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^-)=−6120 *40*; S(n)=9610 *40*; S(p)=5458 *28*; Q(α)=2917 *29* 2017Wa10
S(2n)=17036 *40*; S(2p)=9250 *28* (2017Wa10).
Additional information 1.
For isotope shift data, see 1999Le11.
For nuclear band configurations, see 1982BaZH, 1981Li15, 1979Dr08, 1976Le04.

^{170}Hf Levels

Nomenclature for quasiparticle Nilsson orbitals:
A: ν5/2[642], α=+1/2;
B: ν5/2[642], α=−1/2;
C: ν3/2[651], α=+1/2;
D: ν3/2[651], α=−1/2;
E: ν1/2[521], α=+1/2;
F: ν1/2[521], α=−1/2;
G: ν5/2[512], α=+1/2;
H: ν5/2[512], α=−1/2;
M: ν3/2[521], α=+1/2;
N: ν3/2[521], α=−1/2.

Cross Reference (XREF) Flags

A	^{170}Ta ε decay	D	^{181}Ta(π^-,11nγ)
B	^{124}Sn(^{50}Ti,4nγ):SD	E	^{186}W(n,2p15nγ)
C	^{128}Te(^{48}Ca,6nγ)	F	(HI,xnγ)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
0.0&	0+@	16.01 h *13*	ABCD F	%ε=100 Δ<r^2>(178,170)=−0.466 *7* (1999Le11); this uncertainty does not include the 10% systematic normalization uncertainty. $T_{1/2}$: weighted average of 16.25 h *25* (1969Tr02) and 15.92 h *15* (1970Ch17). Other: 12 h *2* (1971Na28).
100.74& *4*	2+@	1.21 ns *4*	ABCDEF	μ=0.56 *10* μ: from perturbed $\gamma\gamma$ angular correlation In ^{170}Ta ε decay (2007Wo08). Jπ: (E2) 101γ to 0+; $T_{1/2}$: from γ-rf coin (2006Co20) In (HI,xnγ). Other: 1.2 ns *3* from recoil-distance Doppler-shift In (HI,xnγ).
321.74& *5*	4+@	60.5 ps *8*	ABCDEF	Jπ: stretched E2 221γ to (2+) from 221$\gamma(\theta)$ and RUL; band assignment.
642.58& *6*	6+@	9.13 ps *29*	ABCDEF	
880.31e *7*	(0+)		A	Jπ: 779γ to (2+); proposed K$^\pi$=(0+) bandhead. However, see comment on band to which this level is assigned.
961.96f *4*	(2+)		A	Jπ: 961γ to 0+; log $f^{1u}t$<8.5 from (3+).
988.06e *5*	(2+)		A	Jπ: 988γ to 0+ g.s.; log *ft*=6.8 from (3+); K$^\pi$=(0+) band assignment.
1042.98& *12*	8+@	2.77 ps *9*	BCDEF	
1087.84f *5*	(3+)		A	Jπ: 987γ to 2+, 766γ to 4+; K^π=(2+) band member.
1158.92e *7*	(4+)		A C	Jπ: 516γ to 6+, possible 1058γ to 2+. Energy appears to be too low for band assignment to be correct. See comment on band to which this level is assigned.

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Adopted Levels, Gammas (continued)

^{170}Hf Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
1219.4 *4*	4^+		A	Jπ: 577γ to 6^+, 1119γ to 2^+ E approximately correct for J=4 member of β-vibrational band; please note comment on that band.
1227.47[f] *6*	4^+		A	Jπ: 585γ to 6^+, 1127γ to 2^+.
1372.85[n] *8*	(5^-)		ABC F	
1425.31 *6*			A	
1441.69 *7*	$(2^+,3,4^+)$		A	Jπ: log *ft*=7.1 (log $f^{1u}t$=8.8) from (3^+), 1341γ to 2^+, 1120γ to 4^+ suggest $(2^+,3,4^+)$. Possible assignment as bandhead for a two-phonon vibrational mode (1976Le04) would favor $J^\pi=2^+$.
1444.25 *11*	(6^+)		C	
1504.2[&] *7*	10^+[@]	1.25 ps *8*	BCDEF	
1544.16 *9*	(5^-)		C	
1563.99[h] *7*	(4^-)		AB	
1565.61 *9*			A	
1573.12 *10*			A	
1583.34 *6*			A	
1658.77 *8*			A	
1697.94 *9*			A	
1725.7[n] *6*	(7^-)		B F	
1773.50[g] *7*	(6^+)	<5 ns	C F	$T_{1/2}$: from γγ(t) in (HI,xnγ).
1799.3[h] *7*	(6^-)		B F	
1966.10[g] *12*	(7^+)		BC F	
1998.93 *8*			A	
2015.9[&] *9*	12^+[@]	0.76 ps *9*	BCDEF	
2109.1[h] *8*	(8^-)		B F	
2117.24 *6*			A	
2130.4[n] *7*	(9^-)		B	
2149.5 *9*	(7^-)		B	
2182.70[j] *16*	(8^-)	23 ns *2*	BC F	$T_{1/2}$: from γγ(t) in (HI,xnγ).
2254.4[l] *11*	(8^-)		B	
2349.0[m] *9*	(9^-)		B	
2384.0 *10*	$9^{(-)}$		B	
2384.3[b] *11*	(8^-)		B	No transition observed to deexcite this level.
2404.80[k] *19*	(9^-)		C	
2476.4[h] *9*	(10^-)		B F	
2483.3[a] *11*	$(11)^-$		B F	Jπ: E1 979γ to 10^+ 1504.
2530.4[l] *9*	(10^-)		B	
2566.7[&] *10*	14^+[@]	0.53 ps *8*	B DEF	
2578.6[n] *9*	(11^-)		B	
2643.52[j] *21*	(10^-)		BC	
2688.9[m] *8*	(11^-)		B F	
2725.2[b] *11*	(10^-)		B	
2878.3[l] *8*	(12^-)		B F	
2905.9[k] *3*	(11^-)		BC	
2924.4[h] *11*	(12^-)		B	
2931.6[a] *11*	$(13)^-$		B F	
3061.7[n] *10*	(13^-)		B	
3094.3[m] *9*	(13^-)		B F	
3135.2[b] *15*	(12^-)		B	
3144.4[i] *11*	(13^-)		B	
3151.1[&] *11*	16^+[@]	0.38 ps *9*	B D F	

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Adopted Levels, Gammas (continued)

^{170}Hf Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
3177.9[j] 5	(12⁻)		BC	
3196.1[d] 12	(13⁻)		B	
3324.3[l] 10	(14⁻)		B F	
3423.4[h] 15	(14⁻)		B	
3429.4[a] 11	(15)⁻		B F	
3459.9[k] 6	(13⁻)		BC	
3532.1[o] 12	(16⁺)		F	
3537.6[i] 12	(15⁻)		B	
3577.5[m] 10	(15⁻)		B F	
3611.2[b] 18	(14⁻)		B	
3634.8[n] 10	(15⁻)		B	
3717.3[d] 11	(15⁻)		B	
3750.1[j] 6	(14⁻)		BC	
3766.5[&] 11	18⁺[@]	≈0.35 ps	B F	
3810.2[c] 13	(16⁻)		B	
3833.8[l] 11	(16⁻)		F	
3964.8[a] 12	(17⁻)		B F	
3984.3[h] 10	(16⁻)		B	
4043.7[k] 6	(15⁻)		BC	
4061.6[i] 16	(17⁻)		B	
4093.4[o] 12	(18⁺)		B F	
4123.0[m] 12	(17⁻)		B F	
4137.1? 15	+		F	Jπ: E2 or E2+M1 γ to (16)⁺.
4145.2[b] 21	(16⁻)		B	
4213.9[n] 12	(17⁻)		B	
4293.0[d] 12	(17⁻)		B	
4338.7[j] 6	(16⁻)		BC	
4364.1 15	(21⁻)		F	
4394.0[l] 13	(18⁻)		B F	
4418.3[c] 13	(18⁻)		B	
4421.0[&] 12	20⁺[@]	≈0.24 ps	B F	
4528.9[a] 12	(19⁻)		B F	
4584.4[h] 21	(18⁻)		B	
4628.7[k] 9	(17⁻)		BC	
4669.6[i] 19	(19⁻)		B	
4714.7[m] 14	(19⁻)		B F	
4726.2[b] 23	(18⁻)		B	
4751.0[o] 12	(20⁺)		B F	
4843.8[n] 13	(19⁻)		B	
4908.7[d] 12	(19⁻)		B	
4942.7[j] 9	(18⁻)		B	
4968.0[r] 13	(19⁻)		B	
4993.9[l] 15	(20⁻)		B F	
5065.1[c] 13	(20⁻)		B	
5125.9[a] 13	(21⁻)		B F	
5130.2[&] 13	22⁺[@]		B F	
5222.4[h] 23	(20⁻)		B	
5268.7[k] 11	(19⁻)		B	

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Adopted Levels, Gammas (continued)

^{170}Hf Levels (continued)

E(level)[†]	Jπ[‡]	XREF		E(level)[†]	Jπ[‡]	XREF	
5342.9[m] 16	(21⁻)	B	F	8282.8[r] 20	(29⁻)	B	F
5352.2[b] 25	(20⁻)	B		8345[b] 4	(28⁻)	B	
5357.6[i] 21	(21⁻)	B		8410[m] 3	(29⁻)	B	F
5482.0[o] 13	(22⁺)	B		8590.1[&] 23	30⁺[@]	B	F
5506.1[r] 12	(21⁻)	B	F	8667[i] 3	(29⁻)	B	
5525.9[n] 14	(21⁻)	B		8851[l] 3	(30⁻)	B	F
5622.7[j] 12	(20⁻)	B		8881.9[o] 21	(30⁺)	B	
5637.8[l] 16	(22⁻)	B	F	9016.3[a] 22	(31⁻)	B	F
5757.2[c] 14	(22⁻)	B		9025.2[c] 25	(30⁻)	B	
5769.7[a] 16	(23⁻)	B	F	9109.7[r] 21	(31⁻)	B	F
5897.4[h] 25	(22⁻)	B		9150[h] 4	(30⁻)	B	
5902.8[&] 15	24⁺[@]	B	F	9238[b] 4	(30⁻)	B	
5995.7[k] 12	(21⁻)	B		9344[m] 3	(31⁻)	B	F
6014.6[m] 19	(23⁻)	B	F	9577[i] 3	(31⁻)	B	
6023[b] 3	(22⁻)	B		9598.2[&] 25	32⁺[@]	B	F
6117.6[i] 23	(23⁻)	B		9819[l] 3	(32⁻)	B	
6128.3[r] 14	(23⁻)	B	F	9840.9[o] 24	(32⁺)	B	
6262.9[n] 17	(23⁻)	B		9996[c] 3	(32⁻)	B	
6267.0[o] 14	(24⁺)	B		9996.1[r] 22	(33⁻)	B	F
6338.9[l] 19	(24⁻)	B	F	10001.6[a] 22	(33⁻)	B	F
6387.7[j] 13	(22⁻)	B		10123[h] 4	(32⁻)	B	
6476.2[a] 18	(25⁻)	B	F	10335[m] 3	(33⁻)	B	
6499.2[c] 18	(24⁻)	B		10654[&] 3	34⁺[@]	B	F
6618[h] 3	(24⁻)	B		10837[l] 3	(34⁻)	B	
6738.6[&] 18	26⁺[@]	B	F	10847[o] 3	(34⁺)	B	
6744.2[m] 22	(25⁻)	B	F	10941.6[r] 22	(35⁻)	B	F
6746[b] 3	(24⁻)	B		11027[c] 3	(34⁻)	B	
6795.9[r] 17	(25⁻)	B	F	11049[a] 3	(35⁻)	B	
6797.7[k] 14	(23⁻)	B		11140[h] 4	(34⁻)	B	
6940[i] 3	(25⁻)	B		11366[m] 3	(35⁻)	B	
7043.9[n] 20	(25⁻)	B		11750[&] 3	36⁺[@]	B	
7095.9[o] 16	(26⁺)	B		11888[l] 3	(36⁻)	B	
7106.2[l] 22	(26⁻)	B	F	11902[o] 3	(36⁺)	B	
7224.7[j] 15	(24⁻)	B		11944.6[r] 24	(37⁻)	B	
7251.5[a] 22	(27⁻)	B	F	12108[c] 3	(36⁻)	B	
7286.2[c] 20	(26⁻)	B		12146[a] 3	(37⁻)	B	
7397[h] 3	(26⁻)	B		12404[m] 4	(37⁻)	B	
7512.3[r] 19	(27⁻)	B		12880[&] 3	38⁺[@]	B	
7520[b] 3	(26⁻)	B		12950?[l] 4	(38⁻)	B	
7542.3[m] 24	(27⁻)	B	F	12985[o] 3	(38⁺)	B	
7635.7[&] 21	28⁺[@]	B	F	13004[r] 4	(39⁻)	B	
7800[i] 3	(27⁻)	B		13277[a] 4	(39⁻)	B	
7867.9[n] 22	(27⁻)	B		14024?[l] 4	(40⁻)	B	
7944.3[l] 24	(28⁻)	B	F	14031[&] 4	40⁺[@]	B	
7966.9[o] 19	(28⁺)	B		14117[r] 4	(41⁻)	B	
8098.7[a] 21	(29⁻)	B	F	15284[r] 4	(43⁻)	B	
8123.2[c] 23	(28⁻)	B		16504[r] 4	(45⁻)	B	
8241[h] 3	(28⁻)	B		17776[r] 4	(47⁻)	B	

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Adopted Levels, Gammas (continued)

^{170}Hf Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
19101[r] *4*	(49⁻)	B	
0+x[p]	J	B	Additional information 2.
239.0+x[p] *8*	J+1	B	
504.0+x[q] *8*	J+2	B	
790.0+x[p] *10*	J+3	B	
1095.0+x[q] *11*	J+4	B	
1413.0+x[p] *12*	J+5	B	
1743.0+x[q] *13*	J+6	B	
2079.0+x[p] *13*	J+7	B	
2419.0+x[q] *14*	J+8	B	
2763.0+x[p] *15*	J+9	B	
3116.0+x[q] *15*	J+10	B	
3482.0+x[p] *16*	J+11	B	
3862.0+x[q] *17*	J+12	B	
y[s]	J1	B	Additional information 3. E(level): y≈400 keV above the yrast band. Jπ: J≈(22:24) was proposed In 2002Ne20 but, In 2006Ne03, the authors suggest much higher spin of ≈40 when comparing results with those for a high spin band In ^{175}Hf.
722.6+y[s] *5*	J1+2	B	
1497.8+y[s] *7*	J1+4	B	
2328.3+y[s] *8*	J1+6	B	
3213.5+y[s] *9*	J1+8	B	
4153.3+y[s] *9*	J1+10	B	
5145.4+y[s] *10*	J1+12	B	
6188.6+y[s] *10*	J1+14	B	
7283.6+y[s] *11*	J1+16	B	
8434.7+y[s] *11*	J1+18	B	
9644.8+y[s] *15*	J1+20	B	

[†] From least-squares fit to Eγ. Values are adopted from Ta ε decay for all levels populated in decay. All others are adopted from (HI,xnγ), assuming equal weight for all Eγ in that data set (since authors do not state uncertainty in Eγ).

[‡] From γ(θ) and/or α(K)exp for deexciting transitions and band structure in (HI,xnγ), except as noted.

[#] From recoil-distance Doppler-shift method in (HI,xnγ), except as noted.

[@] Definite Jπ assigned to members of the g.s. band based on smooth progression of level energies and independently-established Jπ for band head and multipolarity of intraband J=4 to 2 transition.

[&] Band(A): g.s. band. Rotational parameters: A=17.1, B=−0.05 (but fit is poor). At higher frequencies (around J=16), configuration becomes AB.

[a] Band(B): π=−, α=1 band (1989IrZZ). Rotational parameters: A=10.1, B=−0.0036. May be 7/2[633]⊗5/2[523] configuration at low spin, but first band crossing does not occur at expected frequency and 1981Li15 suggest that band may be so mixed that a pure quasiparticle configuration description is not justified. AE to ABCE band.

[b] Band(C): AF to ABCF band, α=0.

[c] Band(D): AN to ABCN band, α=0.

[d] Band(E): Band based on (13⁻).

[e] Band(F): possible Kπ=(0⁺), α=0 band (1976Le04). May be β-vibrational band (1976Le04). However, evaluator notes that problems may exist with the assignment of the J=0 and J=4 members. If J=0 for the 880 level, the intensity imbalance at this level in ^{170}Ta ε+β⁺ decay must be attributed to indirect feeding by as yet unobserved transitions. Also, 1976Le04 assign the 1157 level as the J=4 member of this band; however, the 1220 level has the same population and deexcitation characteristics, and its energy lies much closer to that expected based on the rotational parameter A=17.9 deduced from the 0⁺ and 2⁺ band member

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Adopted Levels, Gammas (continued)

^{170}Hf Levels (continued)

energies (assuming the 880 level is correctly assigned).

[f] Band(G): $K^{\pi}=(2^+)$ band (1976Le04). Possible γ-vibrational band. Rotational parameter: A=19.0 (J even).

[g] Band(H): $K^{\pi}=(6^+)$ (π 7/2[404])+(π 5/2[402]) band. Rotational parameter: A=13.8.

[h] Band(I): α=0 band based on (4^-).

[i] Band(i): α=1 band based on (7^-).

[j] Band(J): $K^{\pi}=(8^-)$, (π 9/2[514])+(π 7/2[404]), α=0 band (1999Cu01). Assignment based on $(g_K-g_R)/Q_0$ values deduced by 1999Cu01 from observed in-band cascade to crossover transition intensity ratios.

[k] Band(j): $K^{\pi}=(8^-)$, (π 9/2[514])+(π 7/2[404]), α=1 band (1999Cu01). Signature partner of $K^{\pi}=8^-$, (π 9/2[514])+(π 7/2[404]), α=0 band; please see comments on that band.

[l] Band(K): π=− AH to ABCH band, α=0. Rotational parameters: A=10.7, B=−0.010.

[m] Band(k): AG to ABCG band, α=1.

[n] Band(d): AM to ABCM band, α=1.

[o] Band(L): π=+ BC to ABCD band. Rotational parameters: A=6.3, B=+0.0028.

[p] Band(M): Strongly-coupled ΔJ=2 band.

[q] Band(m): Strongly-coupled ΔJ=2 band.

[r] Band(N): Triaxial SD-1 band (2006Ne03). Band population ≈ 8% relative to the intensity of the yrast band. Band observed also In (HI,xnγ) by 1989IrZZ, but authors proposed J values there that were 2 units lower than recommended by 2006Ne03. Rotational parameters: A=8.4, B=−0.0010.

[s] Band(O): Triaxial SD-2 band (2006Ne03,2002Ne20). Band population=0.9% *4* relative to the intensity of the yrast band.

$\gamma(^{170}Hf)$

E_i(level)	J_i^{π}	E_{γ}[†]	I_{γ}[†]	E_f	J_f^{π}	Mult.[†]	α[c]	Comments
100.74	2^+	100.75[&] *4*	100	0.0	0^+	(E2)	3.43	B(E2)(W.u.)=182 *7* Mult.: from α(K)exp and band structure in (^{48}Ca,6nγ).
321.74	4^+	221.05[&] *5*	100	100.74	2^+	E2	0.206	B(E2)(W.u.)=263 *4* E_{γ}: other: 220.9 *1* in (^{48}Ca,6nγ).
642.58	6^+	320.79[&] *7*	100	321.74	4^+	E2	0.0649	B(E2)(W.u.)=306 *10* E_{γ}: other: 320.5 *1* in (^{48}Ca,6nγ).
880.31	(0^+)	779.58[&] *6*	100	100.74	2^+			
961.96	(2^+)	640.19[&] *9*	9.8[&] *7*	321.74	4^+			
		861.18[&] *6*	100[&] *3*	100.74	2^+			
		961.95[&] *7*	5.5[&] *5*	0.0	0^+			
988.06	(2^+)	666.35[&] *8*	24.3[&] *20*	321.74	4^+			
		887[&e]	<2[&]	100.74	2^+			E_{γ}: rounded value from level-energy difference.
		988.04[&d] *6*	100[&d] *6*	0.0	0^+			
1042.98	8^+	400.1[#] *1*	100	642.58	6^+	E2	0.0347	B(E2)(W.u.)=344 *12*
1087.84	(3^+)	766.13[&] *7*	30.0[&] *17*	321.74	4^+			
		987.04[&d] *5*	100[&d] *4*	100.74	2^+			
1158.92	(4^+)	516.3[&] *2*	6.6[&] *22*	642.58	6^+			E_{γ}: other: 512.5 *5* in (^{48}Ca,6nγ). I_{γ}: other: 0.81 *27* in (^{48}Ca,6nγ).
		837.16[&] *7*	100[&] *7*	321.74	4^+			E_{γ}: other: 837.1 *2* in (^{48}Ca,6nγ). I_{γ}: other: 100 *7* in (^{48}Ca,6nγ).
		(1058[&])	≤5.7[&]	100.74	2^+			E_{γ}: other: 1054.3 *12* in (^{48}Ca,6nγ). I_{γ}: other: 19 *4* in (^{48}Ca,6nγ).
1219.4	4^+	576.5[&] *6*	26[&] *4*	642.58	6^+			
		897.6[&] *5*	13[&] *4*	321.74	4^+			

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Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	α[c]	Comments
1219.4	4^+	1119.0[&] *6*	100[&] *7*	100.74	2^+			
1227.47	4^+	585.04[&] *8*	11.1[&] *13*	642.58	6^+			
		905.66[&] *6*	46[&] *4*	321.74	4^+			
		1126.7[&] *1*	100[&] *6*	100.74	2^+			
1372.85	(5^-)	213.8[#] *2*	17[#] *9*	1158.92	(4^+)			
		730.2[&] *1*	17.9[&] *25*	642.58	6^+	(D)		Mult.: DCO in (^{48}Ca,6nγ) is consistent with that for D, ΔJ=0 transition.
		1051.02[&] *10*	100[&] *7*	321.74	4^+	(Q)		Mult.: from DCO in (^{48}Ca,6nγ).
1425.31		337.53[&] *10*	35[&] *3*	1087.84	(3^+)			
		437.18[&] *9*	36[&] *3*	988.06	(2^+)			
		463.37[&] *8*	100[&] *13*	961.96	(2^+)			
		1324.5[&] *2*	15.1[&] *20*	100.74	2^+			
1441.69	$(2^+,3,4^+)$	1119.91[&] *8*	100[&] *7*	321.74	4^+			
		1340.97[&] *8*	83[&] *5*	100.74	2^+			
1444.25	(6^+)	286.2[#] *3*	21[#] *7*	1158.92	(4^+)			
		801.5[#] *2*	100[#] *21*	642.58	6^+	(D)		Mult.: DCO consistent with that for D, ΔJ=0 transition in (^{48}Ca,6nγ).
		1122.3[#] *8*	12[#] *9*	321.74	4^+	(Q)		Mult.: from DCO in (^{48}Ca,6nγ).
1504.2	10^+	462.2	100	1042.98	8^+	E2	0.0236	B(E2)(W.u.)=375 *25*
1544.16	(5^-)	901.5[#] *2*	66[#] *12*	642.58	6^+			
		1222.3[#] *1*	100[#] *18*	321.74	4^+	(D)		Mult.: from DCO in (^{48}Ca,6nγ).
1563.99	(4^-)	191.3[&] *2*	12[&] *3*	1372.85	(5^-)			
		405.06[&] *8*	26[&] *3*	1158.92	(4^+)			
		476.08[&] *7*	100[&] *11*	1087.84	(3^+)			
		1242.8[&] *2*	23[&] *5*	321.74	4^+			
1565.61		923.1[&] *1*	60[&] *6*	642.58	6^+			
		1243.8[&] *1*	100[&] *23*	321.74	4^+			
1573.12		1251.35[&] *9*	64[&] *4*	321.74	4^+			
		1472.5[&] *2*	100[&] *8*	100.74	2^+			
1583.34		595.26[&] *7*	100[&] *13*	988.06	(2^+)			
		621.3[&] *1*	9.5[&] *10*	961.96	(2^+)			
		703.2[&] *2*	26.3[&] *20*	880.31	(0^+)			
		1482.64[&] *9*	45[&] *10*	100.74	2^+			
1658.77		1337.05[&] *9*	33[&] *4*	321.74	4^+			
		1558.0[&] *1*	100[&] *7*	100.74	2^+			
1697.94		710.00[&] *11*	100[&] *7*	988.06	(2^+)			
		735.88[&] *10*	70[&] *7*	961.96	(2^+)			
1725.7	(7^-)	353.0		1372.85	(5^-)			
		1083.0		642.58	6^+			
1773.50	(6^+)	229.2[#] *1*	34.2[#] *23*	1544.16	(5^-)	(E1)	0.0417	B(E1)(W.u.)>5.2×10^{-7} Mult.: D from DCO in (^{48}Ca,6nγ); $\Delta\pi$=yes from level scheme.
		329.3[#] *1*	21.7[#] *19*	1444.25	(6^+)			
		400.4[#] *1*	43[#] *3*	1372.85	(5^-)	[E1]		B(E1)(W.u.)>1.2×10^{-7}
		614.5[#] *1*	38[#] *5*	1158.92	(4^+)	[E2]		B(E2)(W.u.)>0.0036
		1130.7[#] *1*	100[#] *5*	642.58	6^+	(M1)		B(M1)(W.u.)>1.3×10^{-6}

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{170}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	α[c]	Comments
								Mult.: DCO consistent with that for D, ΔJ=0 transition in (^{48}Ca,6nγ).
1773.50	(6$^+$)	1452.4[#] *1*	3.0[#] *4*	321.74	4$^+$			
1799.3	(6$^-$)	235[‡]		1563.99	(4$^-$)			
		426.6	100	1372.85	(5$^-$)			
1966.10	(7$^+$)	192.6[#] *1*	100[#]	1773.50	(6$^+$)	D		
1998.93		573.59[&] *8*	100[&] *13*	1425.31				
		1010.9[&] *1*	88[&] *7*	988.06	(2$^+$)			
2015.9	12$^+$	510.9	100	1504.2	10$^+$	E2	0.0183	B(E2)(W.u.)=3.8×10^2 *5*
2109.1	(8$^-$)	309.8		1799.3	(6$^-$)			
		383.4		1725.7	(7$^-$)			
2117.24		1029.38[&] *8*	50[&] *9*	1087.84	(3$^+$)			
		1129.18[&] *9*	63[&] *9*	988.06	(2$^+$)			
		1155.29[&] *8*	100[&] *9*	961.96	(2$^+$)			
2130.4	(9$^-$)	405[‡]		1725.7	(7$^-$)			
		1087[‡]		1042.98	8$^+$			
2149.5	(7$^-$)	1507[‡]		642.58	6$^+$			
2182.70	(8$^-$)	216.6[#] *1*	100	1966.10	(7$^+$)	(E1)	0.0481	B(E1)(W.u.)=8.9×10^{-7} *8*
		1141[#] *1*	1.6[#] *4*	1042.98	8$^+$	[E1]		B(E1)(W.u.)=1.0×10^{-10} *3*
2254.4	(8$^-$)	105[‡]		2149.5	(7$^-$)			
2349.0	(9$^-$)	1306[‡]		1042.98	8$^+$			
2384.0	9$^{(-)}$	1341[‡]		1042.98	8$^+$			
2404.80	(9$^-$)	222.1[#] *1*	100	2182.70	(8$^-$)			
2476.4	(10$^-$)	367.2	100	2109.1	(8$^-$)			
2483.3	(11)$^-$	978.6	100	1504.2	10$^+$	E1		
2530.4	(10$^-$)	146[‡]		2384.0	9$^{(-)}$			
		276[‡]		2254.4	(8$^-$)			
2566.7	14$^+$	550.7	100	2015.9	12$^+$	E2	0.01524	B(E2)(W.u.)=3.7×10^2 *6*
2578.6	(11$^-$)	448		2130.4	(9$^-$)			
		1074		1504.2	10$^+$			
2643.52	(10$^-$)	238.7[#] *1*	100	2404.80	(9$^-$)			
		461[‡]		2182.70	(8$^-$)			
2688.9	(11$^-$)	340[‡]		2349.0	(9$^-$)			
		1183.8	100	1504.2	10$^+$	E1		
2725.2	(10$^-$)	341[‡]		2384.3	(8$^-$)			
		616[‡]		2109.1	(8$^-$)			
2878.3	(12$^-$)	189.4		2688.9	(11$^-$)			
		348[‡]		2530.4	(10$^-$)			
		401.8		2476.4	(10$^-$)			
2905.9	(11$^-$)	262.1[@] *6*	100[@] *12*	2643.52	(10$^-$)			
		501.2[@] *2*	57[@] *14*	2404.80	(9$^-$)			
2924.4	(12$^-$)	394[‡]		2530.4	(10$^-$)			
		448[‡]		2476.4	(10$^-$)			
2931.6	(13)$^-$	448.6	100	2483.3	(11)$^-$	(E2)[a]	0.0256	
		915.6	97	2015.9	12$^+$	E1		
3061.7	(13$^-$)	483[‡]		2578.6	(11$^-$)			
		1046[‡]		2015.9	12$^+$			
3094.3	(13$^-$)	216[‡]		2878.3	(12$^-$)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	α[c]	Comments
3094.3	(13$^-$)	405.1	100	2688.9	(11$^-$)			
		1078.5	33	2015.9	12$^+$	(E1)[a]		
3135.2	(12$^-$)	410[‡]		2725.2	(10$^-$)			
3144.4	(13$^-$)	566[‡]		2578.6	(11$^-$)			
3151.1	16$^+$	584.4	100	2566.7	14$^+$	E2	0.01321	B(E2)(W.u.)=3.9×10^2 *10*
3177.9	(12$^-$)	272.1[@] *6*	100[@] *9*	2905.9	(11$^-$)			
		534.0[@] *7*	46[@] *12*	2643.52	(10$^-$)			
3196.1	(13$^-$)	1180		2015.9	12$^+$			
3324.3	(14$^-$)	230.0		3094.3	(13$^-$)			
		445.8		2878.3	(12$^-$)			
3423.4	(14$^-$)	499[‡]		2924.4	(12$^-$)			
3429.4	(15)$^-$	497.9	100	2931.6	(13)$^-$	(E2)[a]	0.0196	
		862.6	72	2566.7	14$^+$	E1		
3459.9	(13$^-$)	281.9[@] *4*	100[@] *16*	3177.9	(12$^-$)			
		554.3[@] *8*	59[@] *19*	2905.9	(11$^-$)			
3532.1	(16$^+$)	381[‡]		3151.1	16$^+$			
		965.2	100	2566.7	14$^+$			
3537.6	(15$^-$)	393[‡]		3144.4	(13$^-$)			
		476[‡]		3061.7	(13$^-$)			
3577.5	(15$^-$)	253[‡]		3324.3	(14$^-$)			
		483.2	100	3094.3	(13$^-$)	(E2)[a]	0.0211	
		1011[‡]		2566.7	14$^+$			
3611.2	(14$^-$)	476[‡]		3135.2	(12$^-$)			
3634.8	(15$^-$)	492[‡]		3144.4	(13$^-$)			
		574[‡]		3061.7	(13$^-$)			
		1069[‡]		2566.7	14$^+$			
3717.3	(15$^-$)	521		3196.1	(13$^-$)			
		1151		2566.7	14$^+$			
3750.1	(14$^-$)	289.7[@] *9*	100[@] *15*	3459.9	(13$^-$)			
		572.1[@] *3*	34[@] *11*	3177.9	(12$^-$)			
3766.5	18$^+$	615.2	100	3151.1	16$^+$	E2	0.01170	B(E2)(W.u.)≈320
3810.2	(16$^-$)	659[‡]	100	3151.1	16$^+$			
3833.8	(16$^-$)	256[‡]		3577.5	(15$^-$)			
		509.7	100	3324.3	(14$^-$)			
3964.8	(17$^-$)	535.4	100	3429.4	(15)$^-$	(E2)[a]	0.01632	
		813.7	37.5	3151.1	16$^+$	(E1)[a]		
3984.3	(16$^-$)	560[‡]	100	3423.4	(14$^-$)			
4043.7	(15$^-$)	291.6[#] *9*		3750.1	(14$^-$)			
		584.1[#] *5*		3459.9	(13$^-$)			
4061.6	(17$^-$)	524[‡]	100	3537.6	(15$^-$)			
4093.4	(18$^+$)	327[‡]		3766.5	18$^+$			
		561.0		3532.1	(16$^+$)			
		942.5		3151.1	16$^+$	(E2)		
4123.0	(17$^-$)	289[‡]		3833.8	(16$^-$)			
		545.6	100	3577.5	(15$^-$)	(E2)[a]	0.01559	
4137.1?	$^+$	986[e]	100	3151.1	16$^+$	(E2)		
4145.2	(16$^-$)	534[‡]	100	3611.2	(14$^-$)			
4213.9	(17$^-$)	578[‡]		3634.8	(15$^-$)			
		1063[‡]		3151.1	16$^+$			

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Adopted Levels, Gammas (continued)

γ(^{170}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	α[c]	Comments
4293.0	(17⁻)	576		3717.3	(15⁻)			
		1142		3151.1	16⁺			
4338.7	(16⁻)	294.8[#] *5*		4043.7	(15⁻)			
		588.7[#] *2*		3750.1	(14⁻)			
4364.1	(21⁻)	597.6	100	3766.5	18⁺			
4394.0	(18⁻)	271[‡]		4123.0	(17⁻)			
		560.3	100	3833.8	(16⁻)			
4418.3	(18⁻)	608[‡]		3810.2	(16⁻)			
		652[‡]		3766.5	18⁺			
4421.0	20⁺	654.5	100	3766.5	18⁺	E2	0.01014	B(E2)(W.u.)≈350
4528.9	(19⁻)	564.0	100	3964.8	(17⁻)	(E2)[a]	0.01438	
		762.4		3766.5	18⁺			
4584.4	(18⁻)	601[‡]	100	3984.3	(16⁻)			
4628.7	(17⁻)	290[‡]		4338.7	(16⁻)			
		585[‡]		4043.7	(15⁻)			
4669.6	(19⁻)	608[‡]	100	4061.6	(17⁻)			
4714.7	(19⁻)	591.7	100	4123.0	(17⁻)			
4726.2	(18⁻)	581[‡]	100	4145.2	(16⁻)			
4751.0	(20⁺)	330[‡]		4421.0	20⁺			
		657.5		4093.4	(18⁺)	(E2)	0.01004	
		984.4		3766.5	18⁺	(E2)		
4843.8	(19⁻)	630[‡]		4213.9	(17⁻)			
		1077[‡]		3766.5	18⁺			
4908.7	(19⁻)	380		4528.9	(19⁻)			
		616		4293.0	(17⁻)			
		944		3964.8	(17⁻)			
		1142		3766.5	18⁺			
4942.7	(18⁻)	314[‡]		4628.7	(17⁻)			
		604[‡]		4338.7	(16⁻)			
4968.0	(19⁻)	675		4293.0	(17⁻)			
4993.9	(20⁻)	279[‡]		4714.7	(19⁻)			
		599.9	100	4394.0	(18⁻)			
5065.1	(20⁻)	644[‡]		4421.0	20⁺			
		647[‡]		4418.3	(18⁻)			
5125.9	(21⁻)	596.9	100	4528.9	(19⁻)			
		705		4421.0	20⁺			
5130.2	22⁺	709.3	100	4421.0	20⁺	E2		
5222.4	(20⁻)	638[‡]	100	4584.4	(18⁻)			
5268.7	(19⁻)	326[‡]		4942.7	(18⁻)			
		640[‡]		4628.7	(17⁻)			
5342.9	(21⁻)	628.2	100	4714.7	(19⁻)			
5352.2	(20⁻)	626[‡]	100	4726.2	(18⁻)			
5357.6	(21⁻)	688[‡]	100	4669.6	(19⁻)			
5482.0	(22⁺)	352[‡]		5130.2	22⁺			
		731[‡]		4751.0	(20⁺)			
		1061[‡]		4421.0	20⁺			
5506.1	(21⁻)	380[‡]		5125.9	(21⁻)			
		538[‡]		4968.0	(19⁻)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	α[c]	Comments
5506.1	(21$^-$)	597.6		4908.7	(19$^-$)			Mult.: stretched Q (probably E2) from angular distribution ratio.
		1085[‡]		4421.0	20$^+$			Mult.: angular distribution ratio is consistent with pure stretched D; probably E1 because M1 transition of such high energy would be expected to show E2 admixture.
5525.9	(21$^-$)	682[‡]		4843.8	(19$^-$)			
		1105[‡]		4421.0	20$^+$			
5622.7	(20$^-$)	354[‡]		5268.7	(19$^-$)			
		680[‡]		4942.7	(18$^-$)			
5637.8	(22$^-$)	295[‡]		5342.9	(21$^-$)			
		643.8	100	4993.9	(20$^-$)			
5757.2	(22$^-$)	627[‡]		5130.2	22$^+$			
		692[‡]		5065.1	(20$^-$)			
5769.7	(23$^-$)	643.8	100	5125.9	(21$^-$)	(E2)	0.01054	Mult.: (Q) from (HI,xnγ); band structure.
5897.4	(22$^-$)	675[‡]	100	5222.4	(20$^-$)			
5902.8	24$^+$	772.3	100	5130.2	22$^+$			
5995.7	(21$^-$)	373[‡]		5622.7	(20$^-$)			
		727[‡]		5268.7	(19$^-$)			
6014.6	(23$^-$)	671.7	100	5342.9	(21$^-$)			
6023	(22$^-$)	671[‡]	100	5352.2	(20$^-$)			
6117.6	(23$^-$)	760[‡]	100	5357.6	(21$^-$)			
6128.3	(23$^-$)	622.3		5506.1	(21$^-$)			
		998[‡]		5130.2	22$^+$			
6262.9	(23$^-$)	737[‡]	100	5525.9	(21$^-$)			
6267.0	(24$^+$)	364[‡]		5902.8	24$^+$			
		785[‡]		5482.0	(22$^+$)			
		1137[‡]		5130.2	22$^+$			
6338.9	(24$^-$)	701.1	100	5637.8	(22$^-$)			
6387.7	(22$^-$)	392[‡]		5995.7	(21$^-$)			
		765[‡]		5622.7	(20$^-$)			
6476.2	(25$^-$)	706.6	100	5769.7	(23$^-$)	(E2)		
6499.2	(24$^-$)	742[‡]	100	5757.2	(22$^-$)			
6618	(24$^-$)	721[‡]	100	5897.4	(22$^-$)			
6738.6	26$^+$	835.8	100	5902.8	24$^+$			
6744.2	(25$^-$)	729.6	100	6014.6	(23$^-$)			
6746	(24$^-$)	723[‡]	100	6023	(22$^-$)			
6795.9	(25$^-$)	667.5	100	6128.3	(23$^-$)			
6797.7	(23$^-$)	410[‡]		6387.7	(22$^-$)			
		802[‡]		5995.7	(21$^-$)			
6940	(25$^-$)	822[‡]	100	6117.6	(23$^-$)			
7043.9	(25$^-$)	781[‡]	100	6262.9	(23$^-$)			
7095.9	(26$^+$)	829[‡]		6267.0	(24$^+$)			
		1193[‡]		5902.8	24$^+$			
7106.2	(26$^-$)	767.3	100	6338.9	(24$^-$)			
7224.7	(24$^-$)	427[‡]		6797.7	(23$^-$)			
		837[‡]		6387.7	(22$^-$)			
7251.5	(27$^-$)	775.3	100	6476.2	(25$^-$)			
7286.2	(26$^-$)	787[‡]	100	6499.2	(24$^-$)			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π
7397	(26$^-$)	779[‡]	100	6618	(24$^-$)
7512.3	(27$^-$)	716.4	100	6795.9	(25$^-$)
7520	(26$^-$)	774[‡]	100	6746	(24$^-$)
7542.3	(27$^-$)	798.1	100	6744.2	(25$^-$)
7635.7	28$^+$	897.1	100	6738.6	26$^+$
7800	(27$^-$)	860[‡]	100	6940	(25$^-$)
7867.9	(27$^-$)	824[‡]	100	7043.9	(25$^-$)
7944.3	(28$^-$)	838.1	100	7106.2	(26$^-$)
7966.9	(28$^+$)	871[‡]	100	7095.9	(26$^+$)
8098.7	(29$^-$)	847.3	100	7251.5	(27$^-$)
8123.2	(28$^-$)	837[‡]	100	7286.2	(26$^-$)
8241	(28$^-$)	844[‡]	100	7397	(26$^-$)
8282.8	(29$^-$)	770.4	100	7512.3	(27$^-$)
8345	(28$^-$)	825[‡]	100	7520	(26$^-$)
8410	(29$^-$)	868.0	100	7542.3	(27$^-$)
8590.1	30$^+$	954.4	100	7635.7	28$^+$
8667	(29$^-$)	867[‡]	100	7800	(27$^-$)
8851	(30$^-$)	906.9	100	7944.3	(28$^-$)
8881.9	(30$^+$)	915[‡]	100	7966.9	(28$^+$)
9016.3	(31$^-$)	917.6	100	8098.7	(29$^-$)
9025.2	(30$^-$)	902[‡]	100	8123.2	(28$^-$)
9109.7	(31$^-$)	826.9	100	8282.8	(29$^-$)
9150	(30$^-$)	909[‡]	100	8241	(28$^-$)
9238	(30$^-$)	893[‡]	100	8345	(28$^-$)
9344	(31$^-$)	933.3	100	8410	(29$^-$)
9577	(31$^-$)	910[‡]	100	8667	(29$^-$)
9598.2	32$^+$	1008.1	100	8590.1	30$^+$
9819	(32$^-$)	968[‡]	100	8851	(30$^-$)
9840.9	(32$^+$)	959[‡]	100	8881.9	(30$^+$)
9996	(32$^-$)	971[‡]	100	9025.2	(30$^-$)
9996.1	(33$^-$)	886.3		9109.7	(31$^-$)
		980[‡][e]		9016.3	(31$^-$)
10001.6	(33$^-$)	985.4	100	9016.3	(31$^-$)
10123	(32$^-$)	973[‡]	100	9150	(30$^-$)
10335	(33$^-$)	991[‡]	100	9344	(31$^-$)
10654	34$^+$	1055.5	100	9598.2	32$^+$
10837	(34$^-$)	1018[‡]	100	9819	(32$^-$)
10847	(34$^+$)	1006[‡]	100	9840.9	(32$^+$)
10941.6	(35$^-$)	940[‡][e]		10001.6	(33$^-$)
		945.5		9996.1	(33$^-$)
11027	(34$^-$)	1032[‡]	100	9996	(32$^-$)
11049	(35$^-$)	1047[‡]	100	10001.6	(33$^-$)
11140	(34$^-$)	1017[‡]	100	10123	(32$^-$)
11366	(35$^-$)	1031[‡]	100	10335	(33$^-$)
11750	36$^+$	1096[‡]	100	10654	34$^+$
11888	(36$^-$)	1051[‡]	100	10837	(34$^-$)
11902	(36$^+$)	1055[‡]	100	10847	(34$^+$)
11944.6	(37$^-$)	1003[‡]	100	10941.6	(35$^-$)

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
12108	(36$^-$)	1080[‡]	100	11027	(34$^-$)
12146	(37$^-$)	1097[‡]	100	11049	(35$^-$)
12404	(37$^-$)	1038[‡]	100	11366	(35$^-$)
12880	38$^+$	1130[‡]	100	11750	36$^+$
12950?	(38$^-$)	1062[‡e]	100	11888	(36$^-$)
12985	(38$^+$)	1083	100	11902	(36$^+$)
13004	(39$^-$)	1059[‡]	100	11944.6	(37$^-$)
13277	(39$^-$)	1131[‡]	100	12146	(37$^-$)
14024?	(40$^-$)	1074[‡e]	100	12950?	(38$^-$)
14031	40$^+$	1151[‡]	100	12880	38$^+$
14117	(41$^-$)	1113[‡]	100	13004	(39$^-$)
15284	(43$^-$)	1167[‡]	100	14117	(41$^-$)
16504	(45$^-$)	1220[‡]	100	15284	(43$^-$)
17776	(47$^-$)	1272[‡]	100	16504	(45$^-$)
19101	(49$^-$)	1325[‡]	100	17776	(47$^-$)
239.0+x	J+1	239[‡]	100	0+x	J
504.0+x	J+2	265[‡]		239.0+x	J+1
		504[‡]		0+x	J
790.0+x	J+3	286[‡]		504.0+x	J+2
		551[‡]		239.0+x	J+1
1095.0+x	J+4	305[‡]		790.0+x	J+3
		591[‡]		504.0+x	J+2
1413.0+x	J+5	318[‡]		1095.0+x	J+4
		623[‡]		790.0+x	J+3
1743.0+x	J+6	330[‡]		1413.0+x	J+5
		648[‡]		1095.0+x	J+4
2079.0+x	J+7	336[‡]		1743.0+x	J+6
		666[‡]		1413.0+x	J+5
2419.0+x	J+8	340[‡]		2079.0+x	J+7
		676[‡]		1743.0+x	J+6
2763.0+x	J+9	344[‡]		2419.0+x	J+8
		684[‡]		2079.0+x	J+7
3116.0+x	J+10	353[‡]		2763.0+x	J+9
		697[‡]		2419.0+x	J+8
3482.0+x	J+11	366[‡]		3116.0+x	J+10
		719[‡]		2763.0+x	J+9
3862.0+x	J+12	380[‡]		3482.0+x	J+11
		746[‡]		3116.0+x	J+10
722.6+y	J1+2	722.6 *5*		y	J1
1497.8+y	J1+4	775.2 *5*		722.6+y	J1+2
2328.3+y	J1+6	830.5[b] *3*	100[b]	1497.8+y	J1+4
3213.5+y	J1+8	885.2[b] *3*	100[b]	2328.3+y	J1+6
4153.3+y	J1+10	939.8[b] *3*	100[b]	3213.5+y	J1+8
5145.4+y	J1+12	992.1[b] *3*	100[b]	4153.3+y	J1+10
6188.6+y	J1+14	1043.2[b] *3*	100[b]	5145.4+y	J1+12
7283.6+y	J1+16	1095.0[b] *3*	100[b]	6188.6+y	J1+14

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

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

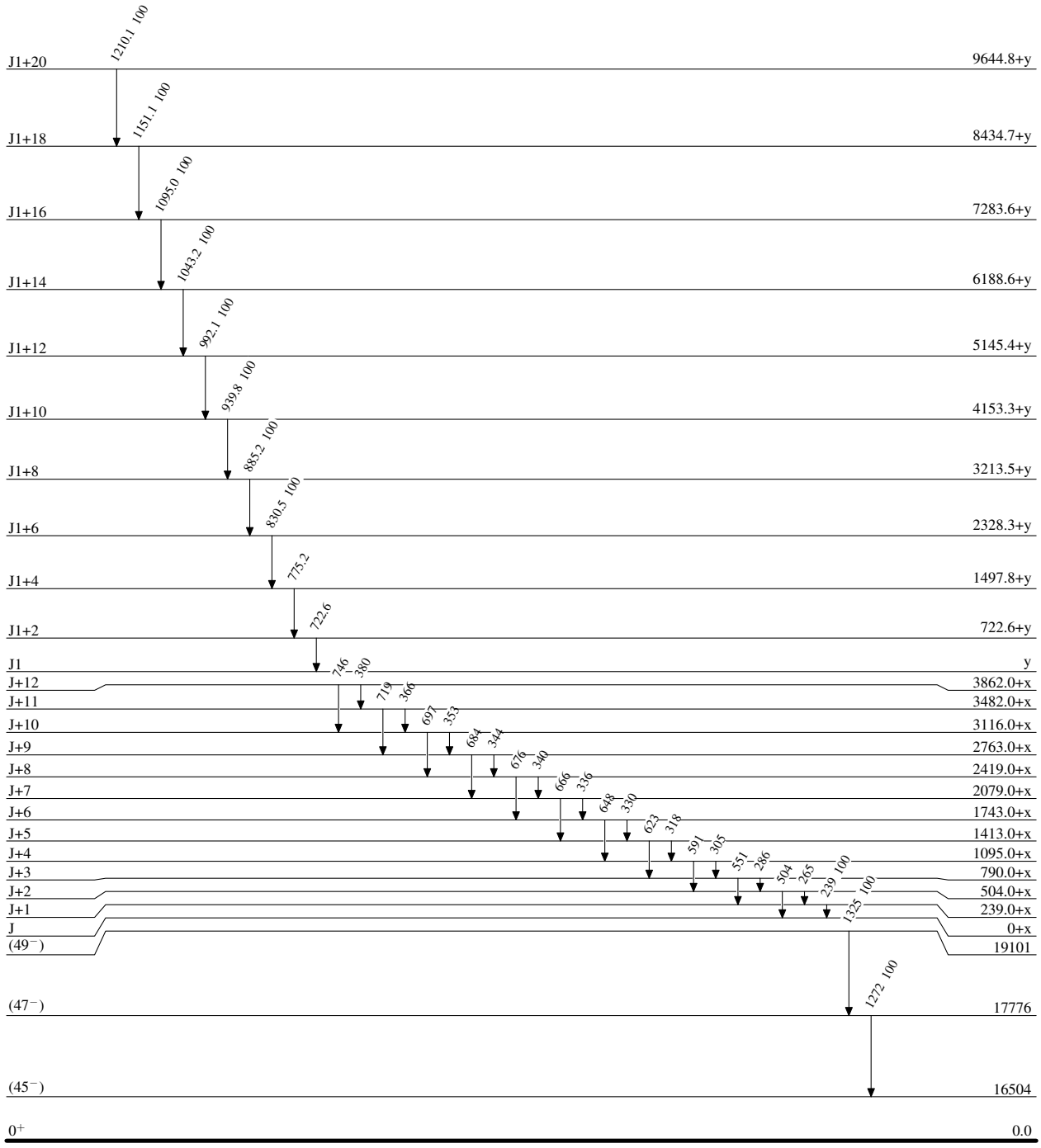
E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
8434.7+y	J1+18	1151.1[b] *3*	100[b]	7283.6+y	J1+16
9644.8+y	J1+20	1210.1[b] *10*	100[b]	8434.7+y	J1+18

† From (HI,xnγ), except as noted.
‡ From ^{124}Sn(^{50}Ti,4nγ):SD.
# From ^{128}Te(^{48}Ca,6nγ).
@ From prompt Iγ In ^{128}Te(^{48}Ca,6nγ).
& From ^{170}Ta ε decay.
[a] Q, (Q) or D from $\gamma(\theta)$ in (HI,xnγ); $\Delta\pi$ from band structure.
[b] From ^{124}Sn(^{50}Ti,4nγ):SD. Iγ (if given) is relative intensity within the SD band.
[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 with intensity suitably divided.
[e] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{170}_{72}Hf_{98}$

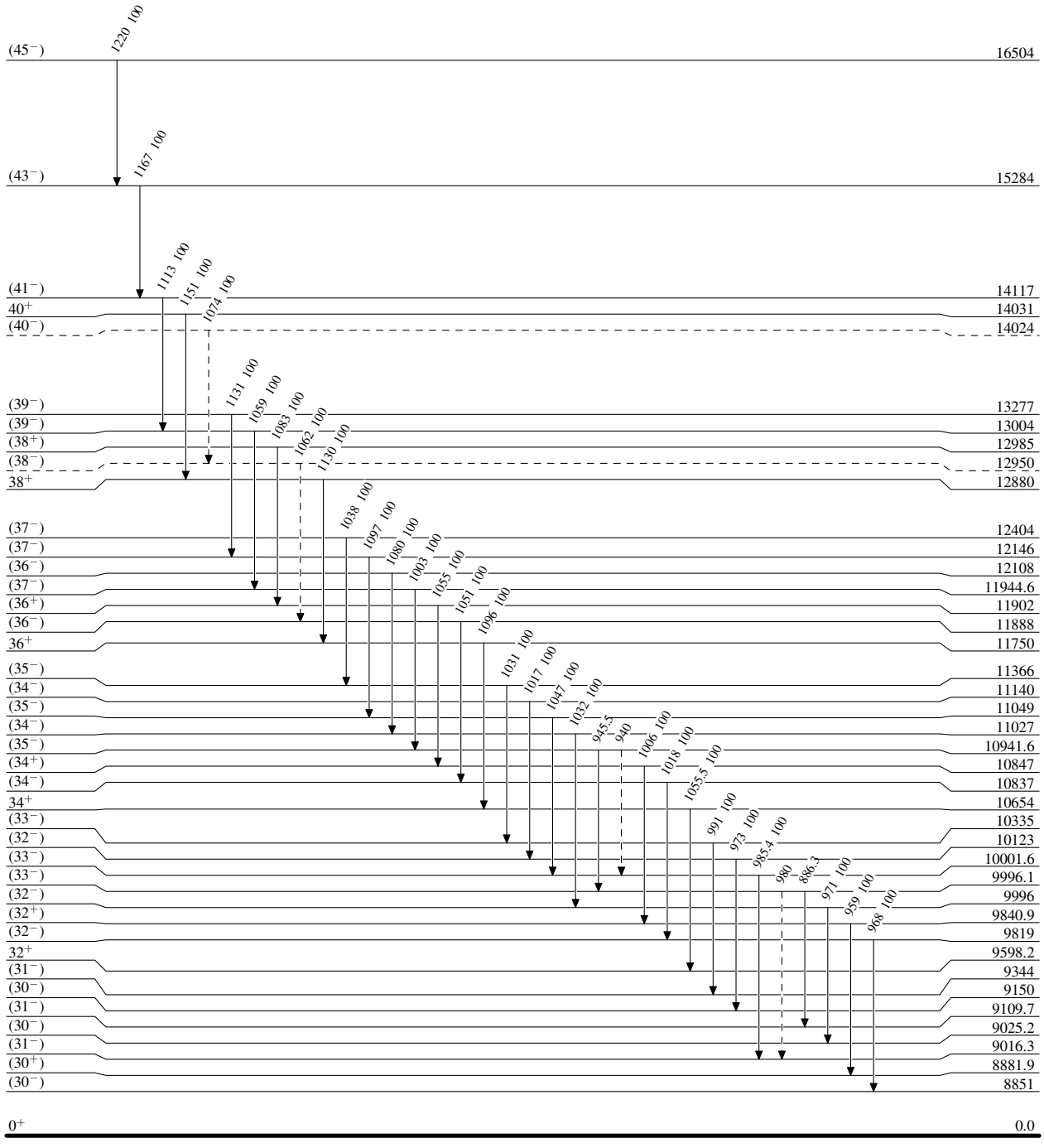
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



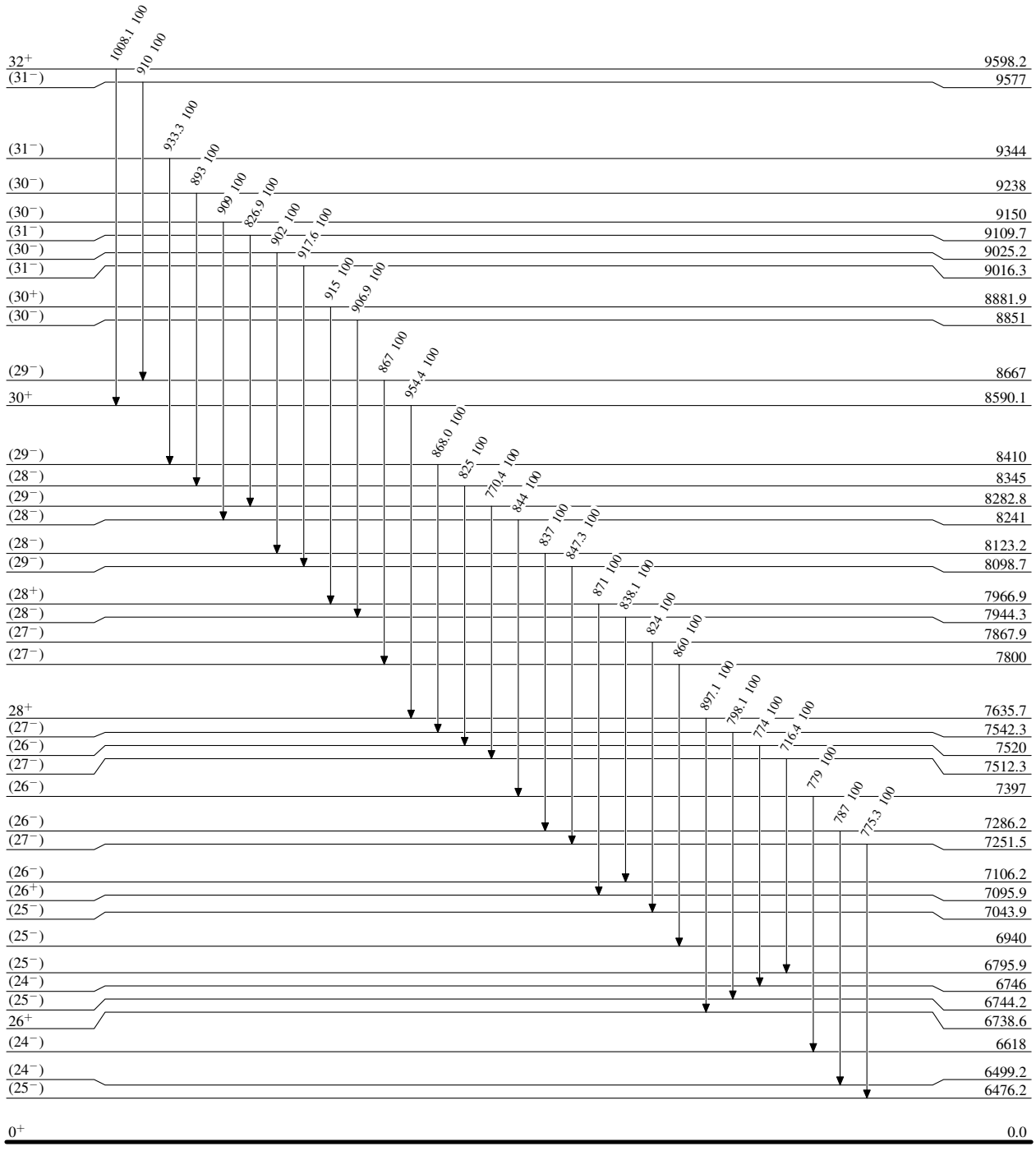
16.01 h *13*

$^{170}_{72}Hf_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

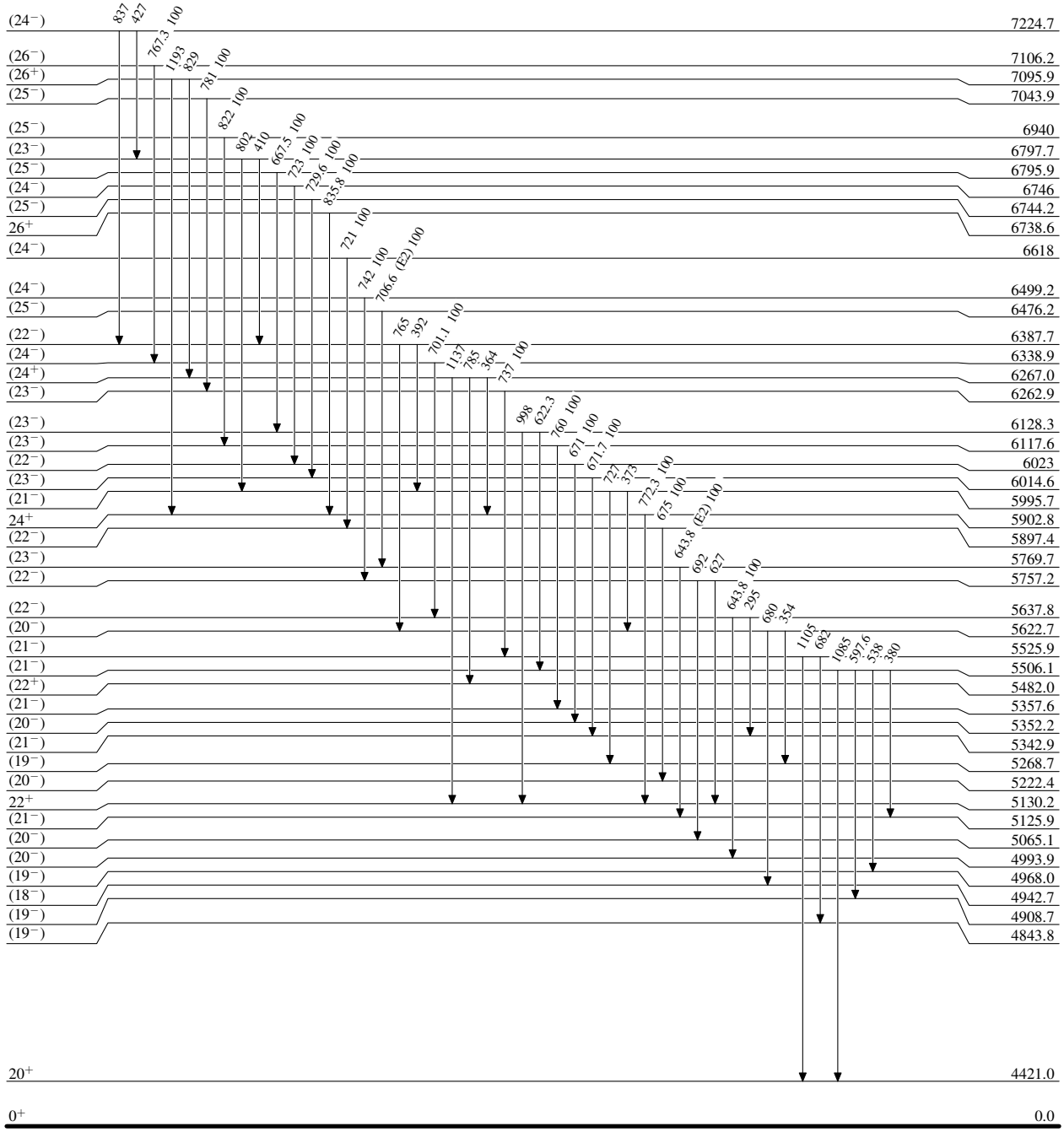


$^{170}_{72}Hf_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

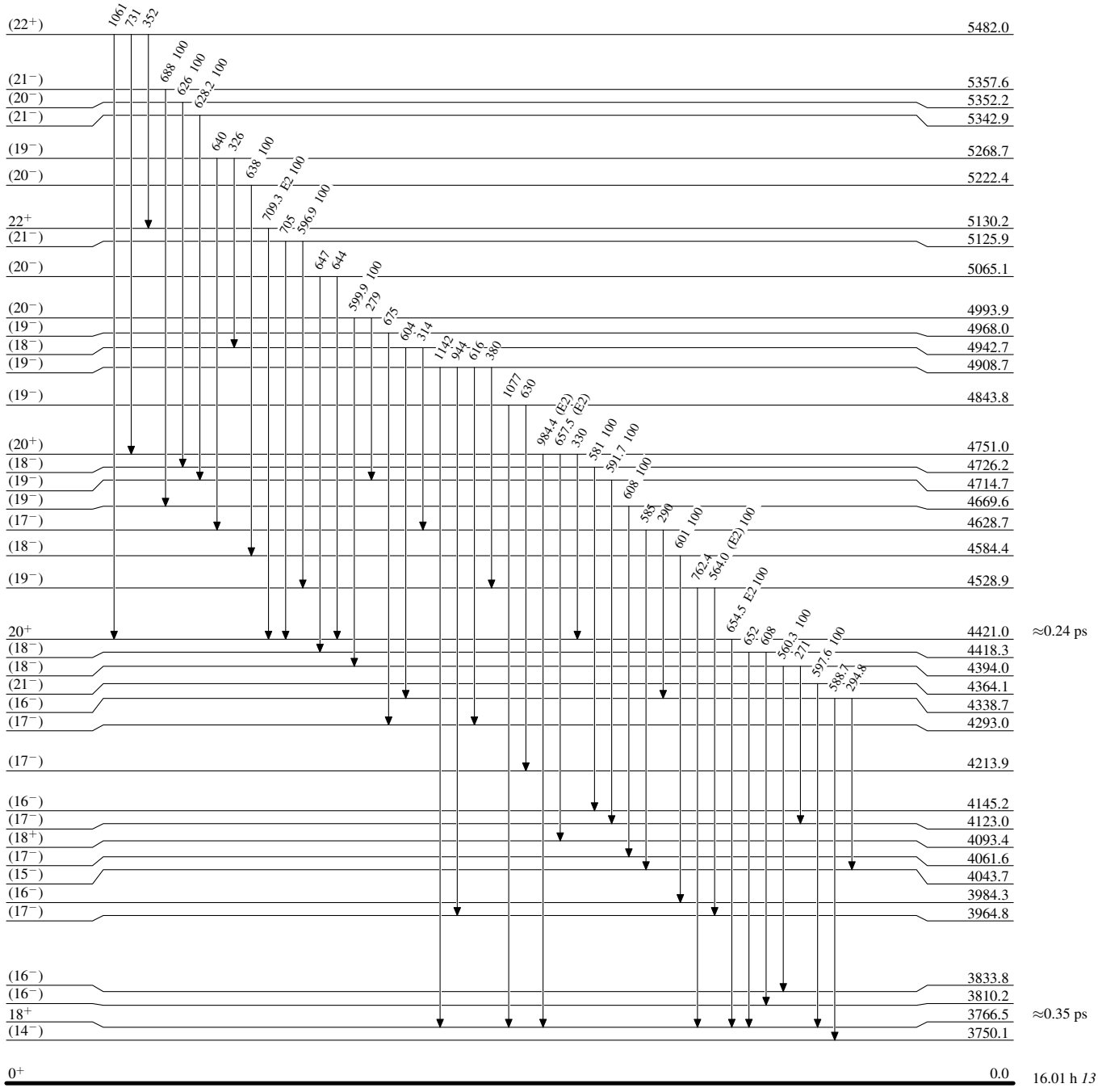


$^{170}_{72}Hf_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{170}_{72}Hf_{98}$

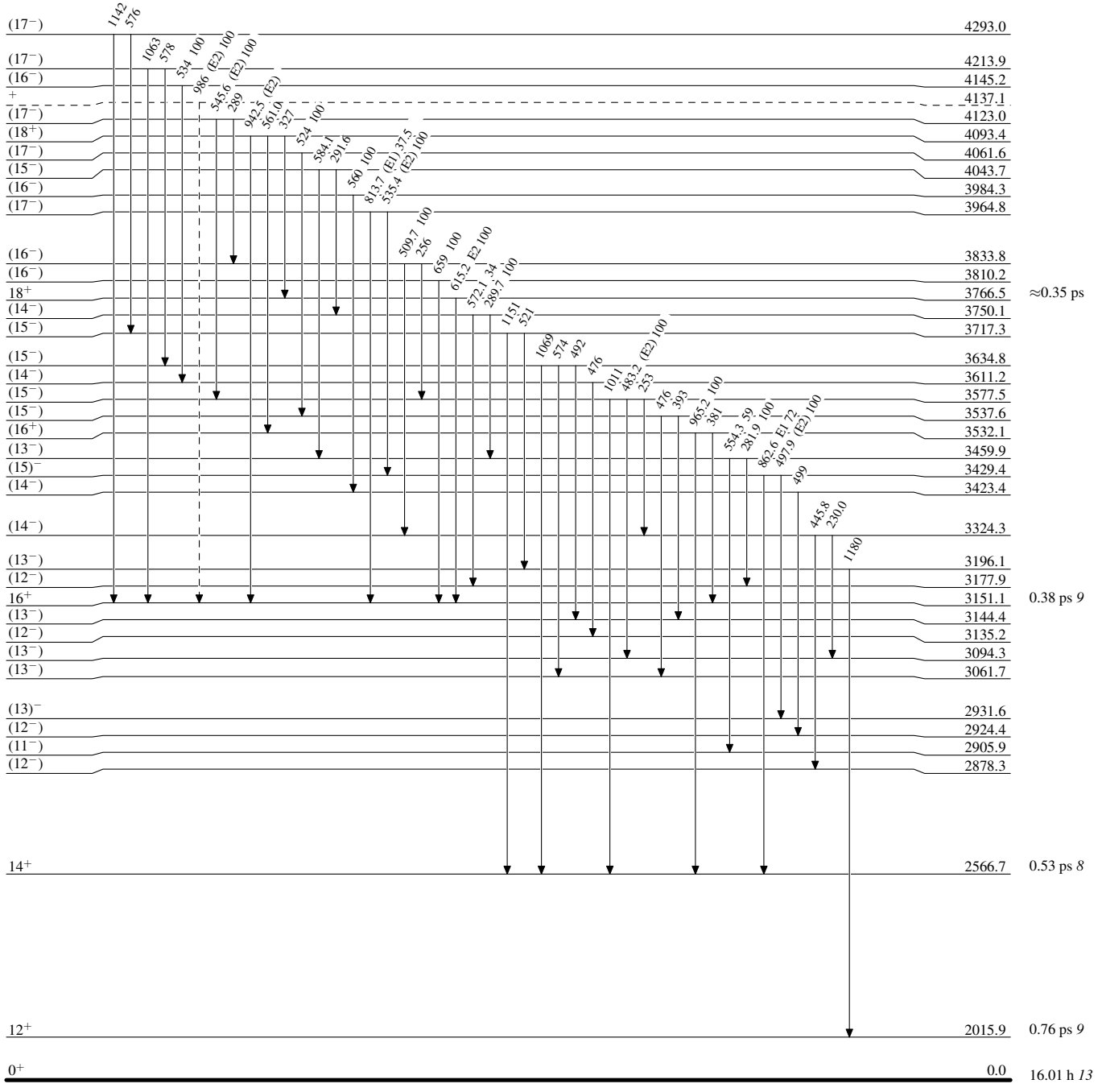
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

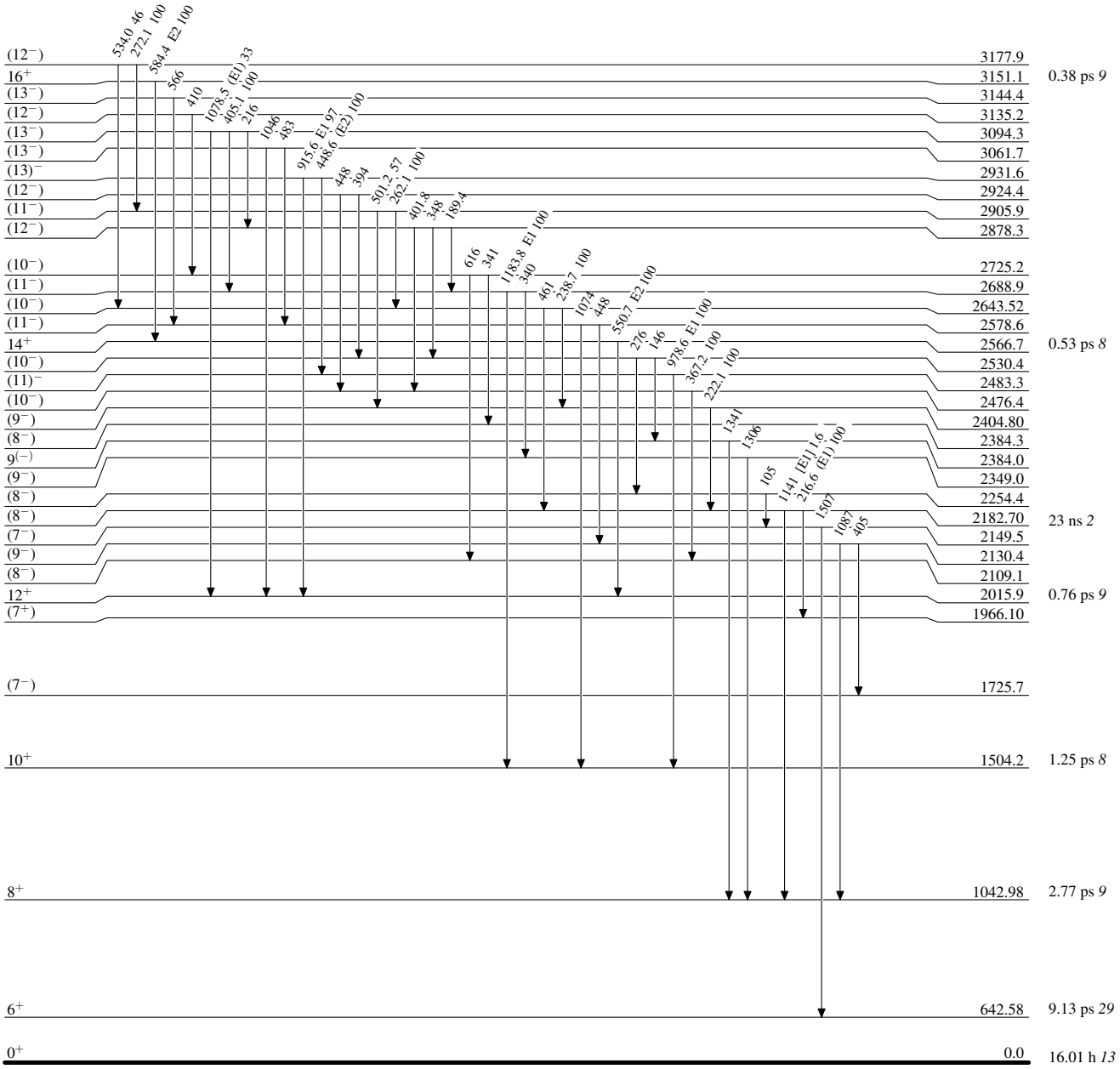


$^{170}_{72}Hf_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

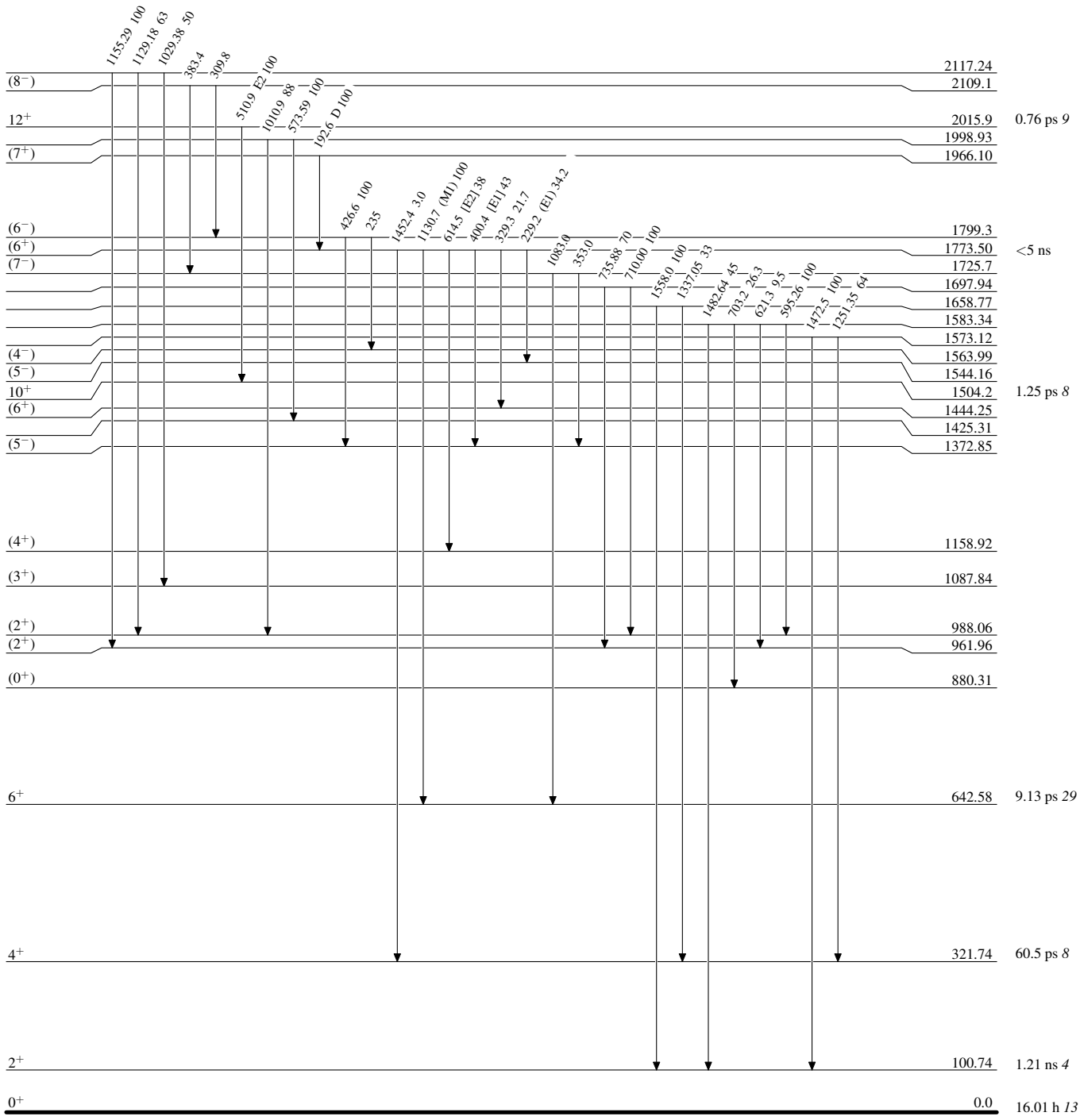


$^{170}_{72}Hf_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{170}_{72}Hf_{98}$

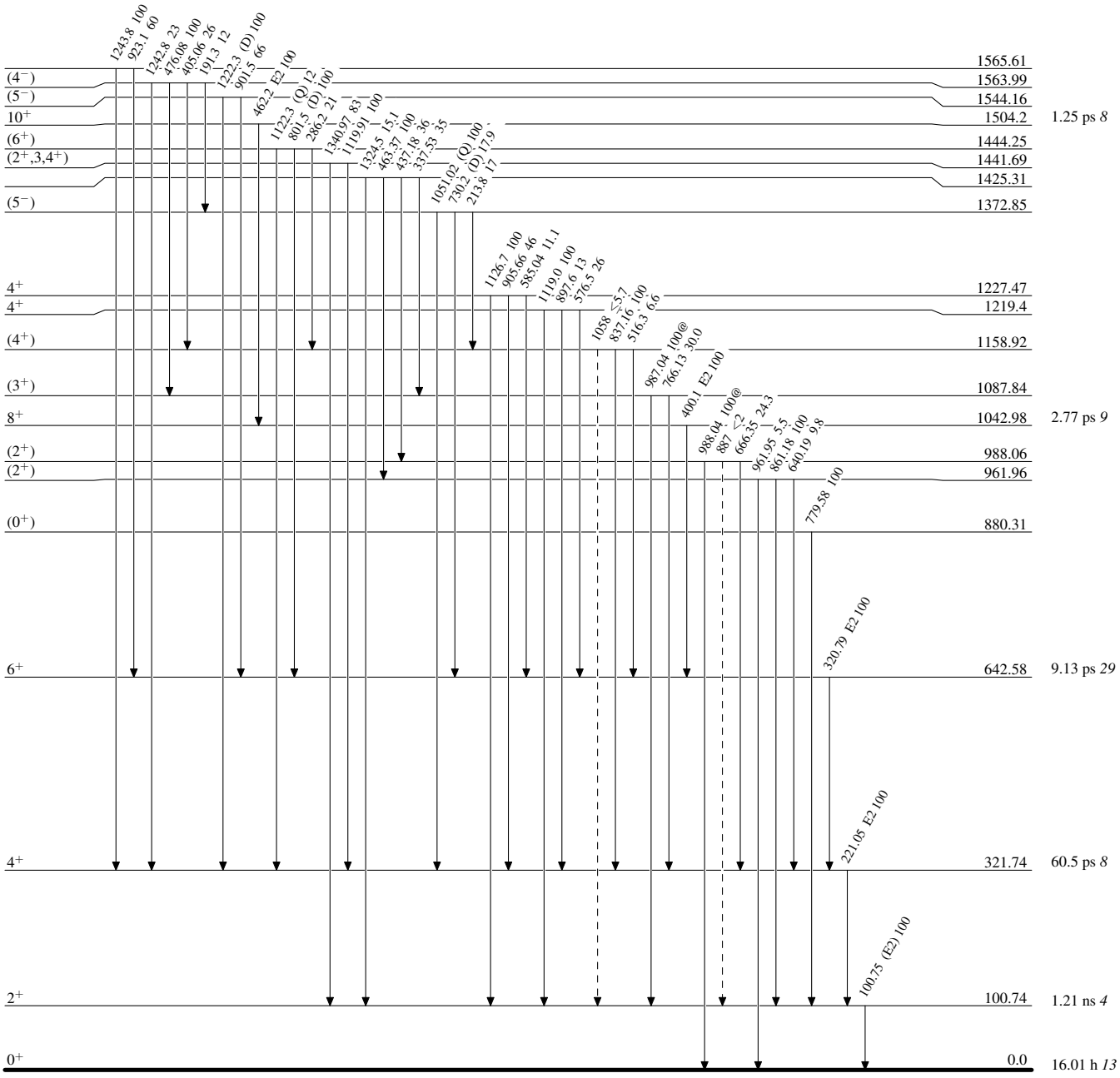
Adopted Levels, Gammas

Legend

Level Scheme (continued)

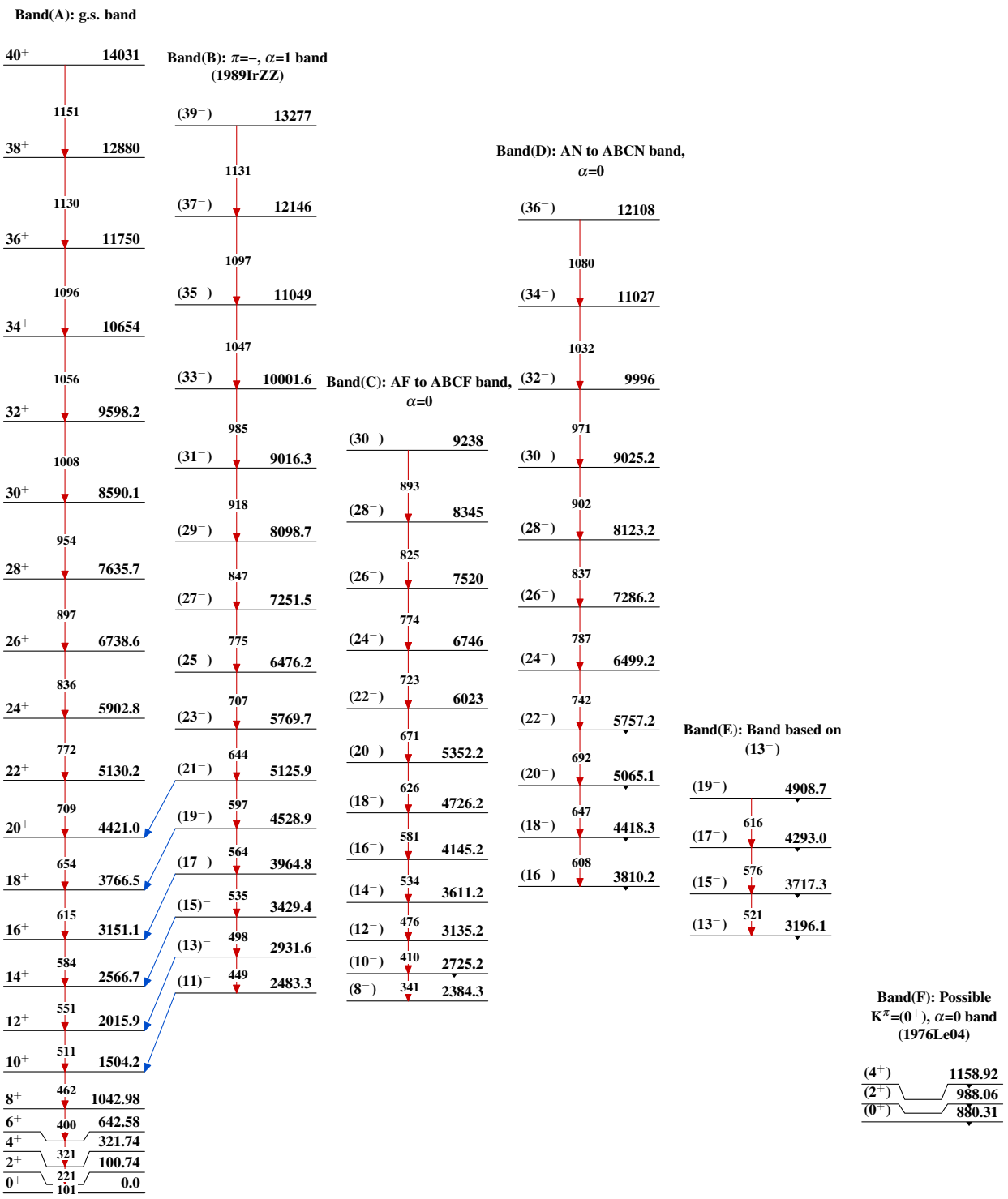
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

- - - - - - ► γ Decay (Uncertain)



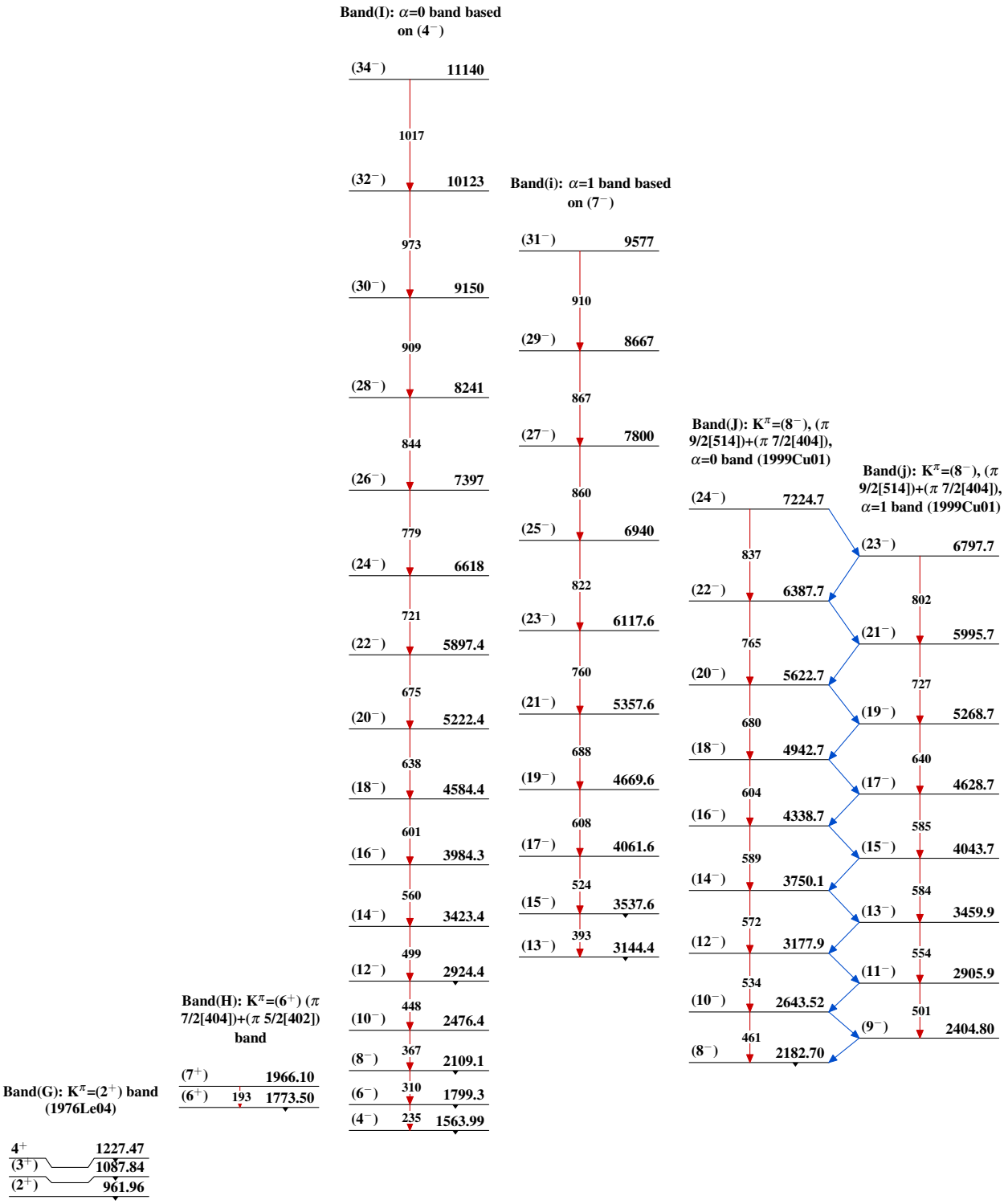
$^{170}_{72}Hf_{98}$

Adopted Levels, Gammas

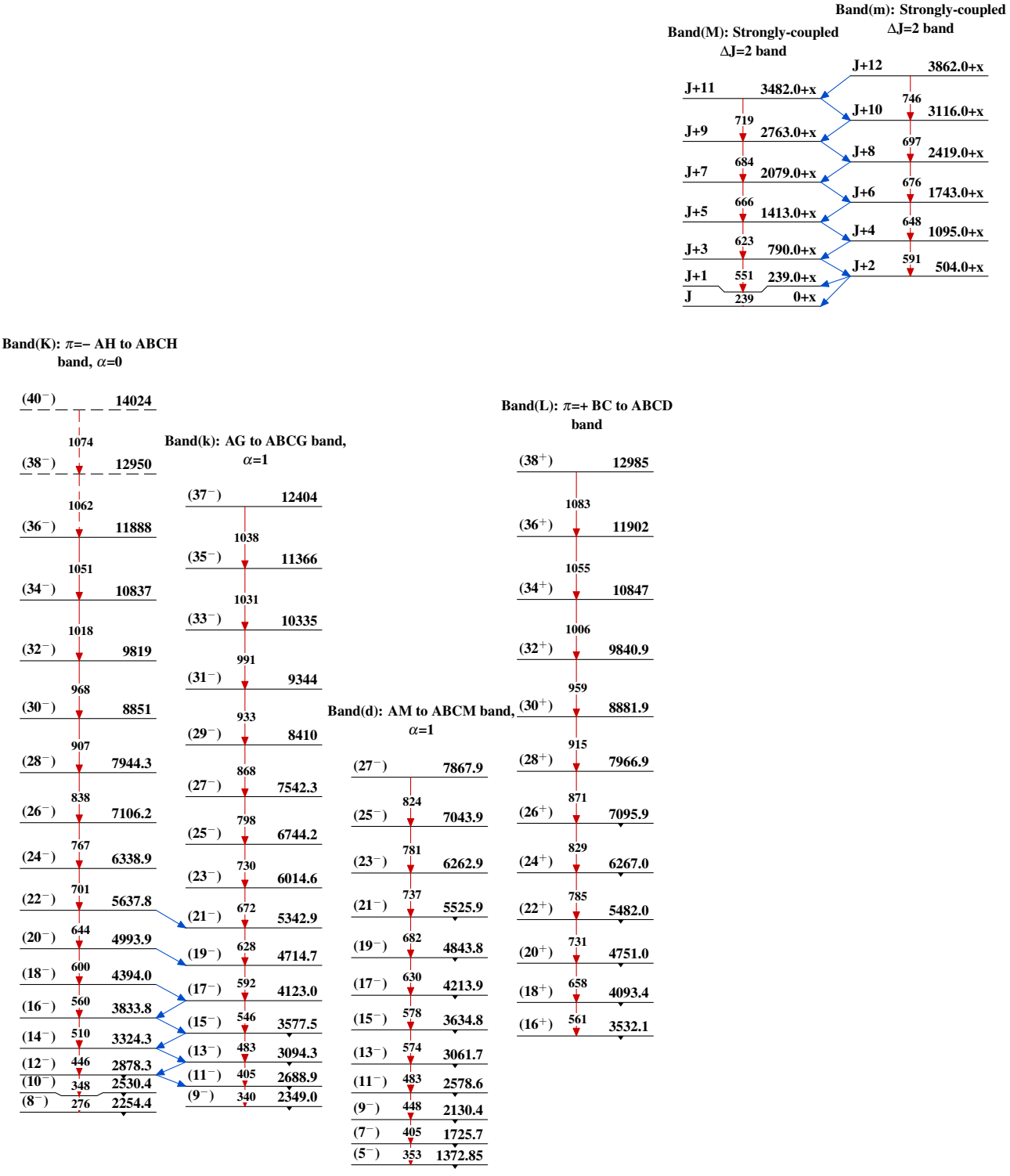


$^{170}_{72}Hf_{98}$

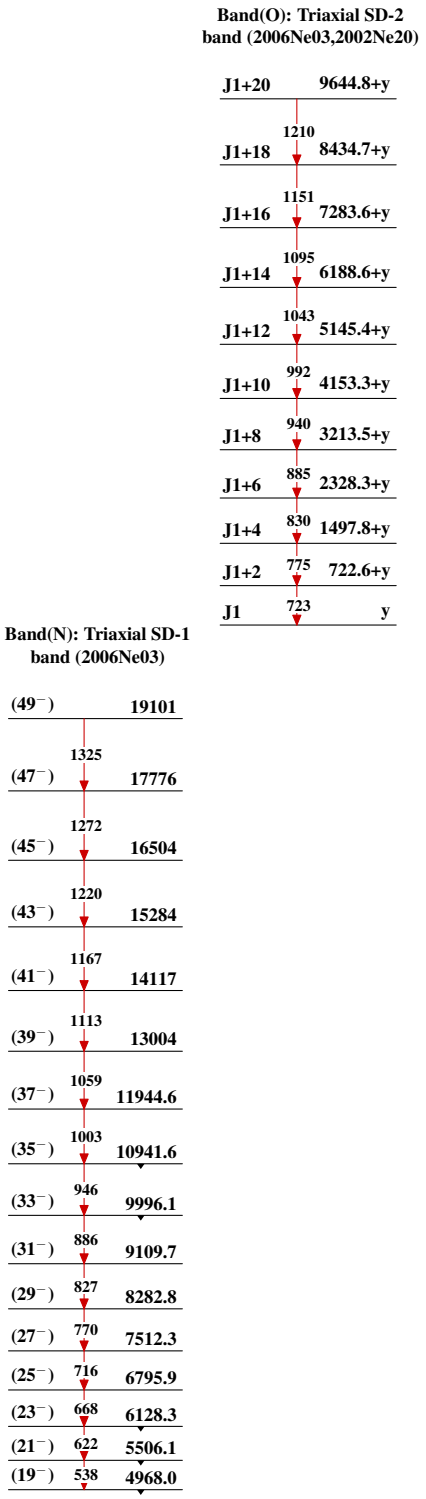
Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{170}_{72}Hf_{98}$