Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Update	Balraj Singh		26-Jul-2005

Q(β^-)=−4.11×10^3 *3*; S(n)=8.51×10^3 *3*; S(p)=6253.0 *22*; Q(α)=2493.1 *24* 2012Wa38
Note: Current evaluation has used the following Q record −3844 808640 SY6252.0 222494.8 *25* 1995Au04.
Q(β^-): from Eβ+=2525 *80* to 297 level from ^{174}Ta ε+β^+ decay (1971Ch26).
Additional information 1.
Isotope shift: 1999Le11, 1995Ga38, 1994Zi04, 1994Ji07, 1994BoZR, 1994An14, 1994An09, 1992Be07.

^{174}Hf Levels

Cross Reference (XREF) Flags

A	^{174}Ta ε decay	E	^{130}Te(^{48}Ca,4nγ):SD
B	^{172}Yb(α,2nγ),^{160}Gd(^{18}O,4nγ)	F	Coulomb excitation
C	^{175}Lu(p,2nγ),(d,3nγ)	G	^{174}Hf(d,d′)
D	^{130}Te(^{48}Ca,4nγ)		

E(level)[#]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[@]	0$^+$	2.0×10^{15} y *4*	ABCD F	%α=100 T$_{1/2}$: from 1961Ma05, value recommended by 1990Ho28. Other value: 4.3×10^{15} y (1959Ri34).
90.985[@] *19*	2$^+$	1.66 ns *7*	ABCD F	T$_{1/2}$: weighted average of 1.68 ns *8* (1971Ch26) and 1.64 ns *10* (1965Ab02,1967Ab06) from ^{174}Ta ε decay. Other value: 1.38 ns *9*, Coul. ex. (1971Ej01,1963Bj04). J$^\pi$: 91.00 E2 γ to 0$^+$.
297.38[@] *4*	4$^+$		ABCD F	J$^\pi$: 206.5 E2 γ to 2$^+$.
608.26[@] *5*	6$^+$		ABCD F	J$^\pi$: 310.9 E2 γ to 4$^+$.
828.13[&] *24*	0$^+$		ABCD G	J$^\pi$: 828.0 E0 transition to 0$^+$.
900.24[&] *4*	2$^+$	2.2 ps *5*	ABCD FG	T$_{1/2}$: from Coul. ex. (1971Ej01). J$^\pi$: 809.33 E0+M1+E2 γ to 2$^+$.
1009.6[@]	8$^+$		BCD F	J$^\pi$: 401.0 stretched E2 γ to 6$^+$.
1062.17[&] *4*	4$^+$		ABCD G	J$^\pi$: 764.8 E0+M1+E2 γ to 4$^+$.
1226.77[a] *7*	2$^+$	0.36 ps *6*	A FG	T$_{1/2}$: from Coul. ex. (1971Ej01). J$^\pi$: 1227.0γ to 0$^+$. Observed in Coul. ex.
1303.36[b] *8*	(3$^+$)		AB D	J$^\pi$: 1006.2γ to 4$^+$, 1212.3γ to 2$^+$. State is possibly mixed with K^π=2$^+$ γ-vibrational band.
1307.4[&]	6$^+$		BCD	J$^\pi$: 699 M1+E2 γ to 6$^+$, 245γ to 4$^+$, 298γ to 8$^+$.
1308.69[c] *10*	(2$^-$)		A G	
1319.40[d] *5*	2$^+$	≤5 ns	A	J$^\pi$: 419.0γ and 1228.3γ to 2$^+$ are E0+M1+E2. T$_{1/2}$: from ^{174}Ta ε decay, $\gamma\gamma$(t) (1975Ca11).
1321[c]	(3$^-$)		G	
1336.48[a] *7*	(3)$^+$		A	J$^\pi$: 1245.5 M1+E2 γ to 2$^+$, 1038.9γ to 4$^+$.
1394.60[b] *8*	(4)$^+$		AB D G	J$^\pi$: 1097.3 M1+E2 γ to 4$^+$, 1303.5γ to 2$^+$.
1425.24[c] *8*	(4)$^-$		AB D	J$^\pi$: 1127.8 (E1) γ to 4$^+$, 996.6 M1+E2 γ from 3$^-$.
1442.66[c] *11*	(5$^-$)		A G	XREF: G(1443). J$^\pi$: 1145.2γ to 4$^+$, 834.3γ to 6$^+$, 979.3γ from 3$^-$.
1448.85[a] *6*	4$^+$		A D G	XREF: G(1449). J$^\pi$: 840.8γ to 6$^+$, 1151.4γ (E2) to 4$^+$, 1357.9γ to 2$^+$.
1485.9[@]	(10$^+$)		BCD	J$^\pi$: 476.4γ to 8$^+$.
1496.36 *11*	2$^+$		A	J$^\pi$: 1496.5γ to 0$^+$, 1198.9γ to 4$^+$.

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Adopted Levels, Gammas (continued)

^{174}Hf Levels (continued)

E(level)[#]	Jπ[‡]	$T_{1/2}$	XREF	Comments
1503.29[d] *5*	$(4)^+$	≤5 ns	A	$T_{1/2}$: from ^{174}Ta ε decay (1975Ca11). Jπ: 1205.9 M1+E2 γ to 4^+, 1412.5γ to 2^+.
1508.2[b]	(5^+)		B	Jπ: 900.0γ to 6^+, 1210.8γ to 4^+.
1549.3[e]	(6^+)	138 ns *4*	BC	μ=+5.42 *5* $T_{1/2}$: from (α,2nγ) (1980Wa23). Other value: 133 ns (1983Wa21,1976KhZR). Jπ: 941.1γ to 6^+, 1251.8γ to 4^+. μ: From g-factor=0.892 *8*, does not include a Knight-shift correction (1989Ra17,1980Wa23).
1561.72[m] *14*	4^-		D	
1626.0 *3*	4^+		A	Jπ: 1534.7γ to 2^+, 1018.5γ to 6^+.
1627.4[m] *3*	5^-		D	Jπ: 1019.3γ to 6^+, 1330.0γ to 4^+.
1630.5[&]	(8^+)		BCD	Jπ: 323.1γ to 6^+, 620.9γ to 8^+.
1634.4[c]	(6^-)		B D	Jπ: 1026.2γ to 6^+.
1642.15[b] *9*	6^+		D	
1648.33[h] *18*	4^-		A D	
1650.6[c]	(7^-)		B D	Jπ: 1042.4γ to 6^+.
1658.41[a] *7*	(5^+)		A	Jπ: 1361.0γ to 4^+, 1050.2γ to 6^+. $J^\pi=(5^+)$ assignment is not consistent with log *ft*=7.45 from ^{174}Ta ($J^\pi=3^{(+)}$) ε+β+ decay.
1713.5[i]	(6^-)	0.45 ns *10*	B	Jπ: 164.3γ and 1105.1γ to 6^+ states. $T_{1/2}$: from γ(t) in (α,2nγ) (1987AnZR).
1722.43[m] *19*	6^-		D	
1737.4[e]	(7^+)		B D	Jπ: 188.1γ to (6^+).
1767.66[h] *11*	5^-		D	
1779.9 *2*	$(2^+,3,4^+)^\dagger$		A	
1797.5[f]	(8^-)	2.39 μs *4*	B D F	$T_{1/2}$: from ^{172}Yb(α,2nγ), ^{160}Gd(^{18}O,4nγ) (1974KhZW). Other: 2.5 μs *6* (2002Pf01). Consistent with Weisskopf estimate of $T_{1/2}$ (1 μs) for 248 (M2) γ. Competition between 60.1 (E1) γ and 248 (M2) γ is possible because of the additional ΔK=2 hindrance for the 60.1 (E1) γ. Jπ: 60.1 (E1) γ to (7^+), 248.2 (M2) γ to (6^+).
1798.0[b]	(7^+)		B D	Jπ: 289.8γ to (5^+).
1827.4[i]	(7^-)		B D	Jπ: 113.9γ to (6^-).
1838.14[m] *17*	7^-		D	
1861.78 *15*	$(2^+,3,4^+)^\dagger$		A	
1904.4 *3*	(6^+)		A	Jπ: 1295.3γ to 6^+, 1607.2γ to 4^+.
1910.0[k] *3*	(6^-)		D	
1928.4[c]	(8^-)		B D	Jπ: 918.8γ to 8^+.
1937.46[h] *14*	6^-		D	
1943.9[c]	(9^-)		B D	Jπ: 934.3γ to 8^+.
1948.1[e]	(8^+)		B D	Jπ: 210.7γ to (7^+), 399.4γ to (6^+).
1963.4[i]	(8^-)		B D	Jπ: 136.1γ to (7^-).
1972.06[b] *10*	8^+		D	
1981.50[m] *21*	8^-		D	
2016.7 *3*	6^-		D	
2020.5[@]	(12^+)		BCD	Jπ: 534.6 stretched (E2) γ to (10^+).
2026.3[&]	(10^+)		BCD	XREF: B(2026.3). Jπ: 395.9γ to (8^+), 540.3γ to (10^+).
2028.0[f]	(9^-)	0.5 ps *3*	B D F	Coulomb excitation of ^{174}Hf($J^\pi=(8^-)$, 2.39 μs). $T_{1/2}$: deduced by evaluator from B(E2)↑(8^- to 9^-)=2 *1*.

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Adopted Levels, Gammas (continued)

^{174}Hf Levels (continued)

E(level)[#]	Jπ[‡]	XREF	Comments
			Jπ: 230.5γ to (8⁻).
2030.25 *15*	4(+)	A	Jπ: 1939.2γ to 2⁺, 1732.9γ to 4⁺, 1421.9γ to 6⁺.
2084.35[h] *9*	7⁻	D	
2119.0[i]	(9⁻)	B D	Jπ: 155.6γ to (8⁻), 292.4γ to (7⁻).
2124.56[k] *20*	(8⁻)	D	
2135.43[m] *25*	9⁻	D	
2167.1[b]	(9⁺)	B D	Jπ: 369.1γ to (7⁺).
2180.0[e]	(9⁺)	B D	Jπ: 231.9γ to (8⁺), 442.4γ to (7⁺).
2276.87[h] *9*	8⁻	D	
2279.2[f]	(10⁻)	B D	Jπ: 251.4γ to (9⁻), 481γ to (8⁻).
2295.7[i]	(10⁻)	B D	Jπ: 176.7γ to (9⁻), 332.2γ to (8⁻).
2299.4[c]	(10⁻)	B D	Jπ: 371.0γ to (8⁻).
2319.2[c]	(11⁻)	B D	Jπ: 375.2γ to (9⁻).
2331.5[m] *4*	10⁻	D	
2338.51 *13*	(2⁺,3,4⁺)†	A	
2353.99 *25*	(3,4⁺)†	A	
2379.22[b] *10*	10⁺	D	
2402.80 *7*	2⁺	A	Jπ: 1083.3 E0+M1+E2 γ to 2⁺.
2421.98 *10*	(3)⁻	A	Jπ: 996.6 M1+E2 γ to (4)⁻, 2331.5γ to 2⁺.
2429.6[k] *3*	(10⁻)	D	
2431.2[e]	(10⁺)	B D	Jπ: 251.0γ to (9⁺), 483.4γ to (8⁺).
2441.85 *23*	(2⁺,3,4⁺)†	A	
2447.41[h] *14*	9⁻	D	
2486.1 *4*	2(+)	A	Jπ: 2486.8γ to 0⁺, 2189.2γ to 4⁺.
2487.73[i] *10*	11⁻	B D	J 192.0γ to (10⁻), 368.9γ to (9⁻).
2489.35[&] *8*	12⁺	B D	Jπ: 462.8γ to (10⁺), 468.6γ to (12⁺).
2491.7 *3*	(2⁺,3,4⁺)†	A	
2505.25 *15*	2(+)	A	Jπ: 2505.4γ to 0⁺, 2208.1γ to 4⁺.
2515.6[m] *3*	11⁻	D	
2529.97 *17*	2⁺	A	Jπ: 1210.9 E0+M1+E2 γ to 2⁺.
2554.6[f]	(11⁻)	B D	Jπ: 275.4γ to (10⁻), 527γ to (9⁻).
2592.21 *20*	(3,4⁺)†	A	
2597.5[@]	(14⁺)	B D	Jπ: 577.0γ to (12⁺).
2609.5[b]	(11⁺)	B	Jπ: 442.4γ to (9⁺).
2641.0 *4*	4(+)	A	Jπ: 2549.5γ to 2⁺, 2031.9γ to 6⁺.
2653.82[h] *8*	10⁻	D	
2684.85[l] *9*	(12⁺)	D	
2700.3[e]	(11⁺)	B D	Jπ: 269.1γ to (10⁺), 520.2γ to (9⁺).
2700.8[i]	(12⁻)	B	XREF: B(2700.8). Jπ: 212.8γ to (11⁻), 404.7γ to (10⁻).
2729.84 *12*		A	
2744.2[c]	(12⁻)	B D	Jπ: 444.8γ to (10⁻).
2767.9[m] *5*	12⁻	D	
2772.0[c]	(13⁻)	B D	Jπ: 452.0γ to (11⁻), 751.5γ to (12⁺).
2791.42 *17*	(2⁺,3,4⁺)†	A	
2792.98[n] *8*	10⁻	D	
2823.6[k] *4*	(12⁻)	D	
2847.4[f]	(12⁻)	B D	Jπ: 292.4γ to (11⁻), 568γ to (10⁻).

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Adopted Levels, Gammas (continued)

^{174}Hf Levels (continued)

E(level)[#]	Jπ[‡]	$T_{1/2}$	XREF	Comments
2854.35[b] *10*	12^+		D	
2859.21[h] *16*	11^-		D	
2931.76 *25*	$2^{(+)}$		A	Jπ: 2931.8γ to 0^+, 2632.6γ to 4^+.
2932.7[i]	(13^-)		B D	Jπ: 232.5γ to (12^-), 445.0γ to (11^-).
2958.72 *7*	(11^-)		D	Other $K^\pi=(11^-)$ band head, see 1995Gj01.
2972.4[m] *3*	13^-		D	
2983.3[e]	(12^+)		B D	Jπ: 282.9γ to (11^+), 552.1γ to (10^+).
2992.5[&]	(14^+)		B D	Jπ: 503.6γ to (12^+), 394.8γ to (14^+).
3046.24[j] *11*	(11^-)		D	
3087.9 *3*	$4^{(+)}$		A	Jπ: 2999.7γ to 2^+, 2479.2γ to 6^+.
3090.16[o] *7*	12^-		D	
3106.0 *5*	$(2,3,4)^\dagger$		A	
3117.4[b]	(13^+)		B	Jπ: 507.9γ to (11^+).
3157.02[f] *11*	(13^-)		D	
3180.7[i]	(14^-)		B	Jπ: 247.3γ to (13^-), 479.7γ to (12^-).
3191.1 *5*	$(2,3,4)^\dagger$		A	
3208.9[@]	(16^+)		B D	Jπ: 611.4γ to (14^+).
3230.06[j] *16*	12^-		D	
3248.01 *16*			A	
3260.2[c]	(14^-)		B D	Jπ: 516.0γ to (12^-).
3269.0[e]	(13^+)		B D	Jπ: 285.7γ to (12^+), 568.4γ to (11^+).
3280.2[m] *4*	14^-		D	
3296.3[c]	(15^-)		B D	Jπ: 524.3γ to (13^-), 698.4γ to (14^+).
3300.24[o] *13*	13^-		D	
3301.8[k] *5*	(14^-)		D	
3311.7[g]	(14^+)	3.7 μs *2*	B D	$T_{1/2}$: from ^{172}Yb(α,2nγ), ^{160}Gd(^{18}O,4nγ) (1974KhZW). Jπ: 328.3γ to (12^+).
3449.7[i]	(15^-)		B	Jπ: 267.7γ to (14^-), 514.4γ to (13^-).
3500.4[&]	(16^+)		B D	Jπ: 507.9γ to (14^+).
3545.5[g]	(15^+)		B	Jπ: 233.8γ to (14^+).
3680.5[b]	(15^+)		B	Jπ: 563.1γ to (13^+).
3795.6[g]	(16^+)		B	Jπ: 250.1γ to (15^+).
3857.3[@]	(18^+)		B D	Jπ: 648.3γ to (16^+).
3885.9[c]	(17^-)		B	Jπ: 589.6γ to (15^-).
4048[&]	(18^+)		D	
4065.7[g]	(17^+)		B	Jπ: 269.5γ to (16^+).
4358.1[g]	(18^+)		B	Jπ: 293.0γ to (17^+).
4550.8[@]	(20^+)		B D	Jπ: 693.5γ to (18^+).
4656[&]	(20^+)		D	
5291[@]	(22^+)		D	
5359[&]	(22^+)		D	
6062.7[@] *15*	(24^+)		D	
6164.7[&] *15*	(24^+)		D	
6890?[@]	(26^+)		D	
7027?[&]	(26^+)		D	
x[p]	J>23		E	
726+x[p]	J+2		E	
1490+x[p]	J+4		E	

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Adopted Levels, Gammas (continued)

^{174}Hf Levels (continued)

E(level)[#]	Jπ[‡]	XREF	E(level)[#]	Jπ[‡]	XREF	E(level)[#]	Jπ[‡]	XREF
2310+x[p]	J+6	E	6960+z[r]	J2+16	E	1661+w[u]	J5+4	E
3177+x[p]	J+8	E	8065+z[r]	J2+18	E	2550+w[u]	J5+6	E
4095+x[p]	J+10	E	9291+z[r]	J2+20	E	3491+w[u]	J5+8	E
5065+x[p]	J+12	E	10578+z[r]	J2+22	E	4493+w[u]	J5+10	E
6090+x[p]	J+14	E	11927+z[r]	J2+24	E	5558+w[u]	J5+12	E
7172+x[p]	J+16	E	13339+z[r]	J2+26	E	6684+w[u]	J5+14	E
8313+x[p]	J+18	E	14814+z?[r]	J2+28	E	7884+w[u]	J5+16	E
9515+x[p]	J+20	E	u[s]	J3>28	E	9146+w[u]	J5+18	E
10779+x[p]	J+22	E	855+u[s]	J3+2	E	10476+w[u]	J5+20	E
12105+x?[p]	J+24	E	1759+u[s]	J3+4	E	11871+w[u]	J5+22	E
13495+x[p]	J+26	E	2708+u[s]	J3+6	E	13331+w?[u]	J5+24	E
14948+x[p]	J+28	E	3703+u[s]	J3+8	E	s[v]	J6	E
16460+x?[p]	J+30	E	4748+u[s]	J3+10	E	810+s[v]	J6+2	E
y[q]	J1>24	E	5846+u[s]	J3+12	E	1650+s[v]	J6+4	E
755+y[q]	J1+2	E	7001+u[s]	J3+14	E	2543+s[v]	J6+6	E
1548+y[q]	J1+4	E	8217+u[s]	J3+16	E	3489+s[v]	J6+8	E
2394+y[q]	J1+6	E	9495+u[s]	J3+18	E	4491+s[v]	J6+10	E
3293+y[q]	J1+8	E	10839+u[s]	J3+20	E	5549+s[v]	J6+12	E
4248+y[q]	J1+10	E	12250+u[s]	J3+22	E	6666+s[v]	J6+14	E
5263+y[q]	J1+12	E	13728+u?[s]	J3+24	E	7844+s[v]	J6+16	E
6340+y[q]	J1+14	E	v[t]	J4	E	9086+s[v]	J6+18	E
7480+y[q]	J1+16	E	723+v[t]	J4+2	E	10389+s[v]	J6+20	E
8684+y[q]	J1+18	E	1492+v[t]	J4+4	E	11755+s[v]	J6+22	E
9953+y[q]	J1+20	E	2309+v[t]	J4+6	E	t[w]	J7	E
11288+y[q]	J1+22	E	3177+v[t]	J4+8	E	818+t[w]	J7+2	E
12688+y[q]	J1+24	E	4096+v[t]	J4+10	E	1672+t[w]	J7+4	E
14154+y[q]	J1+26	E	5069+v[t]	J4+12	E	2570+t[w]	J7+6	E
15684+y[q]	J1+28	E	6099+v[t]	J4+14	E	3512+t[w]	J7+8	E
z[r]	J2>22	E	7186+v[t]	J4+16	E	4502+t[w]	J7+10	E
702+z?[r]	J2+2	E	8333+v[t]	J4+18	E	5550+t[w]	J7+12	E
1456+z[r]	J2+4	E	9542+v[t]	J4+20	E	6660+t[w]	J7+14	E
2237+z[r]	J2+6	E	10810+v[t]	J4+22	E	7837+t[w]	J7+16	E
3078+z[r]	J2+8	E	12150+v[t]	J4+24	E	9079+t[w]	J7+18	E
3968+z[r]	J2+10	E	13541+v[t]	J4+26	E	10387+t[w]	J7+20	E
4909+z[r]	J2+12	E	w[u]	J5	E	11740+t[w]	J7+22	E
5905+z[r]	J2+14	E	802+w[u]	J5+2	E			

† From γ-ray decay pattern in ^{174}Ta ε+β$^+$ decay.

‡ Assignment of levels to different bands is based on level spacings and rotational parameters. Specific arguments are given with individual levels. Values of the rotational parameters shown for each band have been obtained from least-squares fit to the adopted experimental energies. γ rays from ^{174}Ta ε decay used for spin-parity assignments have been assumed to be M1, E1, or E2, unless otherwise specified. Limiting spins for bandheads in SD bands are based on comparison of relative alignments for the sequences with respect to the normal-deformed structures in ^{174}Hf, the SD bands in ^{168}Hf and 163Lu.

From ^{174}Ta ε decay. Energies of levels not observed in ^{174}Ta ε decay are from in-beam reaction data.

@ Band(A): g.s. band. Rotational parameters: A=15.0, B=−14.0. Spin members of the band used in the fit: 0 to 10.

& Band(B): β-vibrational band. Rotational parameters: A=11.7, B=−7.2. Spin members of the band used in the fit: 0 to 10.

a Band(C): K$^\pi$=2$^+$, γ-vibrational band.

b Band(D): K$^\pi$=(3$^+$) band. Probable configuration=(ν 1/2[521])+(ν 5/2[512]). Rotational parameters: A=11.5, B=−4.3. Spin members of the band used in the fit: 3 to 15.

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Adopted Levels, Gammas (continued)

^{174}Hf Levels (continued)

[c] Band(E): $K^{\pi}=(1^{-})$, octupole band.
[d] Band(F): $K^{\pi}=(0^{+})$ band.
[e] Band(G): $K^{\pi}=(6^{+})$ band. Probable configuration=(π 7/2[404])+(π 5/2[402]). Rotational parameters: A=14.3, B=−8.5. Spin members of the band used in the fit: 6 to 12.
[f] Band(H): $K^{\pi}=(8^{-})$ band. Probable configuration=(π 9/2[514])+(π 7/2[404]). Rotational parameters: A=13.5, B=−4.3. Spin members of the band used in the fit: 8 to 12.
[g] Band(I): $K^{\pi}=(14^{+})$ band. Rotational parameters: A=7.0, B=1.8. Spin members of the band used in the fit: 14 to 18.
[h] Band(J): $K^{\pi}=(2^{-})$ band.
[i] Band(K): $K^{\pi}=(6^{-})$ band. Probable configuration=(ν 7/2[633])+(ν 5/2[512]). Rotational parameters: A=8.4, B=1.4. Spin members of the band used in the fit: 6 to 15.
[j] Band(L): $K^{\pi}=(11^{-})$ band.
[k] Band(M): $K^{\pi}=(6^{-})$ band.
[l] Band(N): $K^{\pi}=(12^{+})$ band.
[m] Band(O): $K^{\pi}=4^{-}$ band.
[n] Band(P): $K^{\pi}=10^{-}$ band.
[o] Band(Q): $K^{\pi}=12^{-}$ band.
[p] Band(R): Triaxial (?) SD-1 band (2005Ha05,2003Dj01). Q(transition)=13.8 *+3−4* (2005Ha05). Band intensity=1.1 *3* of the total population of ^{174}Hf channel (2003Dj01). The transitions in this band are in coincidence with g.s. band transitions up to 12^{+}.
[q] Band(S): Triaxial (?) SD-2 band (2005Ha05,2003Dj01). Q(transition)=13.5 *+2−3* (2005Ha05). SD-2 and SD-3 bands have a combined intensity of 0.9 *4* of the total population of ^{174}Hf channel (2003Dj01). The transitions in this band are in coincidence with g.s. band transitions up to 12^{+}.
[r] Band(T): Triaxial (?) SD-3 band (2005Ha05,2003Dj01). Q(transition)=13.0 *+8−4* (2005Ha05). SD-2 and SD-3 bands have a combined intensity of 0.9 *4* of the total population of ^{174}Hf channel (2003Dj01). The transitions in this band are in coincidence with g.s. band transitions up to 12^{+}.
[s] Band(U): Triaxial (?) SD-4 band (2005Ha05,2003Dj01). Q(transition)=12.6 *8* (2005Ha05). Band intensity=0.3 *2* of the total population of ^{174}Hf channel (2003Dj01). Due to the low intensity and contamination in the coincidence gates, this band was tentatively assigned to ^{174}Hf by 2003Dj01. Higher statistics from the experiments in 2005Ha05 confirm the assignment of SD-4 band to this nucleus. The transitions in this band are in coincidence with the yrast sequence of transitions up to spin 18.
[t] Band(V): Triaxial (?) SD-5 band (2005Ha05).
[u] Band(W): Triaxial (?) SD-6 band (2005Ha05).
[v] Band(X): Triaxial (?) SD-7 band (2005Ha05).
[w] Band(Y): Triaxial (?) SD-8 band (2005Ha05).

Adopted Levels, Gammas (continued)

γ(^{174}Hf)

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult.[#]	δ	α[c]	$I_{(\gamma+ce)}$	Comments
90.985	2^+	91.00 *2*	100	0.0	0^+	E2		5.21		B(E2)(W.u.)=152 *8*
297.38	4^+	206.50 *4*	100	90.985	2^+	E2		0.261		
608.26	6^+	310.90 *4*	100	297.38	4^+	E2		0.0718		
828.13	0^+	737.25 *36*	100	90.985	2^+					
		828.0[a] *10*	[a]	0.0	0^+	E0			≈2.5	Mult.: from ce data, ^{174}Ta ε decay. $I_{(\gamma+ce)}$: from ^{172}Yb(α,2nγ) (1971Ej01).
900.24	2^+	602.91 *7*	59 *6*	297.38	4^+	E2		0.01238		B(E2)(W.u.)=13 *4*
		809.33 *6*	100 *6*	90.985	2^+	E0+M1+E2	−2 +2−2	0.09[@]		δ: from γ(θ).
		900.15 *5*	73 *7*	0.0	0^+	[E2]				B(E2)(W.u.)=2.1 *6*
1009.6	8^+	401.05[‡] *20*	100	608.26	6^+	(E2)				Mult.: from γ(θ).
1062.17	4^+	163[‡] *1*	40 *13*	900.24	2^+					
		454.07 *9*	17 *3*	608.26	6^+					
		764.79 *5*	100 *5*	297.38	4^+	E0+M1+E2	−2.9 *10*	0.10[@] *1*		δ: from γ(θ).
		971.06 *5*	87 *7*	90.985	2^+					
1226.77	2^+	1135.81 *7*	100 *8*	90.985	2^+	(E2)				B(E2)(W.u.)=7.4 *15*
		1227.0 *10*	97 *44*	0.0	0^+	[E2]				B(E2)(W.u.)=4.8 *22*
1303.36	(3^+)	1006.21 *13*	11 *5*	297.38	4^+					
		1212.29 *9*	100 *50*	90.985	2^+					
1307.4	6^+	245[‡] *1*	18 *4*	1062.17	4^+					
		298[‡] *1*	10 *6*	1009.6	8^+					
		699[‡] *1*	100	608.26	6^+	D+Q	−0.92 *18*			Mult.,δ: from γ(θ).
		1010[‡] *1*	54 *14*	297.38	4^+					
1308.69	(2^-)	408.37 *54*	11 *4*	900.24	2^+					
		1217.67 *13*	100 *13*	90.985	2^+					
1319.40	2^+	418.99 *12*	12.0 *17*	900.24	2^+	E0+M1+E2		0.17[@]		
		491.16 *36*	2.8 *8*	828.13	0^+					
		1022.07 *6*	58 *5*	297.38	4^+	E2		0.00395		B(E2)(W.u.)>0.00038
		1228.33 *7*	100 *25*	90.985	2^+	E0+M1+E2		0.03[@]		
		1319.33 *32*	90.8 *13*	0.0	0^+					
1336.48	$(3)^+$	1038.93 *18*	25 *4*	297.38	4^+					
		1245.54 *8*	100 *9*	90.985	2^+	M1+E2				
1394.60	$(4)^+$	1097.26 *9*	100 *7*	297.38	4^+	M1+E2				
		1303.53 *12*	71 *24*	90.985	2^+					
1425.24	$(4)^-$	362.95 *34*	7.9 *20*	1062.17	4^+					
		1127.81 *8*	100 *9*	297.38	4^+	(E1)				
1442.66	(5^-)	834.35 *20*	72 *13*	608.26	6^+					
		1145.20 *15*	100 *13*	297.38	4^+					
1448.85	4^+	222.80[d] *50*	≤1.7[d]	1226.77	2^+					

$^{174}_{72}Hf_{102}$-7

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]
1448.85	4^+	840.79 *34*	7 *3*	608.26	6^+	
		1151.41 *6*	100 *11*	297.38	4^+	(E2)
		1357.94 *8*	78 *14*	90.985	2^+	
1485.9	(10^+)	476.4[‡] *4*	100	1009.6	8^+	
1496.36	2^+	596.19[d] *12*	≤85[d]	900.24	2^+	
		1198.94 *35*	100 *20*	297.38	4^+	
		1405.23 *51*	31 *10*	90.985	2^+	
		1496.50 *89*	47 *17*	0.0	0^+	
1503.29	$(4)^+$	440.88 *12*	4.3 *5*	1062.17	4^+	
		1205.92 *4*	100 *5*	297.38	4^+	M1+E2
		1412.55 *24*	4.4 *8*	90.985	2^+	
1508.2	(5^+)	113.8[a] *5*	100[a] *32*	1394.60	$(4)^+$	
		204.2[a] *9*	24[a] *13*	1303.36	(3^+)	
		900.1[a] *20*	11[a] *11*	608.26	6^+	
		1210.88[a] *19*	61[a] *3*	297.38	4^+	
1549.3	(6^+)	100.10[a] *22*	2.5[a] *13*	1448.85	4^+	
		154.71[a] *13*	3.4[a] *13*	1394.60	$(4)^+$	
		241.97[a] *19*	1.08[a] *21*	1307.4	6^+	
		486.61[a] *25*	0.6[a] *4*	1062.17	4^+	
		539.67[a] *25*	2.20[a] *14*	1009.6	8^+	
		941.02[a] *5*	100.0[a] *8*	608.26	6^+	
		1251.81[a] *7*	71.8[a] *11*	297.38	4^+	
1561.72	4^-	1264.28[a] *21*	100[a]	297.38	4^+	
1626.0	4^+	1018.5 *10*	100	608.26	6^+	
		1328.95 *50*	48 *13*	297.38	4^+	
		1534.71 *39*	100 *19*	90.985	2^+	
1627.4	5^-	1019.3 *4*	85 *13*	608.26	6^+	
		1330.0 *3*	100 *15*	297.38	4^+	
1630.5	(8^+)	323.1[‡]		1307.4	6^+	
		620.9[‡]	36 *13*	1009.6	8^+	
		1022.1[‡]	100	608.26	6^+	
1634.4	(6^-)	209[a] *5*	10[a] *5*	1425.24	$(4)^-$	
		1025.97[a] *16*	100[a] *9*	608.26	6^+	
1642.15	6^+	133.9[a] *3*	1.0×10^{2}[a] *10*	1508.2	(5^+)	
		247.7[a] *4*	100[a] *40*	1394.60	$(4)^+$	
		1034.0[a] *3*	30[a] *10*	608.26	6^+	
		1344.77[a] *18*	37[a] *17*	297.38	4^+	
1648.33	4^-	222.80[d] *50*	≤10[d]	1425.24	$(4)^-$	

$^{174}_{72}Hf_{102}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{174}Hf)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
1648.33	4^-	1351.17 *28*	100 *17*	297.38	4^+
1650.6	(7^-)	1042.4[‡]	100	608.26	6^+
1658.41	(5^+)	596.19[d] *12*	≤16[d]	1062.17	4^+
		1050.18 *28*	19 *4*	608.26	6^+
		1361.04 *8*	100 *9*	297.38	4^+
1713.5	(6^-)	151.8[a] *4*	19[a] *9*	1561.72	4^-
		164.22[a] *16*	100[a] *4*	1549.3	(6^+)
		1105.24[a] *12*	86[a] *7*	608.26	6^+
1722.43	6^-	160.7[a] *19*	9[a] *9*	1561.72	4^-
		1114.2[a] *3*	100[a] *16*	608.26	6^+
1737.4	(7^+)	188.1[‡]	100	1549.3	(6^+)
1767.66	5^-	705[a] *4*	10[a] *10*	1062.17	4^+
		1159.42[a] *18*	100[a] *30*	608.26	6^+
1779.9	$(2^+,3,4^+)$	471.10 *37*	32 *8*	1308.69	(2^-)
		1482.51 *29*	100 *25*	297.38	4^+
		1689.66 *65*	55 *20*	90.985	2^+
1797.5	(8^-)	60.18[a] *13*	100[a] *4*	1737.4	(7^+)
		248.3[a] *5*	14[a] *2*	1549.3	(6^+)
		788.0[a] *12*	0.13[a] *6*	1009.6	8^+
1798.0	(7^+)	155.8[‡] *4*		1642.15	6^+
		289.70[‡] *16*		1508.2	(5^+)
1827.4	(7^-)	114.14[a] *22*	100[a] *19*	1713.5	(6^-)
		818.0[a] *4*	7[a] *2*	1009.6	8^+
		1219.4[a] *11*	5[a] *1*	608.26	6^+
1838.14	7^-	210.7[a] *6*	100[a] *30*	1627.4	5^-
		828.6[a] *6*	27[a] *6*	1009.6	8^+
		1229.9[a] *3*	45[a] *15*	608.26	6^+
1861.78	$(2^+,3,4^+)$	366.2 *14*	6 *4*	1496.36	2^+
		1564.40 *32*	82 *14*	297.38	4^+
		1770.95 *30*	100 *18*	90.985	2^+
1904.4	(6^+)	1295.27 *75*	39 *6*	608.26	6^+
		1607.15 *28*	100 *20*	297.38	4^+
1910.0	(6^-)	261.2[a] *10*	31[a] *8*	1648.33	4^-
		1301.7[a] *5*	100[a] *8*	608.26	6^+
1928.4	(8^-)	293.9[‡]		1634.4	(6^-)
		918.8[‡]		1009.6	8^+
1937.46	6^-	288.7[a] *4*	100[a] *23*	1648.33	4^-
		1329.2[a] *3*	87[a] *8*	608.26	6^+

From ENSDF

$^{174}_{72}Hf_{102}$-9

Adopted Levels, Gammas (continued)

$\gamma(^{174}Hf)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
1943.9	(9^-)	293.2[‡] *5*		1650.6	(7^-)		
		934.3[‡]		1009.6	8^+		
1948.1	(8^+)	210.7[‡]		1737.4	(7^+)		
		399.4[‡]		1549.3	(6^+)		
1963.4	(8^-)	135.87[a] *19*	100[a] *11*	1827.4	(7^-)		
		250.0[a] *3*	29[a] *2*	1713.5	(6^-)		
1972.06	8^+	174.1[a] *3*	20[a] *8*	1798.0	(7^+)		
		329.91[a] *15*	100[a] *25*	1642.15	6^+		
1981.50	8^-	259.1[a] *3*	100[a] *50*	1722.43	6^-		
		971.9[a] *4*	78[a] *17*	1009.6	8^+		
2016.7	6^-	367.9[a] *13*	100[a] *20*	1648.33	4^-		
		1408.5[a] *6*	100[a] *40*	608.26	6^+		
2020.5	(12^+)	534.6[‡]	100	1485.9	(10^+)	(E2)	Mult.: stretched Q $\gamma(\theta)$.
2026.3	(10^+)	395.9[‡]		1630.5	(8^+)		
		540.3[‡]		1485.9	(10^+)		
2028.0	(9^-)	230.5[‡]	100	1797.5	(8^-)		
2030.25	$4^{(+)}$	371.68 *65*	8 *3*	1658.41	(5^+)		
		1421.9[d] *12*	≤8.3[d]	608.26	6^+		
		1732.87 *19*	100 *13*	297.38	4^+		
		1939.25[d] *25*	≤83[d]	90.985	2^+		
2084.35	7^-	316.71[a] *18*	100[a] *40*	1767.66	5^-		
		777.1[a] *4*	40[a] *40*	1307.4	6^+		
		1074.79[a] *16*	100[a] *50*	1009.6	8^+		
		1476.1[a] *4*	21[a] *8*	608.26	6^+		
2119.0	(9^-)	155.6[‡]		1963.4	(8^-)		E_γ: from in-beam reaction data.
		292.4		1827.4	(7^-)		
2124.56	(8^-)	214.6[a] *5*	90[a] *60*	1910.0	(6^-)		
		1115.0[a] *3*	1.0×10^{2}[a] *10*	1009.6	8^+		
2135.43	9^-	297.3[a] *4*	100[a] *23*	1838.14	7^-		
		1125.9[a] *9*	11[a] *4*	1009.6	8^+		
2167.1	(9^+)	195.0[a] *5*	19[a] *10*	1972.06	8^+		
		369.08[a] *15*	100[a] *33*	1798.0	(7^+)		
2180.0	(9^+)	231.9[‡]		1948.1	(8^+)		
		442.4		1737.4	(7^+)		E_γ: from in-beam reaction data.
2276.87	8^-	192.5[a] *3*	42[a] *12*	2084.35	7^-		
		260.2[a] *5*	15[a] *4*	2016.7	6^-		

$^{174}_{72}Hf_{102}$-10

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[c]
2276.87	8⁻	339.4[a] *3*	100[a] *19*	1937.46	6⁻		
		348.6[a] *4*	45[a] *9*	1928.4	(8⁻)		
		367[a] *3*	3.3[a] *17*	1910.0	(6⁻)		
		625.8[a] *5*	20[a] *5*	1650.6	(7⁻)		
		1267.3[a] *4*	58[a] *10*	1009.6	8⁺		
2279.2	(10⁻)	160.0[a] *3*	3.6[a] *7*	2119.0	(9⁻)		
		250.93[a] *5*	100[a] *4*	2028.0	(9⁻)		
		481.35[a] *21*	8.9[a] *10*	1797.5	(8⁻)		
2295.7	(10⁻)	176.78[a] *15*	65[a] *7*	2119.0	(9⁻)		
		267.70[a] *17*	100[a] *10*	2028.0	(9⁻)		
		332.2[a] *3*	24[a] *5*	1963.4	(8⁻)		
2299.4	(10⁻)	371.0[‡]	100	1928.4	(8⁻)		
2319.2	(11⁻)	375.2[‡]		1943.9	(9⁻)		
		833.4[‡]		1485.9	(10⁺)		
2331.5	10⁻	350.0[a] *5*	100[a]	1981.50	8⁻		
2338.51	(2⁺,3,4⁺)	835.16 *20*	100 *18*	1503.29	(4)⁺		
		1029.81 *14*	10 *7*	1308.69	(2⁻)		
		1112.2 *14*	13 *6*	1226.77	2⁺		
		2040.53 *77*	100 *40*	297.38	4⁺		
		2248.21 *95*	48 *15*	90.985	2⁺		
2353.99	(3,4⁺)	574.14 *23*	77 *14*	1779.9	(2⁺,3,4⁺)		
		929.08[d] *87*	≤29[d]	1425.24	(4)⁻		
		1291.54 *49*	100 *24*	1062.17	4⁺		
		2056.6 *13*	59 *24*	297.38	4⁺		
		2262.76 *91*	41 *12*	90.985	2⁺		
2379.22	10⁺	212.2[a] *4*	39[a] *14*	2167.1	(9⁺)		
		407.16[a] *12*	100[a] *20*	1972.06	8⁺		
2402.80	2⁺	1066.37 *9*	42 *8*	1336.48	(3)⁺	E2	
		1083.30 *8*	50 *9*	1319.40	2⁺	E0+M1+E2	0.010[@] *5*
		1176.05 *10*	100 *9*	1226.77	2⁺	(E2)	
		1502.96[d] *30*	≤19[d]	900.24	2⁺		
2421.98	(3)⁻	560.28 *18*	32 *5*	1861.78	(2⁺,3,4⁺)		
		979.25 *13*	63 *9*	1442.66	(5⁻)		
		996.61 *17*	100 *12*	1425.24	(4)⁻	M1+E2	
		1102.06 *36*	12.9 *23*	1319.40	2⁺		
		2124.95 *20*	48 *6*	297.38	4⁺		
		2331.51 *76*	4.6 *14*	90.985	2⁺		
2429.6	(10⁻)	305.07[a] *25*	100[a]	2124.56	(8⁻)		

$^{174}_{72}Hf_{102}$-11

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[c]
2431.2	(10$^+$)	251.0[‡]		2180.0	(9$^+$)		
		483.4[‡]		1948.1	(8$^+$)		
		945[‡] *6*		1485.9	(10$^+$)		
2441.85	(2$^+$,3,4$^+$)	1104.99 *36*	26 *6*	1336.48	(3)$^+$		
		1139.14 *36*	43 *8*	1303.36	(3$^+$)		
		2143.43 *51*	100 *23*	297.38	4$^+$		
		2352.09 *82*	66 *14*	90.985	2$^+$		
2447.41	9$^-$	363.08[a] *21*	100[a] *28*	2084.35	7$^-$		
		816.9[a] *5*	29[a] *15*	1630.5	(8$^+$)		
2486.1	2$^{(+)}$	1166.55[d] *36*	≤64[d]	1319.40	2$^+$		
		2189.19 *72*	100 *50*	297.38	4$^+$		
		2486.8 *17*	90 *50*	0.0	0$^+$		
2487.73	11$^-$	192.01[a] *23*	100[a] *8*	2295.7	(10$^-$)		
		368.79[a] *18*	70[a] *16*	2119.0	(9$^-$)		
2489.35	12$^+$	462.85[a] *19*	66[a] *7*	2026.3	(10$^+$)		
		468.62[a] *15*	100[a] *7*	2020.5	(12$^+$)		
2491.7	(2$^+$,3,4$^+$)	1429.62[d] *73*	≤16[d]	1062.17	4$^+$		
		1591.59[d] *54*	≤19[d]	900.24	2$^+$		
		2194.21 *57*	100 *14*	297.38	4$^+$		
		2400.86 *69*	72 *12*	90.985	2$^+$		
2505.25	2$^{(+)}$	1185.84 *14*	100 *10*	1319.40	2$^+$		
		2208.1 *15*	15 *3*	297.38	4$^+$		
		2414.2 *12*	7.1 *21*	90.985	2$^+$		
		2505.4 *21*	12 *5*	0.0	0$^+$		
2515.6	11$^-$	380.2[a] *3*	100[a]	2135.43	9$^-$		
2529.97	2$^+$	1210.91 *30*	67 *11*	1319.40	2$^+$	E0+M1+E2	0.20[@]
		1221.18 *36*	14 *3*	1308.69	(2$^-$)		
		1629.53 *28*	78 *14*	900.24	2$^+$		
		2232.37 *66*	56 *8*	297.38	4$^+$		
		2438.78 *59*	100 *14*	90.985	2$^+$		
		2530.2 *15*	10 *3*	0.0	0$^+$		
2554.6	(11$^-$)	259.0[a] *3*	7[a] *2*	2295.7	(10$^-$)		
		275.74[a] *23*	100[a] *5*	2279.2	(10$^-$)		
		526.67[a] *20*	22[a] *2*	2028.0	(9$^-$)		
2592.21	(3,4$^+$)	933.62 *92*	≤19	1658.41	(5$^+$)		
		1166.55[d] *36*	≤26[d]	1425.24	(4)$^-$		
		1289.03 *36*	18 *6*	1303.36	(3$^+$)		
		2294.81 *88*	68 *18*	297.38	4$^+$		

$^{174}_{72}Hf_{102}$-12

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
2592.21	(3,4$^+$)	2500.98 *60*	100	90.985	2$^+$
2597.5	(14$^+$)	577.0‡	100	2020.5	(12$^+$)
2609.5	(11$^+$)	229.9[a] *4*	76[a] *45*	2379.22	10$^+$
		442.12[a] *19*	100[a] *3*	2167.1	(9$^+$)
2641.0	4$^{(+)}$	301.62 *70*	26 *7*	2338.51	(2$^+$,3,4$^+$)
		1192.66 *50*	100 *30*	1448.85	4$^+$
		2031.9[d] *14*	≤83[d]	608.26	6$^+$
		2344.5 *10*	40 *13*	297.38	4$^+$
		2549.5 *11*	25 *5*	90.985	2$^+$
2653.82	10$^-$	206.4[a] *12*	30.2[a] *23*	2447.41	9$^-$
		354.4[a] *3*	11[a] *4*	2299.4	(10$^-$)
		376.95[a] *11*	100[a] *8*	2276.87	8$^-$
		709.5[a] *3*	11[a] *4*	1943.9	(9$^-$)
		1167.7[a] *4*	5[a] *6*	1485.9	(10$^+$)
2684.85	(12$^+$)	195.5[a] *5*	20[a] *7*	2489.35	12$^+$
		664.10[a] *18*	100[a] *11*	2020.5	(12$^+$)
2700.3	(11$^+$)	269.1‡		2431.2	(10$^+$)
		520.2‡		2180.0	(9$^+$)
2700.8	(12$^-$)	212.8‡		2487.73	11$^-$
		404.7‡		2295.7	(10$^-$)
2729.84		1233.59 *21*	61 *5*	1496.36	2$^+$
		1421.9[d] *12*	≤6.4[d]	1308.69	(2$^-$)
		1502.96[d] *30*	≤34[d]	1226.77	2$^+$
		1829.54 *14*	100 *10*	900.24	2$^+$
2744.2	(12$^-$)	444.8‡	100	2299.4	(10$^-$)
2767.9	12$^-$	436.4[a] *7*	100[a]	2331.5	10$^-$
2772.0	(13$^-$)	452.0‡		2319.2	(11$^-$)
		751.5‡		2020.5	(12$^+$)
2791.42	(2$^+$,3,4$^+$)	929.08[d] *87*	≤58[d]	1861.78	(2$^+$,3,4$^+$)
		2494.2 *16*	75 *13*	297.38	4$^+$
		2699.2 *12*	100 *30*	90.985	2$^+$
2792.98	10$^-$	238.3[a] *5*	4.7[a] *13*	2554.6	(11$^-$)
		497.3[a] *3*	10.1[a] *11*	2295.7	(10$^-$)
		514.04[a] *15*	92[a] *5*	2279.2	(10$^-$)
		764.97[a] *14*	100[a] *7*	2028.0	(9$^-$)
		995.4[a] *4*	69[a] *8*	1797.5	(8$^-$)
2823.6	(12$^-$)	394.0[a] *3*	100[a]	2429.6	(10$^-$)

$^{174}_{72}Hf_{102}$-13

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Comments
2847.4	(12$^-$)	292.32[a] *19*	100[a] *10*	2554.6	(11$^-$)	E_γ: from in-beam reaction data.
		568.1[a] *6*	52[a] *16*	2279.2	(10$^-$)	
2854.35	12$^+$	245.2[a] *8*	17[a] *10*	2609.5	(11$^+$)	
		475.11[a] *12*	100[a] *25*	2379.22	10$^+$	
2859.21	11$^-$	411.8[a] *3*	100[a] *22*	2447.41	9$^-$	
		832.7[a] *3*	90[a] *30*	2026.3	(10$^+$)	
2931.76	2$^{(+)}$	339.33 *29*	100 *14*	2592.21	(3,4$^+$)	
		1435.86 *51*	44 *11*	1496.36	2$^+$	
		2031.9[d] *14*	≤53[d]	900.24	2$^+$	
		2104.28 *63*	23 *6*	828.13	0$^+$	
		2632.6 *14*	16 *3*	297.38	4$^+$	
		2840.7 *14*	22 *6*	90.985	2$^+$	
		2931.8 *12*	36 *8*	0.0	0$^+$	
2932.7	(13$^-$)	232.5[‡]		2700.3	(11$^+$)	
		445.0[‡]		2487.73	11$^-$	
2958.72	(11$^-$)	165.75[a] *13*	100[a] *5*	2792.98	10$^-$	
		404.05[a] *10*	50.0[a] *21*	2554.6	(11$^-$)	
		663.02[a] *16*	12.9[a] *12*	2295.7	(10$^-$)	
		679.79[a] *9*	67[a] *3*	2279.2	(10$^-$)	
		932.12[a] *22*	3.0[a] *10*	2026.3	(10$^+$)	
		1472.6[a] *5*	0.46[a] *16*	1485.9	(10$^+$)	
2972.4	13$^-$	456.80[a] *24*	100[a]	2515.6	11$^-$	
2983.3	(12$^+$)	283.04[a] *4*	100[a] *2*	2700.3	(11$^+$)	
		552.14[a] *6*	80[a] *1*	2431.2	(10$^+$)	
		962.96[a] *25*	0.7[a] *3*	2020.5	(12$^+$)	
2992.5	(14$^+$)	394.8[‡]		2597.5	(14$^+$)	
		503.6[‡]		2489.35	12$^+$	
3046.24	(11$^-$)	87.6[a] *4*	100[a] *40*	2958.72	(11$^-$)	
		726.7[a] *3*	7.9[a] *18*	2319.2	(11$^-$)	
		1019.71[a] *17*	16[a] *4*	2026.3	(10$^+$)	
		1102.0[a] *4*	3.3[a] *25*	1943.9	(9$^-$)	
		1560.2[a] *4*	1.3[a] *4*	1485.9	(10$^+$)	
3087.9	4$^{(+)}$	1429.62[d] *73*	≤30[d]	1658.41	(5$^+$)	
		1439.37 *49*	81 *25*	1648.33	4$^-$	
		1591.59[d] *54*	≤36[d]	1496.36	2$^+$	
		1785.6[d] *14*	≤23[d]	1303.36	(3$^+$)	
		2479.22 *75*	100 *23*	608.26	6$^+$	

$^{174}_{72}Hf_{102}$-14

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
3087.9	$4^{(+)}$	2790.2 *19*	30 *4*	297.38	4^+
		2999.7 *18*	10 *4*	90.985	2^+
3090.16	12^-	131.46[a] *10*	100[a] *5*	2958.72	(11^-)
		230.9[a] *5*	1.55[a] *19*	2859.21	11^-
		243.2[a] *5*	3.9[a] *6*	2847.4	(12^-)
		297.2[a] *4*	1.9[a] *5*	2792.98	10^-
		346.1[a] *4*	0.59[a] *16*	2744.2	(12^-)
		436.33[a] *8*	12.4[a] *10*	2653.82	10^-
		535.51[a] *22*	9.7[a] *8*	2554.6	(11^-)
		770.6[a] *4*	0.50[a] *19*	2319.2	(11^-)
		811.25[a] *25*	2.5[a] *6*	2279.2	(10^-)
3106.0	(2,3,4)	614.82 *91*	60 *22*	2491.7	$(2^+,3,4^+)$
		703.16 *73*	64 *18*	2402.80	2^+
		1785.6[d] *14*	≤45[d]	1319.40	2^+
		2808.6 *17*	100 *30*	297.38	4^+
		3014.0 *22*	23 *8*	90.985	2^+
3117.4	(13^+)	262.9[a] *7*	19[a] *14*	2854.35	12^+
		508.0[a] *3*	100[a] *67*	2609.5	(11^+)
3157.02	(13^-)	310.1[a] *3*	100[a] *11*	2847.4	(12^-)
		602.4[a] *3*	49[a] *10*	2554.6	(11^-)
3180.7	(14^-)	247.3‡		2932.7	(13^-)
		479.7‡		2700.8	(12^-)
3191.1	(2,3,4)	259.36 *82*	48 *9*	2931.76	$2^{(+)}$
		1742.49 *73*	100 *23*	1448.85	4^+
		1886.8 *11*	59 *23*	1303.36	(3^+)
		2893.8 *12*	45 *12*	297.38	4^+
		3100.0 *18*	15 *5*	90.985	2^+
3208.9	(16^+)	611.4‡	100	2597.5	(14^+)
3230.06	12^-	183.8[a] *3*	100[a] *18*	3046.24	(11^-)
		271.4[a] *7*	52[a] *11*	2958.72	(11^-)
3248.01		1599.79 *21*	68 *11*	1648.33	4^-
		1853.27 *56*	29 *7*	1394.60	$(4)^+$
		1927.9 *20*	32 *11*	1319.40	2^+
		1939.25[d] *25*	≤100[d]	1308.69	(2^-)
		1944.53 *24*	100 *14*	1303.36	(3^+)
		2022.6 *15*	10 *3*	1226.77	2^+
3260.2	(14^-)	516.0‡	100	2744.2	(12^-)
3269.0	(13^+)	285.7‡		2983.3	(12^+)
3269.0	(13^+)	568.4‡		2700.3	(11^+)
3280.2	14^-	512.4[a] *12*	100[a]	2767.9	12^-
3296.3	(15^-)	524.3‡		2772.0	(13^-)
		698.4‡		2597.5	(14^+)
3300.24	13^-	210.10[a] *22*	100[a]	3090.16	12^-
3301.8	(14^-)	478.2[a] *7*	100[a]	2823.6	(12^-)
3311.7	(14^+)	10.3[a] *10*	0.14[a] *9*	3301.8	(14^-)
		11.87[a] *25*	33.0[a] *13*	3300.24	13^-
		15.7[a] *7*	0.27[a] *13*	3296.3	(15^-)
		31.9[a] *5*	0.14[a] *8*	3280.2	14^-
		42.69[a] *14*	100.0[a] *11*	3269.0	(13^+)
		54[a] *5*	0.14[a] *15*	3260.2	(14^-)
		82.0[a] *3*	0.14[a] *9*	3230.06	12^-
		132.4[a] *14*	0.63[a] *17*	3180.7	(14^-)
		155.09[a] *16*	2.33[a] *24*	3157.02	(13^-)
		194.8[a] *12*	0.05[a] *6*	3117.4	(13^+)
		221.97[a] *22*	44.6[a] *18*	3090.16	12^-
		318.8[a] *3*	0.4[a] *5*	2992.5	(14^+)
		328.36[a] *5*	64.9[a] *9*	2983.3	(12^+)
		339.7[a] *5*	0.18[a] *18*	2972.4	13^-
		379.38[a] *12*	5.6[a] *4*	2932.7	(13^-)
		457.70[a] *14*	1.4[a] *4*	2854.35	12^+
		539.3[a] *6*	0.23[a] *9*	2772.0	(13^-)
		627.22[a] *14*	1.27[a] *15*	2684.85	(12^+)
		714.2[a] *3*	1.86[a] *11*	2597.5	(14^+)
		822.70[a] *15*	1.1[a] *3*	2489.35	12^+
		1291.32[a] *24*	0.48[a] *22*	2020.5	(12^+)
3449.7	(15^-)	267.7‡		3180.7	(14^-)
		514.4‡		2932.7	(13^-)
3500.4	(16^+)	507.9‡	100	2992.5	(14^+)
3545.5	(15^+)	233.8‡	100	3311.7	(14^+)
3680.5	(15^+)	563.1‡	100	3117.4	(13^+)
3795.6	(16^+)	250.1‡	100	3545.5	(15^+)
3857.3	(18^+)	648.3‡	100	3208.9	(16^+)
3885.9	(17^-)	589.6‡	100	3296.3	(15^-)
4048	(18^+)	547	100	3500.4	(16^+)
4065.7	(17^+)	269.5‡		3795.6	(16^+)
		519.7‡		3545.5	(15^+)

$^{174}_{72}Hf_{102}$-15

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
4358.1	(18$^+$)	293.0[‡]	100	4065.7	(17$^+$)
4550.8	(20$^+$)	693.5[‡]	100	3857.3	(18$^+$)
4656	(20$^+$)	608[&]	100	4048	(18$^+$)
5291	(22$^+$)	741[&]	100	4550.8	(20$^+$)
5359	(22$^+$)	703[‡]		4656	(20$^+$)
		809[‡]		4550.8	(20$^+$)
6062.7	(24$^+$)	771[&]	100	5291	(22$^+$)
6164.7	(24$^+$)	805[&]	100	5359	(22$^+$)
6890?	(26$^+$)	828[&e]	100	6062.7	(24$^+$)
7027?	(26$^+$)	863[&e]	100	6164.7	(24$^+$)
726+x	J+2	726[b]	0.45[b] *10*	x	J>23
1490+x	J+4	764[b]	0.67[b] *10*	726+x	J+2
2310+x	J+6	820[b]	1.00[b] *10*	1490+x	J+4
3177+x	J+8	867[b]	0.85[b] *10*	2310+x	J+6
4095+x	J+10	918[b]	1.00[b] *20*	3177+x	J+8
5065+x	J+12	970[b]	0.87[b] *10*	4095+x	J+10
6090+x	J+14	1025[b]	0.92[b] *10*	5065+x	J+12
7172+x	J+16	1082[b]	0.73[b] *10*	6090+x	J+14
8313+x	J+18	1141[b]	0.62[b] *15*	7172+x	J+16
9515+x	J+20	1202[b]	0.40[b] *15*	8313+x	J+18
10779+x	J+22	1264[b]	0.28[b] *15*	9515+x	J+20
12105+x?	J+24	1326[be]	0.17[b] *17*	10779+x	J+22
13495+x	J+26	1390		12105+x?	J+24
14948+x	J+28	1453		13495+x	J+26
16460+x?	J+30	1512[e]		14948+x	J+28
755+y	J1+2	755[b]	0.60[b] *10*	y	J1>24
1548+y	J1+4	793[b]	0.75[b] *10*	755+y	J1+2
2394+y	J1+6	846[b]	0.85[b] *20*	1548+y	J1+4
3293+y	J1+8	899[b]	0.90[b] *10*	2394+y	J1+6
4248+y	J1+10	955[b]	0.95[b] *10*	3293+y	J1+8
5263+y	J1+12	1015[b]	1.00[b] *10*	4248+y	J1+10
6340+y	J1+14	1077[b]	0.77[b] *10*	5263+y	J1+12
7480+y	J1+16	1140[b]	0.55[b] *15*	6340+y	J1+14
8684+y	J1+18	1204[b]	0.50[b] *15*	7480+y	J1+16
9953+y	J1+20	1269[b]	0.30[b] *20*	8684+y	J1+18
11288+y	J1+22	1335	0.20 *20*	9953+y	J1+20
12688+y	J1+24	1400		11288+y	J1+22
14154+y	J1+26	1466		12688+y	J1+24
15684+y	J1+28	1530		14154+y	J1+26
702+z?	J2+2	702[be]	0.30[b] *20*	z	J2>22
1456+z	J2+4	754[b]	0.52[b] *15*	702+z?	J2+2
2237+z	J2+6	781[b]	0.60[b] *15*	1456+z	J2+4
3078+z	J2+8	841[b]	1.00[b] *10*	2237+z	J2+6
3968+z	J2+10	890[b]	0.90[b] *10*	3078+z	J2+8
4909+z	J2+12	941[b]	0.80[b] *10*	3968+z	J2+10
5905+z	J2+14	996[b]	0.80[b] *10*	4909+z	J2+12
6960+z	J2+16	1055[b]	0.50[b] *15*	5905+z	J2+14
8065+z	J2+18	1105[b]	0.27[b] *20*	6960+z	J2+16
9291+z	J2+20	1226		8065+z	J2+18
10578+z	J2+22	1287		9291+z	J2+20
11927+z	J2+24	1349		10578+z	J2+22
13339+z	J2+26	1412		11927+z	J2+24
14814+z?	J2+28	1475[e]		13339+z	J2+26
855+u	J3+2	855[b]	0.60[b] *20*	u	J3>28
1759+u	J3+4	904[b]	0.85[b] *15*	855+u	J3+2
2708+u	J3+6	949[b]	0.75[b] *15*	1759+u	J3+4
3703+u	J3+8	995[b]	1.00[b] *15*	2708+u	J3+6
4748+u	J3+10	1045[b]	0.70[b] *15*	3703+u	J3+8
5846+u	J3+12	1098[b]	0.75[b] *15*	4748+u	J3+10
7001+u	J3+14	1155[b]	0.45[b] *20*	5846+u	J3+12
8217+u	J3+16	1216[b]	0.25[b] *20*	7001+u	J3+14
9495+u	J3+18	1278		8217+u	J3+16
10839+u	J3+20	1344		9495+u	J3+18
12250+u	J3+22	1411		10839+u	J3+20
13728+u?	J3+24	1478[e]		12250+u	J3+22
723+v	J4+2	723		v	J4

$^{174}_{72}Hf_{102}$-16

Adopted Levels, Gammas (continued)

γ(^{174}Hf) (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	E_i(level)	J_i^π	E_γ †	E_f	J_f^π
1492+v	J4+4	769	723+v	J4+2	4493+w	J5+10	1002	3491+w	J5+8	9086+s	J6+18	1242	7844+s	J6+16
2309+v	J4+6	817	1492+v	J4+4	5558+w	J5+12	1065	4493+w	J5+10	10389+s	J6+20	1303	9086+s	J6+18
3177+v	J4+8	868	2309+v	J4+6	6684+w	J5+14	1126	5558+w	J5+12	11755+s	J6+22	1366	10389+s	J6+20
4096+v	J4+10	919	3177+v	J4+8	7884+w	J5+16	1200	6684+w	J5+14	818+t	J7+2	818	t	J7
5069+v	J4+12	973	4096+v	J4+10	9146+w	J5+18	1262	7884+w	J5+16	1672+t	J7+4	854	818+t	J7+2
6099+v	J4+14	1030	5069+v	J4+12	10476+w	J5+20	1330	9146+w	J5+18	2570+t	J7+6	898	1672+t	J7+4
7186+v	J4+16	1087	6099+v	J4+14	11871+w	J5+22	1395	10476+w	J5+20	3512+t	J7+8	942	2570+t	J7+6
8333+v	J4+18	1147	7186+v	J4+16	13331+w?	J5+24	1460[e]	11871+w	J5+22	4502+t	J7+10	990	3512+t	J7+8
9542+v	J4+20	1209	8333+v	J4+18	810+s	J6+2	810	s	J6	5550+t	J7+12	1048	4502+t	J7+10
10810+v	J4+22	1268	9542+v	J4+20	1650+s	J6+4	840	810+s	J6+2	6660+t	J7+14	1110	5550+t	J7+12
12150+v	J4+24	1340	10810+v	J4+22	2543+s	J6+6	893	1650+s	J6+4	7837+t	J7+16	1177	6660+t	J7+14
13541+v	J4+26	1391	12150+v	J4+24	3489+s	J6+8	946	2543+s	J6+6	9079+t	J7+18	1242	7837+t	J7+16
802+w	J5+2	802	w	J5	4491+s	J6+10	1002	3489+s	J6+8	10387+t	J7+20	1308	9079+t	J7+18
1661+w	J5+4	859	802+w	J5+2	5549+s	J6+12	1058	4491+s	J6+10	11740+t	J7+22	1353	10387+t	J7+20
2550+w	J5+6	889	1661+w	J5+4	6666+s	J6+14	1117	5549+s	J6+12					
3491+w	J5+8	941	2550+w	J5+6	7844+s	J6+16	1178	6666+s	J6+14					

† From ^{174}Ta ε decay, unless otherwise specified. Intensities for SD bands are relative intensities within each band. All other intensities are relative photon branchings.
‡ From in-beam reaction data.
# From α(K)exp, ^{174}Ta ε decay, except where noted otherwise.
@ Experimental value from ^{174}Ta ε decay.
& From ^{130}Te(^{48}Ca,4nγ) (1986Wa07).
[a] Eγ, Iγ(1+α) from 1995Gj01.
[b] From ^{130}Te(^{48}Ca,4nγ):SD.
[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 undivided intensity.
[e] Placement of transition in the level scheme is uncertain.

$^{174}_{72}Hf_{102}$-17

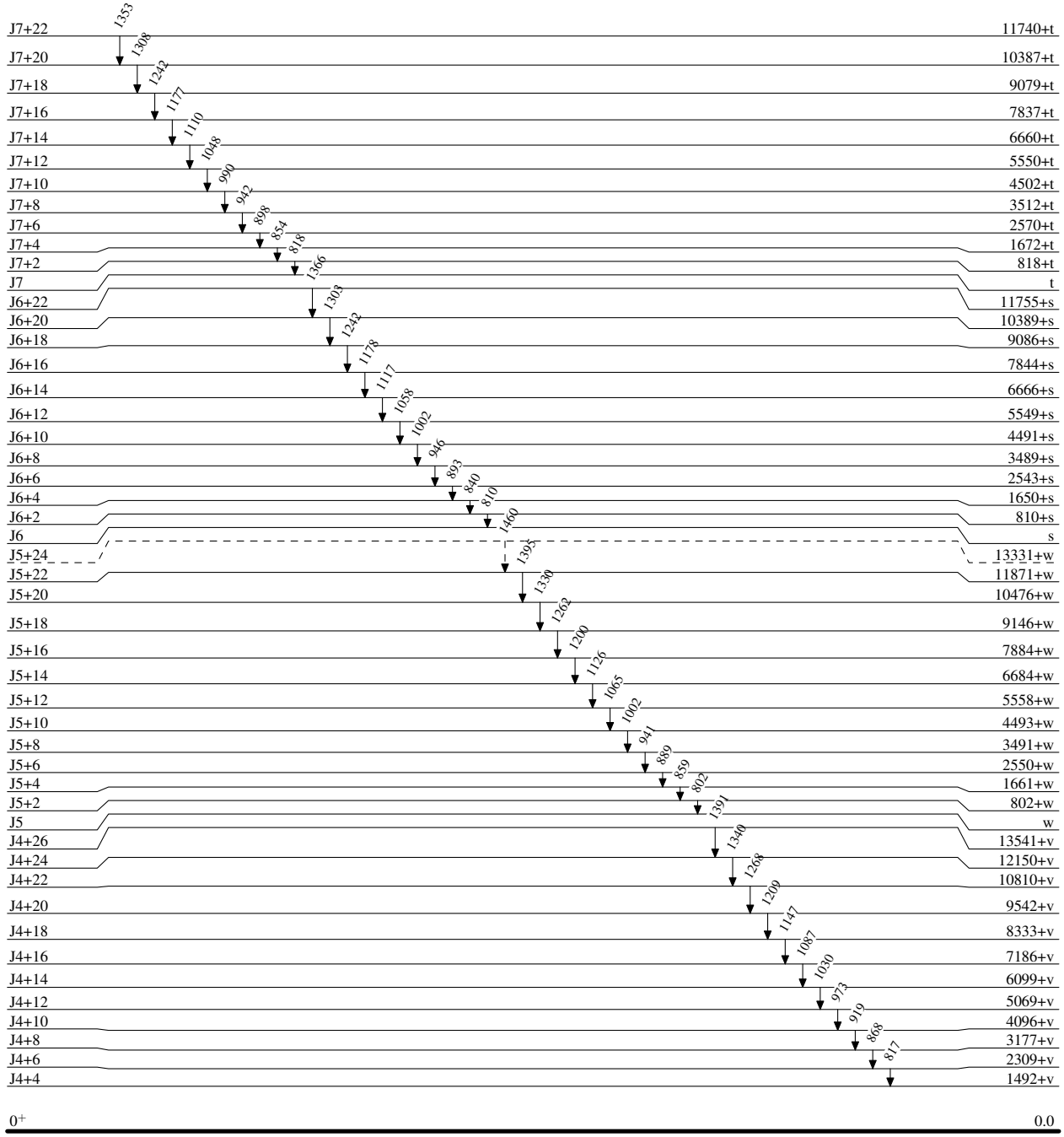
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{174}_{72}Hf_{102}$

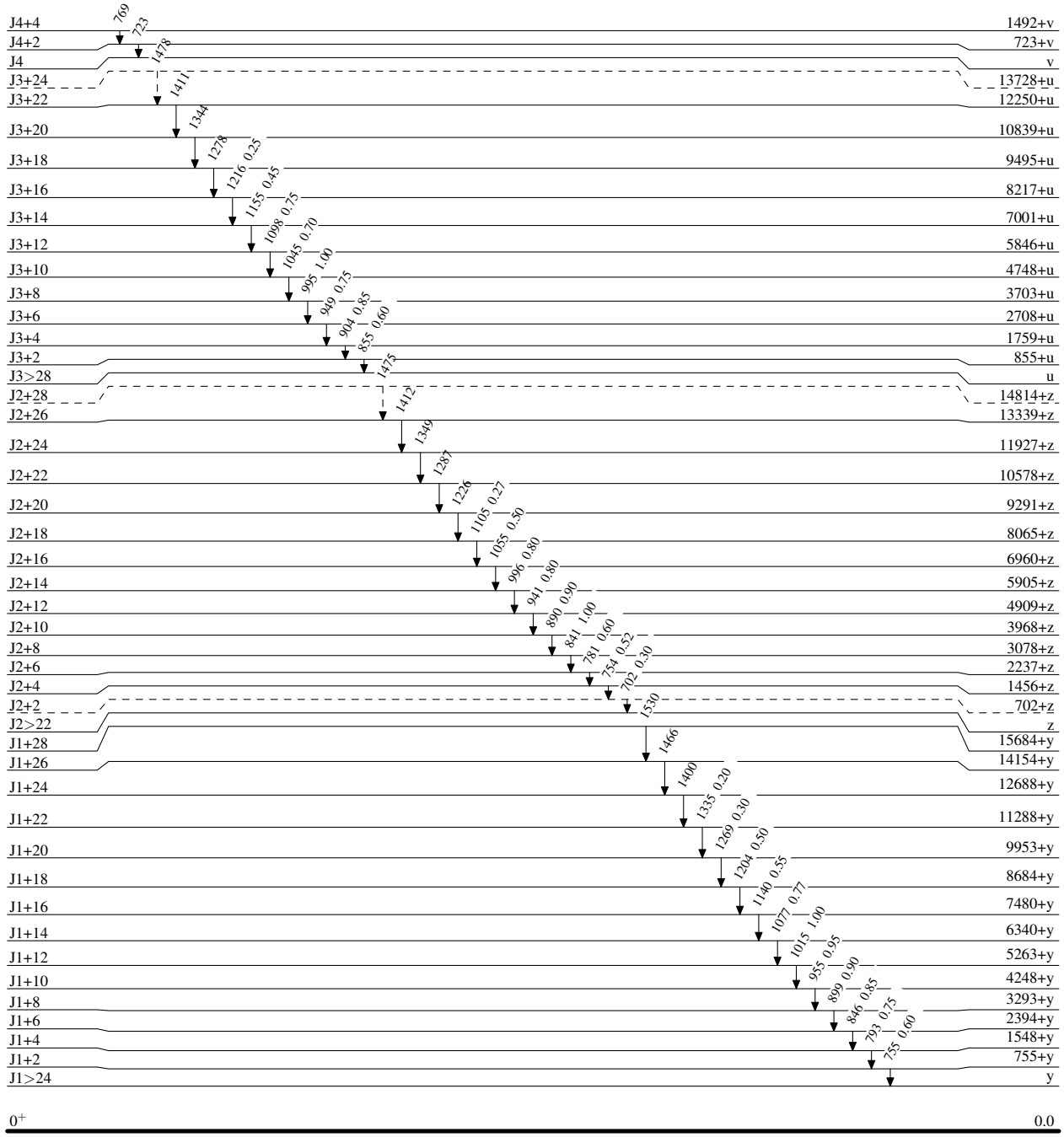
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{174}_{72}Hf_{102}$

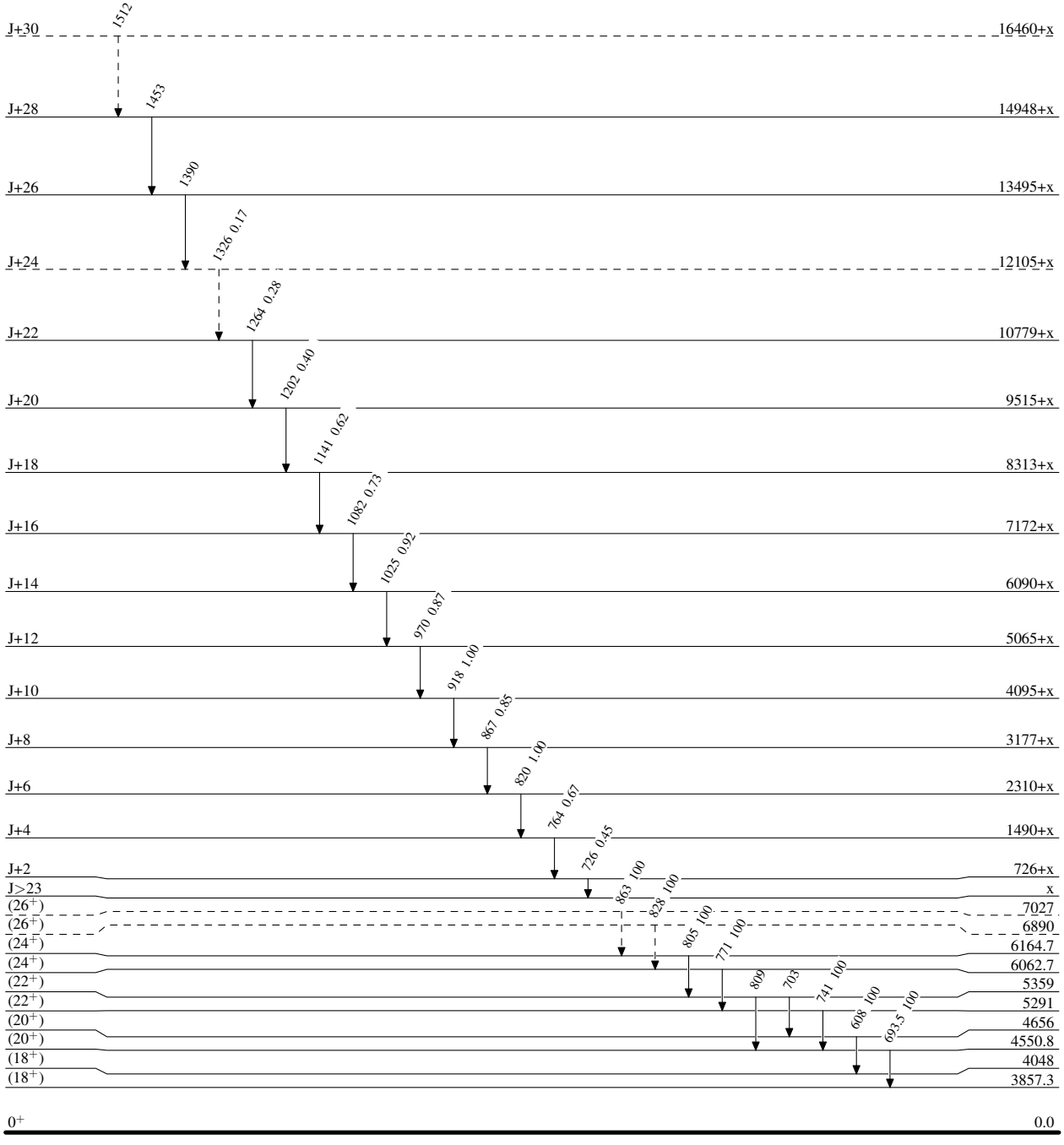
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

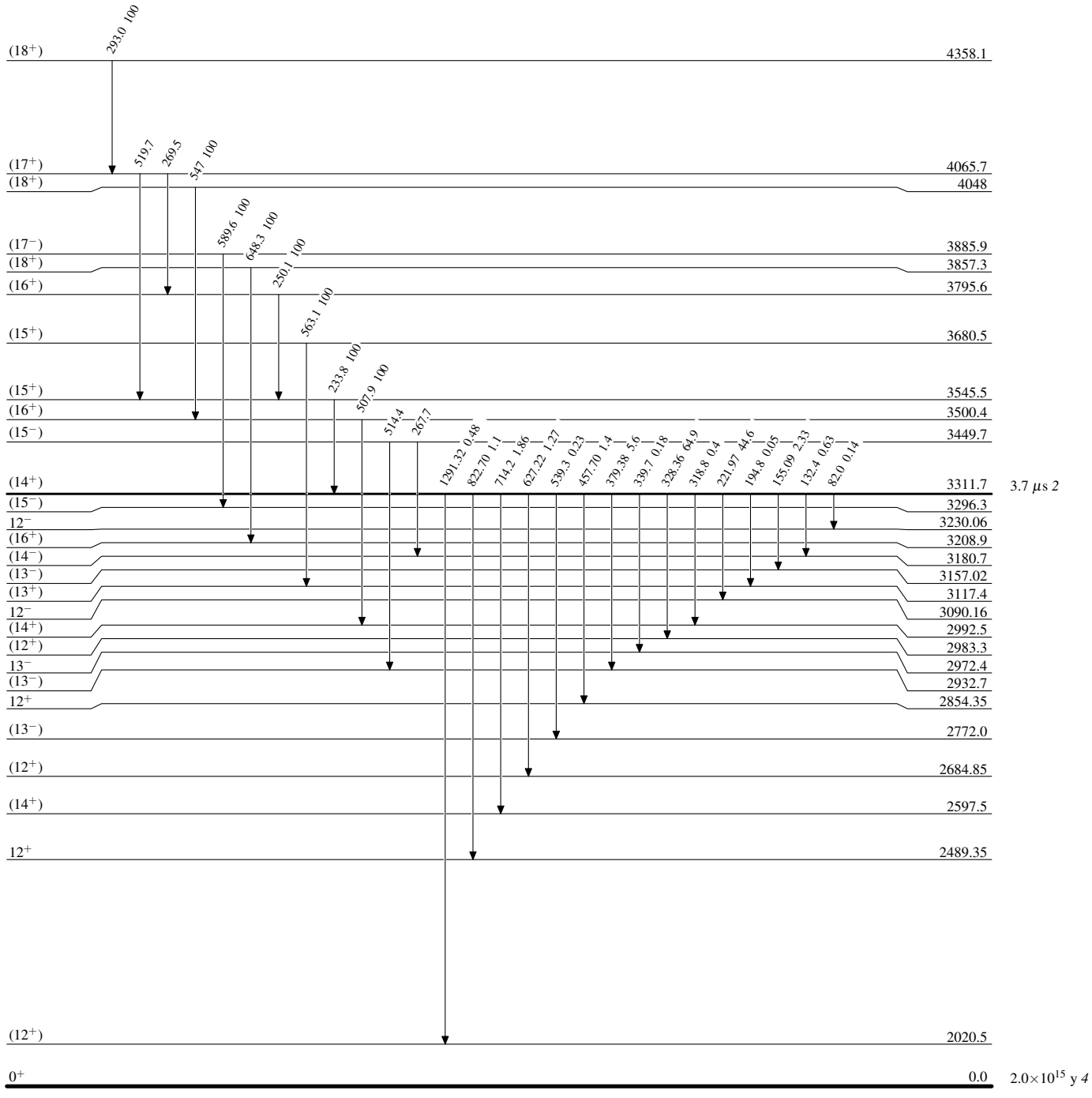


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

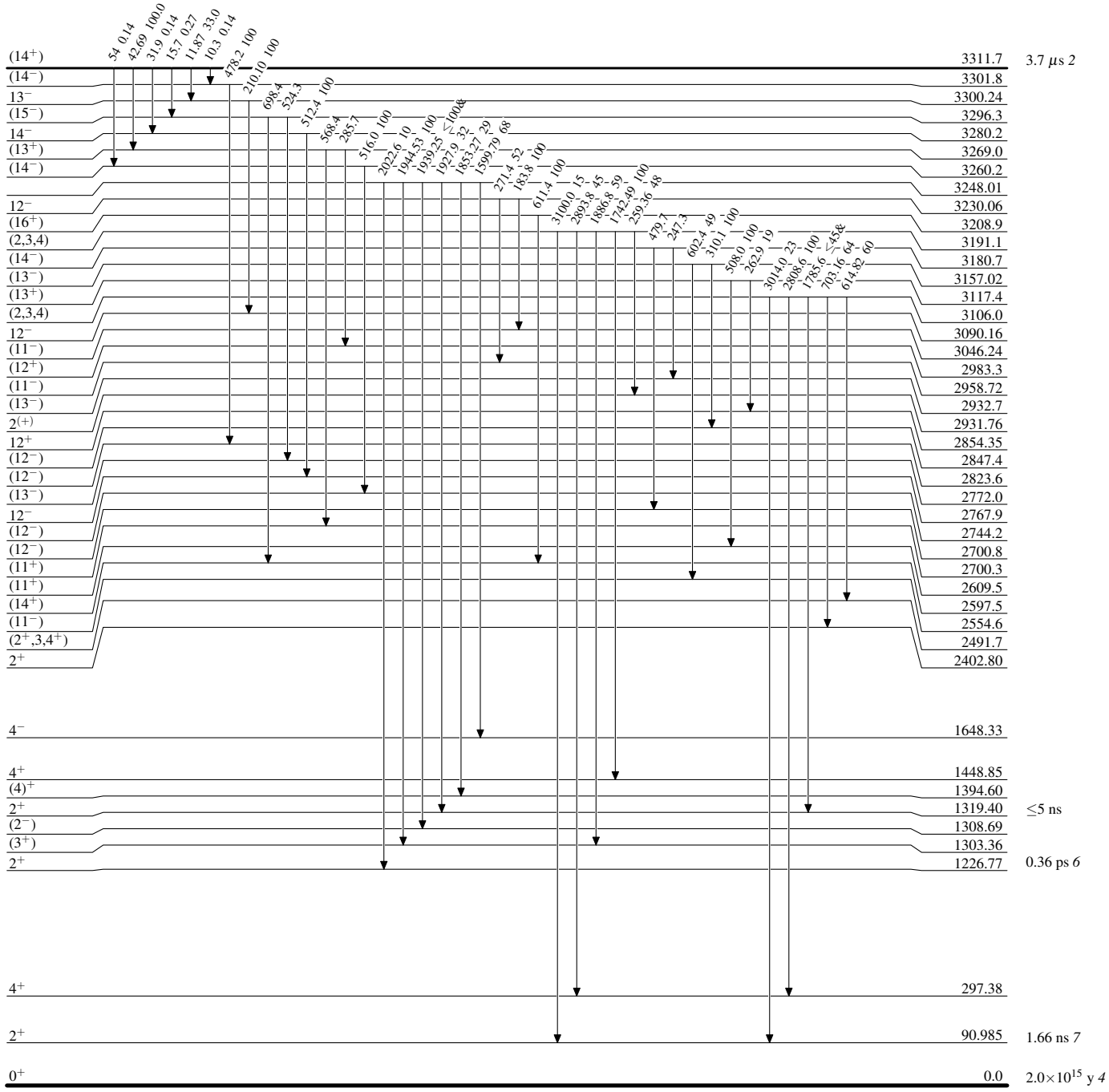


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

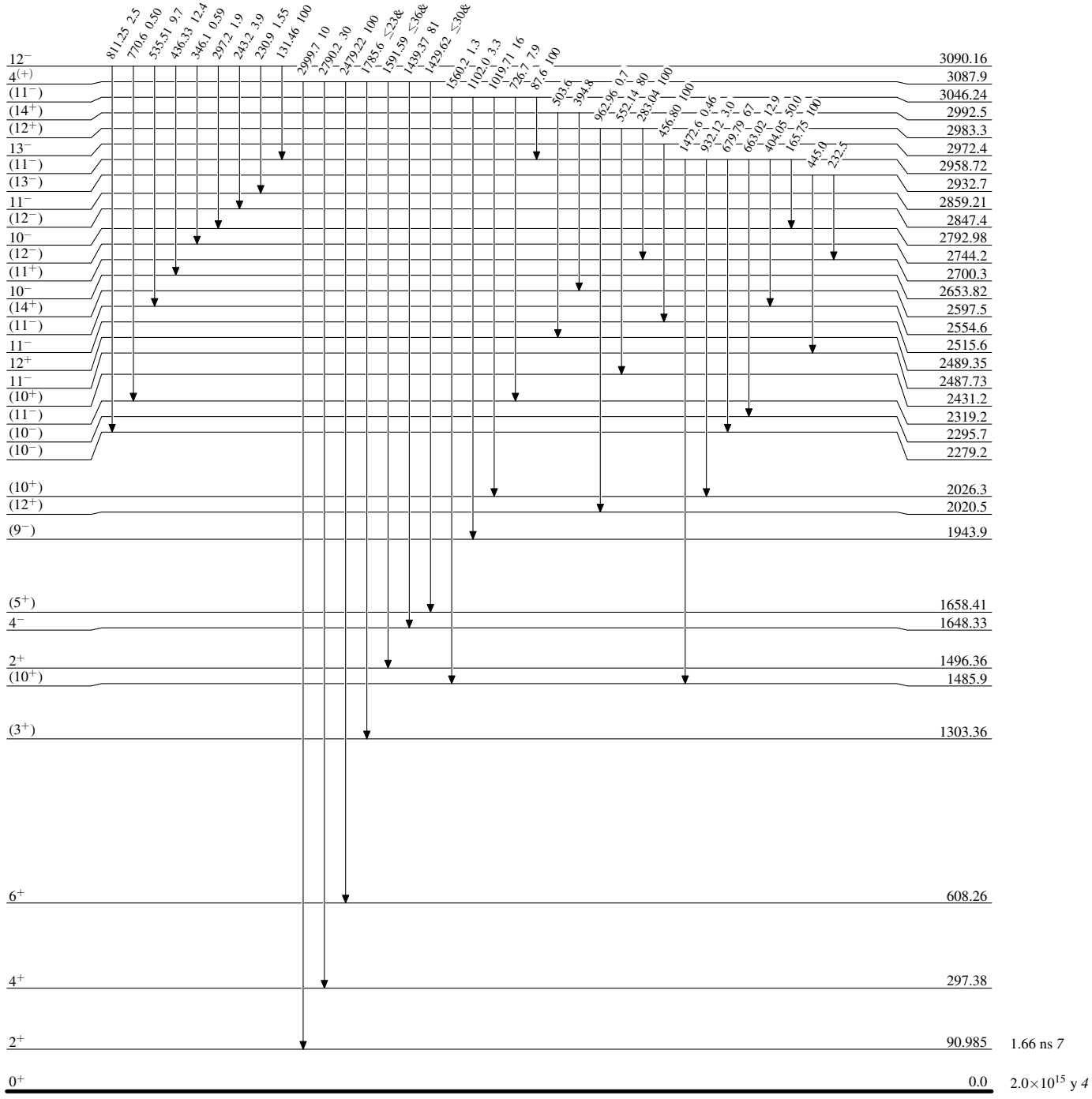


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

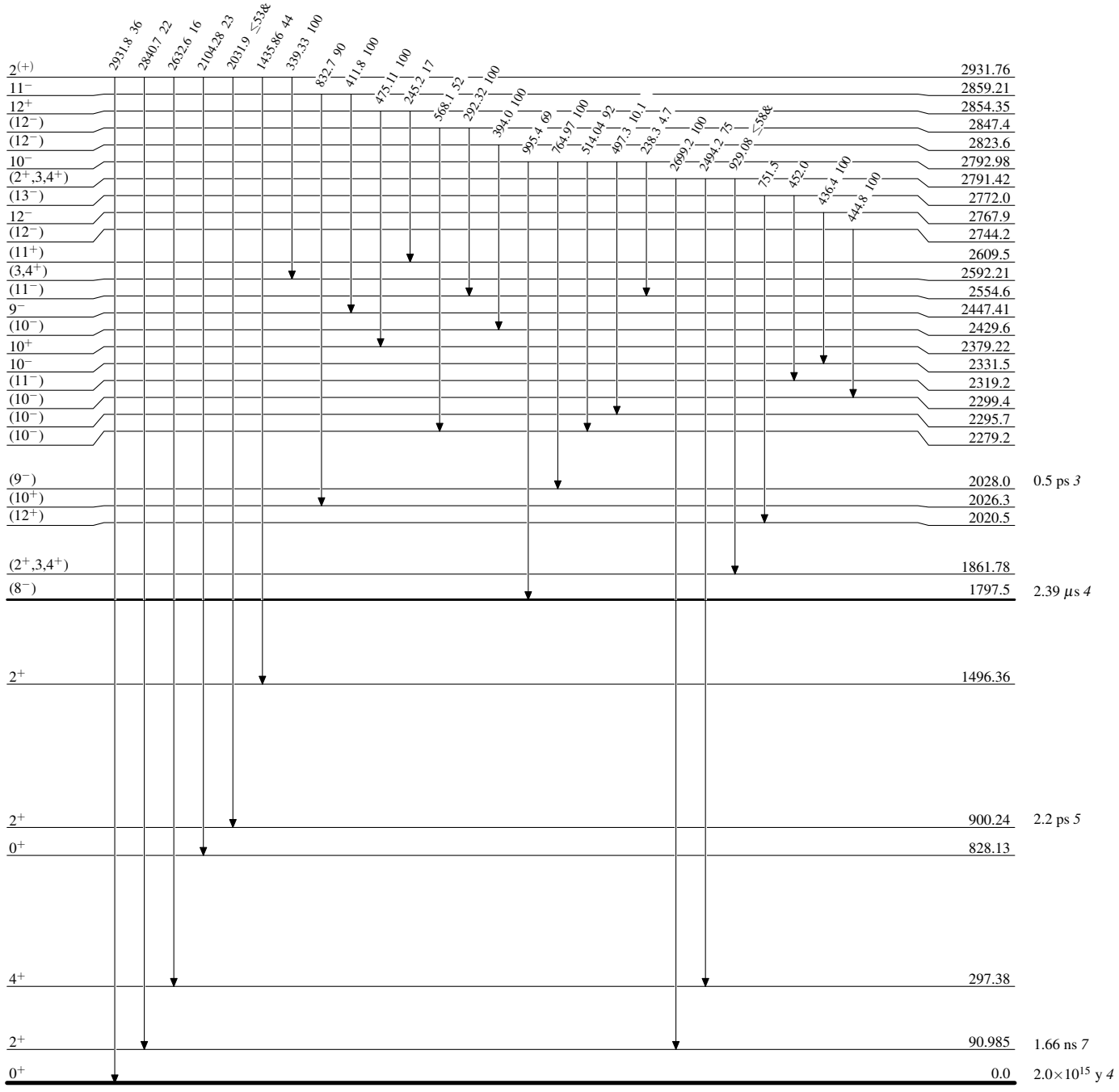


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

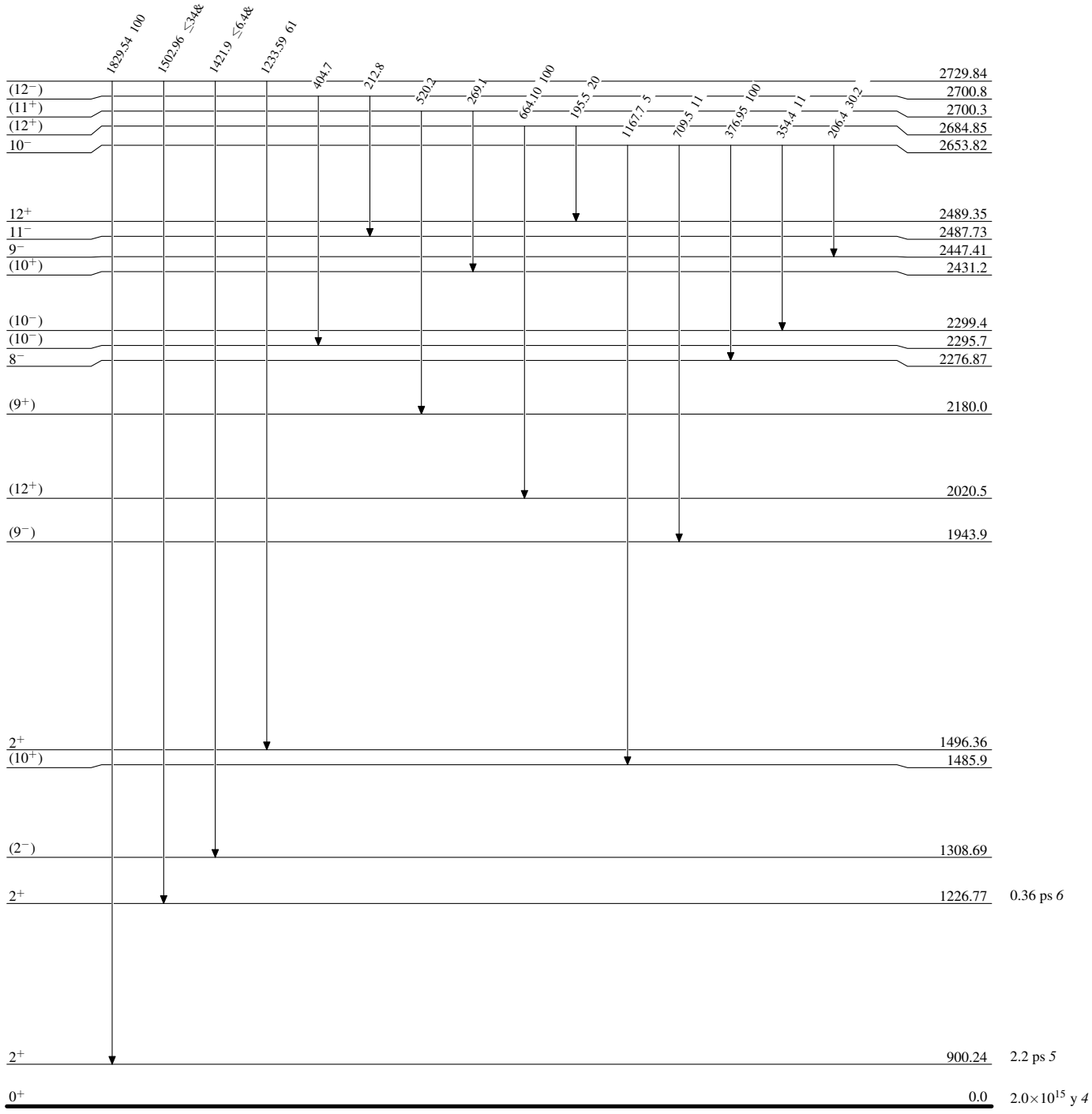


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

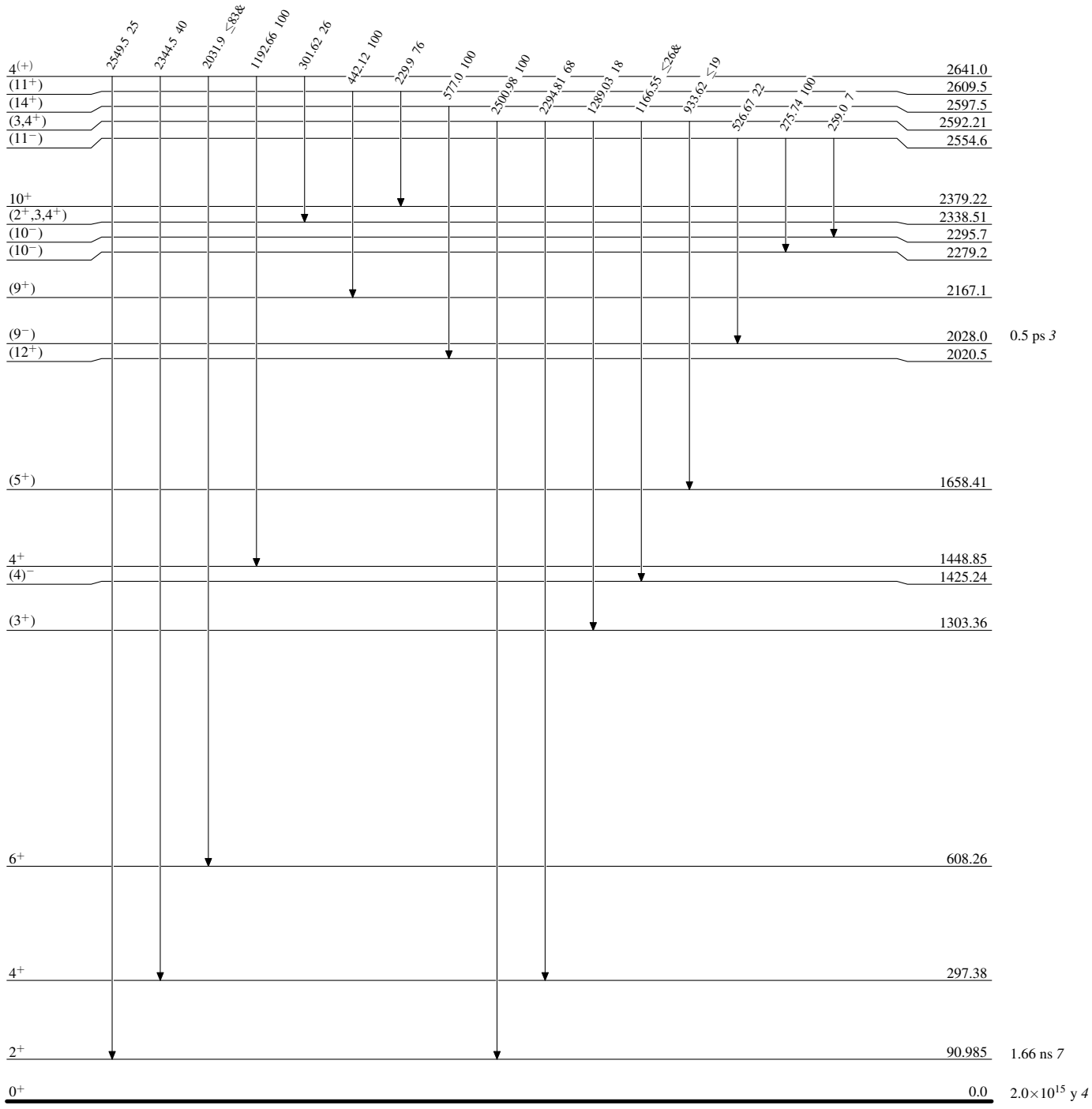


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

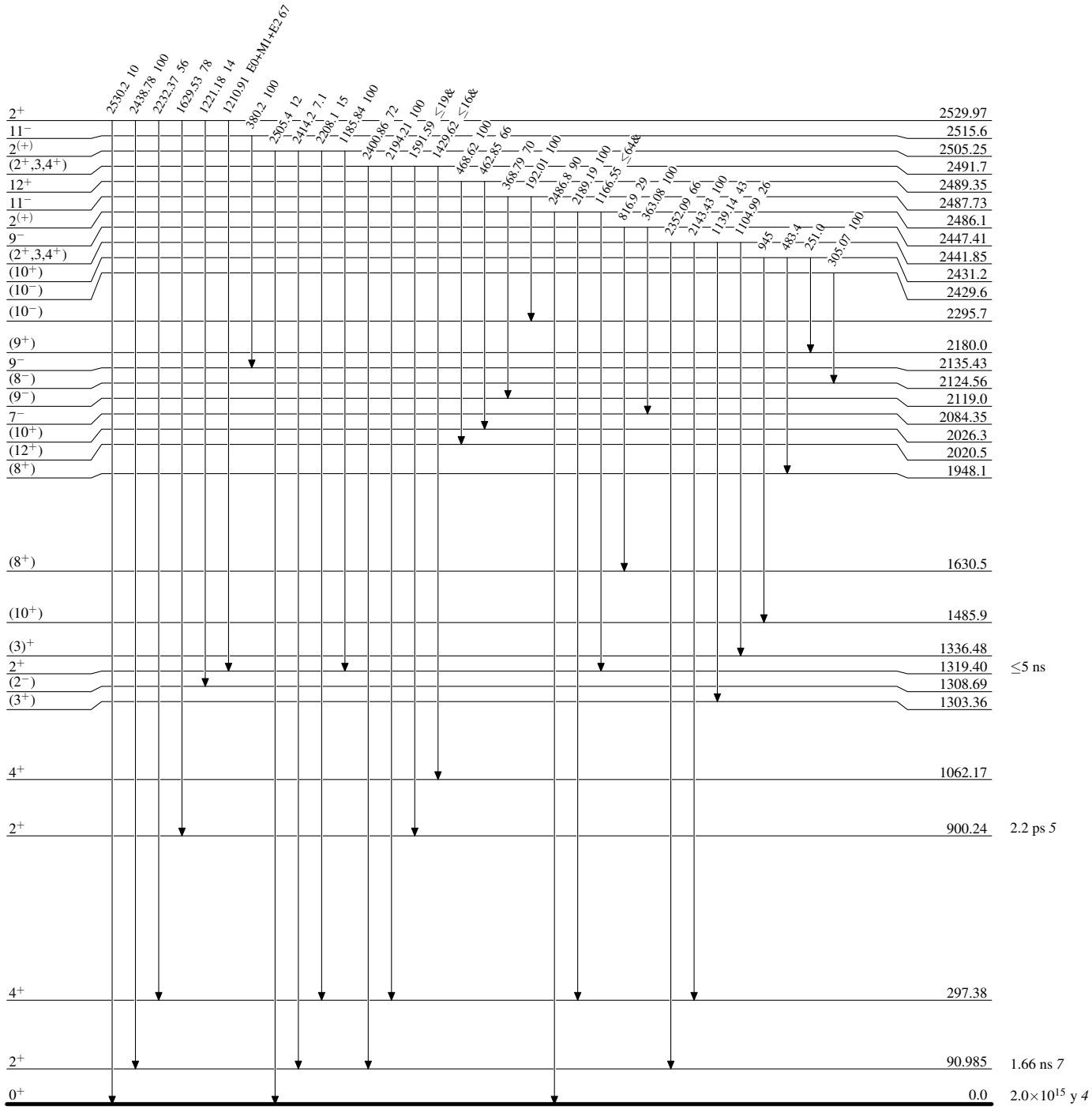


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

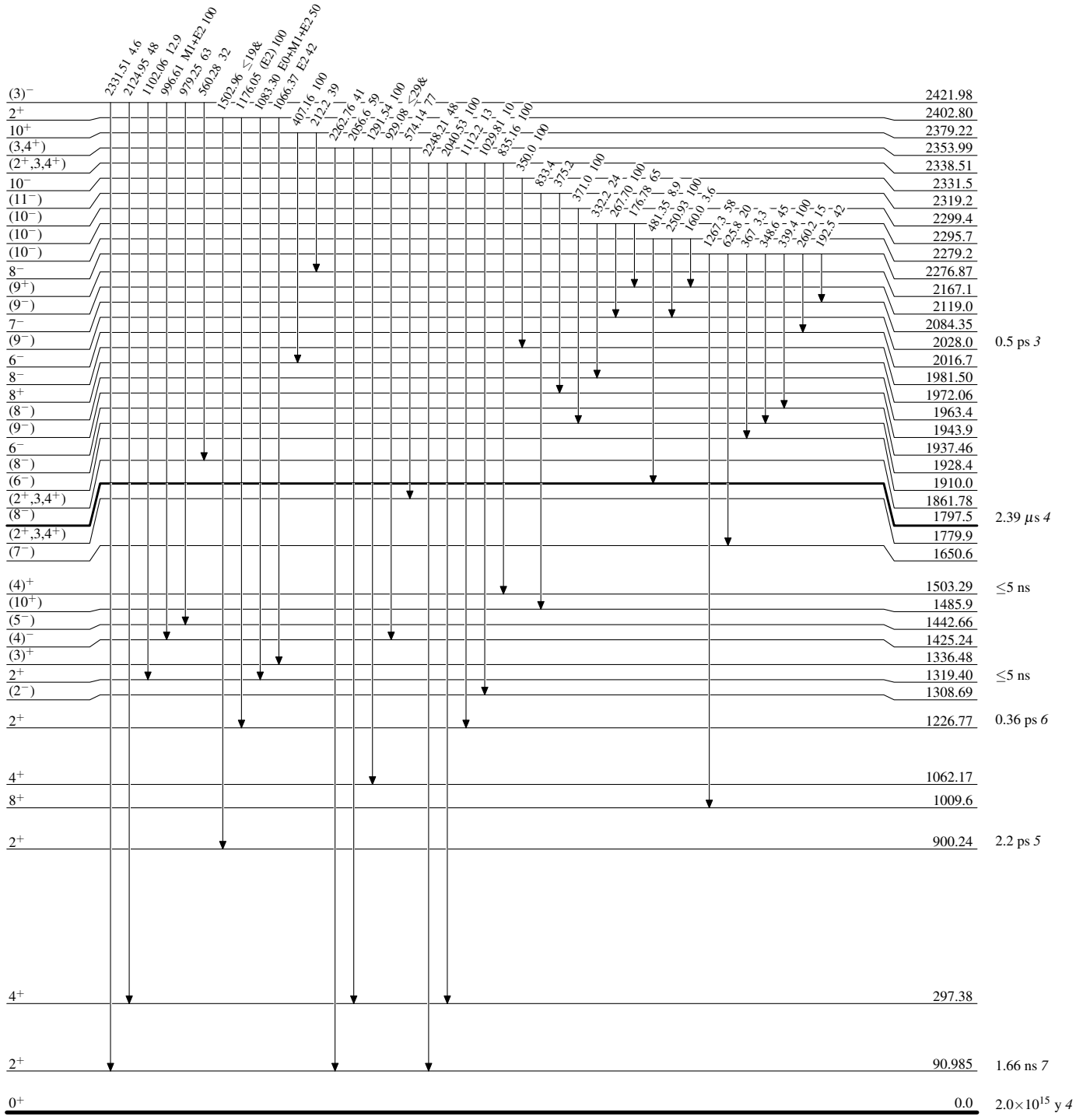


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

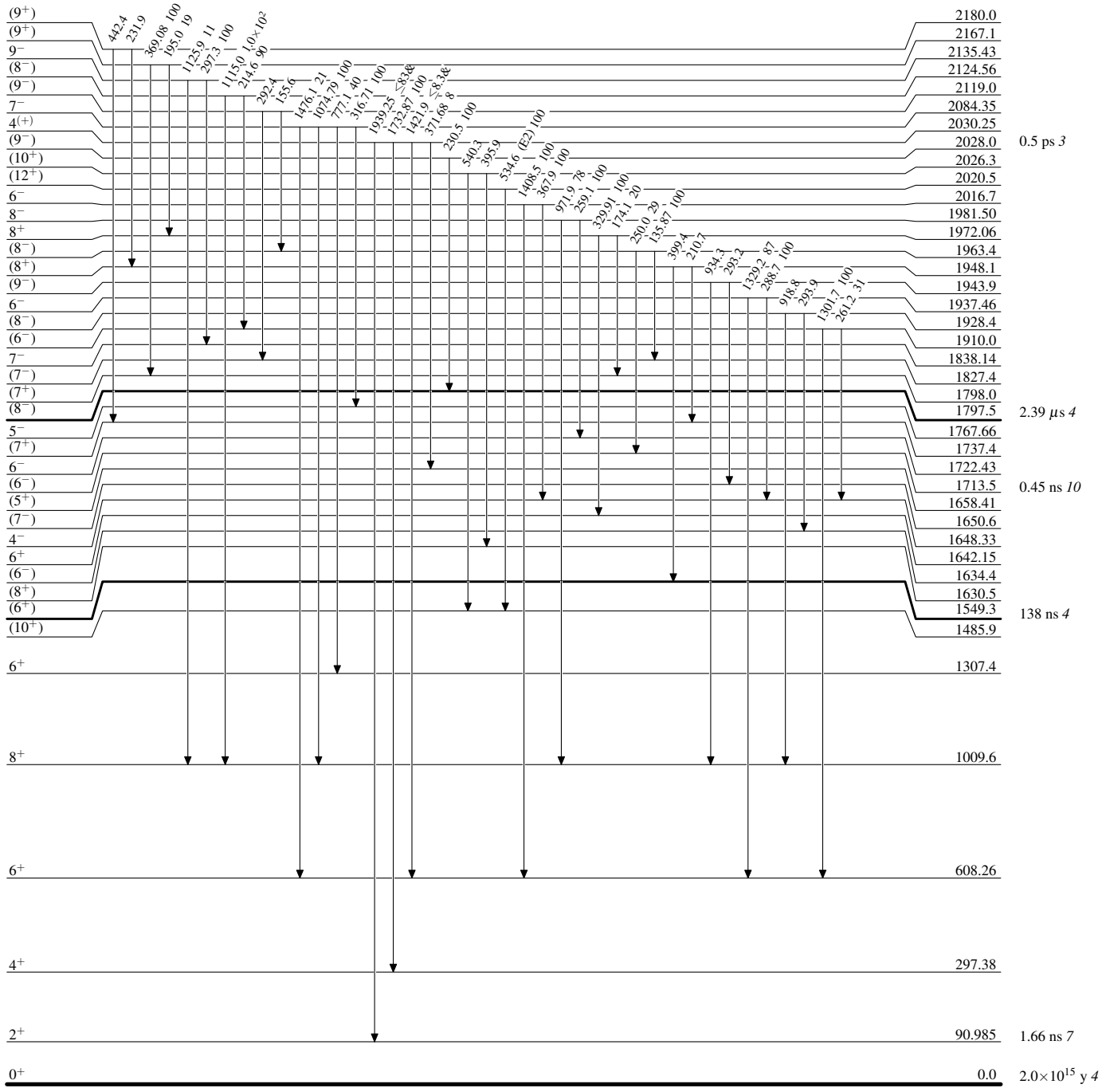


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

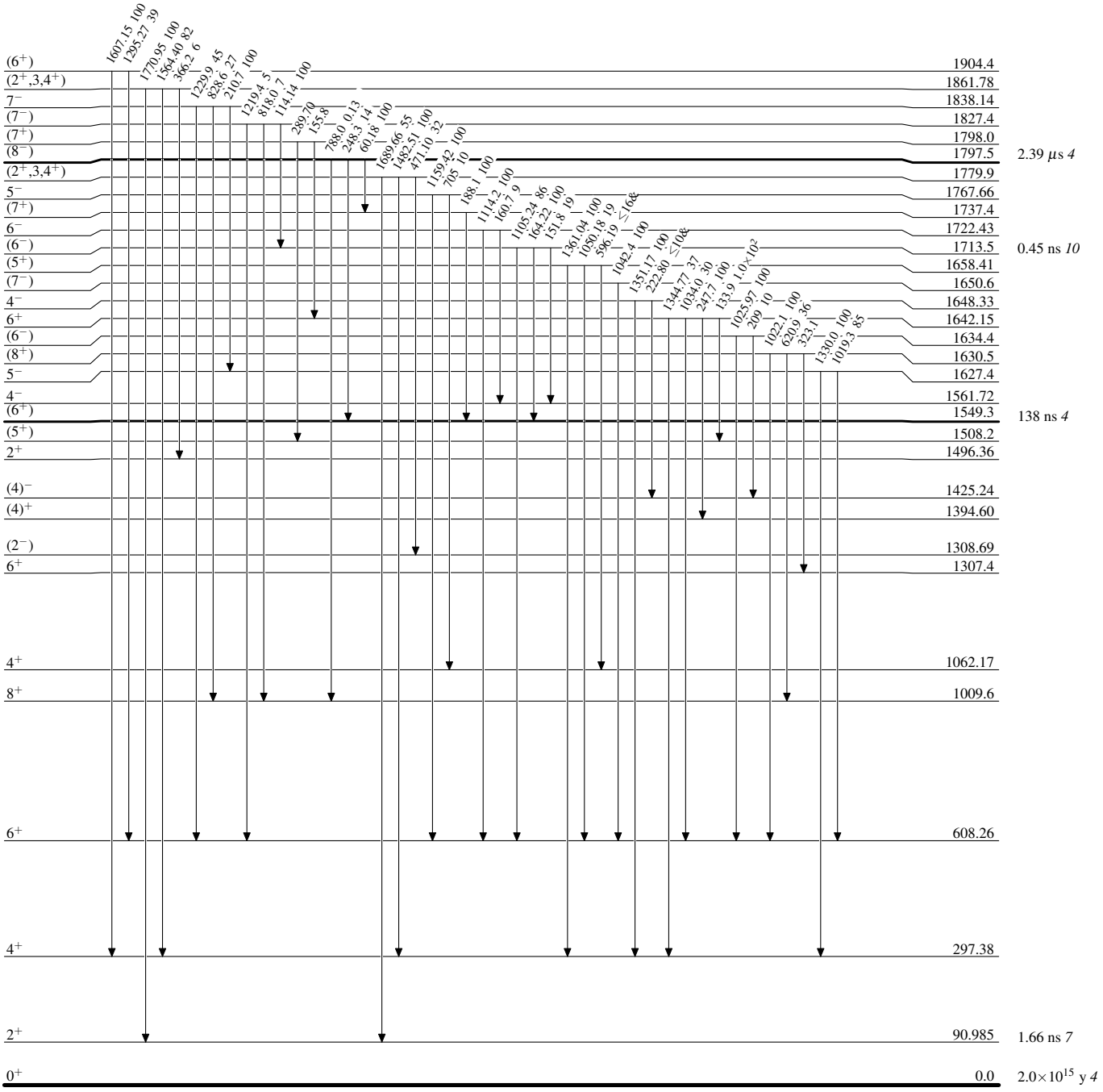


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

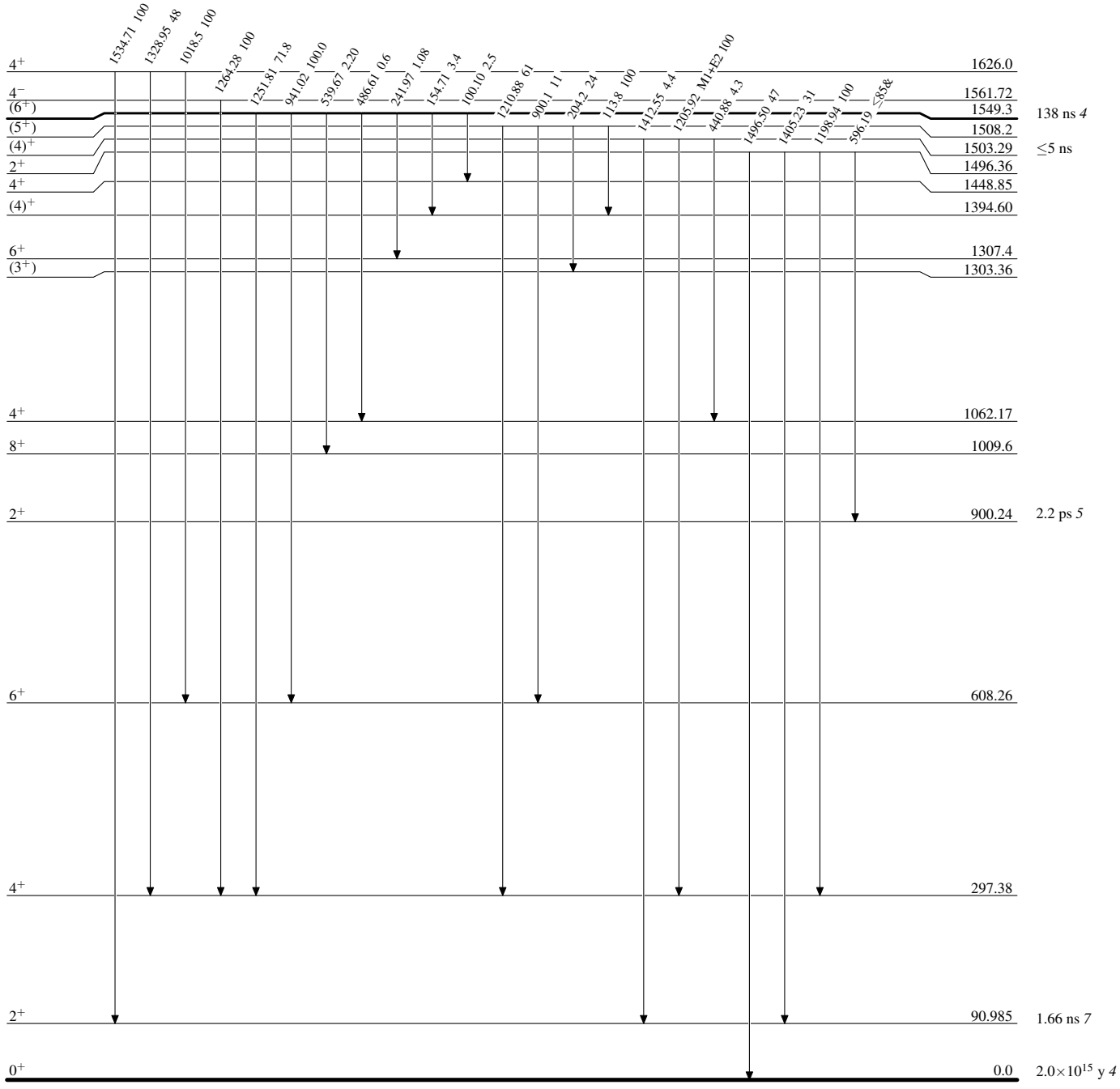


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

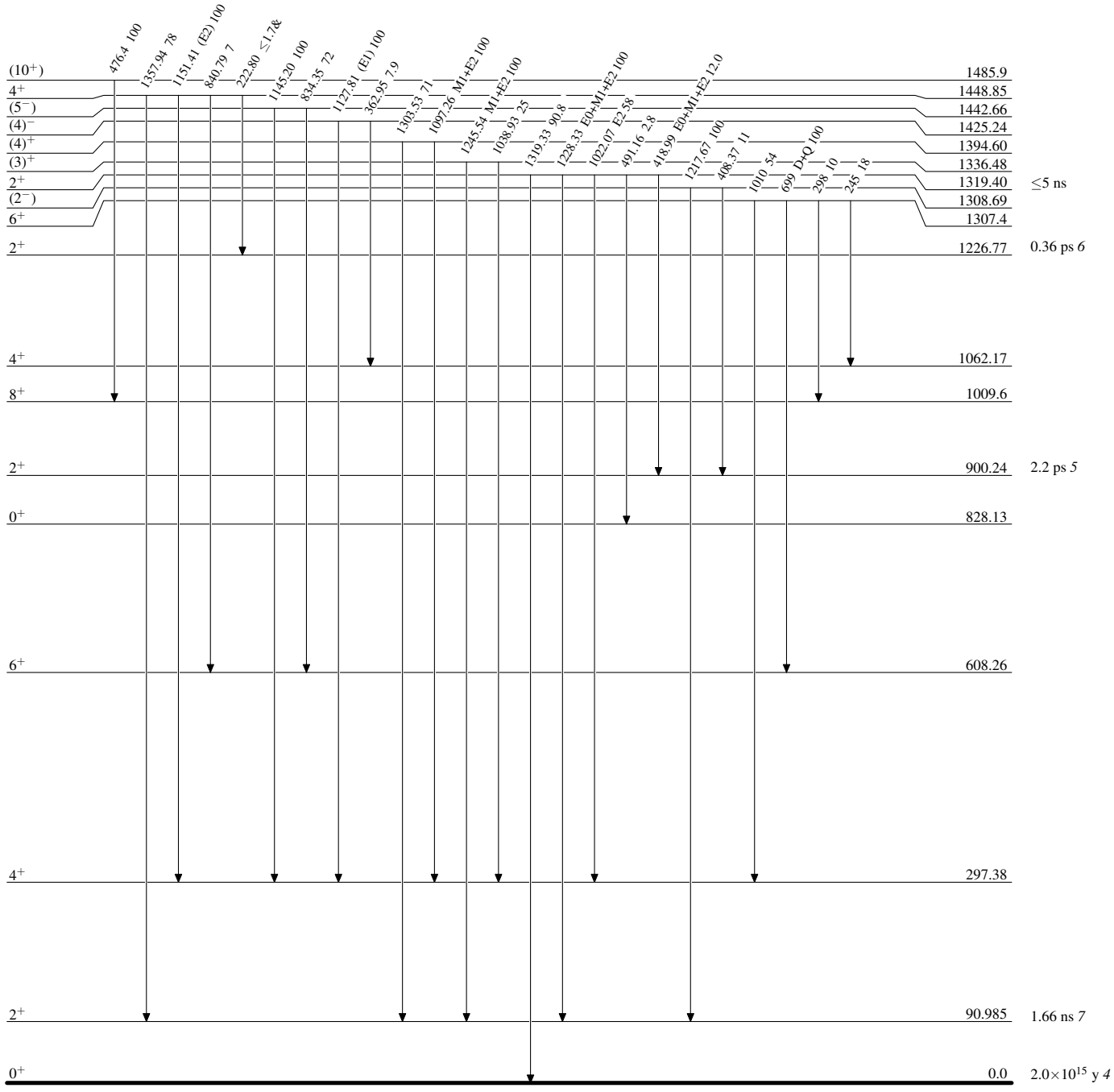


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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

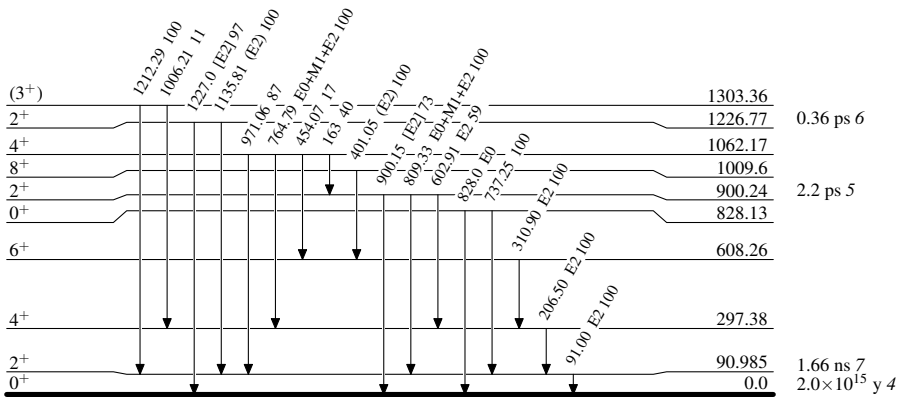


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas

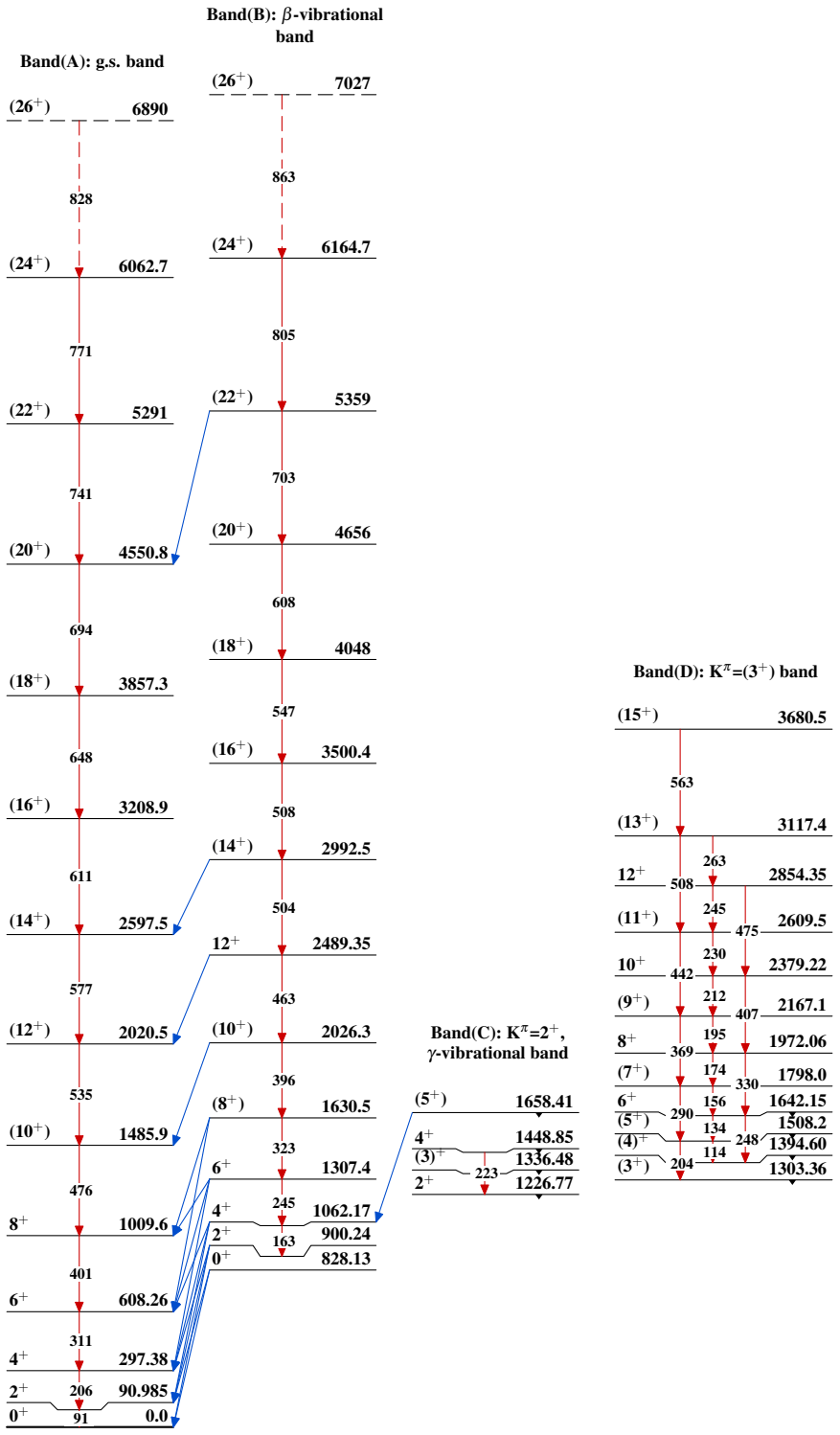
Level Scheme (continued)

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



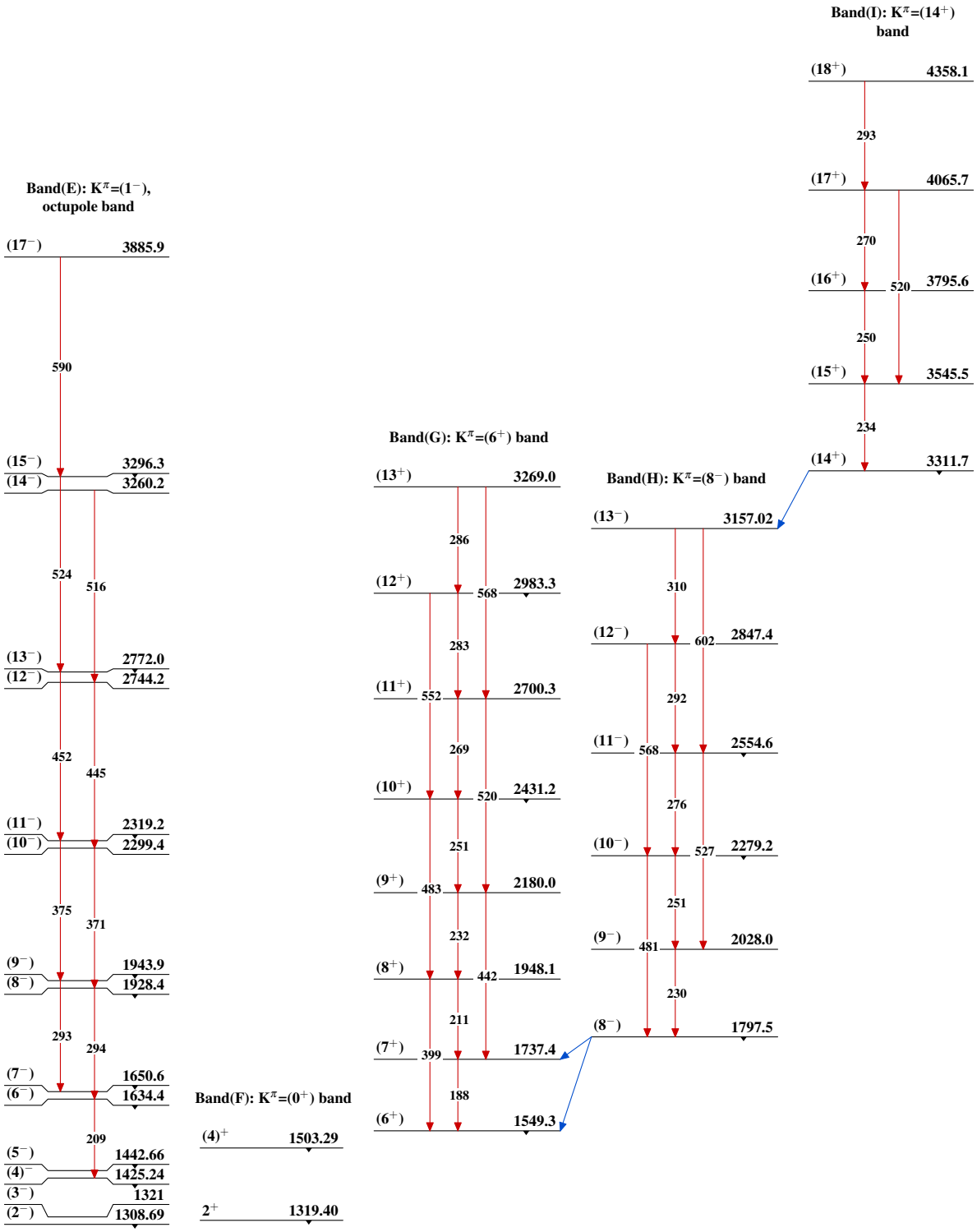
$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas



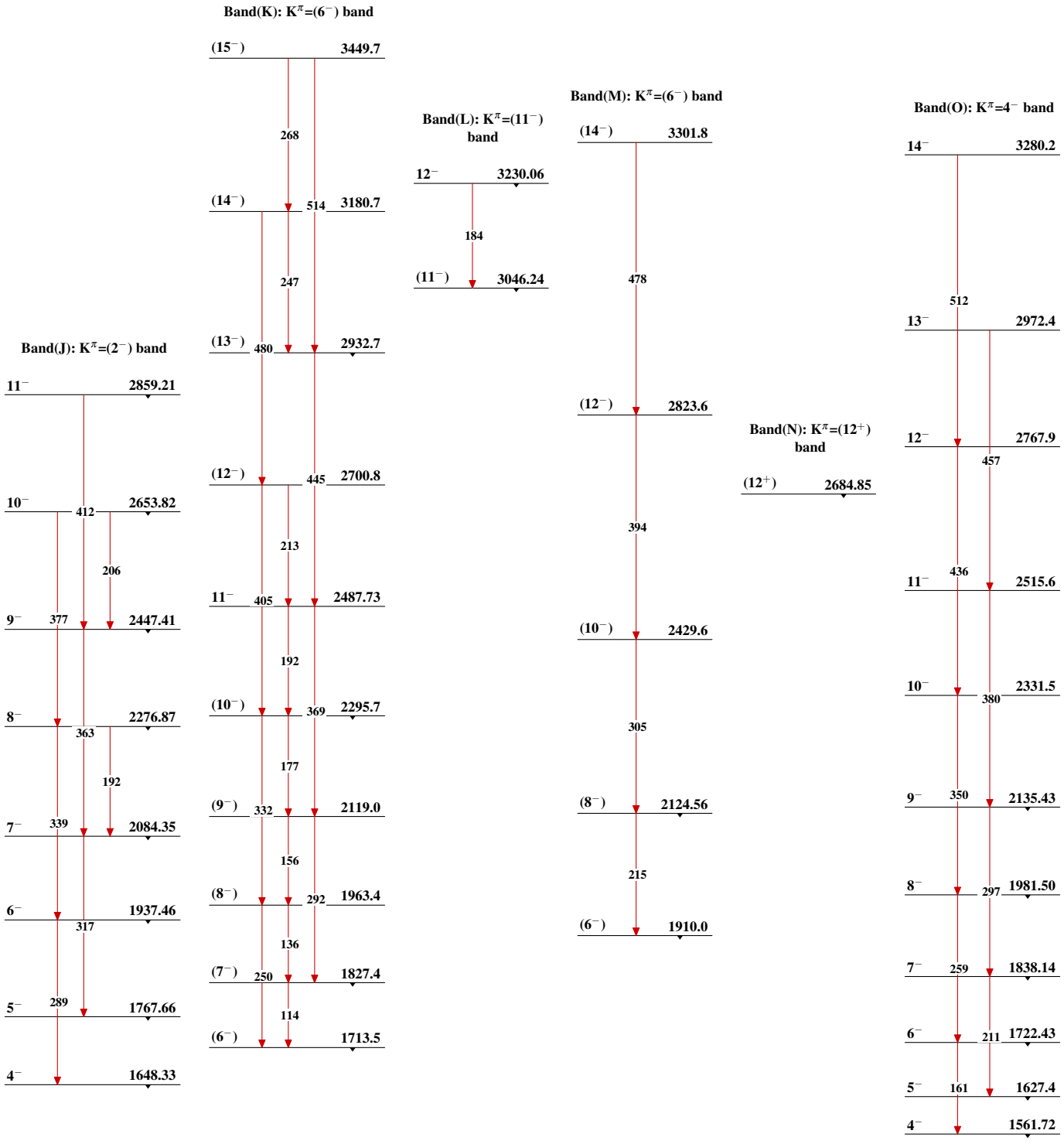
$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas (continued)

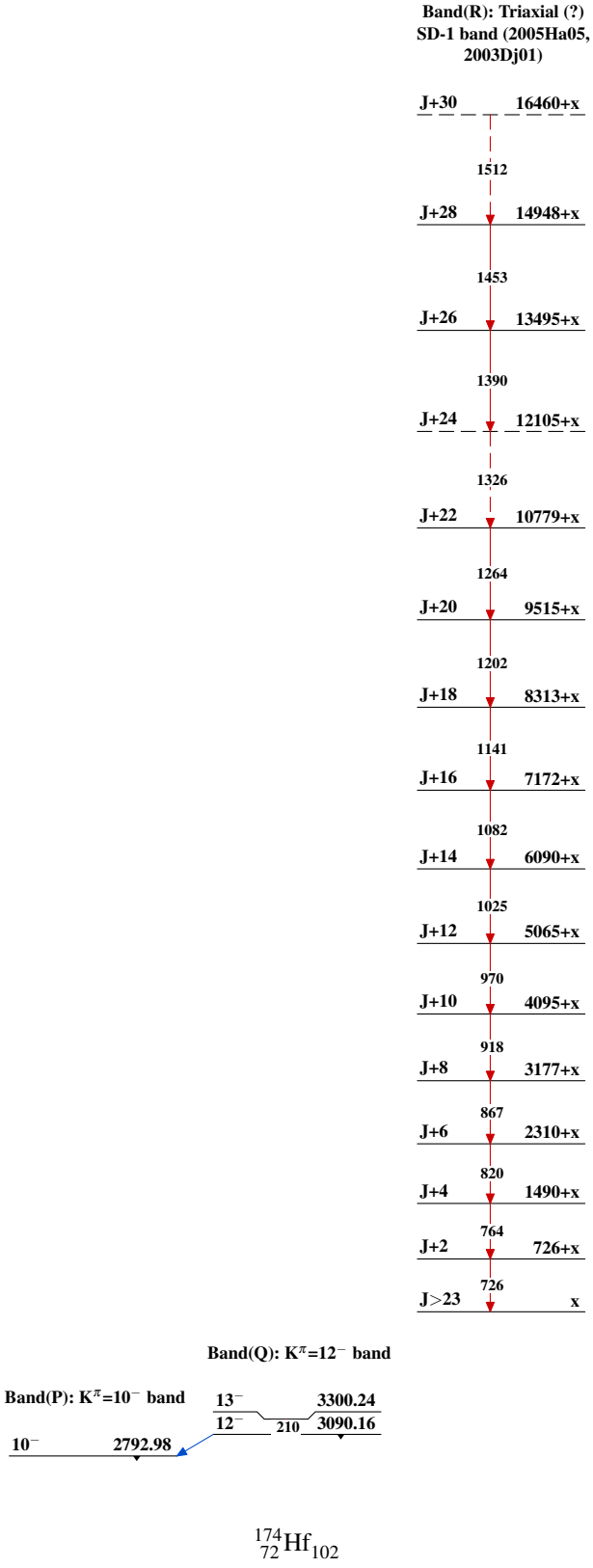


$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas (continued)

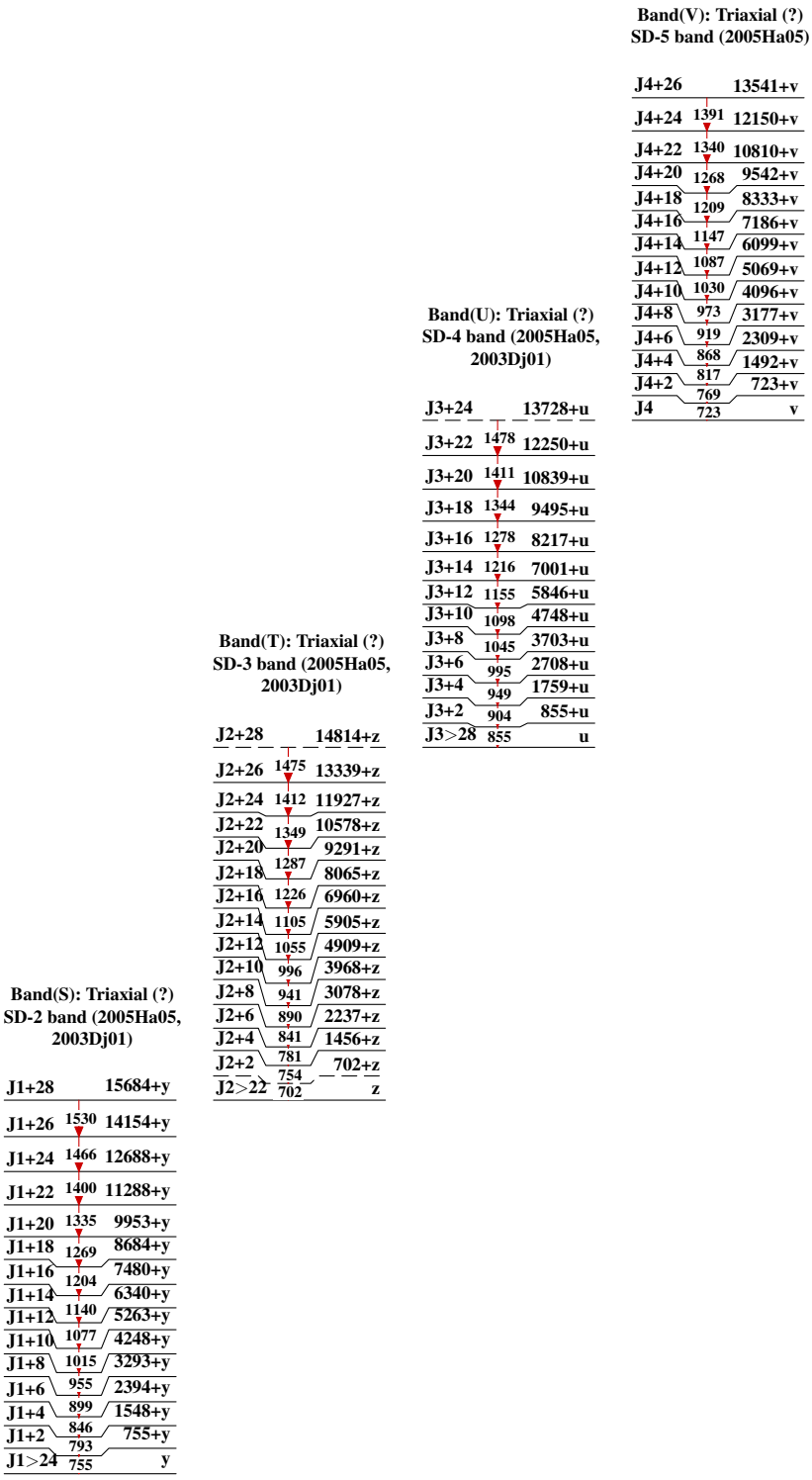


Adopted Levels, Gammas (continued)



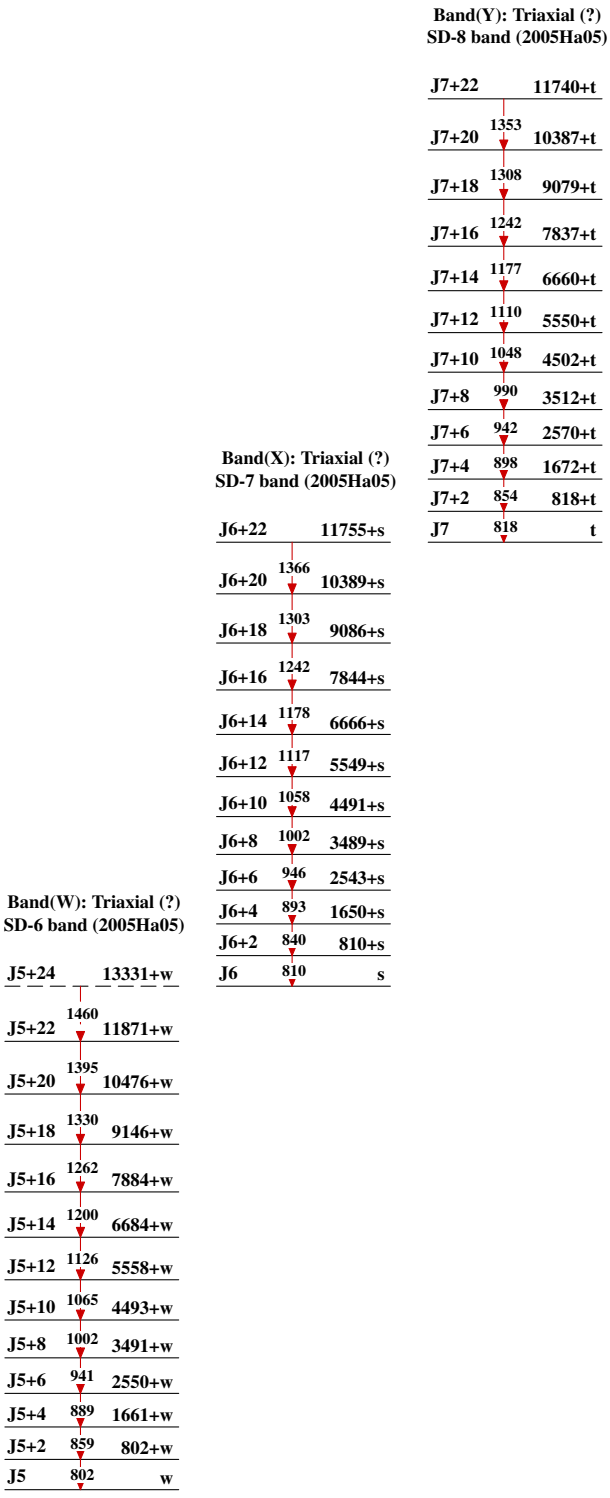
$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas (continued)



$^{174}_{72}Hf_{102}$

Adopted Levels, Gammas (continued)



$^{174}_{72}Hf_{102}$