	(17−)	B	4510.5+xc 7	(24−)	B
954.88+xh 18	(13+)	BC	2747.94+xj 23	(19+)	B	4520.9+xb 6	(25−)	B
954.9+xb 5	(13−)	BC	2782.82+xo 24	(19+)	B	4525.9+xd 7	(24−)	B
962.56+xp 18	(12+)	B	2801.8+x@ 5	(20−)	BC	4559.7+xh 3	(25+)	B
1010.67+xn 25	(12+)	B	2810.2+xq 3	(19+)	B	4564.0+xr 7		B
1047.50+xj 18	(13+)	B	2821.7+xa 6	(20−)	BC	4578.9+xu 5		B
1068.5+xc 6	(12−)	B	2924.6+xg 3	(20+)	BC	4673.9+xj 3	(25+)	B
1078.5+x@ 5	(14−)	BC	3068.94+xi 24	(20+)	B	4777.5+xo 4	(25+)	B
1102.0+xa 5	(14−)	BC	3069.6+xe 6	(18−)	B	4794.2+xl 4	(25+)	B
1145.43+xq 18	(13+)	B	3119.5+xb 5	(21−)	B	4835.1+xq 7	(25+)	B

Adopted Levels, Gammas (continued)

^{170}Ta Levels (continued)

E(level)†	Jπ#	XREF	E(level)†	Jπ#	XREF	E(level)†	Jπ#	XREF
1201.66+x[g] *20*	(14$^+$)	BC	3122.9+x[p] *4*	(20$^+$)	B	4843.0+x[@] *6*	(26$^-$)	B

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Adopted Levels, Gammas (continued)

^{170}Ta Levels (continued)

E(level)†	Jπ#	XREF	E(level)†	Jπ#	XREF	E(level)†	Jπ#	XREF
4958.1+x[g] 4	(26+)	B	6863.7+x[t] 9		B	8996.3+x[j] 8	(35+)	B
5040.2+x[i] 3	(26+)	B	6906.6+x[c] 11	(30−)	B	9070.8+x[q] 13	(35+)	B
5081.5+x[a] 6	(26−)	B	6920.0+x[n] 10	(30+)	B	9097.2+x[o] 10	(35+)	B
5188.8+x[k] 7	(26+)	B	6921.1+x[m] 10	(30+)	B	9258.5+x[s] 11		B
5207.4+x[n] 7	(26+)	B	6949.5+x[p] 7	(30+)	B	9370.9+x[@] 11	(36−)	B
5229.1+x[d] 7	(26−)	B	6960.4+x[&] 6	(31−)	B	9459.4+x[g] 5	(36+)	B
5243.1+x[&] 6	(27−)	B	6982.1+x[b] 6	(31−)	B	9513.1+x[d] 13	(36−)	B
5256.9+x[p] 5	(26+)	B	7030.1+x[h] 4	(31+)	B	9587.7+x[i] 11	(36+)	B
5267.1+x[c] 9	(26−)	B	7089.8+x[j] 4	(31+)	B	9810.9+x[a] 11	(36−)	B
5287.5+x[b] 6	(27−)	B	7158.0+x[o] 7	(31+)	B	9864.8+x[p] 12	(36+)	B
5314.1+x[r] 9		B	7258.5+x[q] 11	(31+)	B	9906.9+x[h] 5	(37+)	B
5318.2+x[h] 4	(27+)	B	7311.3+x[s] 8		B	9949.6+x[b] 10	(37−)	B
5389.4+x[u] 7		B	7331.9+x[l] 10	(31+)	B	10084.3+x[&] 10	(37−)	B
5422.0+x[j] 3	(27+)	B	7380.4+x[@] 8	(32−)	B	10164.1+x[o] 11	(37+)	B
5542.2+x[o] 4	(27+)	B	7499.6+x[g] 4	(32+)	B	10430.5+x[@] 12	(38−)	B
5578.2+x[l] 6	(27+)	B	7602.1+x[i] 8	(32+)	B	10500.9+x[g] 7	(38+)	B
5599.5+x[q] 8	(27+)	B	7622.2+x[d] 11	(32−)	B	10549.8+x[d] 14	(38−)	B
5620.9+x[@] 6	(28−)	B	7687.9+x[k] 11	(32+)	B	10882.6+x[a] 12	(38−)	B
5747.3+x[g] 4	(28+)	B	7756.3+x[a] 9	(32−)	B	10920.3+x[p] 13	(38+)	B
5826.2+x[i] 4	(28+)	B	7757.2+x[t] 10		B	10971.3+x[h] 7	(39+)	B
5924.6+x[a] 7	(28−)	B	7796.1+x[c] 12	(32−)	B	11047.1+x[b] 11	(39−)	B
5973.0+x[d] 9	(28−)	B	7858.4+x[m] 11	(32+)	B	11235.1+x[&] 11	(39−)	B
5984.3+x[k] 8	(28+)	B	7870.6+x[p] 9	(32+)	B	11277.5+x[o] 12	(39+)	B
6026.4+x[n] 8	(28+)	B	7908.2+x[b] 7	(33−)	B	11519.7+x[@] 13	(40−)	B
6027.3+x[m] 8	(28+)	B	7938.5+x[&] 7	(33−)	B	11584.3+x[g] 9	(40+)	B
6052.4+x[t] 7		B	7959.3+x[h] 4	(33+)	B	11648.5+x[d] 15	(40−)	B
6064.9+x[&] 6	(29−)	B	7994.7+x[j] 7	(33+)	B	12092.2+x[h] 9	(41+)	B
6068.3+x[c] 10	(28−)	B	8091.5+x[o] 9	(33+)	B	12193.6+x[b] 12	(41−)	B
6080.7+x[p] 5	(28+)	B	8150.4+x[q] 12	(33+)	B	12446.9+x[o] 13	(41+)	B
6105.5+x[b] 6	(29−)	B	8260.7+x[s] 10		B	12639.7+x[@] 14	(42−)	B
6142.9+x[h] 4	(29+)	B	8280.2+x[l] 11	(33+)	B	12712.9+x[g] 10	(42+)	B
6233.1+x[j] 4	(29+)	B	8351.5+x[@] 10	(34−)	B	13260.9+x[h] 10	(43+)	B
6320.4+x[o] 5	(29+)	B	8456.7+x[g] 5	(34+)	B	13361.3+x?[b] 13	(43−)	B
6405.6+x[q] 10	(29+)	B	8537.5+x[d] 13	(34−)	B	13793.1+x[@] 15	(44−)	B
6417.5+x[s] 7		B	8583.6+x[i] 10	(34+)	B	13889.2+x[g] 12	(44+)	B
6430.6+x[l] 8	(29+)	B	8623.2+x[k] 12	(34+)	B	14458.2+x[h] 11	(45+)	B
6467.9+x[@] 6	(30−)	B	8753.2+x[a] 10	(34−)	B	14977.2+x[@] 16	(46−)	B
6595.5+x[g] 4	(30+)	B	8807.6+x[m] 12	(34+)	B	15106.1+x?[g] 13	(46+)	B
6681.1+x[i] 6	(30+)	B	8844.4+x[p] 10	(34+)	B	15688.9+x[h] 13	(47+)	B
6767.3+x[d] 10	(30−)	B	8901.7+x[b] 9	(35−)	B	16196.2+x?[@] 17	(48−)	B
6814.0+x[k] 10	(30+)	B	8904.2+x[h] 5	(35+)	B	16955.9+x?[h] 14	(49+)	B
6814.9+x[a] 7	(30−)	B	8976.2+x[&] 9	(35−)	B			

† From least-squares fit to Eγ, allowing 1 keV uncertainty in those Eγ values for which no uncertainty has been reported.
‡ Placement(s) of different transitions from J=19 band member In (^{16}O,5nγ) not adopted.
# Based on multipolarities of deexciting gammas and on band structure deduced in (HI,xnγ) reactions, except as noted. If Jπ(^{170}Ta g.s.)=3+, no g.s. ε+β+ feeding to it from 0+ ^{170}W would be expected. Decay to the one established excited state is

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Adopted Levels, Gammas (continued)

^{170}Ta Levels (continued)

allowed (implying $J^\pi=0^+,1^+$) provided $\varepsilon+\beta^+$ feeding to it exceeds 2.3%. While the latter feeding condition seems likely to be satisfied, substantial indirect feeding of the 316 level via highly-converted low-energy transitions cannot be ruled out, and the decay scheme is likely to be incomplete. The 316γ to the (3^+) g.s. favors 1^+ over 0^+ for J^π(316 level).

[@] Band(A): (π9/2[514])⊗(ν5/2[642]), α=0 band (2010Ag06). Configuration assignment supported by observed signature inversion and B(M1)/B(E2) data from (^{16}O,5nγ) and (^{51}V,5nγ) for presumed M1 and E2 in-band transitions which deexcite the same level. 9/2[514] proton orbital suggested in 1985Ba48 for (π $h_{11/2}$).

[&] Band(a): (π9/2[514])⊗(ν5/2[642]), α=1 band (2010Ag06). Signature partner of ((π 9/2[514])⊗(ν 5/2[642])), α=0 band; please see comments on that band.

[a] Band(B): (π1/2[541])+(ν5/2[642]), α=0 band (2001De60). Favored semidecoupled band; configuration assignment supported by apparent level staggering (typical for (ν $i_{13/2}$)) and large band crossing frequency (1998Zh08).

[b] Band(b): (π1/2[541])+(ν5/2[642]), α=1 band (2001De60). Signature partner of (π 1/2[541])+(ν 5/2[642]), α=0 band; please see comments on that band.

[c] Band(C): $K^\pi=3^-$ H_pA, α=0 band. Spherical orbitals=$\pi h_{9/2}\otimes\nu i_{13/2}$. Delayed band crossing at $\hbar\omega\approx$0.34 MeV due to BC.

[d] Band(D): (π5/2[402])+(ν5/2[642]), α=0 band (2010Ag06). Assignment based on small signature splitting and favored by B(M1)/B(E2)≈0.6 for presumed M1 and E2 in-band transitions deexciting the same level.

[e] Band(E): K^π=13- 4-quasiparticle band, α=0. Configuration=π([5/2[402],7/2[404],9/2[514])⊗ν5/2[642]. Spherical orbitals=$\pi(h_{11/2},d_{5/2},g_{7/2})\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.3 MeV due to BC.

[f] Band(e): K^π=13- 4-quasiparticle band, α=1. Configuration=π([5/2[402],7/2[404],9/2[514])⊗ν5/2[642]. Spherical orbitals=$\pi(h_{11/2},d_{5/2},g_{7/2})\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.3 MeV due to BC.

[g] Band(F): $K^\pi=5^+$ B_pA, α=0 band. Spherical orbitals=$\pi d_{5/2}\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.30 MeV due to BC. Second band crossing at $\hbar\omega\approx$0.50 MeV due to E_pF_p.

[h] Band(f): $K^\pi=5^+$ A_pA, α=1 band. Spherical orbitals=$\pi d_{5/2}\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.30 MeV due to BC. Second band crossing at $\hbar\omega\approx$0.46 MeV due possibly to E_pF_p.

[i] Band(G): D_pA, α=0, $K^\pi=6^+$ band. Spherical orbitals=$\pi g_{7/2}\otimes\nu i_{13/2}$. Strongly coupled. Band crossing at $\hbar\omega\approx$0.31 MeV due to BC. Second band crossing at $\hbar\omega\approx$0.5 MeV due possibly to E_pF_p.

[j] Band(g): $K^\pi=6^+$ C_pA, α=1 band. Spherical orbitals=$\pi g_{7/2}\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.31 MeV due to BC. Second band crossing at $\hbar\omega\approx$0.42 MeV; E_pF_p is not likely.

[k] Band(H): Tentative F_pEAB, α=0 band.

[l] Band(h): Tentative E_pEAB, α=1 band.

[m] Band(I): Band based on (28^+). Side band of band #8 in fig. 2 from 2010Ag06.

[n] Band(J): $K^\pi=3^+$ G_pF, α=0 band. Spherical orbitals=$\pi h_{9/2}\otimes\nu h_{9/2}$. Band crossing at $\hbar\omega\approx$0.3 MeV due to AB.

[o] Band(j): $K^\pi=3^+$ G_pE, α=1 band. Spherical orbitals=$\pi h_{9/2}\otimes\nu h_{9/2}$. Band crossing at $\hbar\omega\approx$0.3 MeV due to AB. Second band crossing at $\hbar\omega\approx$0.4 MeV.

[p] Band(K): $K^\pi=2^+$ J_pA, α=0 band. Spherical orbitals=$\pi d_{3/2}\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.3 MeV due to BC. Second band crossing at $\hbar\omega\approx$0.4 MeV.

[q] Band(k): $K^\pi=2^+$ I_pA, α=1 band. Spherical orbitals=$\pi d_{3/2}\otimes\nu i_{13/2}$. Band crossing at $\hbar\omega\approx$0.3 MeV due to BC. Second band crossing at $\hbar\omega\approx$0.4 MeV.

[r] Band(L): Side band 1. Feeds $K^\pi=3^+$, G_pF, α=0 band.

[s] Band(M): Side band 2. Feeds $K^\pi=3^+$, G_pE, α=1 band.

[t] Band(N): Side band 3. Feeds $K^\pi=2^+$ J_pA, α=0 band.

[u] Band(O): Side band 4. Feeds $K^\pi=2^+$ I_pA, α=1 band.

$\gamma(^{170}Ta)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]
89.23+x	(8^+)	89.3 *2*	100	0.0+x	(7^+)	D
131.8+x	(7^-)	85.7 *2*	100	46.1+x	(6^-)	
145.6+x	(8^-)	88.9 *2*	100	56.7+x	(7^-)	
170.86+x	(7^+)	170.8 *2*	100	0.0+x	(7^+)	
182.6+x	(8^-)	50.8 *2*		131.8+x	(7^-)	

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Adopted Levels, Gammas (continued)

$\gamma(^{170}Ta)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[&]	Comments
182.6+x	(8$^-$)	136.5 *2*		46.1+x	(6$^-$)			Mult.: apparent D character from $\gamma(\theta)$ ratio In ^{124}Sn(^{51}V,5nγ) is inconsistent with ΔJ=2 placement and has not been adopted.
210.83+x	(9$^+$)	121.5 *2*	39 *3*	89.23+x	(8$^+$)	D		
		210.9 *2*	100 *6*	0.0+x	(7$^+$)			
211.2+x	(7$^+$)	178.6 *2*	100	32.6+x	(5$^+$)			
268.3+x	(9$^-$)	122.7 *2*	100 *5*	145.6+x	(8$^-$)	[M1,E2]	2.1 *4*	
		211.6 *2*	100 *5*	56.7+x	(7$^-$)			Mult.: apparent D character from $\gamma(\theta)$ ratio In ^{124}Sn(^{51}V,5nγ) is inconsistent with placement and has not been adopted.
291.31+x	(9$^+$)	110.4 *2*	100 *10*	180.74+x	(8$^+$)			
		202.1 *2*	62 *7*	89.23+x	(8$^+$)			
312.04+x	(8$^+$)	222.9 *2*	100 *13*	89.23+x	(8$^+$)	D(+Q)		
		312.0 *2*	75 *8*	0.0+x	(7$^+$)	D		
316.2	(1$^+$)	316.2 *4*	100	0.0	(3$^+$)	[E2]	0.0702	E_γ: from ^{170}W ε decay; ΔE estimated by evaluator.
322.4+x	(9$^-$)	139.8 *2*	50.0 *25*	182.6+x	(8$^-$)	D		
		190.6 *2*	100 *5*	131.8+x	(7$^-$)			
323.95+x		234.8 *2*	100 *5*	89.23+x	(8$^+$)			
		323.9 *2*	100 *5*	0.0+x	(7$^+$)			
328.2+x	(8$^+$)	217.4 *2*	100	110.8+x	(6$^+$)			
339.66+x		250.5 *2*	100	89.23+x	(8$^+$)			
362.59+x	(10$^+$)	152.0 *2*	100 *5*	210.83+x	(9$^+$)	D+Q		
		273.3 *2*	85 *4*	89.23+x	(8$^+$)	Q		I_γ: other: 47 from (^{16}O,5nγ).
365.7+x	(10$^-$)	97.4 *2*	100	268.3+x	(9$^-$)	D		
394.0+x	(10$^-$)	71.5 *2*	41 *4*	322.4+x	(9$^-$)			
		211.3 *2*	100 *5*	182.6+x	(8$^-$)	(E2)	0.248	
395.02+x	(9$^+$)	83.0 *2*	33.5 *17*	312.04+x	(8$^+$)			
		224.1 *2*	100 *5*	170.86+x	(7$^+$)			
		305.8 *2*	50.0 *23*	89.23+x	(8$^+$)	D+Q		
434.8+x	(8$^-$)	228.1 *2*	100 *5*	207.6+x	(6$^-$)			
		303.0 *2*	15.3 *15*	131.8+x	(7$^-$)			
436.67+x	(10$^+$)	145.4 *2*	33.4 *17*	291.31+x	(9$^+$)			
		225.7 *2*	16.7 *8*	210.83+x	(9$^+$)	D+Q		
		255.9 *2*	100 *5*	180.74+x	(8$^+$)			
462.59+x		123.0 *2*	100	339.66+x				
473.17+x	(9$^+$)	133.4 *5*	10.2 *10*	339.66+x				
		262.0 *2*	100 *5*	211.2+x	(7$^+$)			
496.6+x	(11$^-$)	130.9 *2*	64 *7*	365.7+x	(10$^-$)	(M1)	2.02	
		228.4 *2*	100 *5*	268.3+x	(9$^-$)	[E2]	0.192	E_γ: absent In (^{16}O,5nγ).
536.37+x	(11$^+$)	173.8 *2*	100 *5*	362.59+x	(10$^+$)	(M1+E2)	0.69 *22*	Mult.: D+Q from (^{16}O,5nγ); Δπ=(No) from level scheme.
		325.4 *2*	100 *5*	210.83+x	(9$^+$)			I_γ: other: 47.5 from (^{16}O,5nγ).
584.62+x	(10$^+$)	260.7 *2*	25.1 *13*	323.95+x		D+Q		
		272.6 *2*	100 *5*	312.04+x	(8$^+$)	(Q)		
595.6+x	(11$^-$)	201.7 *2*	100 *5*	394.0+x	(10$^-$)	D		
		273.2 *2*	82 *4*	322.4+x	(9$^-$)			I_γ: other: 78 from (^{16}O,5nγ).
614.51+x	(11$^+$)	177.9 *2*	29.9 *14*	436.67+x	(10$^+$)	D+Q		
		252.0 *2*	16.0 *17*	362.59+x	(10$^+$)			
		323.1 *2*	100 *5*	291.31+x	(9$^+$)	Q		
		403.7 *2*	20.1 *10*	210.83+x	(9$^+$)	Q		
626.21+x	(10$^+$)	263.6 *2*	41.8 *21*	362.59+x	(10$^+$)			
		298.0 *2*	100 *5*	328.2+x	(8$^+$)			
626.59+x		164.1 *2*	100	462.59+x				
637.55+x		174.9 *2*	41 *4*	462.59+x				
		297.9 *2*	100 *10*	339.66+x				

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Adopted Levels, Gammas (continued)

$\gamma(^{170}Ta)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[&]	Comments
663.5+x	(12$^-$)	167.0 *2*	100 *5*	496.6+x	(11$^-$)	D		
		297.7 *2*	31.4 *16*	365.7+x	(10$^-$)	Q		I_γ: other: 35.4 from (^{16}O,5nγ).
698.7+x	(12$^-$)	103.0 *2*	4.7 *5*	595.6+x	(11$^-$)			
		304.7 *2*	100.0 *10*	394.0+x	(10$^-$)	(E2)	0.0783	
719.2+x	(10$^-$)	284.4 *2*	100 *5*	434.8+x	(8$^-$)	Q		
		396.8 *2*	35 *3*	322.4+x	(9$^-$)	D		
723.74+x	(11$^+$)	139.1 *2*	8.7 *9*	584.62+x	(10$^+$)			
		328.7 *2*	100 *5*	395.02+x	(9$^+$)			
		361.2 *2*	14.1 *15*	362.59+x	(10$^+$)			
739.48+x	(12$^+$)	203.1 *2*	100 *5*	536.37+x	(11$^+$)	D+Q		
		376.9 *2*	100 *5*	362.59+x	(10$^+$)	Q		I_γ: other: 92 from (^{16}O,5nγ).
810.06+x	(11$^+$)	172.6 *2*	24.6 *25*	637.55+x				
		183.8 *2*	24.6 *25*	626.21+x	(10$^+$)			
		273.7 *2*	10.2 *10*	536.37+x	(11$^+$)			
		337.0 *2*	75 *3*	473.17+x	(9$^+$)			
		347.3 *2*	100 *5*	462.59+x				
816.99+x		179.3 *2*	100 *5*	637.55+x				
		190.5 *2*	100 *5*	626.59+x				
		343.7 *2*	100 *5*	473.17+x	(9$^+$)			
		354.6 *2*	100 *5*	462.59+x				
818.76+x	(12$^+$)	204.3 *2*	39.3 *20*	614.51+x	(11$^+$)			
		282.3 *2*	17.7 *10*	536.37+x	(11$^+$)	D		
		382.0 *2*	100 *5*	436.67+x	(10$^+$)			
855.0+x	(13$^-$)	156.3 *2*	3.7 *4*	698.7+x	(12$^-$)			
		191.4 *2*	100 *5*	663.5+x	(12$^-$)	(M1)	0.693	
		358.3 *2*	50.7 *25*	496.6+x	(11$^-$)	(E2)	0.0489	
954.88+x	(13$^+$)	215.4 *2*	61.5 *26*	739.48+x	(12$^+$)	D		I_γ: other: 75 from (^{16}O,5nγ).
		418.5 *2*	100 *5*	536.37+x	(11$^+$)	Q		
954.9+x	(13$^-$)	256.2 *2*	75 *4*	698.7+x	(12$^-$)	D		I_γ: other: 55.4 from (^{16}O,5nγ).
		359.2 *2*	100 *5*	595.6+x	(11$^-$)	Q		
962.56+x	(12$^+$)	222.9 *2*	17.0 *19*	739.48+x	(12$^+$)			
		378.0 *2*	100 *5*	584.62+x	(10$^+$)	Q		
1010.67+x	(12$^+$)	384.5 *2*	100	626.21+x	(10$^+$)			
1047.50+x	(13$^+$)	228.7 *2*	28.7 *15*	818.76+x	(12$^+$)			
		308.2 *2*	5.7 *6*	739.48+x	(12$^+$)			
		433.0 *2*	100 *5*	614.51+x	(11$^+$)	Q		
1068.5+x	(12$^-$)	349.2 *2*	100 *5*	719.2+x	(10$^-$)	(Q)		
		472.9 *2*	40 *5*	595.6+x	(11$^-$)	D		
1078.5+x	(14$^-$)	223.6 *2*	100 *5*	855.0+x	(13$^-$)	(M1)	0.450	
		415.0 *2*	54 *3*	663.5+x	(12$^-$)	(E2)	0.0327	I_γ: other: 81 from (^{16}O,5nγ).
1102.0+x	(14$^-$)	147.1 *2*	5.9 *6*	954.9+x	(13$^-$)			
		247.0 *2*	3.9 *4*	855.0+x	(13$^-$)			
		403.3 *2*	100 *5*	698.7+x	(12$^-$)	(E2)	0.0353	
1145.43+x	(13$^+$)	182.8 *2*	10.2 *11*	962.56+x	(12$^+$)			
		406.0 *2*	10.2 *11*	739.48+x	(12$^+$)			
		421.7 *2*	100 *5*	723.74+x	(11$^+$)	Q		
1201.66+x	(14$^+$)	246.8 *2*	54 *3*	954.88+x	(13$^+$)	D		I_γ: other: 69 from (^{16}O,5nγ).
		462.1 *2*	100 *5*	739.48+x	(12$^+$)	Q		
1223.36+x	(13$^+$)	406.4 *2*	27.8 *14*	816.99+x				
		413.3 *2*	100 *5*	810.06+x	(11$^+$)	Q		
1286.5+x		920.7 *5*	100	365.7+x	(10$^-$)			
1297.07+x	(14$^+$)	249.6 *2*	29.9 *14*	1047.50+x	(13$^+$)			
		342.2 *2*	18.0 *10*	954.88+x	(13$^+$)			
		478.2 *2*	100 *5*	818.76+x	(12$^+$)	Q		
1320.6+x	(15$^-$)	218.6 *2*	3.4 *3*	1102.0+x	(14$^-$)			
		242.3 *2*	100 *5*	1078.5+x	(14$^-$)	(M1)	0.361	

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Adopted Levels, Gammas (continued)

γ(^{170}Ta) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[&]	Comments
1320.6+x	(15$^-$)	465.6 *2*	83 *4*	855.0+x	(13$^-$)	(E2)	0.0241	I_γ: other: 117 from (^{16}O,5nγ).
1395.3+x	(15$^-$)	293.3 *2*	54 *3*	1102.0+x	(14$^-$)			I_γ: other: 32 from (^{16}O,5nγ).
		316.9 *5*	0.6 *3*	1078.5+x	(14$^-$)			
		440.4 *2*	100 *5*	954.9+x	(13$^-$)	Q		
1430.30+x	(14$^+$)	467.7 *2*	100	962.56+x	(12$^+$)	Q		
1450.41+x	(15$^+$)	248.7 *2*	53.3 *25*	1201.66+x	(14$^+$)			I_γ: other: 30 from (^{16}O,5nγ).
		495.5 *2*	100 *5*	954.88+x	(13$^+$)	Q		
1461.9+x	(14$^+$)	451.3 *2*	100	1010.67+x	(12$^+$)	Q		
1491.0+x	(14$^-$)	422.6 *2*	100 *5*	1068.5+x	(12$^-$)	Q		
		536.0 *2*	20.3 *20*	954.9+x	(13$^-$)	D+Q		
1562.97+x	(15$^+$)	265.9 *2*	25.1 *13*	1297.07+x	(14$^+$)			
		515.6 *2*	100 *5*	1047.50+x	(13$^+$)	Q		
1587.6+x	(16$^-$)	266.9 *2*	100 *5*	1320.6+x	(15$^-$)	(M1)	0.277	I_γ: other: 74 from (^{16}O,5nγ).
		509.1 *2*	100 *5*	1078.5+x	(14$^-$)	(E2)	0.0193	
1598.1+x	(16$^-$)	203.6[#a]	[@]	1395.3+x	(15$^-$)			E_γ: absent In (^{51}V,5nγ), so placement shown As tentative.
		277.5 *2*	4.9 *5*	1320.6+x	(15$^-$)			
		496.1 *2*	100 *5*	1102.0+x	(14$^-$)	(E2)	0.0206	
1645.03+x	(15$^+$)	499.6 *2*	100 *5*	1145.43+x	(13$^+$)	Q		
1696.04+x	(15$^+$)	472.7 *2*	100	1223.36+x	(13$^+$)	Q		
1728.6+x	(13$^-$)	442.1 *5*	67 *7*	1286.5+x				
		650.2 *5*	56 *6*	1078.5+x	(14$^-$)			
		773.8 *5*	44 *4*	954.88+x	(13$^+$)			
		873.6 *5*	44 *4*	855.0+x	(13$^-$)			
		989.1 *5*	100 *10*	739.48+x	(12$^+$)			
		1065.2 *5*	33 *3*	663.5+x	(12$^-$)			
1732.17+x	(16$^+$)	281.7 *2*	49.9 *25*	1450.41+x	(15$^+$)	D+Q		I_γ: other: 67 from (^{16}O,5nγ).
		530.5 *2*	100 *5*	1201.66+x	(14$^+$)	Q		
1846.62+x	(16$^+$)	283.8 *2*	11.3 *11*	1562.97+x	(15$^+$)			
		549.5 *2*	100 *5*	1297.07+x	(14$^+$)	Q		
1872.4+x	(17$^-$)	274.7 *2*	5.3 *5*	1598.1+x	(16$^-$)			
		285.1 *2*	66 *3*	1587.6+x	(16$^-$)	(M1)	0.232	
		552.2 *2*	100 *5*	1320.6+x	(15$^-$)	(E2)	0.01579	
1904.6+x	(14$^-$)	176.0 *2*	100	1728.6+x	(13$^-$)			
1909.8+x	(17$^-$)	311.7 *2*	45.9 *24*	1598.1+x	(16$^-$)			I_γ: other: 26.6 from (^{16}O,5nγ).
		322.3 *2*	10.5 *10*	1587.6+x	(16$^-$)			
		514.5 *2*	100 *5*	1395.3+x	(15$^-$)			
1956.8+x	(16$^+$)	494.8 *2*	40.1 *20*	1461.9+x	(14$^+$)			
		526.5 *2*	100 *5*	1430.30+x	(14$^+$)	Q		
1981.4+x	(16$^+$)	519.5 *2*	100 *5*	1461.9+x	(14$^+$)	Q		
		551.0 *2*	55.1 *25*	1430.30+x	(14$^+$)	Q		
1987.3+x	(16$^-$)	496.4 *2*	100 *5*	1491.0+x	(14$^-$)	Q		
		592.0 *2*	13.6 *14*	1395.3+x	(15$^-$)			
2005.65+x	(17$^+$)	273.4 *2*	54.3 *28*	1732.17+x	(16$^+$)	D+Q		I_γ: other: 43.4 from (^{16}O,5nγ).
		555.2 *2*	100 *5*	1450.41+x	(15$^+$)	Q		
2137.30+x	(17$^+$)	290.7 *2*	11.7 *12*	1846.62+x	(16$^+$)			
		574.3 *2*	100 *5*	1562.97+x	(15$^+$)	Q		
2144.5+x	(15$^-$)	239.9 *2*	100 *5*	1904.6+x	(14$^-$)			
		415.9 *5*	4.1 *4*	1728.6+x	(13$^-$)			
2170.4+x	(18$^-$)	297.6 *2*	56.8 *27*	1872.4+x	(17$^-$)	(M1)	0.206	I_γ: other: 50.5 from (^{16}O,5nγ).
		582.8 *2*	100 *5*	1587.6+x	(16$^-$)	(E2)	0.01388	
2175.1+x	(18$^-$)	265.2[#a]	[@]	1909.8+x	(17$^-$)			E_γ: absent In (^{51}V,5nγ), so placement shown As tentative.
		577.0 *2*	100	1598.1+x	(16$^-$)	(E2)	0.01421	
2203.01+x	(17$^+$)	507.0 *2*	11.9 *12*	1696.04+x	(15$^+$)			

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Adopted Levels, Gammas (continued)

γ(^{170}Ta) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[&]	Comments
2203.01+x	(17$^+$)	558.0 *2*	100 *5*	1645.03+x	(15$^+$)	Q		
2220.04+x	(17$^+$)	524.0 *2*	100 *5*	1696.04+x	(15$^+$)	Q		
		575.0 *2*	8.1 *8*	1645.03+x	(15$^+$)			
2312.56+x	(18$^+$)	306.8 *2*	39.1 *20*	2005.65+x	(17$^+$)	D		
		580.4 *2*	100 *5*	1732.17+x	(16$^+$)	Q		
2426.1+x	(16$^-$)	281.6 *2*	100 *5*	2144.5+x	(15$^-$)			
		521.5 *5*	5.7 *6*	1904.6+x	(14$^-$)			
2444.34+x	(18$^+$)	307.2 *5*	2.0 *7*	2137.30+x	(17$^+$)			
		597.8 *2*	100 *5*	1846.62+x	(16$^+$)	Q		
2482.4+x	(19$^-$)	307.3 *2*	38.6 *20*	2175.1+x	(18$^-$)			
		312.1 *2*	38.6 *20*	2170.4+x	(18$^-$)			
		572.6 *2*	100 *5*	1909.8+x	(17$^-$)	Q		
		609.6 *2*	92 *5*	1872.4+x	(17$^-$)	(E2)	0.01249	Mult.: from (^{16}O,5nγ).
2494.8+x	(19$^-$)	324.2 *2*	35.8 *18*	2170.4+x	(18$^-$)			
		585.1 *2*	100 *5*	1909.8+x	(17$^-$)	Q		
		622.1 *2*	72 *4*	1872.4+x	(17$^-$)			
2517.0+x	(18$^+$)	535.6 *2*	12.7 *13*	1981.4+x	(16$^+$)			
		560.3 *2*	100 *5*	1956.8+x	(16$^+$)	Q		
2551.0+x	(18$^-$)	563.7 *2*	100	1987.3+x	(16$^-$)	Q		
2566.3+x	(18$^+$)	585.0 *2*	100	1981.4+x	(16$^+$)	Q		
2600.85+x	(19$^+$)	288.2 *2*	40.1 *20*	2312.56+x	(18$^+$)	D+Q		
		595.2 *2*	100 *5*	2005.65+x	(17$^+$)	Q		
2737.1+x	(17$^-$)	311.0 *2*	100 *5*	2426.1+x	(16$^-$)			
		592.6 *5*	6.8 *7*	2144.5+x	(15$^-$)			
2747.94+x	(19$^+$)	303.6 *2*	9.3 *9*	2444.34+x	(18$^+$)			
		610.6 *2*	100 *5*	2137.30+x	(17$^+$)	Q		
2782.82+x	(19$^+$)	562.8 *2*	100 *5*	2220.04+x	(17$^+$)	Q		
		579.8 *2*	40 *4*	2203.01+x	(17$^+$)	Q		
2801.8+x	(20$^-$)	307.0 *2*	27.8 *14*	2494.8+x	(19$^-$)			
		319.3 *2*	27.8 *14*	2482.4+x	(19$^-$)	D		
		626.6 *2*	4.7 *5*	2175.1+x	(18$^-$)			
		631.4 *2*	100 *5*	2170.4+x	(18$^-$)			
2810.2+x	(19$^+$)	590.1 *2*	66 *7*	2220.04+x	(17$^+$)			
		607.2 *2*	100 *9*	2203.01+x	(17$^+$)	Q		
2821.7+x	(20$^-$)	646.6 *2*	100	2175.1+x	(18$^-$)	Q		
2924.6+x	(20$^+$)	323.6 *2*	23.5 *25*	2600.85+x	(19$^+$)			I_γ: other: 52 from (^{16}O,5nγ).
		612.0 *2*	100 *5*	2312.56+x	(18$^+$)	Q		
3068.94+x	(20$^+$)	321.0 *2*	15.8 *16*	2747.94+x	(19$^+$)			
		624.7 *2*	100 *5*	2444.34+x	(18$^+$)	Q		
3069.6+x	(18$^-$)	332.5 *2*	100 *6*	2737.1+x	(17$^-$)			
		643.5 *5*	8.5 *9*	2426.1+x	(16$^-$)			
3119.5+x	(21$^-$)	297.8 *2*	16.3 *16*	2821.7+x	(20$^-$)			
		317.8 *5*	1.4 *7*	2801.8+x	(20$^-$)			
		624.6 *2*	21.8 *20*	2494.8+x	(19$^-$)			
		637.1 *2*	100 *5*	2482.4+x	(19$^-$)	Q		
3122.9+x	(20$^+$)	605.8 *2*	100	2517.0+x	(18$^+$)	Q		
3142.4+x	(21$^-$)	340.5 *2*	84 *4*	2801.8+x	(20$^-$)	D		
		647.7 *2*	100 *5*	2494.8+x	(19$^-$)			Mult.: possibly (E2) from (^{16}O,5nγ).
		660.2 *2*	31 *3*	2482.4+x	(19$^-$)			
3144.2+x		627.2 *2*	100	2517.0+x	(18$^+$)			
3153.6+x?	(20$^+$)	709.4[a] *5*	100	2444.34+x	(18$^+$)			
3168.8+x	(20$^-$)	617.8 *2*	100	2551.0+x	(18$^-$)	Q		
3181.1+x	(20$^+$)	614.8 *2*	100	2566.3+x	(18$^+$)	Q		
3219.4+x	(21$^+$)	294.8 *2*	35.8 *17*	2924.6+x	(20$^+$)	D+Q		I_γ: other: 69 from (^{16}O,5nγ).
		618.6 *2*	100 *5*	2600.85+x	(19$^+$)	Q		
3376.86+x	(21$^+$)	307.9 *2*	18.5 *19*	3068.94+x	(20$^+$)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{170}Ta) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]
3376.86+x	(21$^+$)	628.9 *2*	100 *5*	2747.94+x	(19$^+$)	Q
3394.99+x	(21$^+$)	612.2 *2*	100	2782.82+x	(19$^+$)	Q
3416.5+x	(19$^-$)	346.9 *2*	100 *11*	3069.6+x	(18$^-$)	
		679.4 *5*	17.1 *17*	2737.1+x	(17$^-$)	
3420.0+x	(21$^+$)	672.0 *2*	100	2747.94+x	(19$^+$)	
3449.5+x	(21$^+$)	639.3 *2*	100	2810.2+x	(19$^+$)	Q
3457.4+x	(22$^-$)	315.0 *2*	53.5 *23*	3142.4+x	(21$^-$)	D
		655.4 *2*	100 *5*	2801.8+x	(20$^-$)	Q
3526.0+x	(22$^-$)	704.3 *2*	100	2821.7+x	(20$^-$)	Q
3559.8+x	(22$^+$)	340.4 *2*	67 *3*	3219.4+x	(21$^+$)	D
		635.2 *2*	100 *5*	2924.6+x	(20$^+$)	Q
3682.83+x	(22$^+$)	306.0 *2*	72 *7*	3376.86+x	(21$^+$)	
		529.3 *5*	20.7 *21*	3153.6+x?	(20$^+$)	
		614.0 *2*	100 *10*	3068.94+x	(20$^+$)	
3742.9+x	(22$^+$)	589.3[a] *2*	41 *4*	3153.6+x?	(20$^+$)	
		674.0 *2*	100 *10*	3068.94+x	(20$^+$)	
3763.4+x	(20$^-$)	346.9 *2*	100 *10*	3416.5+x	(19$^-$)	
		693.8 *5*	25.0 *25*	3069.6+x	(18$^-$)	
3779.1+x	(22$^+$)	656.2 *2*	100	3122.9+x	(20$^+$)	Q
3799.0+x	(23$^-$)	273.0 *2*	12.5 *13*	3526.0+x	(22$^-$)	
		679.5 *2*	100 *5*	3119.5+x	(21$^-$)	Q
3803.8+x	(22$^+$)	622.7 *2*	100	3181.1+x	(20$^+$)	Q
3805.9+x	(23$^-$)	348.5 *2*	91 *5*	3457.4+x	(22$^-$)	D
		663.5 *2*	100 *5*	3142.4+x	(21$^-$)	
3824.4+x	(22$^-$)	655.6 *2*	100	3168.8+x	(20$^-$)	Q
3834.2+x		690.0 *2*	100	3144.2+x		
3865.0+x	(23$^+$)	305.0 *2*	30 *3*	3559.8+x	(22$^+$)	D
		645.6 *2*	100 *5*	3219.4+x	(21$^+$)	Q
3879.3+x		698.2 *2*	100	3181.1+x	(20$^+$)	
3996.62+x	(23$^+$)	313.9 *2*	50 *5*	3682.83+x	(22$^+$)	
		601.6 *5*	25.0 *25*	3394.99+x	(21$^+$)	
		619.7 *2*	100 *10*	3376.86+x	(21$^+$)	
		777.1 *2*	75 *8*	3219.4+x	(21$^+$)	
4056.0+x	(23$^+$)	661.0 *2*	100 *10*	3394.99+x	(21$^+$)	Q
		679.1 *2*	62 *7*	3376.86+x	(21$^+$)	
4072.5+x	(23$^+$)	652.5 *2*	33 *3*	3420.0+x	(21$^+$)	
		677.5 *2*	100 *10*	3394.99+x	(21$^+$)	
		695.6 *5*	50 *5*	3376.86+x	(21$^+$)	
4110.3+x	(21$^-$)	346.9 *2*	100 *10*	3763.4+x	(20$^-$)	
		693.8 *5*	33 *3*	3416.5+x	(19$^-$)	
4118.9+x	(23$^+$)	669.4 *2*	100	3449.5+x	(21$^+$)	Q
4129.4+x	(24$^-$)	323.6 *2*	56 *6*	3805.9+x	(23$^-$)	D+Q
		671.9 *2*	100 *4*	3457.4+x	(22$^-$)	Q
4231.0+x	(24$^+$)	366.1 *2*	67 *7*	3865.0+x	(23$^+$)	D
		671.3 *2*	100 *5*	3559.8+x	(22$^+$)	Q
4280.8+x	(24$^-$)	754.8 *2*	100	3526.0+x	(22$^-$)	Q
4324.6+x	(24$^+$)	328.0 *2*	75 *8*	3996.62+x	(23$^+$)	
		641.8 *2*	100 *10*	3682.83+x	(22$^+$)	
4434.7+x	(24$^+$)	691.8 *2*	100	3742.9+x	(22$^+$)	
4469.7+x	(24$^+$)	666.0 *2*	100 *10*	3803.8+x	(22$^+$)	Q
		690.5 *2*	100 *10*	3779.1+x	(22$^+$)	
4475.9+x	(22$^-$)	365.6 *2*	100 *10*	4110.3+x	(21$^-$)	
		712.5 *5*	33 *3*	3763.4+x	(20$^-$)	
4493.6+x	(24$^+$)	689.6 *5*	13.2 *13*	3803.8+x	(22$^+$)	
		714.5 *2*	100 *10*	3779.1+x	(22$^+$)	Q
4495.3+x	(25$^-$)	366.1 *2*	100 *5*	4129.4+x	(24$^-$)	D

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Adopted Levels, Gammas (continued)

γ(^{170}Ta) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]
4495.3+x	(25$^-$)	689.4 *2*	69 *7*	3805.9+x	(23$^-$)	
4510.5+x	(24$^-$)	686.1 *2*	100	3824.4+x	(22$^-$)	Q
4520.9+x	(25$^-$)	240.1 *5*	3.7 *4*	4280.8+x	(24$^-$)	
		721.9 *2*	100 *5*	3799.0+x	(23$^-$)	
4525.9+x	(24$^-$)	701.5 *2*	100	3824.4+x	(22$^-$)	
4559.7+x	(25$^+$)	328.7 *2*	33 *4*	4231.0+x	(24$^+$)	
		694.6 *2*	100 *5*	3865.0+x	(23$^+$)	Q
4564.0+x		684.7 *4*	100	3879.3+x		
4578.9+x		744.7 *2*	100	3834.2+x		
4673.9+x	(25$^+$)	349.3 *2*	41 *4*	4324.6+x	(24$^+$)	
		677.2 *2*	100 *10*	3996.62+x	(23$^+$)	
4777.5+x	(25$^+$)	721.5 *2*	100	4056.0+x	(23$^+$)	Q
4794.2+x	(25$^+$)	721.7 *2*	100	4072.5+x	(23$^+$)	
4835.1+x	(25$^+$)	716.2 *5*	100	4118.9+x	(23$^+$)	
4843.0+x	(26$^-$)	347.7 *2*	51 *5*	4495.3+x	(25$^-$)	
		713.6 *2*	100 *5*	4129.4+x	(24$^-$)	
4958.1+x	(26$^+$)	398.4 *2*	48 *5*	4559.7+x	(25$^+$)	
		727.1 *2*	100 *5*	4231.0+x	(24$^+$)	Q
5040.2+x	(26$^+$)	366.2 *2*	100 *10*	4673.9+x	(25$^+$)	
		715.7 *2*	100 *10*	4324.6+x	(24$^+$)	
5081.5+x	(26$^-$)	800.7 *2*	100	4280.8+x	(24$^-$)	Q
5188.8+x	(26$^+$)	754.1 *5*	100	4434.7+x	(24$^+$)	
5207.4+x	(26$^+$)	737.7 *5*	100	4469.7+x	(24$^+$)	
5229.1+x	(26$^-$)	703.2 *2*	100	4525.9+x	(24$^-$)	
5243.1+x	(27$^-$)	400.0 *2*	60 *6*	4843.0+x	(26$^-$)	
		747.8 *2*	100 *11*	4495.3+x	(25$^-$)	
5256.9+x	(26$^+$)	763.3 *2*	100	4493.6+x	(24$^+$)	Q
5267.1+x	(26$^-$)	756.6 *5*	100	4510.5+x	(24$^-$)	
5287.5+x	(27$^-$)	766.6 *2*	100	4520.9+x	(25$^-$)	
5314.1+x		750.1 *5*	100	4564.0+x		
5318.2+x	(27$^+$)	360.0 *2*	32 *3*	4958.1+x	(26$^+$)	
		758.6 *2*	100 *5*	4559.7+x	(25$^+$)	Q
5389.4+x		810.5 *5*	100	4578.9+x		
5422.0+x	(27$^+$)	381.8 *2*	67 *7*	5040.2+x	(26$^+$)	
		748.1 *2*	100 *10*	4673.9+x	(25$^+$)	
5542.2+x	(27$^+$)	764.7 *2*	100	4777.5+x	(25$^+$)	
5578.2+x	(27$^+$)	784.0 *5*	100	4794.2+x	(25$^+$)	
5599.5+x	(27$^+$)	764.4 *5*	100	4835.1+x	(25$^+$)	
5620.9+x	(28$^-$)	377.7 *2*	50 *5*	5243.1+x	(27$^-$)	
		777.9 *2*	100 *11*	4843.0+x	(26$^-$)	
5747.3+x	(28$^+$)	428.9 *2*	41 *4*	5318.2+x	(27$^+$)	
		789.2 *2*	100 *9*	4958.1+x	(26$^+$)	Q
5826.2+x	(28$^+$)	404.3 *5*	55 *5*	5422.0+x	(27$^+$)	
		786.0 *2*	100 *10*	5040.2+x	(26$^+$)	
5924.6+x	(28$^-$)	843.1 *2*	100	5081.5+x	(26$^-$)	(Q)
5973.0+x	(28$^-$)	743.9 *5*	100	5229.1+x	(26$^-$)	
5984.3+x	(28$^+$)	795.4 *5*	100	5188.8+x	(26$^+$)	
6026.4+x	(28$^+$)	819.0 *5*	100	5207.4+x	(26$^+$)	
6027.3+x	(28$^+$)	838.4 *5*	100	5188.8+x	(26$^+$)	
6052.4+x		795.5 *5*	100	5256.9+x	(26$^+$)	
6064.9+x	(29$^-$)	444.0 *2*	53 *5*	5620.9+x	(28$^-$)	
		821.8 *2*	100 *9*	5243.1+x	(27$^-$)	
6068.3+x	(28$^-$)	801.2 *5*	100	5267.1+x	(26$^-$)	
6080.7+x	(28$^+$)	823.8 *2*	100	5256.9+x	(26$^+$)	
6105.5+x	(29$^-$)	818.1 *2*	100	5287.5+x	(27$^-$)	
6142.9+x	(29$^+$)	395.4 *5*	18.0 *18*	5747.3+x	(28$^+$)	

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Adopted Levels, Gammas (continued)

$\gamma(^{170}Ta)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
6142.9+x	(29$^+$)	824.7 *2*	100 *10*	5318.2+x	(27$^+$)
6233.1+x	(29$^+$)	811.1 *2*	100	5422.0+x	(27$^+$)
6320.4+x	(29$^+$)	778.2 *2*	100	5542.2+x	(27$^+$)
6405.6+x	(29$^+$)	806.1 *5*	100	5599.5+x	(27$^+$)
6417.5+x		875.3 *5*	100	5542.2+x	(27$^+$)
6430.6+x	(29$^+$)	852.4 *5*	100	5578.2+x	(27$^+$)
6467.9+x	(30$^-$)	847.0 *2*	100	5620.9+x	(28$^-$)
6595.5+x	(30$^+$)	452.8 *5*	21.4 *21*	6142.9+x	(29$^+$)
		848.2 *2*	100 *10*	5747.3+x	(28$^+$)
6681.1+x	(30$^+$)	854.9 *5*	100	5826.2+x	(28$^+$)
6767.3+x	(30$^-$)	794.3 *5*	100	5973.0+x	(28$^-$)
6814.0+x	(30$^+$)	829.7 *5*	100	5984.3+x	(28$^+$)
6814.9+x	(30$^-$)	890.3 *2*	100	5924.6+x	(28$^-$)
6863.7+x		811.3 *5*	100	6052.4+x	
6906.6+x	(30$^-$)	838.3 *5*	100	6068.3+x	(28$^-$)
6920.0+x	(30$^+$)	893.6 *5*	100	6026.4+x	(28$^+$)
6921.1+x	(30$^+$)	893.8 *5*	100	6027.3+x	(28$^+$)
6949.5+x	(30$^+$)	868.8 *5*	100	6080.7+x	(28$^+$)
6960.4+x	(31$^-$)	895.5 *2*	100	6064.9+x	(29$^-$)
6982.1+x	(31$^-$)	876.6 *2*	100	6105.5+x	(29$^-$)
7030.1+x	(31$^+$)	434.6 *2*	32 *3*	6595.5+x	(30$^+$)
		887.2 *2*	100 *10*	6142.9+x	(29$^+$)
7089.8+x	(31$^+$)	856.7 *2*	100	6233.1+x	(29$^+$)
7158.0+x	(31$^+$)	837.6 *5*	100	6320.4+x	(29$^+$)
7258.5+x	(31$^+$)	852.9 *5*	100	6405.6+x	(29$^+$)
7311.3+x		893.8 *5*	100	6417.5+x	
7331.9+x	(31$^+$)	901.3 *5*	100	6430.6+x	(29$^+$)
7380.4+x	(32$^-$)	912.5 *5*	100	6467.9+x	(30$^-$)
7499.6+x	(32$^+$)	469.8 *5*	16.7 *17*	7030.1+x	(31$^+$)
		904.0 *2*	100 *10*	6595.5+x	(30$^+$)
7602.1+x	(32$^+$)	921.0 *5*	100	6681.1+x	(30$^+$)
7622.2+x	(32$^-$)	854.9 *5*	100	6767.3+x	(30$^-$)
7687.9+x	(32$^+$)	873.9 *5*	100	6814.0+x	(30$^+$)
7756.3+x	(32$^-$)	941.4 *5*	100	6814.9+x	(30$^-$)
7757.2+x		893.5 *5*	100	6863.7+x	
7796.1+x	(32$^-$)	889.5 *5*	100	6906.6+x	(30$^-$)
7858.4+x	(32$^+$)	937.3 *5*	100	6921.1+x	(30$^+$)
7870.6+x	(32$^+$)	921.1 *5*	100	6949.5+x	(30$^+$)
7908.2+x	(33$^-$)	926.1 *5*	100 *10*	6982.1+x	(31$^-$)
		947.7 *5*	67 *7*	6960.4+x	(31$^-$)
7938.5+x	(33$^-$)	956.4 *5*	50 *5*	6982.1+x	(31$^-$)
		978.0 *5*	100 *10*	6960.4+x	(31$^-$)
7959.3+x	(33$^+$)	869.5 *5*	13.6 *14*	7089.8+x	(31$^+$)
		929.2 *2*	100 *10*	7030.1+x	(31$^+$)
7994.7+x	(33$^+$)	904.9 *5*	100	7089.8+x	(31$^+$)
8091.5+x	(33$^+$)	933.5 *5*	100	7158.0+x	(31$^+$)
8150.4+x	(33$^+$)	891.9 *5*	100	7258.5+x	(31$^+$)
8260.7+x		949.4 *5*	100	7311.3+x	
8280.2+x	(33$^+$)	948.3 *5*	100	7331.9+x	(31$^+$)
8351.5+x	(34$^-$)	971.1 *5*	100	7380.4+x	(32$^-$)
8456.7+x	(34$^+$)	957.1 *2*	100	7499.6+x	(32$^+$)
8537.5+x	(34$^-$)	915.2 *5*	100	7622.2+x	(32$^-$)
8583.6+x	(34$^+$)	981.5 *5*	100	7602.1+x	(32$^+$)
8623.2+x	(34$^+$)	935.3 *5*	100	7687.9+x	(32$^+$)
8753.2+x	(34$^-$)	996.9 *5*	100	7756.3+x	(32$^-$)
8807.6+x	(34$^+$)	949.2 *5*	100	7858.4+x	(32$^+$)

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Adopted Levels, Gammas (continued)

$\gamma(^{170}Ta)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
8844.4+x	(34^+)	973.8 *5*	100	7870.6+x	(32^+)
8901.7+x	(35^-)	993.5 *5*	100	7908.2+x	(33^-)
8904.2+x	(35^+)	944.9 *2*	100	7959.3+x	(33^+)
8976.2+x	(35^-)	1037.7 *5*	100	7938.5+x	(33^-)
8996.3+x	(35^+)	1001.6 *5*	100	7994.7+x	(33^+)
9070.8+x	(35^+)	920.4 *5*	100	8150.4+x	(33^+)
9097.2+x	(35^+)	1005.7 *5*	100	8091.5+x	(33^+)
9258.5+x		997.8 *5*	100	8260.7+x	
9370.9+x	(36^-)	1019.4 *5*	100	8351.5+x	(34^-)
9459.4+x	(36^+)	1002.7 *2*	100	8456.7+x	(34^+)
9513.1+x	(36^-)	975.6 *5*	100	8537.5+x	(34^-)
9587.7+x	(36^+)	1004.1 *5*	100	8583.6+x	(34^+)
9810.9+x	(36^-)	1057.7 *5*	100	8753.2+x	(34^-)
9864.8+x	(36^+)	1020.4 *5*	100	8844.4+x	(34^+)
9906.9+x	(37^+)	1002.7 *2*	100	8904.2+x	(35^+)
9949.6+x	(37^-)	1047.9 *5*	100	8901.7+x	(35^-)
10084.3+x	(37^-)	1108.1 *5*	100	8976.2+x	(35^-)
10164.1+x	(37^+)	1066.9 *5*	100	9097.2+x	(35^+)
10430.5+x	(38^-)	1059.6 *5*	100	9370.9+x	(36^-)
10500.9+x	(38^+)	1041.5 *5*	100	9459.4+x	(36^+)
10549.8+x	(38^-)	1036.7 *5*	100	9513.1+x	(36^-)
10882.6+x	(38^-)	1071.7 *5*	100	9810.9+x	(36^-)
10920.3+x	(38^+)	1055.5 *5*	100	9864.8+x	(36^+)
10971.3+x	(39^+)	1064.4 *5*	100	9906.9+x	(37^+)
11047.1+x	(39^-)	1097.5 *5*	100	9949.6+x	(37^-)
11235.1+x	(39^-)	1150.8 *5*	100	10084.3+x	(37^-)
11277.5+x	(39^+)	1113.4 *5*	100	10164.1+x	(37^+)
11519.7+x	(40^-)	1089.2 *5*	100	10430.5+x	(38^-)
11584.3+x	(40^+)	1083.4 *5*	100	10500.9+x	(38^+)
11648.5+x	(40^-)	1098.7 *5*	100	10549.8+x	(38^-)
12092.2+x	(41^+)	1120.9 *5*	100	10971.3+x	(39^+)
12193.6+x	(41^-)	1146.5 *5*	100	11047.1+x	(39^-)
12446.9+x	(41^+)	1169.4 *5*	100	11277.5+x	(39^+)
12639.7+x	(42^-)	1120.0 *5*	100	11519.7+x	(40^-)
12712.9+x	(42^+)	1128.6 *5*	100	11584.3+x	(40^+)
13260.9+x	(43^+)	1168.7 *5*	100	12092.2+x	(41^+)
13361.3+x?	(43^-)	1167.7[a] *5*	100	12193.6+x	(41^-)
13793.1+x	(44^-)	1153.4 *5*	100	12639.7+x	(42^-)
13889.2+x	(44^+)	1176.3 *5*	100	12712.9+x	(42^+)
14458.2+x	(45^+)	1197.3 *5*	100	13260.9+x	(43^+)
14977.2+x	(46^-)	1184.1 *5*	100	13793.1+x	(44^-)
15106.1+x?	(46^+)	1216.9[a] *5*	100	13889.2+x	(44^+)
15688.9+x	(47^+)	1230.7 *5*	100	14458.2+x	(45^+)
16196.2+x?	(48^-)	1219.0[a] *5*	100	14977.2+x	(46^-)
16955.9+x?	(49^+)	1267.0[a] *5*	100	15688.9+x	(47^+)

† From $^{124}Sn(^{51}V,5n\gamma)$, except As noted.

‡ From $(^{51}V,5n\gamma)$; based on stretched L=1 or 2 transition (from unenumerated $\gamma(\theta)$ data) and on assumed $\Delta\pi$=no for intraband transitions.

From $^{159}Tb(^{16}O,5n\gamma)$.

@ From $(^{16}O,5n\gamma)$; uncertainties range from 5% to 30%. See source dataset for γ branching (uncertainties unstated) measured in summed coincidence spectrum gated by transitions above the level of interest; some of these differ significantly from branching deduced from Iγ reported in this reaction.

& 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.

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

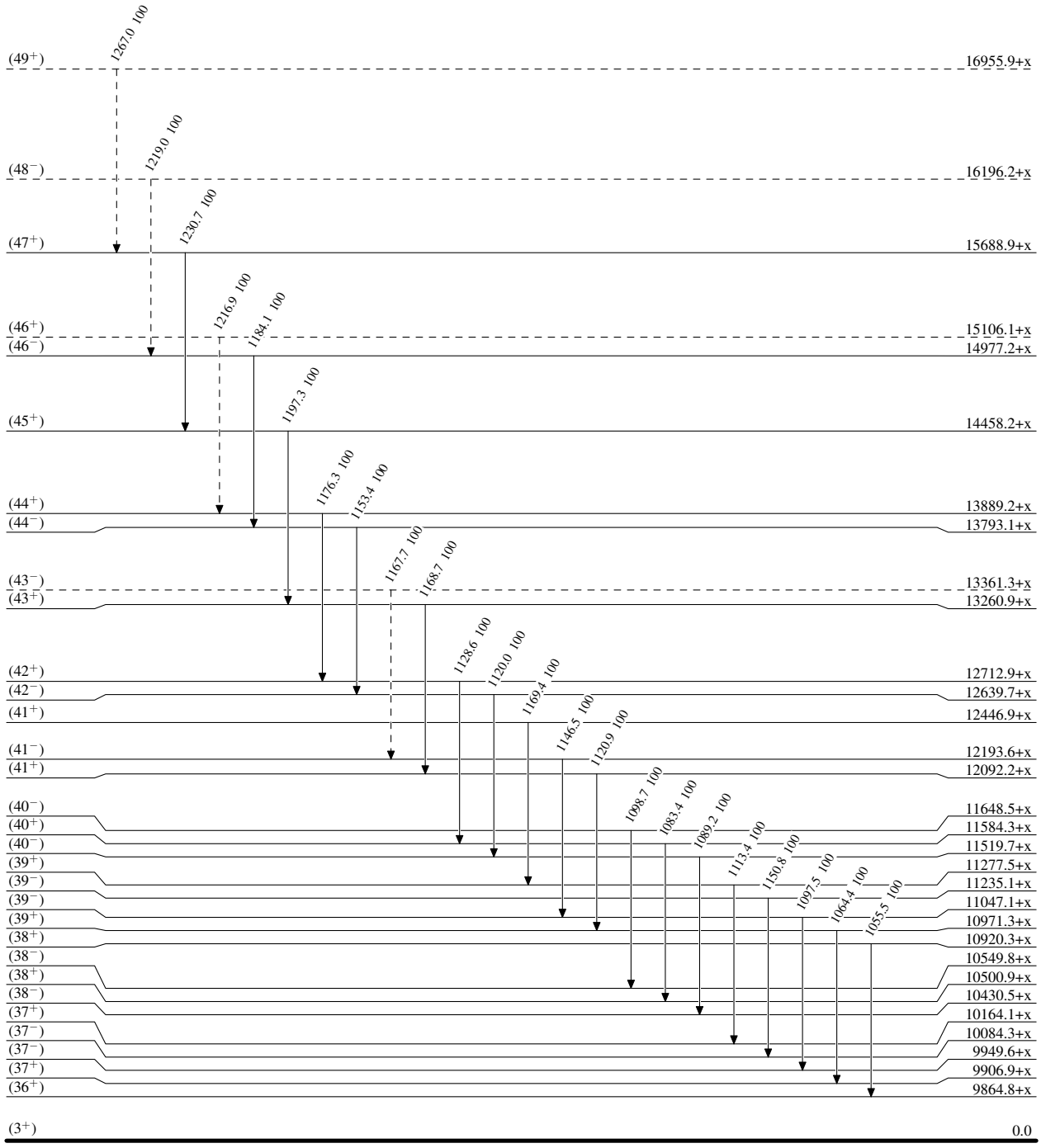
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

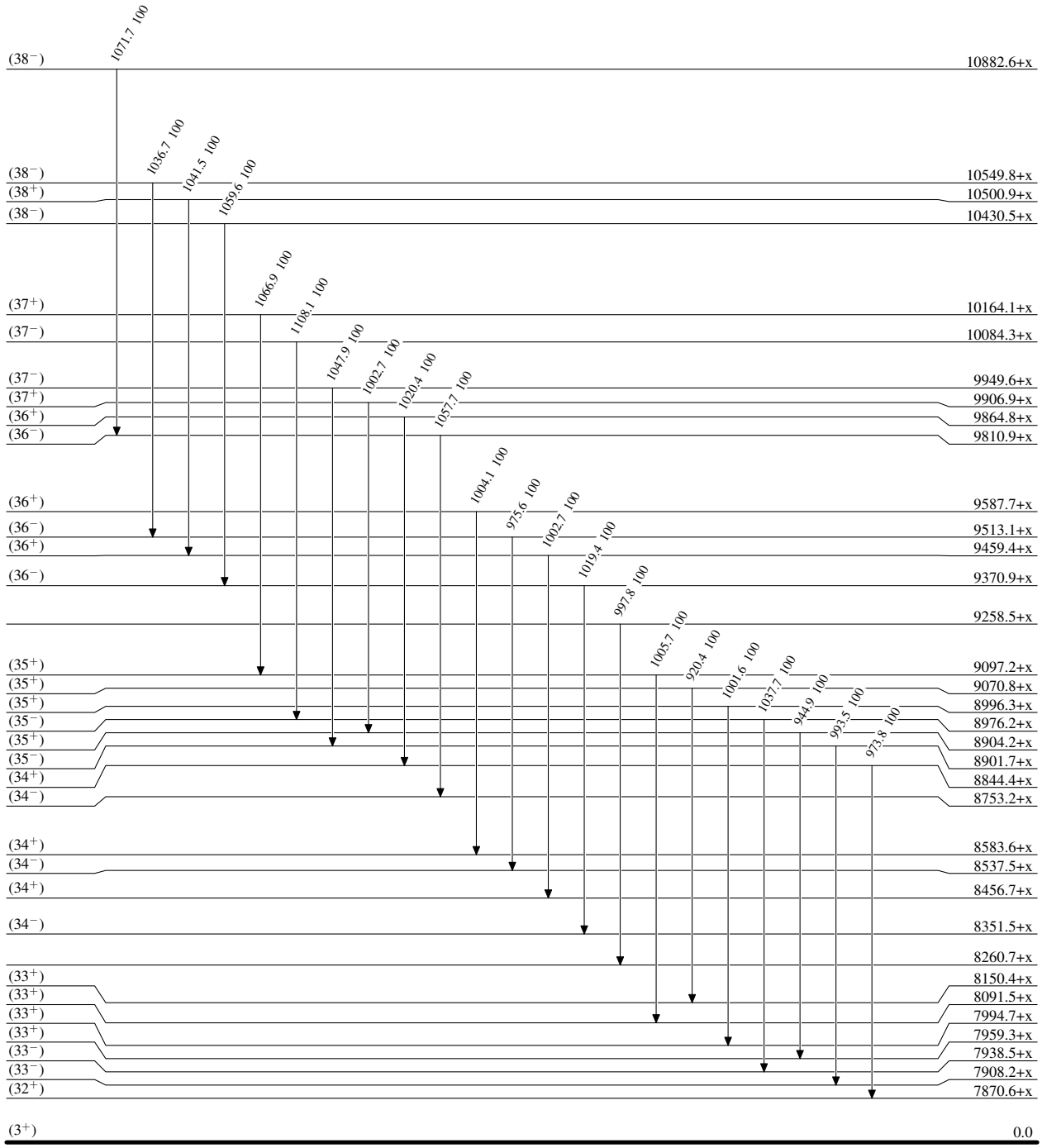


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

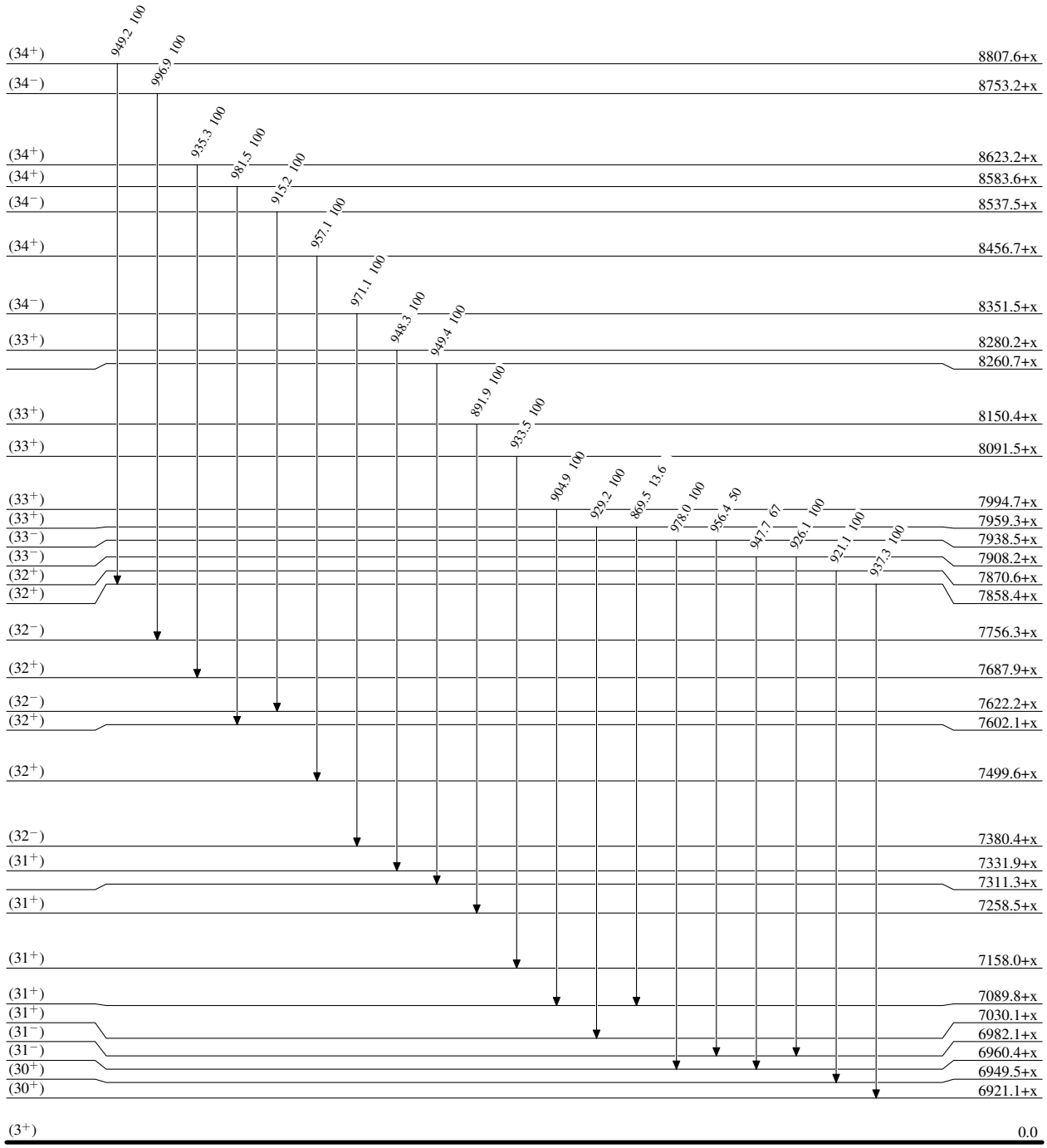


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

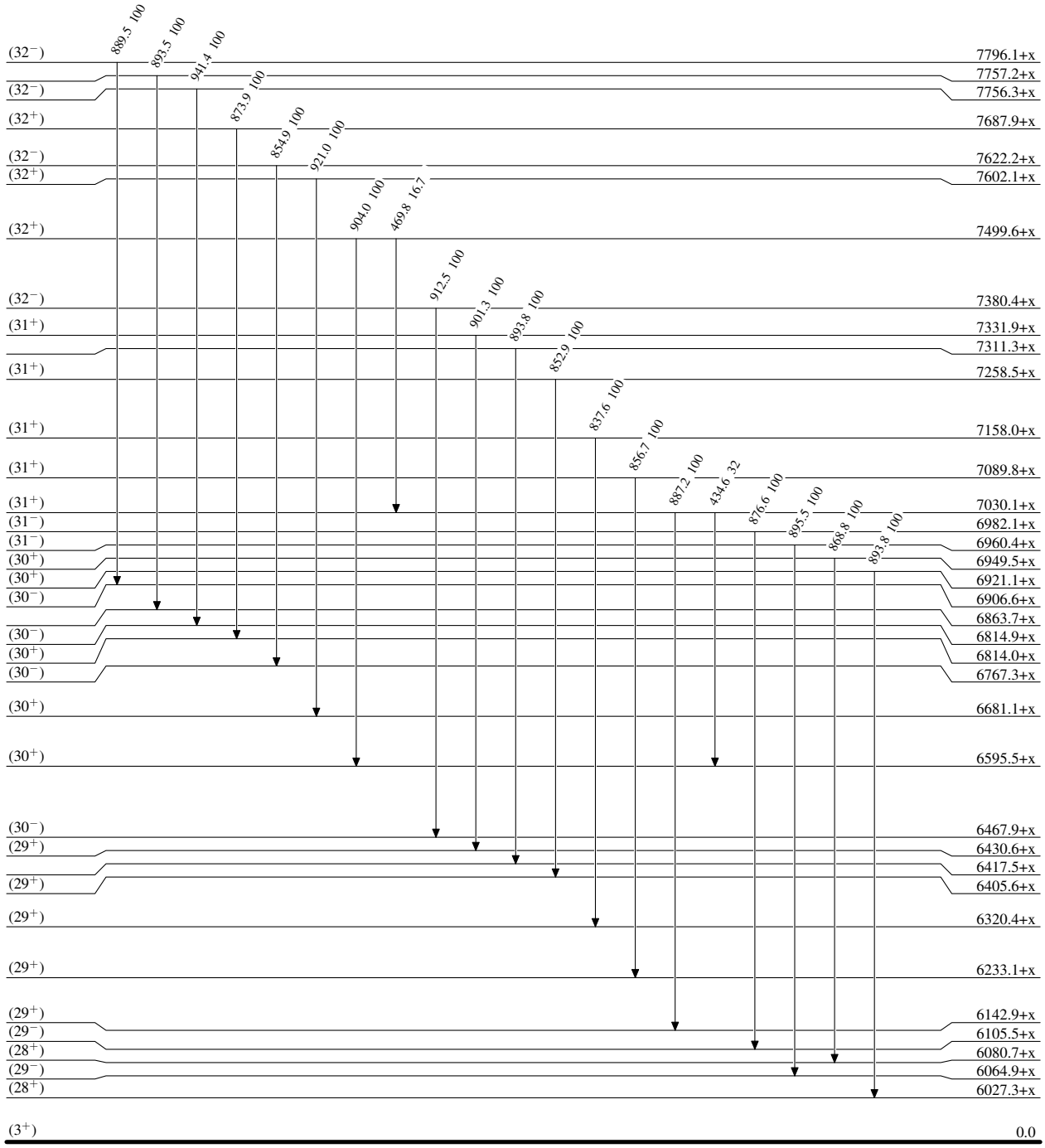


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

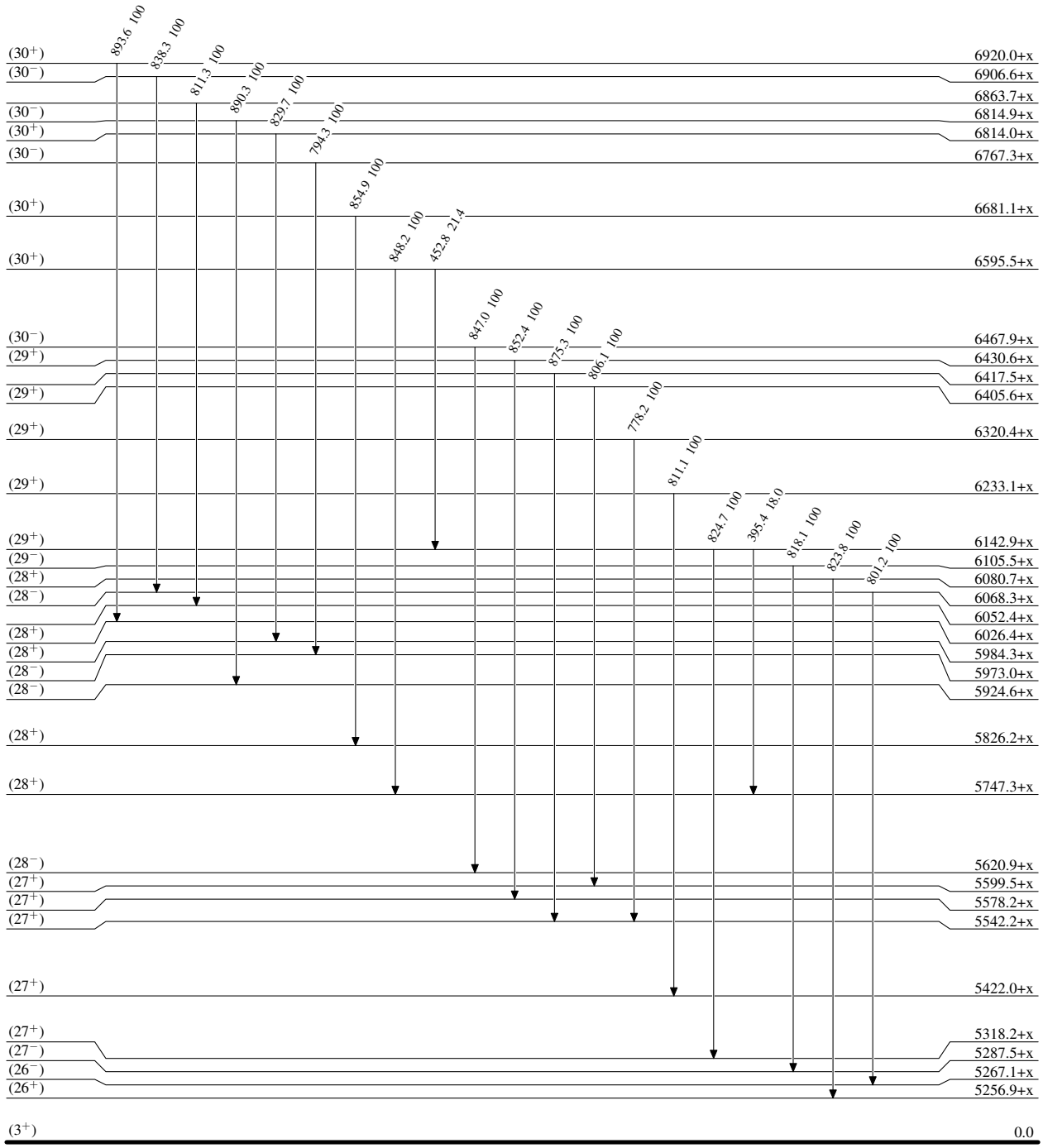


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

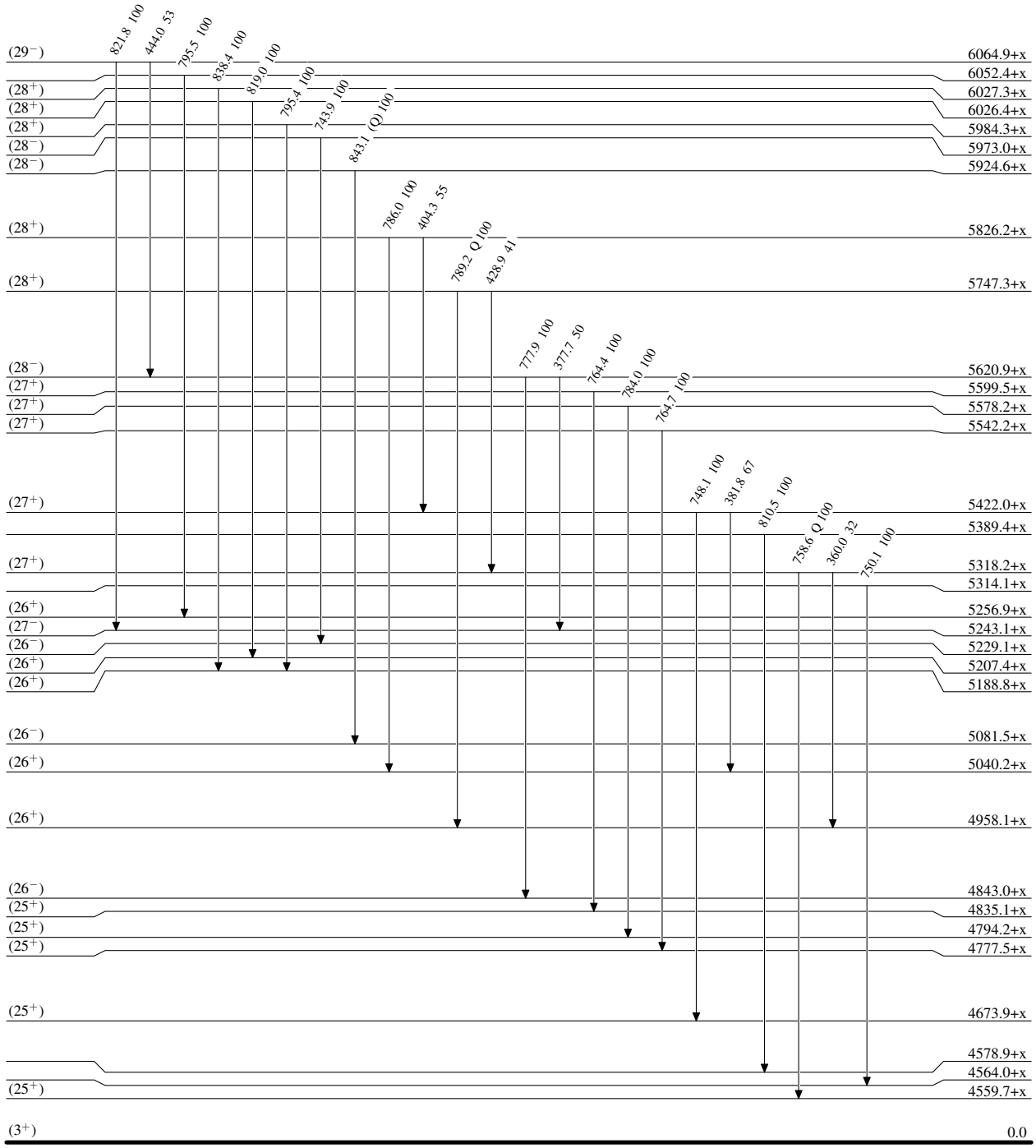


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

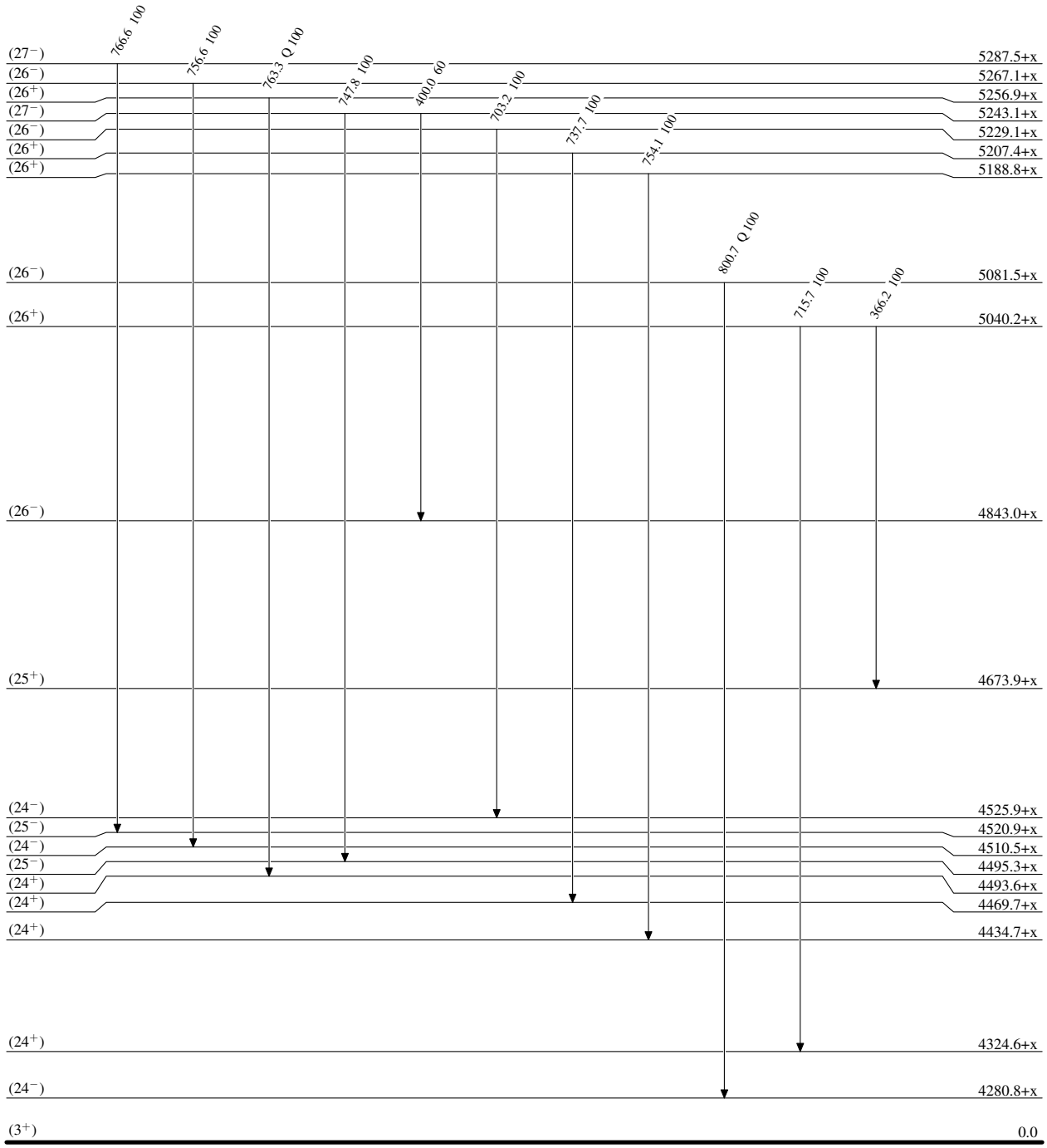


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

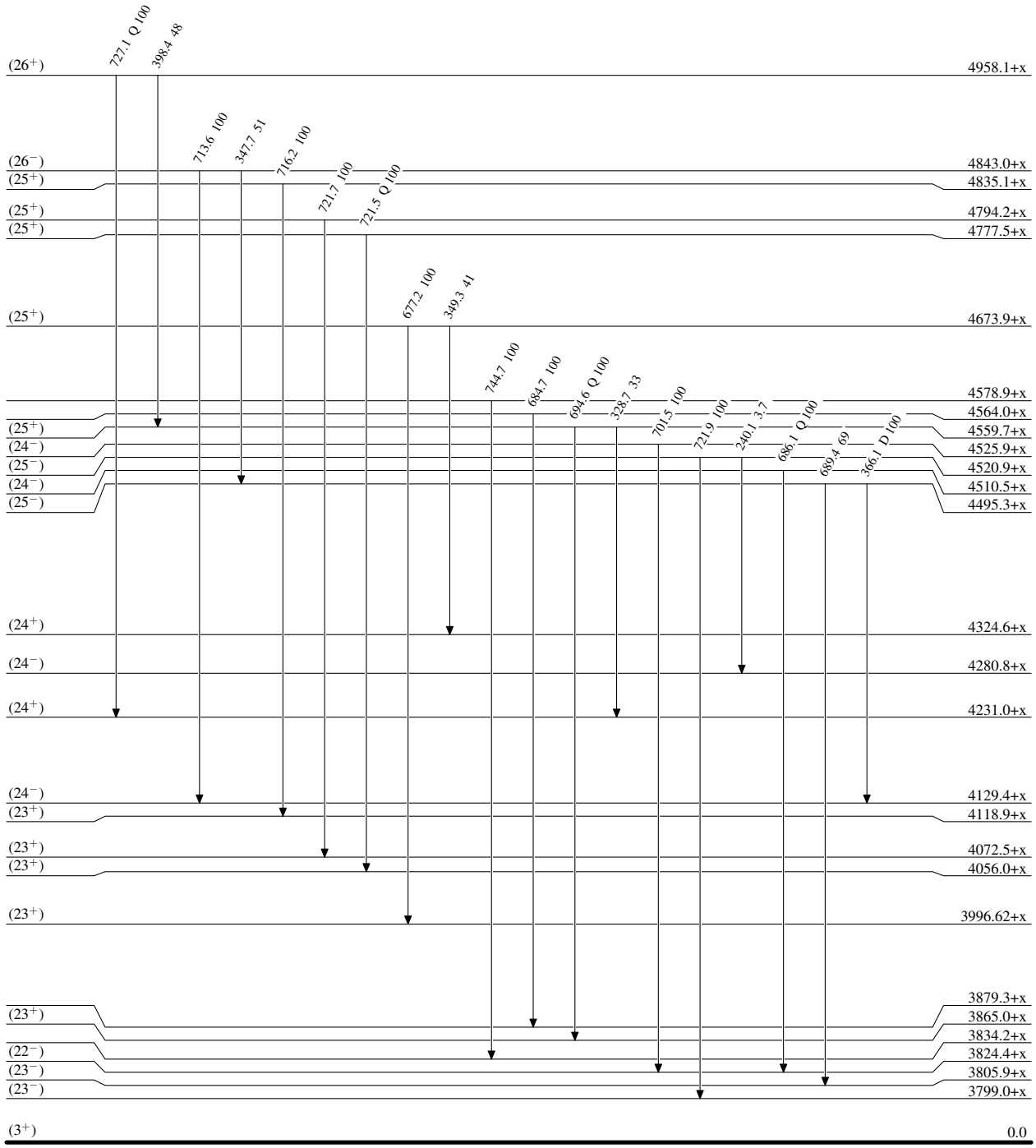


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

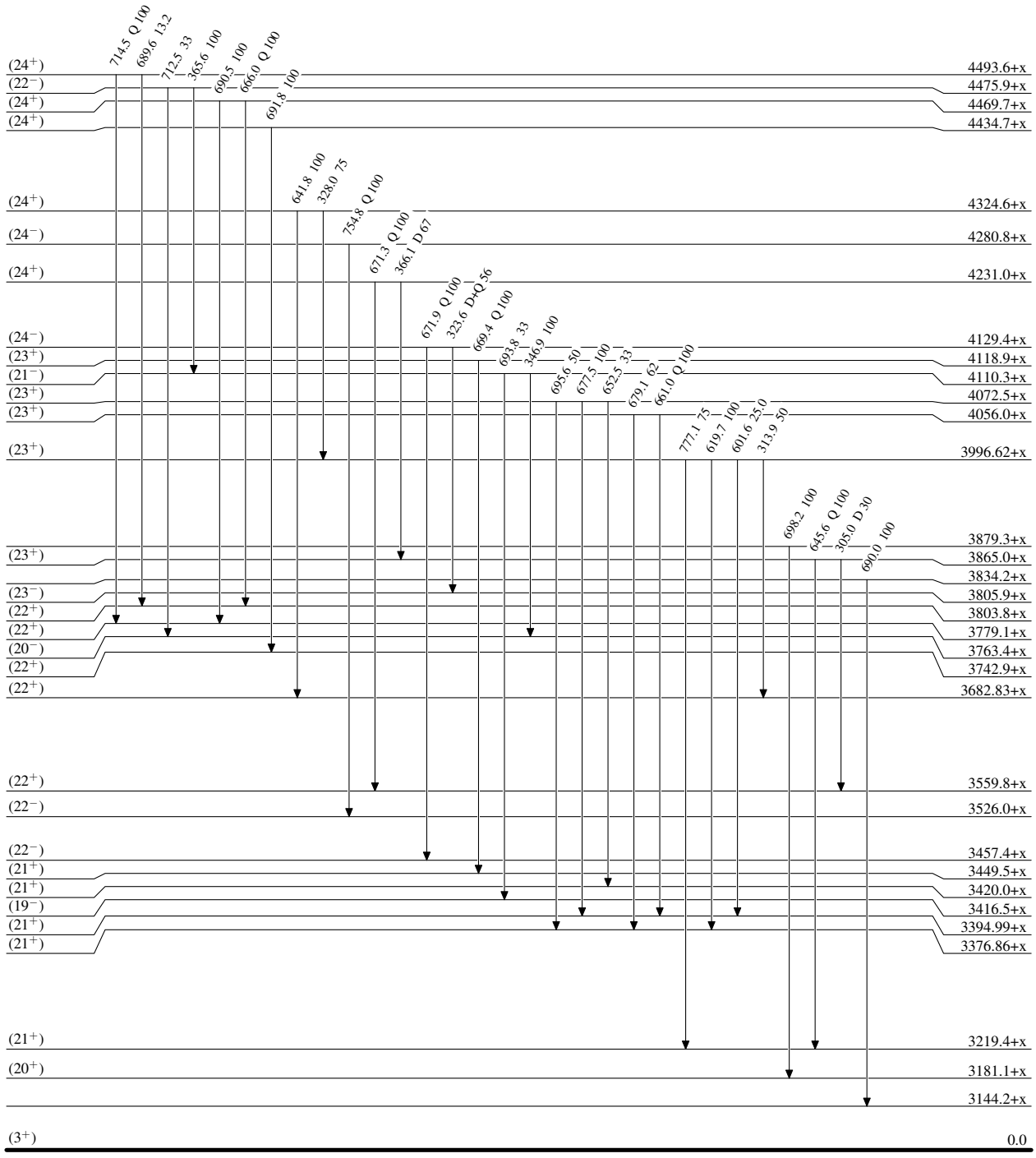


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{170}_{73}Ta_{97}$

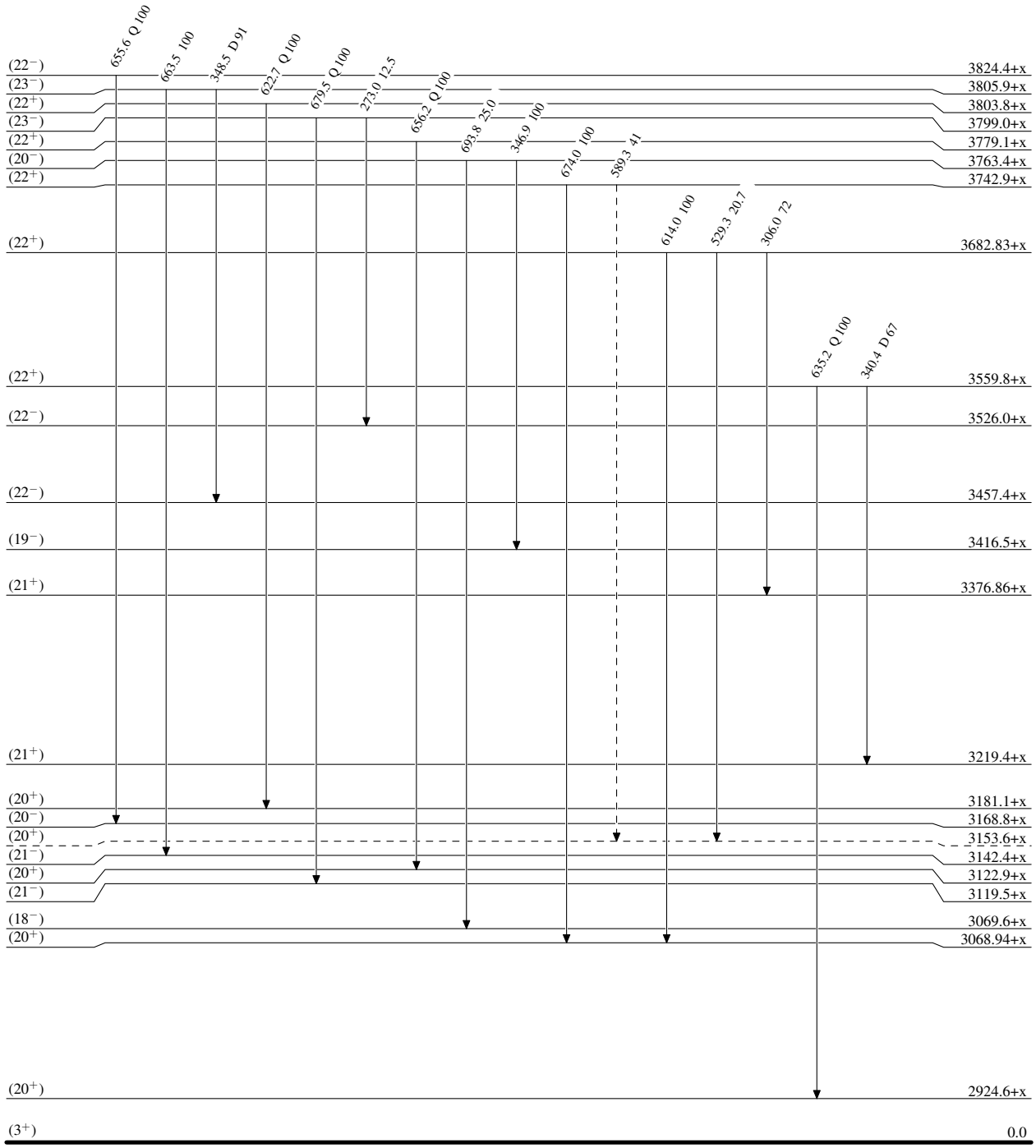
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{170}_{73}Ta_{97}$

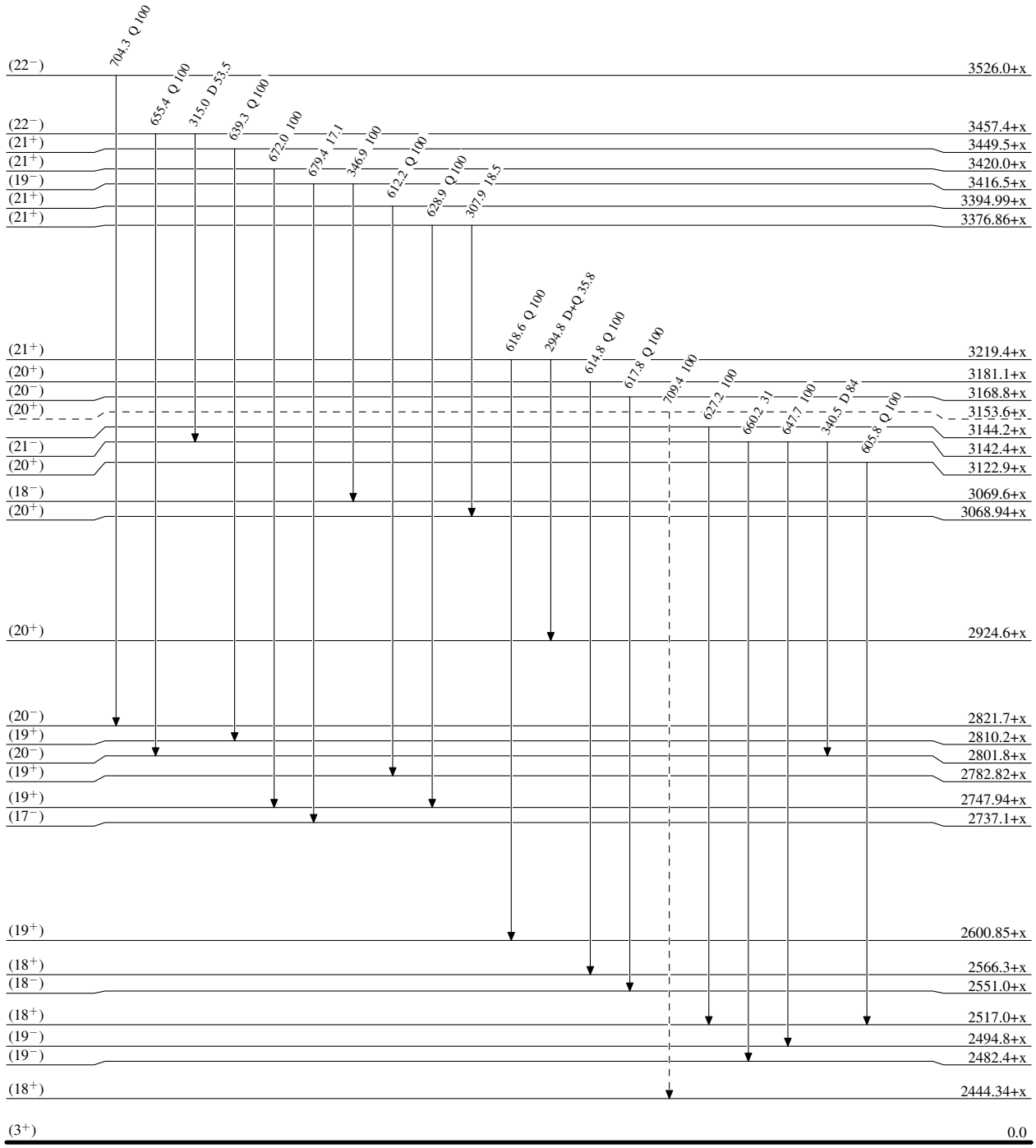
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

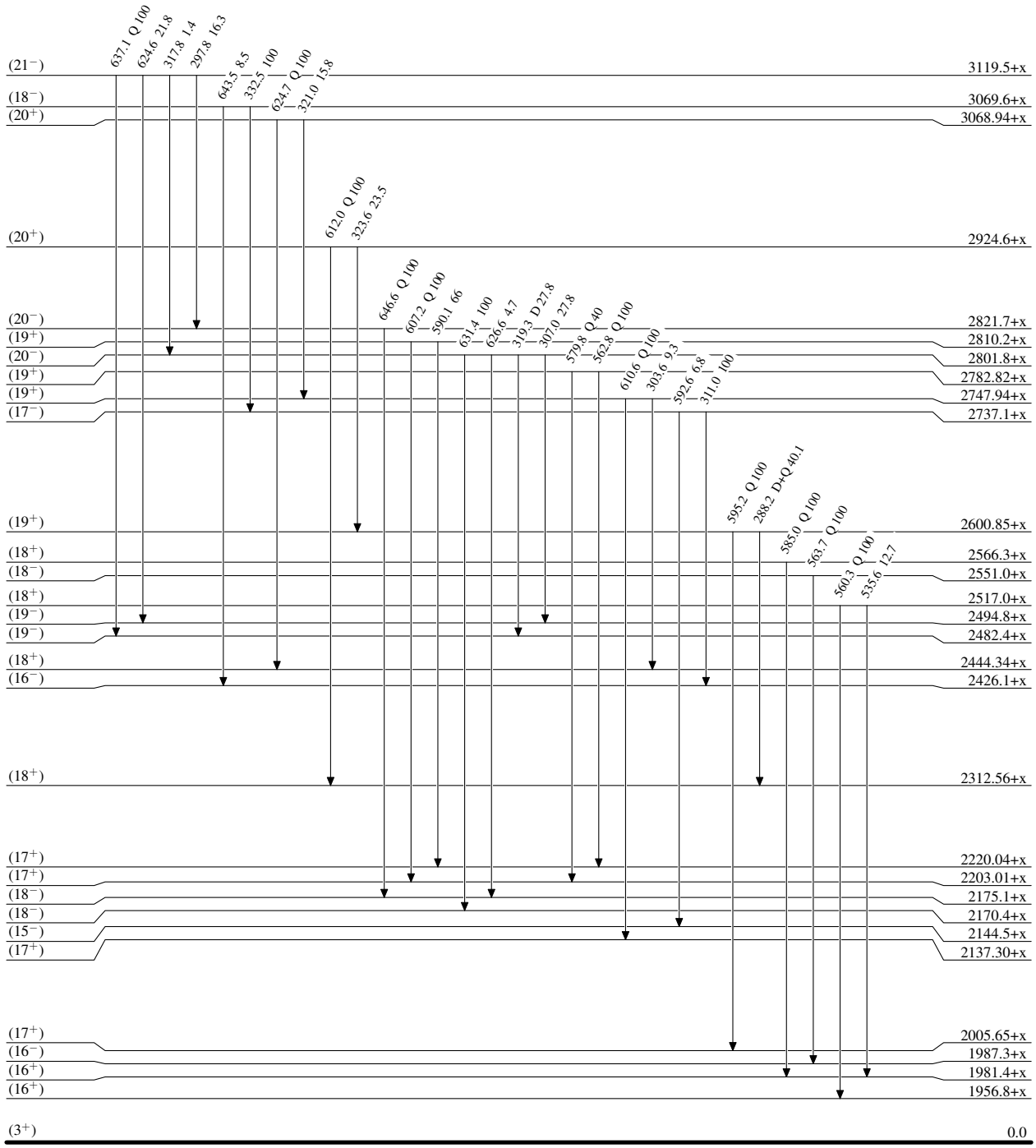


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{170}_{73}Ta_{97}$

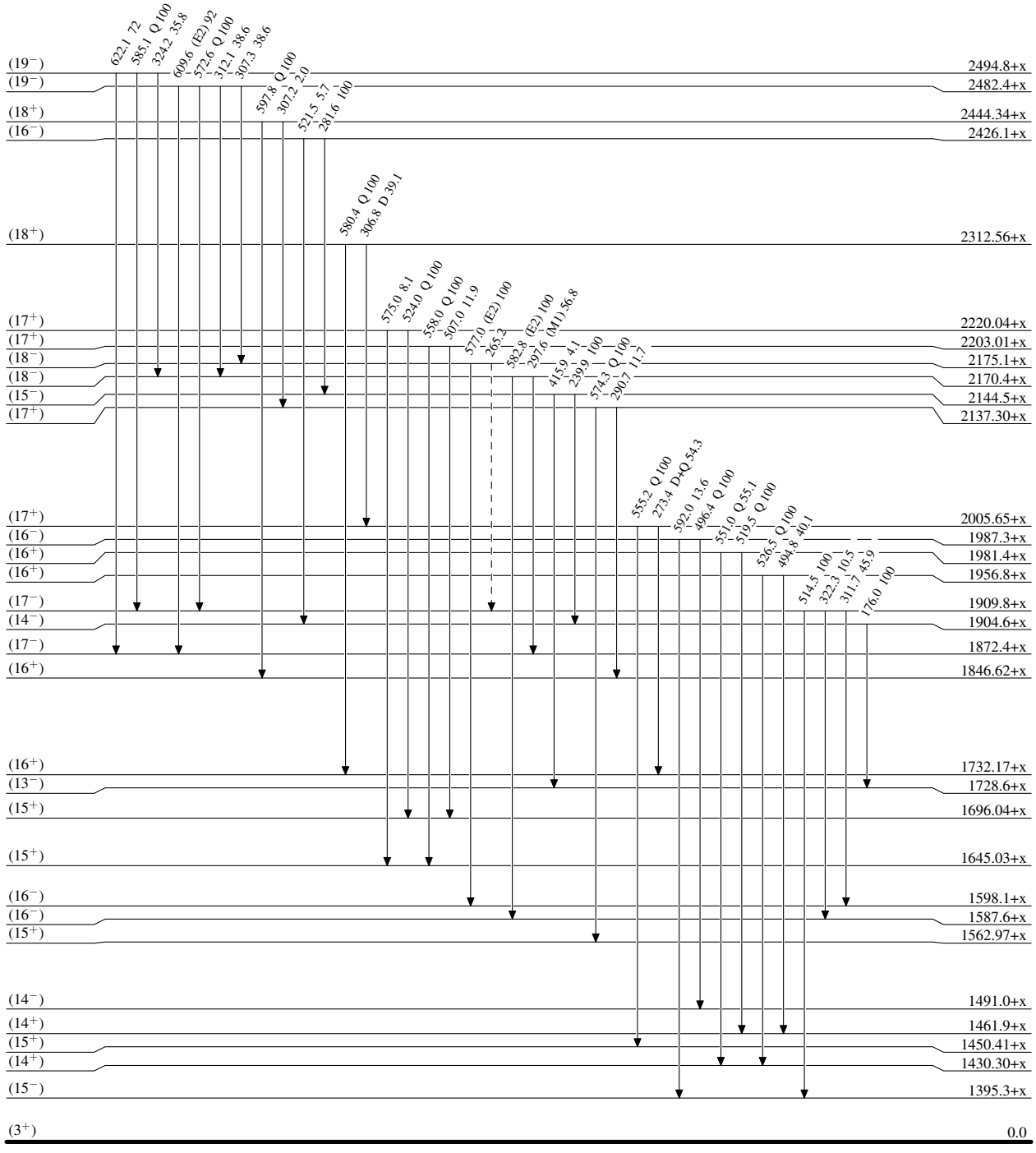
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{170}_{73}Ta_{97}$

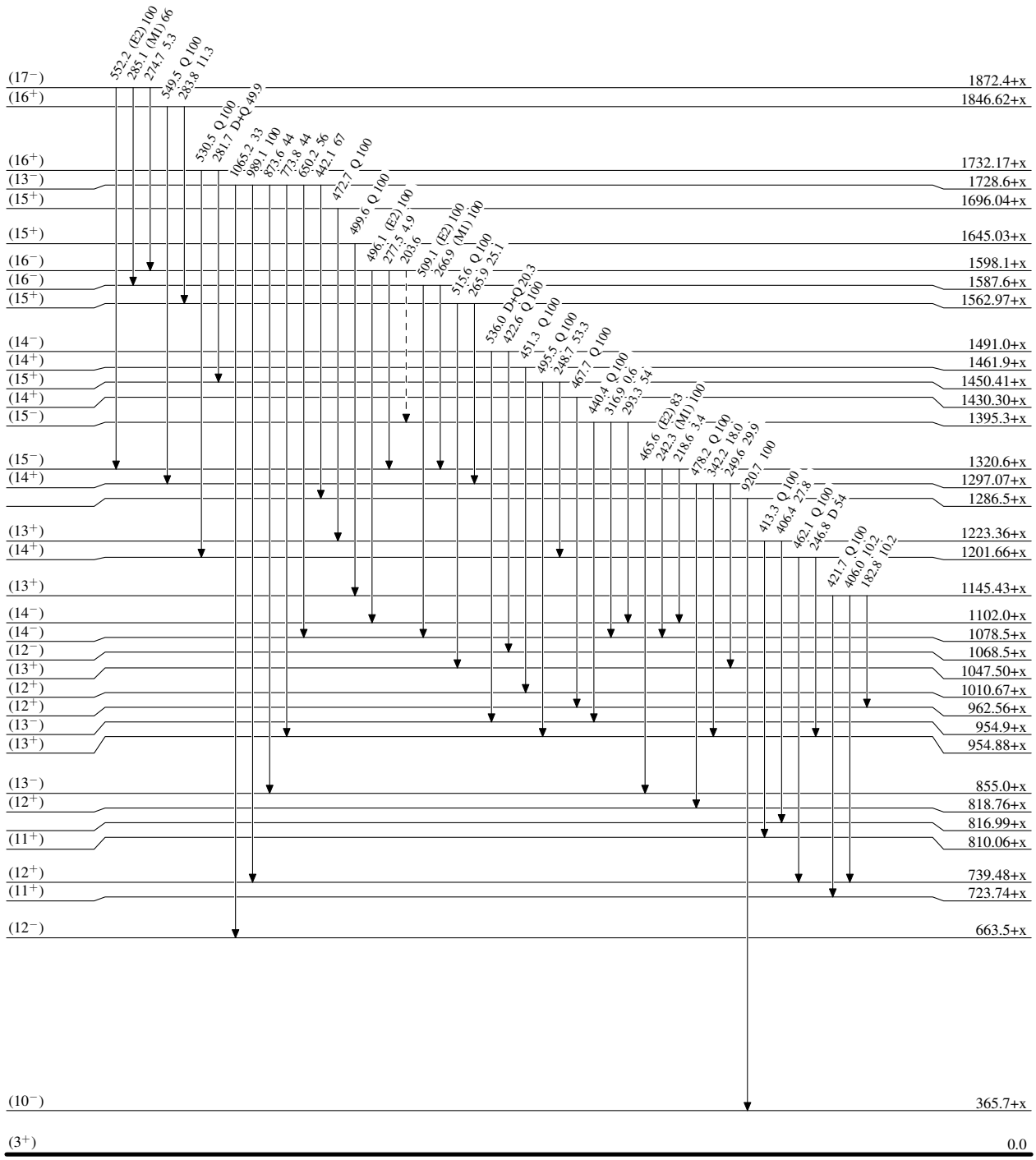
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

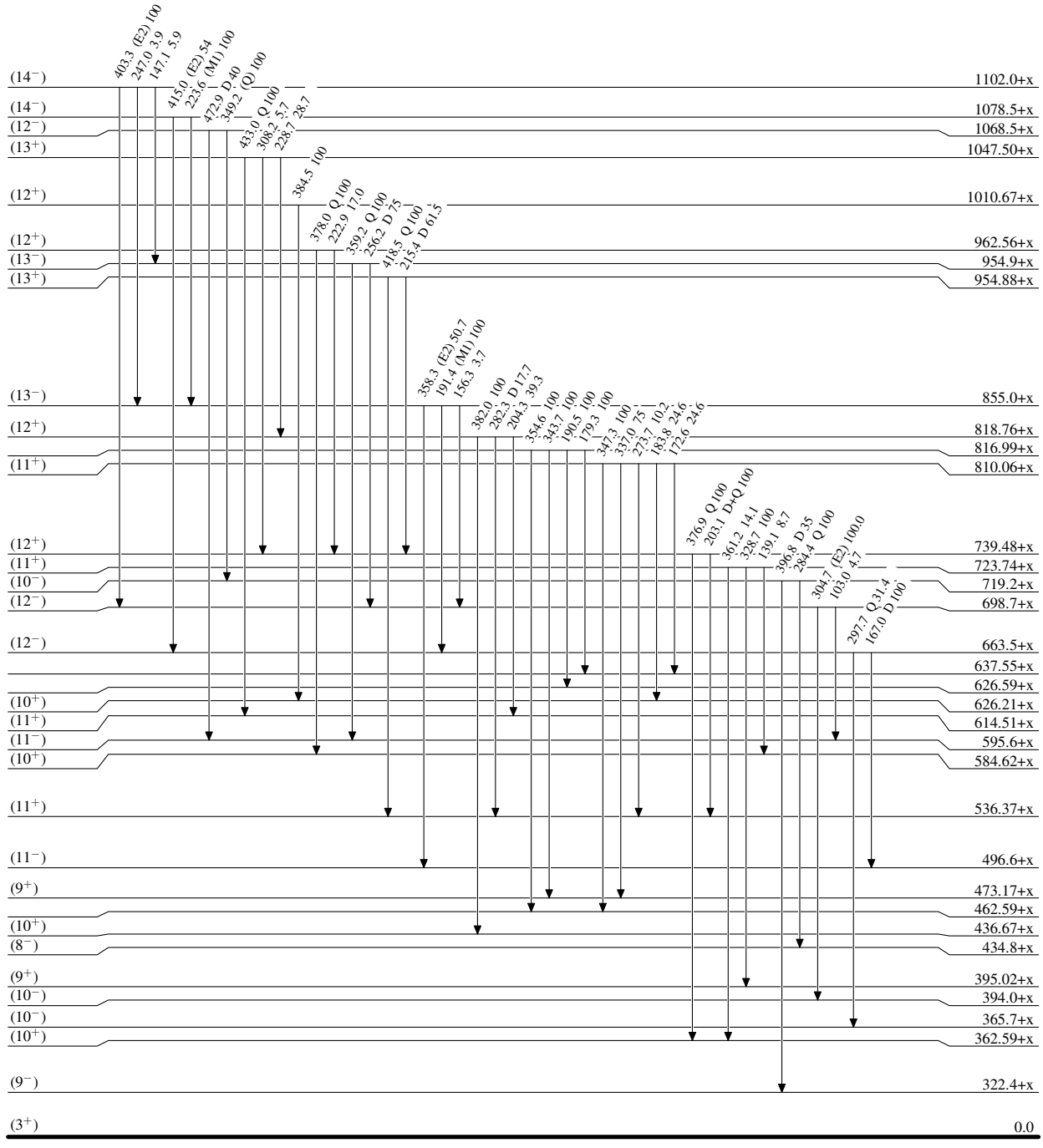


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

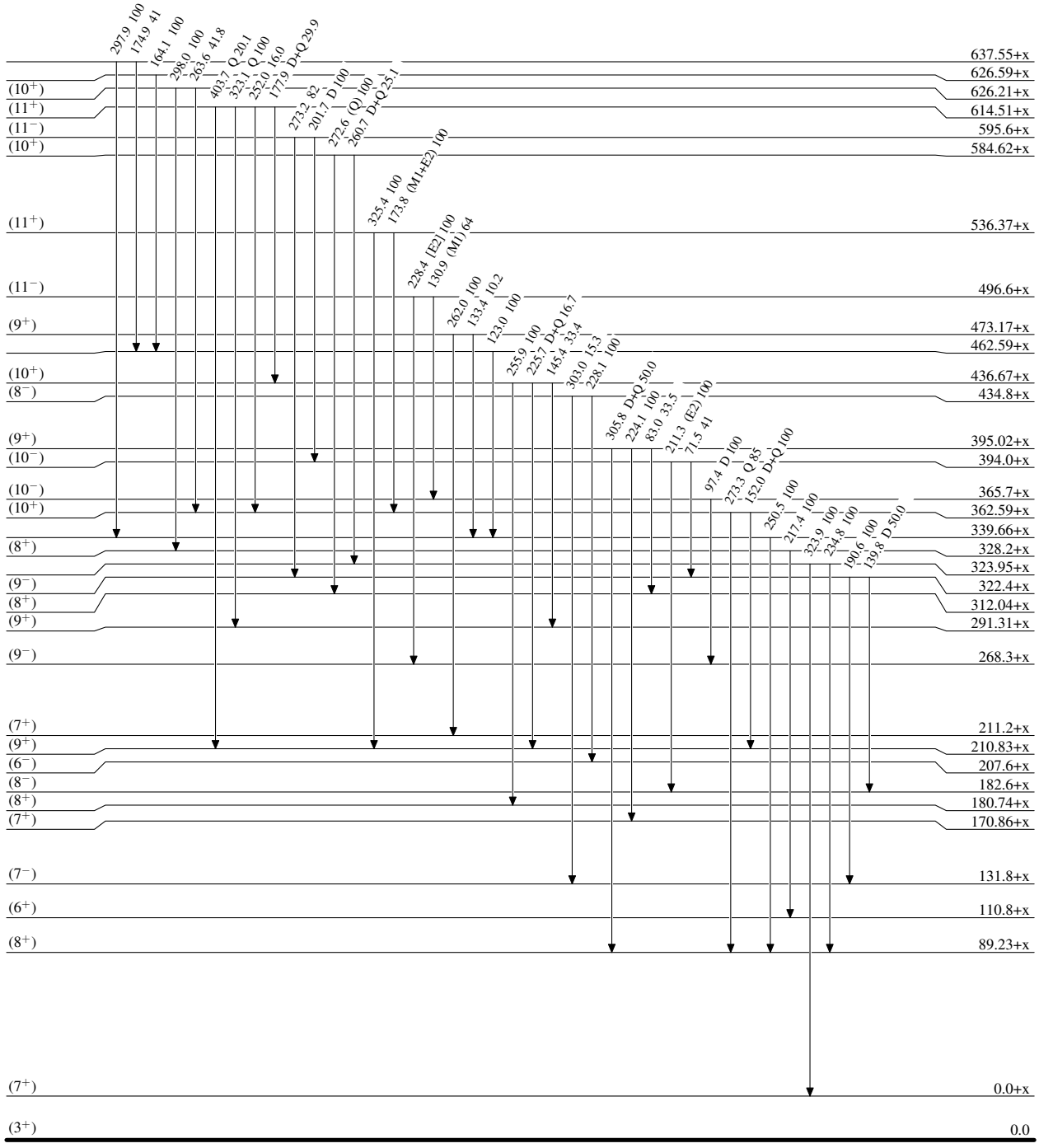


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

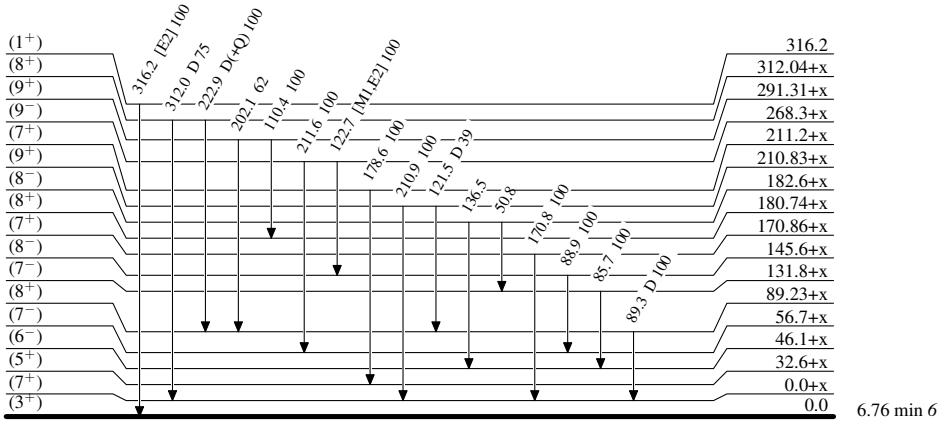


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

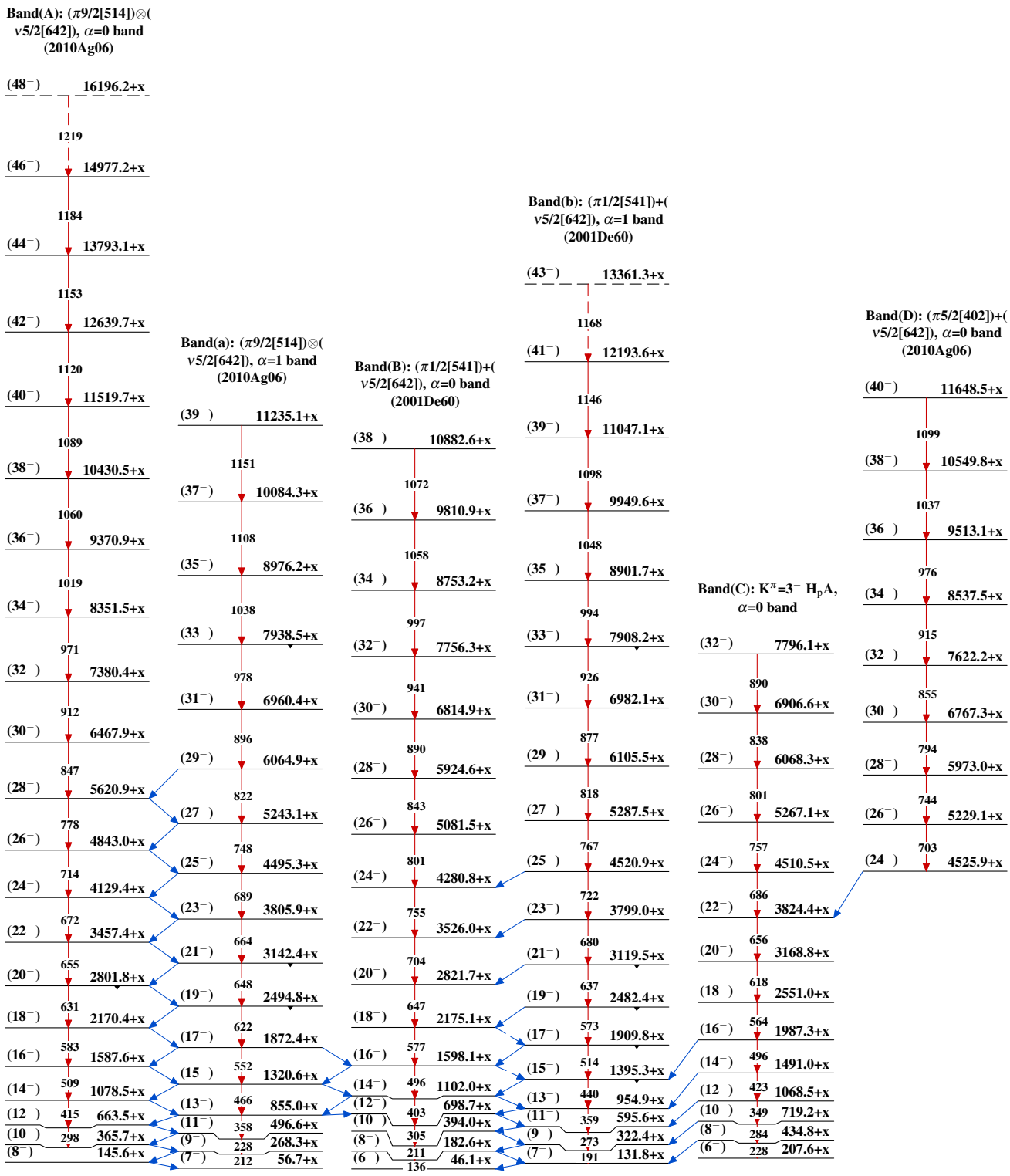
Level Scheme (continued)

Intensities: Relative photon branching from each level



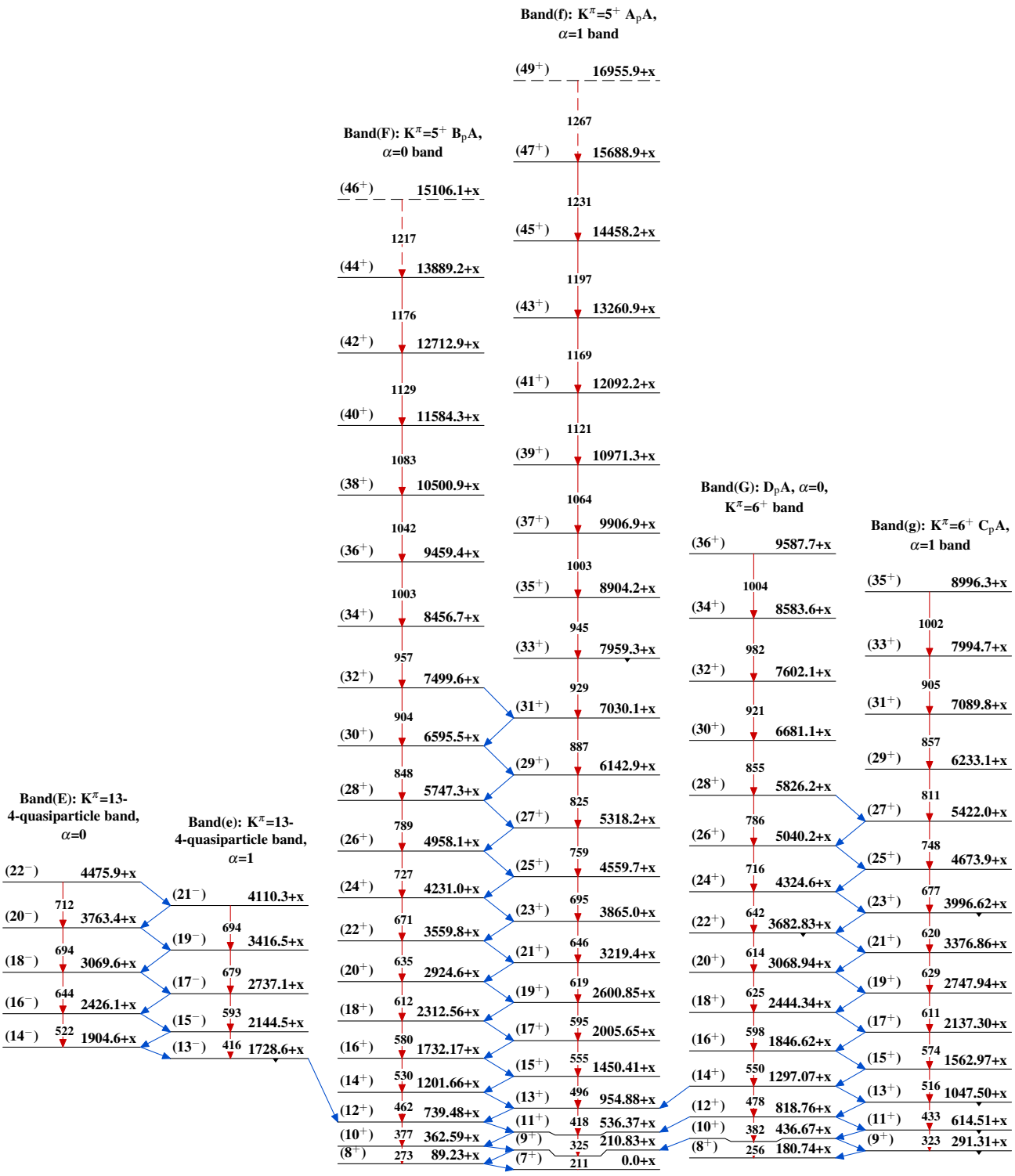
$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas

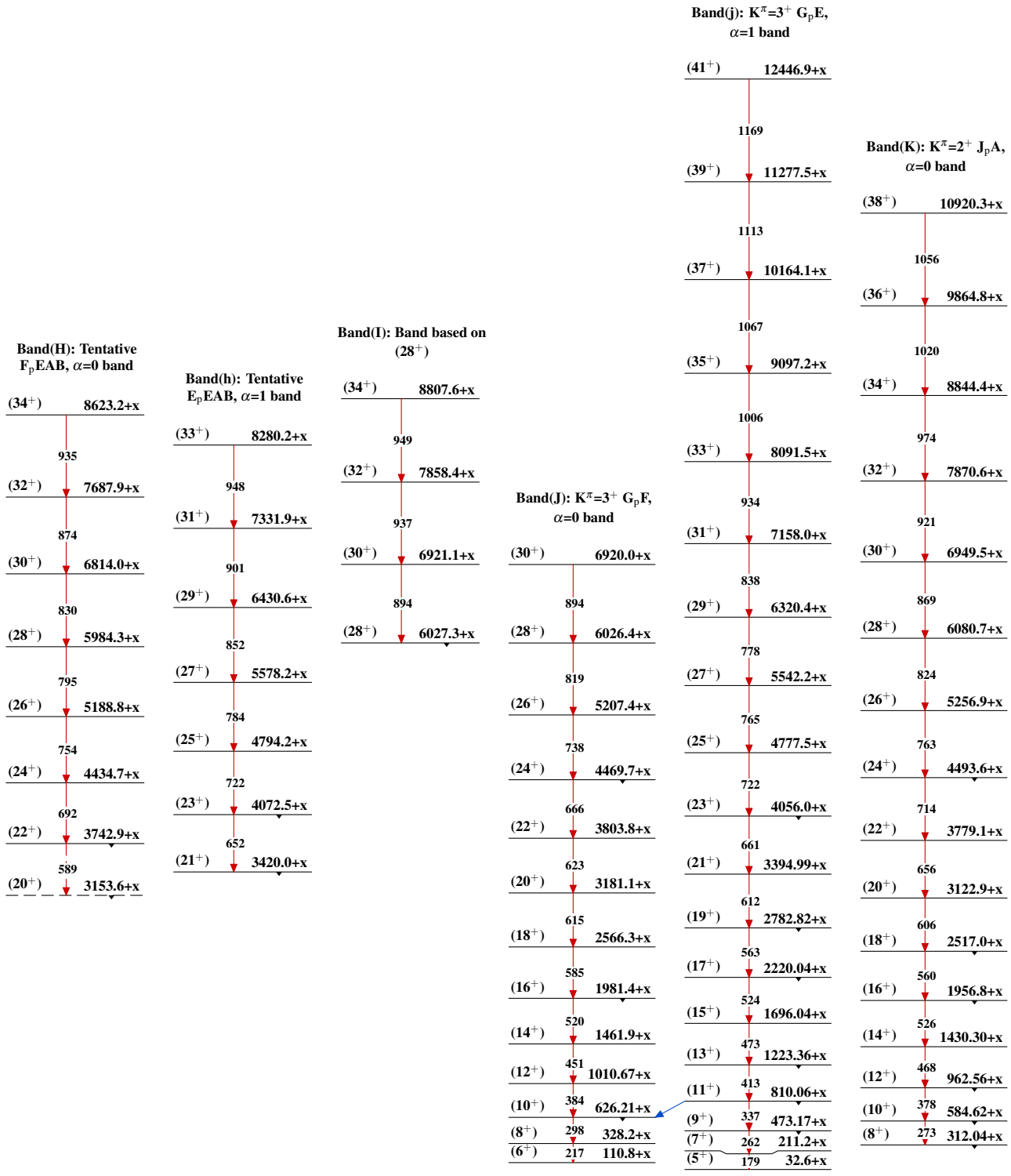


$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{170}_{73}Ta_{97}$

Adopted Levels, Gammas (continued)