^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Achterberg, O. A. Capurro, G. V. Marti	NDS 110, 1473 (2009)	31-May-2008

1998Pu01: E(lab)=80 MeV onto a 4 mg/cm^2 self-supporting target. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, ce, and lifetimes by $\gamma\gamma$(t) and ^{13}C(t) using CAESAR array of six Compton suppressed Ge detectors (at +/−148°, +/−97° and +/−47°) and two unsuppressed Ge detectors (at +/−45°). Includes earlier papers by the same group: 1997Wa29 and 1995Pu06.

1999Cu02: Production in two complementary parts, using a thick target (4.6 mg/cm^2, E(lab)=86 MeV) and a thin target (0.6 mg/cm^2, E(lab)= 83MeV). Measured Eγ, $\gamma\gamma$, Iγ, $\gamma\gamma(\theta)$(DCO) and lifetimes using the GAMMASPHERE array of Compton suppressed Ge detectors.

Other: ^{170}Er(^{12}C,4nγ), E=66 MeV (1979Dr06).

^{178}W Levels

E(level)[†]	J$^\pi$	T$_{1/2}$
0.0[‡]	0$^+$	
105.80[‡] *10*	2$^+$	
342.53[‡] *12*	4$^+$	
693.95[‡] *13*	6$^+$	
1044.43[&] *13*	2$^-$	
1119.94[a] *13*	3$^-$	
1141.29[‡] *14*	8$^+$	
1225.05[&] *13*	4$^-$	
1344.42[a] *13*	5$^-$	
1379.96 *13*	4$^+$	
1508.42[&] *15*	6$^-$	
1545.0[b] *4*	(3$^-$)	
1555.78[@] *15*	6$^+$	
1656.09[a] *14*	7$^-$	
1664.73[e] *13*	6$^+$	3 ns *1*
1665.15[‡] *14*	10$^+$	
1738.50[g] *14*	7$^-$	8 ns *1*
1763.91[b] *15*	(5$^-$)	
1827.20[h] *14*	8$^-$	
1835.19[f] *15*	7$^+$	
1888.22[&] *18*	(8$^-$)	
1915.60[@] *15*	8$^+$	
1964.25[g] *14*	9$^-$	
2023.18[e] *15*	8$^+$	
2037.00? *17*		
2041.61[a] *15*	9$^-$	
2053.93[c] *15*	(7)	
2075.98[b] *16*	(7$^-$)	
2078.07[d] *17*	8$^-$	
2132.83[h] *15*	10$^-$	
2135.85 *15*	8$^+$	
2226.57[f] *15*	9$^+$	
2244.25[‡] *15*	12$^+$	
2322.41[d] *15*	9$^-$	
2327.31[g] *15*	11$^-$	

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

^{178}W Levels (continued)

E(level)[†]	J$^{\pi}$	T$_{1/2}$	Comments
2339.54[@] *15*	10$^+$		
2347.72[c] *15*	(9)		
2355.62[&] *21*	10$^-$		
2444.21[e] *15*	10$^+$		
2468.14[b] *16*	(9$^-$)		
2489.64[a] *16*	11$^-$		
2545.87[h] *15*	12$^-$		
2577.36[d] *15*	10$^-$		
2671.58[f] *16*	11$^+$		
2682.58 *14*	10$^+$		
2717.94[c] *16*	(11)		
2784.10[g] *16*	13$^-$		
2803.79[@] *15*	12$^+$		
2841.77[d] *18*	11$^-$		
2845.45[#] *17*	12$^+$		
2858.50[‡] *16*	14$^+$		
2901.22[&] *23*	12$^-$		
2911.41[e] *15*	12$^+$		
2933.25[b] *18*	(11$^-$)		
2994.66[a] *18*	13$^-$		
3043.99[h] *17*	14$^-$		
3053.61 *14*	11$^-$	<2 ns	K^{π}=11$^-$. Configuration=ν(1/2[521]5/2[512]7/2[514]9/2[624]).
3138.42[f] *18*	13$^+$		
3143.9 *6*			
3161.74[c] *19*	(13)		
3209.05[#] *17*	14$^+$		
3235.13 *14*	12$^+$	<1 ns	K^{π}=12$^+$. Configuration=ν(1/2[521]7/2[633]7/2[514]9/2[624]) or ν(5/2[512]7/2[514])π(5/2[402]7/2[404]).
3282.00 *17*	(12$^-$)		Probable band member of the K^{π}=11$^-$ band at 3053 keV.
3317.20[g] *17*	15$^-$		
3318.53[@] *16*	14$^+$		
3385.15 *19*	(13$^+$)		Probable band member of the K^{π}=12$^+$ band at 3235 keV.
3420.19[e] *15*	14$^+$		
3455.36[b] *20*	(13$^-$)		
3459.55 *20*	(13$^-$)		
3488.22[‡] *17*	16$^+$		
3514.63[&] *25*	14$^-$		
3525.33[i] *17*	13$^-$	<1 ns	
3558.08[a] *20*	15$^-$		
3593.43 *19*	14$^-$	3 ns *1*	K^{π}=14$^-$. Configuration=ν(5/2[512]7/2[514])π(7/2[404]9/2[514]).
3612.02[f] *20*	15$^+$		
3612.70[h] *19*	16$^-$		
3654.72[k] *20*	15$^+$	30 ns *1*	
3660.94[#] *17*	16$^+$		
3673.74[c] *21*	(15)		
3686.43[j] *17*	(14$^+$)		
3689.01[i] *19*	14$^-$		
3694.85 *18*			
3836.8[j] *6*	(15$^+$)		

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

^{178}W Levels (continued)

E(level)[†]	J$^{\pi}$	T$_{1/2}$	Comments
3862.13[l] 23	16^{+}		
3870.80[@] 18	16^{+}		
3875.83 22	(15^{-})		Probable member of the K^{π}=14^{-} band at 3593 keV.
3912.31[g] 20	17^{-}		
3930.42[i] 20	15^{-}		
4009.09[e] 18	16^{+}		
4084.2[j] 6	(16^{+})		
4099.97[‡] 19	18^{+}		
4129.73[k] 24	17^{+}		
4157.72[f] 22	17^{+}		
4171.3[&] 6	16^{-}		
4182.78[a] 23	17^{-}		
4208.68[i] 20	16^{-}		
4238.01[h] 22	18^{-}		
4238.74[c] 24	(17)		
4248.00[#] 18	18^{+}		
4368.6[j] 6	(17^{+})		
4429.53[l] 24	18^{+}		
4498.11[@] 20	18^{+}		
4516.08[i] 21	17^{-}		
4555.71[g] 22	19^{-}		
4663.19[e] 21	18^{+}		
4678.5[j] 6	(18^{+})		
4711.62 21	(17^{+})		K^{π}=17^{+}. Configuration=ν(5/2[512]7/2[514])π(1/2[541]5/2[402]7/2[404]9/2[514]).
4730.16[‡] 21	20^{+}		
4753.43[k] 25	19^{+}		
4796.92[f] 24	19^{+}		
4833.5[&] 8	(18^{-})		
4835.2[c] 3	(19)		
4863.68[a] 25	19^{-}		
4879.52[m] 20	18^{-}	<3 ns	
4905.51[h] 24	20^{-}		
4941.64[#] 19	20^{+}		
5006.5[j] 6	(19^{+})		
5063.02[n] 23	19^{-}		
5096.63[l] 25	20^{+}		
5188.11[@] 22	20^{+}		
5233.91[g] 25	21^{-}		
5269.64[m] 25	20^{-}		
5313.5[o] 3	21^{-}	64 ns 2	
5428.76[‡] 23	22^{+}		
5455.54[k] 25	21^{+}		
5460.6[c] 3	(21)		
5521.9[n] 3	21^{-}		
5525.7[f] 3	21^{+}		
5537.4[&] 13	(20^{-})		
5577.3[a] 3	(21^{-})		
5603.0[h] 3	22^{-}		

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

^{178}W Levels (continued)

E(level)[†]	J$^{\pi}$	T$_{1/2}$
5626.9[q] *3*	22$^-$	
5675.0[p] *3*	22$^-$	
5688.55[#] *21*	22$^+$	
5814.0[m] *3*	22$^-$	
5827.0[l] *3*	22$^+$	
5906.41[@] *25*	22$^+$	
5939.7[g] *3*	23$^-$	
6000.3[r] *3*	23$^-$	
6052.7[o] *3*	23$^-$	
6136.6[c] *3*	(23)	
6139.8[n] *3*	23$^-$	
6194.3[‡] *3*	24$^+$	
6207.6[k] *3*	23$^+$	
6299.2[a] *6*	(23$^-$)	
6328.9[f] *6*	23$^+$	
6332.5[h] *3*	24$^-$	
6389.6[q] *3*	24$^-$	
6447.5[p] *5*	24$^-$	
6483.65[#] *24*	24$^+$	
6494.2[m] *3*	24$^-$	
6572.5[s] *3*	25$^+$	220 ns *10*
6593.6[l] *3*	24$^+$	
6685.1[g] *3*	25$^-$	
6795.4[r] *3*	25$^-$	
6858.9[o] *5*	25$^-$	
6860.2[t] *4*	26$^+$	
6872.7[n] *4*	25$^-$	
6886.3[c] *3*	(25)	
6971.4[k] *4*	(25$^+$)	
6984.0 *6*	25$^+$	
7005.8 *5*	25$^+$	
7017.0[‡] *3*	(26$^+$)	
7113.0[h] *3*	26$^-$	
7217.3[s] *4*	27$^+$	
7218.4[q] *5*	26$^-$	
7272.2[m] *5*	26$^-$	
7288.0[p] *6*	26$^-$	
7330.0[#] *6*	26$^+$	
7336.8[l] *4*	26$^+$	
7392.0 *4*	26$^+$	
7489.7[g] *3*	27$^-$	
7611.5[t] *4*	28$^+$	
7657.4[r] *5*	27$^-$	
7689.9[n] *5*	27$^-$	
7709.2[k] *4*	27$^+$	
7719.3[c] *6*	(27)	
7732.0[o] *8*	27$^-$	
7798.6 *5*	27$^+$	
7897.3[‡] *6*	(28$^+$)	

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

^{178}W Levels (continued)

E(level)†	Jπ	$T_{1/2}$	Comments
7961.7[h] 3	(28−)		
8034.4[s] 4	29+		
8096.2[l] 4	28+		
8111.4[q] 8	28−		
8121.9[m] 8	28−		
8148.2[u] 4	28(−)	<5 ns	
8188.9[p] 9	28−		
8228.0 6	28+		
8365.1[g] 6	(29−)		
8475.8[v] 4	29(−)		
8484.3[t] 5	30+		
8499.5[k] 4	29+		
8564.1[n] 9	29−		
8578.4[r] 9	29−		
8655.1[o] 10	29−		
8665.6 7	29+		
8800.1[y] 4	30+	<1 ns	
8897.1[u] 4	30(−)		
8905.4[w] 4	(29+)	<1 ns	
8919.3[l] 4	30+		
8957.7[s] 7	31+		
9016.4[m] 10	30−		
9051.4[q] 10	30−		
9124.5[p] 12	30−		
9342.4[x] 4	(30+)		
9356.2[k] 4	31+		
9359.3[z] 4	(31+)		
9360.7[v] 4	31−		1998Pu01 propose a 31− level at 9343-keV, deexciting through 448 and 869 keV γ-rays, instead of the 9361 keV level shown here.
9453.6[t] 8	32+		
9475.3[n] 11	31−		
9532.4[r] 11	31−		
9806.4[w] 5	(31+)		
9810.4[l] 5	32+		
9854.7[u] 5	32−		1998Pu01 propose an uncertain 32− level at 9819-keV, deexciting through 474 and 922 keV γ-rays, instead of the 9854 keV level shown here.
9931.7[y] 4	(32+)		
9947.4[m] 12	32−		
9971.7[s] 8	33+		
10012.8?[q] 21	(32−)		
10280.1[k] 5	33+		
10299.3[x] 5	(32+)		
10378.6[v] 5	33−		
10509.0[t] 8	34+		
10514.4[r] 15	33−		
10525.7[z] 4	(33+)		
10766.2[l] 8	34+		
10916.2[u] 5	34−		
11065.8[s] 8	35+		
11075.3[1] 5	(34+)	<1 ns	
11265.2[k] 9	35+		

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

^{178}W Levels (continued)

E(level)[†]	J$^{\pi}$
11463.1?[y] *16*	(35$^-$)
11697.0[l] *5*	(35$^+$)
11780.2[l] *11*	36$^+$
12306.2[k] *14*	37$^+$
12844.9[l] *15*	(38$^+$)
13393.8[k] *17*	(39$^+$)

[†] From least-squares fit to Eγ's.
[‡] Band(A): Yrast band, $K^{\pi}=0^+$ based on the ground state.
[#] Band(B): Yrare $K^{\pi}=12^+$ band based on the 2845-keV level.
[@] Band(C): β-vibrational band based on the 1556-keV level.
[&] Band(D): $K^{\pi}=2^-$ band, $\alpha=0$ based on the 1044-keV level.
[a] Band(d): $K^{\pi}=2^-$ band, $\alpha=1$ based on the 1120-keV level.
[b] Band(E): $J^{\pi}=(3^-)$ band based on the 1545-keV level.
[c] Band(F): J=(7) band based on the 2054-keV level.
[d] Band(G): ΔJ=1 band based on 8$^-$ based on the 2078-keV level.
[e] Band(H): $K^{\pi}=6^+$, $\alpha=0$ based on the 1665-keV level. Configuration=ν5/2[512]ν7/2[514].
[f] Band(h): $K^{\pi}=6^+$, $\alpha=1$ based on the 1835-keV level. Configuration=ν5/2[512]ν7/2[514].
[g] Band(i): $K^{\pi}=7^-$, $\alpha=0$ based on the 1827-keV level. Configuration=ν7/2[633]ν7/2[514].
[h] Band(I): $K^{\pi}=7^-$, $\alpha=1$ based on the 1739-keV level. Configuration=ν7/2[633]ν7/2[514].
[i] Band(J): $K^{\pi}=13^-$ based on the 3525-keV level. Configuration=ν(7/2[633]7/2[514])π(5/2[402]7/2[404].
[j] Band(K): $K^{\pi}=14^+$ based on the 3686-keV level. Configuration=ν(7/2[633]7/2[514])π(5/2[402]9/2[514].
[k] Band(l): $K^{\pi}=15^+$, $\alpha=0$ based on the 3862-keV level. Configuration=ν(7/2[633]7/2[514])π(7/2[404]9/2[514]).
[l] Band(L): $K^{\pi}=15^+$, $\alpha=1$ based on the 3655-keV level. Configuration=ν(7/2[633]7/2[514])π(7/2[404]9/2[514]).
[m] Band(M): $K^{\pi}=18^-$, $\alpha=0$ based on the 4880-keV level. Configuration=ν(7/2[633]7/2[514])π(1/2[541]5/2[402]7/2[404]9/2[514]).
[n] Band(m): $K^{\pi}=18^-$, $\alpha=1$ based on the 5063-keV level. Configuration=ν(7/2[633]7/2[514])π(1/2[541]5/2[402]7/2[404]9/2[514]).
[o] Band(n): $K^{\pi}=21^-$, $\alpha=0$ based on the 5675-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624])π(5/2[402]9/2[514]).
[p] Band(N): $K^{\pi}=21^-$, $\alpha=1$ based on the 5314-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624])π(5/2[402]9/2[514]).
[q] Band(O): $K^{\pi}=22^-$, $\alpha=0$ based on the 5627-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624])π(7/2[404]9/2[514]).
[r] Band(o): $K^{\pi}=22^-$, $\alpha=1$ based on the 6000-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624])π(7/2[404]9/2[514]).
[s] Band(p): $K^{\pi}=25^+$, $\alpha=0$ based on the 6860-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]) π(1/2[541]5/2[402]7/2[404]9/2[514]).
[t] Band(P): $K^{\pi}=25^+$, $\alpha=1$ based on the 6573-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]) π(1/2[541]5/2[402]7/2[404]9/2[514]).
[u] Band(q): $K^{\pi}=28^-$, $\alpha=0$ based on the 8476-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]) π(1/2[541]7/2[404]9/2[514]11/2[505]).
[v] Band(Q): $K^{\pi}=28^-$, $\alpha=1$ based on the 8148-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]) π(1/2[541]7/2[404]9/2[514]11/2[505]).
[w] Band(R): $K^{\pi}=(29^+)$ band, $\alpha=0$ based on the 9342-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]1/2[521]7/2[503]) π(1/2[541]5/2[402]7/2[404]9/2[514]).
[x] Band(r): $K^{\pi}=(29^+)$ band, $\alpha=1$ based on the 8905-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]1/2[521]7/2[503]) π(1/2[541]5/2[402]7/2[404]9/2[514]).
[y] Band(s): $K^{\pi}=30^+$ band, $\alpha=0$ based on the 8800-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]) π(5/2[402]7/2[404]9/2[514]11/2[505]).
[z] Band(S): $K^{\pi}=30^+$ band, $\alpha=1$ based on the 9359-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]) π(5/2[402]7/2[404]9/2[514]11/2[505]).

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

^{178}W Levels (continued)

[1] Band(T): $K^{\pi}=(34^{+})$ band based on the 11075-keV level. Configuration=ν(5/2[512]7/2[633]7/2[514]9/2[624]1/2[521]7/2[503]) π(5/2[402]7/2[404]9/2[514]11/2[505]).

$\gamma(^{178}W)$

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult. @	α a	Comments
43.8 *1*	0.9 *1*	5313.5	21^-	5269.64	20^-	(M1)	9.04 *14*	B(M1)(W.u.)=0.00039 *7*
61.4 *1*	4.7 *3*	3654.72	15^+	3593.43	14^-	(E1)	0.265	B(E1)(W.u.)=2.43×10^{-5} *9*
68.2 *1*	2.0 *4*	3593.43	14^-	3525.33	13^-	(M1)	2.47	B(M1)(W.u.)=0.0067 *23*
73.6 *1*	38.8 *15*	1738.50	7^-	1664.73	6^+			Mult.: A_2=−0.5 *3*.
75.5 *1*	0.8 *4*	1119.94	3^-	1044.43	2^-			
88.3 *1*	10.0 *4*	1827.20	8^-	1738.50	7^-			Mult.: A_2=−0.86 *15*.
103.4 *5*	0.30 *6*	3385.15	(13^+)	3282.00	(12^-)			
105.2 *1*	0.8 *2*	1225.05	4^-	1119.94	3^-			Mult.: A_2=+0.14 *3*.
105.8 *1*	38.2 *11*	105.80	2^+	0.0	0^+	E2	3.12	Mult.: A_2=+0.14 *3*.
119.2 *5*	0.40 *14*	1344.42	5^-	1225.05	4^-			
136.9 *1*	7.5 *5*	1964.25	9^-	1827.20	8^-			Mult.: A_2=−0.53 *6*.
140.2 *1*	0.9 *1*	3525.33	13^-	3385.15	(13^+)			
150.2 *5*	0.40 *6*	3385.15	(13^+)	3235.13	12^+			
150.4 *5*	0.5 *1*	3836.8	(15^+)	3686.43	(14^+)			
163.6 *1*	4.1 *2*	3689.01	14^-	3525.33	13^-	M1	1.170	Mult.: A_2=−0.14 *9*, α(L)exp=0.159 *18*, theory α(L)=0.154.
163.8 *5*	0.40 *8*	1508.42	6^-	1344.42	5^-			Mult.: A_2=−0.14 *9*.
168.0 *1*	1.2 *1*	4879.52	18^-	4711.62	(17^+)	(E1)	0.0978	B(E1)(W.u.)>1.9×10^{-6} Mult.: A_2=−0.67.
168.3 *1*	4.5 *2*	2132.83	10^-	1964.25	9^-			Mult.: A_2=−0.67.
170.5 *1*	3.9 *2*	1835.19	7^+	1664.73	6^+			Mult.: A_2=−0.52.
180.6 *1*	1.1 *1*	1225.05	4^-	1044.43	2^-			Mult.: A_2=−0.13 *2*.
181.4 *1*	13.3 *5*	3235.13	12^+	3053.61	11^-			Mult.: A_2=−0.13 *2*.
182.9 *1*	2.9 *1*	6572.5	25^+	6389.6	24^-	(E1)	0.0787	B(E1)(W.u.)=1.44×10^{-7} *10* Mult.: A_2=−0.13 *2*.
183.5 *1*	5.5 *3*	5063.02	19^-	4879.52	18^-	(M1)	0.848	Mult.: A_2=−0.13 *2*.
187.8 *1*	1.8 *2*	2023.18	8^+	1835.19	7^+			
194.4 *1*	2.2 *1*	2327.31	11^-	2132.83	10^-			
203.5 *1*	1.5 *1*	2226.57	9^+	2023.18	8^+			
206.6 *1*	5.4 *4*	5269.64	20^-	5063.02	19^-	M1(+E2)	0.44 *17*	Mult.: A_2=+0.01 *7*, α(K)exp=0.44 *3*.
207.4 *1*	4.9 *2*	3862.13	16^+	3654.72	15^+			Mult.: A_2=+0.01 *7*, DCO=0.87 *2*. Additional information 1.
211.6 *5*	0.3 *1*	3053.61	11^-	2841.77	11^-			
217.5 *1*	0.6 *1*	2444.21	10^+	2226.57	9^+			
218.5 *1*	1.7 *1*	2545.87	12^-	2327.31	11^-	M1	0.522	Mult.: α(K)exp=0.39 *9*.
218.6 *5*	0.10 *5*	1763.91	(5^-)	1545.0	(3^-)			
224.3 *1*	1.9 *2*	1344.42	5^-	1119.94	3^-			
225.6 *1*	5.7 *3*	1964.25	9^-	1738.50	7^-			Mult.: A_2=+0.14 *10*.
226.9 *5*	0.30 *4*	3686.43	(14^+)	3459.55	(13^-)			
227.9 *5*	0.20 *4*	3138.42	13^+	2911.41	12^+			
228.2 *5*	0.50 *5*	2671.58	11^+	2444.21	10^+			
228.4 *1*	1.0 *1*	3282.00	(12^-)	3053.61	11^-			
230.8 *5*	0.40 *3*	3686.43	(14^+)	3455.36	(13^-)			
231.2 b *5*	0.30 *6*	1888.22	(8^-)	1656.09	7^-			
236.7 *1*	100 *3*	342.53	4^+	105.80	2^+	E2	0.1772	Mult.: A_2=+0.16 *3*, α(K)exp=0.106 *7*.
238.2 *1*	0.9 *2*	2784.10	13^-	2545.87	12^-			
241.0 *1*	6.0 *2*	3930.42	15^-	3689.01	14^-			Mult.: A_2=−0.09 *4*.
245.0 *5*	0.20 *6*	2322.41	9^-	2078.07	8^-			
247.4 *1*	1.5 *2*	4084.2	(16^+)	3836.8	(15^+)			
251.0 *5*	0.3 *1*	5313.5	21^-	5063.02	19^-			

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
252.2 *1*	2.0 *1*	5521.9	21^-	5269.64	20^-	(M1)	0.352	Mult.: A_2=+0.03 *6*.
254.9 *1*	0.8 *1*	2577.36	10^-	2322.41	9^-			
260.0 *1*	0.7 *2*	3043.99	14^-	2784.10	13^-			
264.4 *1*	1.0 *2*	2841.77	11^-	2577.36	10^-			
267.5 *1*	4.3 *2*	4129.73	17^+	3862.13	16^+			Mult.: A_2=+0.08 *8*, DCO=0.58 *3*.
269.1 *5*	0.40 *12*	3053.61	11^-	2784.10	13^-			
273.3 *1*	0.60 *15*	3317.20	15^-	3043.99	14^-			
277.9 *1*	5.2 *2*	4208.68	16^-	3930.42	15^-	M1	0.270	Mult.: A_2=−0.12 *10*, α(K)exp=0.244 *15*.
282.4 *1*	2.3 *1*	3875.83	(15^-)	3593.43	14^-			
283.4 *1*	3.7 *3*	1508.42	6^-	1225.05	4^-			
284.4 *1*	1.1 *2*	4368.6	(17^+)	4084.2	(16^+)			
284.9 *1*	2.5 *2*	1664.73	6^+	1379.96	4^+			
287.7 *1*	2.5 *2*	6860.2	26^+	6572.5	25^+	M1	0.246	Mult.: A_2=−1.15 *20*, DCO=0.17 *1*.
288.5 *5*	0.5 *1*	4157.72	17^+	3870.80	16^+			
290.2 *1*	20.4 *6*	3525.33	13^-	3235.13	12^+	E1	0.0248	B(E1)(W.u.)>8.2×10^{-6} Mult.: A_2=−0.17 *6*, α(K)exp=0.027 *+4−7*.
292.1 *1*	1.6 *1*	5814.0	22^-	5521.9	21^-			
293.8 *1*	0.60 *8*	2347.72	(9)	2053.93	(7)			
295.6 *5*	0.2 *1*	3612.70	16^-	3317.20	15^-			
299.7 *1*	3.8 *2*	4429.53	18^+	4129.73	17^+	M1,E2	0.15 *7*	Mult.: A_2=+0.10 *4*, DCO=1.10 *4*.
305.7 *1*	9.7 *4*	2132.83	10^-	1827.20	8^-			Mult.: A_2=+0.13 *4*.
307.3 *1*	3.4 *2*	4516.08	17^-	4208.68	16^-			
307.9 *1*	1.3 *2*	1964.25	9^-	1656.09	7^-			
309.9 *1*	0.9 *1*	4678.5	(18^+)	4368.6	(17^+)			
311.7 *1*	4.1 *3*	1656.09	7^-	1344.42	5^-	E2	0.0759	Mult.: A_2=−0.02 *8*, α(K)exp=0.068 *14*.
312.0 *1*	1.0 *1*	2075.98	(7^-)	1763.91	(5^-)			Mult.: A_2=−0.02 *8*.
313.5 *1*	7.6 *5*	5626.9	22^-	5313.5	21^-			
313.8[b] *5*	0.10 *1*	2355.62	10^-	2041.61	9^-			
318.8 *1*	1.4 *1*	1827.20	8^-	1508.42	6^-			
323.9 *1*	2.9 *2*	4753.43	19^+	4429.53	18^+	(M1,E2)	0.12 *6*	Mult.: DCO=1.15 *4*.
324.4[&] *1*	0.34[#] *2*	8800.1	30^+	8475.8	$29^{(-)}$	E1	0.0190	B(E1)(W.u.)>4.6×10^{-6} Mult.: DCO=0.60 *11*.
325.3 *1*	1.4 *1*	6000.3	23^-	5675.0	22^-			
325.8 *1*	1.2 *1*	6139.8	23^-	5814.0	22^-			
327.5 *5*	0.3 *1*	8475.8	$29^{(-)}$	8148.2	$28^{(-)}$	M1	0.173	Mult.: DCO=0.20 *5*.
328.0 *1*	0.8 *1*	5006.5	(19^+)	4678.5	(18^+)			
336.9 *1*	0.6 *3*	6389.6	24^-	6052.7	23^-			
339.6 *1*	0.7 *2*	2078.07	8^-	1738.50	7^-			
343.1 *1*	2.2 *4*	5096.63	20^+	4753.43	19^+	(M1,E2)	0.11 *5*	Mult.: DCO=1.11 *4*.
351.4 *1*	75.0 *22*	693.95	6^+	342.53	4^+	E2	0.0536	Mult.: A_2=+0.26 *3*, α(K)exp=0.042 *3*.
354.3 *1*	1.0 *1*	6494.2	24^-	6139.8	23^-			
357.0 *1*	1.7 *1*	7217.3	27^+	6860.2	26^+	M1	0.1373	Mult.: A_2=+0.04 *20*, DCO=1.05 *3*.
358.4 *1*	0.7 *1*	2322.41	9^-	1964.25	9^-			
358.6 *1*	3.2 *2*	2023.18	8^+	1664.73	6^+			
358.7 *1*	2.0 *1*	5455.54	21^+	5096.63	20^+			Mult.: DCO=1.16 *5*.
359.9 *1*	0.60 *4*	1915.60	8^+	1555.78	6^+			
361.5 *1*	4.0 *3*	5675.0	22^-	5313.5	21^-			
363.1 *1*	10.7 *4*	2327.31	11^-	1964.25	9^-			Mult.: A_2=+0.28 *4*.
363.3 *1*	5.1 *4*	4879.52	18^-	4516.08	17^-	M1	0.1310	B(M1)(W.u.)>8.1×10^{-5} Mult.: A_2=+0.28 *4*, α(K)exp=0.094 *9*.
363.8 *5*	0.30 *15*	3209.05	14^+	2845.45	12^+			Mult.: A_2=+0.28 *4*.
365.5[&] *1*	0.50[#] *2*	7336.8	26^+	6971.4	(25^+)			Mult.: DCO=1.15 *6*.
370.2 *1*	1.5 *1*	2717.94	(11)	2347.72	(9)			
371.3 *1*	1.5 *1*	5827.0	22^+	5455.54	21^+			Mult.: DCO=1.28 *6*.
373.0[&] *1*	0.26[#] *3*	7709.2	27^+	7336.8	26^+			Mult.: DCO=1.15 *8*.

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
373.3 *1*	4.6 *2*	6000.3	23^-	5626.9	22^-			
377.4 *5*	0.5 *1*	6971.4	(25^+)	6593.6	24^+			
377.7 *1*	2.0 *2*	6052.7	23^-	5675.0	22^-			
378.5 *1*	0.80 *7*	6872.7	25^-	6494.2	24^-			
379.8 *1*	3.1 *1*	1888.22	(8^-)	1508.42	6^-			Mult.: A_2=+0.18 *14*.
380.5 *1*	0.9 *1*	6207.6	23^+	5827.0	22^+			
382.5 *1*	0.70 *8*	3870.80	16^+	3488.22	16^+			
385.6 *1*	4.1 *2*	2041.61	9^-	1656.09	7^-			Mult.: A_2=+0.06 *7*.
386.0 *1*	0.8 *1*	6593.6	24^+	6207.6	23^+			
386.0[&] *10*	0.04[#] *6*	7392.0	26^+	7005.8	25^+			
387.5[&] *1*	0.34[#] *3*	8096.2	28^+	7709.2	27^+			
389.1 *1*	4.8 *3*	6389.6	24^-	6000.3	23^-	M1+E2	0.07 *4*	Mult.: A_2=+0.47 *15*, α(K)exp=0.058 *5*.
389.5 *5*	0.39 *8*	3235.13	12^+	2845.45	12^+			
390.4 *5*	0.10 *5*	6984.0	25^+	6593.6	24^+			
391.6 *1*	4.2 *3*	2226.57	9^+	1835.19	7^+			Mult.: A_2=+0.18 *7*.
392.1 *1*	1.3 *1*	2468.14	(9^-)	2075.98	(7^-)			
393.7 *1*	3.0 *3*	1738.50	7^-	1344.42	5^-			
394.0 *1*	0.80 *6*	7611.5	28^+	7217.3	27^+	M1	0.1056	Mult.: A_2=+0.49 *20*, DCO=1.52 *6*. I_γ: 1.09 *5* (1999Cu02).
394.8 *5*	0.40 *8*	6447.5	24^-	6052.7	23^-			
398.4 *5*	0.30 *8*	4498.11	18^+	4099.97	18^+			
399.1 *5*	0.40 *6*	7272.2	26^-	6872.7	25^-			
403.2[&] *1*	0.19[#] *2*	8499.5	29^+	8096.2	28^+			
405.0 *5*	0.20 *1*	3930.42	15^-	3525.33	13^-			
405.8 *1*	0.60 *9*	6795.4	25^-	6389.6	24^-			
406.6[&] *2*	0.09[#] *2*	7798.6	27^+	7392.0	26^+			
411.3 *5*	0.20 *8*	6858.9	25^-	6447.5	24^-			
411.7[&] *4*	0.08[#] *2*	7005.8	25^+	6593.6	24^+			
412.9 *1*	10.1 *4*	2545.87	12^-	2132.83	10^-	E2	0.0344	Mult.: A_2=+0.19 *8*, α(K)exp=0.049 *8*.
417.8 *5*	0.20 *5*	7689.9	27^-	7272.2	26^-			
419.6[&] *6*		8919.3	30^+	8499.5	29^+			
420.3[&] *3*	0.18[#] *2*	7392.0	26^+	6971.4	(25^+)			
420.9 *1*	2.4 *1*	2444.21	10^+	2023.18	8^+			
421.8 *5*	0.20 *4*	8897.1	$30^{(-)}$	8475.8	$29^{(-)}$	M1	0.0882	
422.6 *5*	0.40 *8*	7218.4	26^-	6795.4	25^-			
423.1 *5*	0.40 *6*	8034.4	29^+	7611.5	28^+	M1	0.0875	Mult.: A_2=+0.42 *26*, DCO=2.16 *16*.
423.8 *1*	0.7 *1*	2339.54	10^+	1915.60	8^+			
427.0[&b] *2*	0.06[#] *2*	8228.0	28^+	7798.6	27^+			
429.1 *5*	0.10 *6*	7288.0	26^-	6858.9	25^-			
430.8 *1*	0.90 *14*	3235.13	12^+	2803.79	12^+			
432		8121.9	28^-	7689.9	27^-			
436.9[&] *2*	0.11[#] *2*	9356.2	31^+	8919.3	30^+			
437.0[&] *1*	0.12[#] *1*	9342.4	(30^+)	8905.4	(29^+)	(M1)	0.0803	
438.7 *5*	0.10 *5*	7657.4	27^-	7218.4	26^-			
439.5[&b] *4*	0.08[#] *2*	8665.6	29^+	8228.0	28^+			
442		8564.1	29^-	8121.9	28^-			
443.8 *1*	2.8 *1*	3161.74	(13)	2717.94	(11)			
444		7732.0	27^-	7288.0	26^-			
444.1 *5*	0.2 *1*	2577.36	10^-	2132.83	10^-			
445.5 *1*	3.6 *2*	2671.58	11^+	2226.57	9^+			
447.4 *1*	48.0 *15*	1141.29	8^+	693.95	6^+	E2	0.0278	Mult.: A_2=+0.24 *3*, α(K)exp=0.0334 *25*.
447.9 *1*	3.4 *1*	2489.64	11^-	2041.61	9^-			Mult.: A_2=+0.24 *3*.

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
450.0 *5*	0.10 *5*	8484.3	30^+	8034.4	29^+	M1	0.0744	Mult.: A_2=+0.34 *30*. I_γ: 0.52 *11* (1999Cu02).
451.3 *1*	0.8 *1*	3686.43	(14^+)	3235.13	12^+			
451.8 *1*	0.6 *1*	3660.94	16^+	3209.05	14^+			
452		9016.4	30^-	8564.1	29^-			
453.9[&] *3*	0.09[#] *2*	9810.4	32^+	9356.2	31^+			
454		8111.4	28^-	7657.4	27^-			
456.8 *1*	8.4 *3*	2784.10	13^-	2327.31	11^-			
457		8188.9	28^-	7732.0	27^-			
458.8 *5*	0.4 *3*	5521.9	21^-	5063.02	19^-			
459		9475.3	31^-	9016.4	30^-			
459.9 *1*	1.1 *1*	3318.53	14^+	2858.50	14^+	M1(+E2)	0.048 *23*	Mult.: α(K)exp=0.068 *25*.
463.6[&] *2*	0.15[#] *4*	9360.7	31^-	8897.1	$30^{(-)}$	M1	0.0688	see comment to 9360-keV level.
464.0[&] *1*	0.05[#] *1*	9806.4	(31^+)	9342.4	(30^+)	(M1)	0.0686	
464.3 *1*	0.80 *14*	2803.79	12^+	2339.54	10^+	E2	0.0253	Mult.: α(K)exp=0.021 *5*.
465.1 *1*	2.5 *1*	2933.25	(11^-)	2468.14	(9^-)			
466		8655.1	29^-	8188.9	28^-			
466.7 *1*	2.4 *2*	3138.42	13^+	2671.58	11^+			
466.9 *1*	0.60 *12*	2911.41	12^+	2444.21	10^+			
467		8578.4	29^-	8111.4	28^-			
467.4 *1*	2.2 *1*	2355.62	10^-	1888.22	(8^-)			
469		9124.5	30^-	8655.1	29^-			
469.5[&] *3*	0.10[#] *2*	10280.1	33^+	9810.4	32^+			
472		9947.4	32^-	9475.3	31^-			
473		9051.4	30^-	8578.4	29^-			
473.5 *1*	1.6 *1*	3612.02	15^+	3138.42	13^+			
474 *1*	<0.1	8957.7	31^+	8484.3	30^+	M1	0.0649	Mult.: A_2=+0.38 *34*. I_γ: 0.22 *5* (1999Cu02).
475.1 *5*	0.30 *18*	4129.73	17^+	3654.72	15^+			
476.0 *1*	1.2 *1*	3053.61	11^-	2577.36	10^-			
481		9532.4	31^-	9051.4	30^-			
486		10766.2	34^+	10280.1	33^+			
492.9[&] *1*	0.05[#] *1*	10299.3	(32^+)	9806.4	(31^+)	(M1)	0.0586	
493.7[&] *8*		9854.7	32^-	9360.7	31^-	M1	0.0584	
494 *1*	<0.1	9453.6	32^+	8957.7	31^+	M1	0.0583	Mult.: DCO=1.12 *5*. I_γ: 0.20 *2* (1999Cu02).
494.9 *1*	0.8 *1*	2322.41	9^-	1827.20	8^-			
497.7 *5*	0.50 *12*	4157.72	17^+	3660.94	16^+			
498.1 *1*	7.9 *3*	3043.99	14^-	2545.87	12^-			Mult.: A_2=+0.24 *7*.
499		11265.2	35^+	10766.2	34^+			
500.3 *5*	0.20 *6*	1545.0	(3^-)	1044.43	2^-			
505.0 *1*	3.3 *1*	2994.66	13^-	2489.64	11^-			Mult.: A_2=+0.28 *15*.
507.6 *1*	1.1 *2*	3053.61	11^-	2545.87	12^-			
508.6 *1*	1.9 *2*	3420.19	14^+	2911.41	12^+			
512.0 *1*	2.7 *1*	3673.74	(15)	3161.74	(13)			
514.6 *1*	1.3 *1*	1656.09	7^-	1141.29	8^+			
515.0 *1*	1.1 *1*	3318.53	14^+	2803.79	12^+			
515		11780.2	36^+	11265.2	35^+			
517.7[&] *3*	0.13[#] *3*	9971.7	33^+	9453.6	32^+	M1	0.0516	
520.0 *1*	1.1 *2*	4208.68	16^-	3689.01	14^-	E2	0.0191	Mult.: α(K)exp=0.017 *5*.
522.1 *1*	1.6 *1*	3455.36	(13^-)	2933.25	(11^-)			
523.6 *1*	37.0 *15*	1665.15	10^+	1141.29	8^+	E2	0.0187	Mult.: A_2=+0.22 *3*, α(K)exp=0.0202 *19*.
524.0[&] *2*		10378.6	33^-	9854.7	32^-	M1	0.0500	
526.3 *1*	1.2 *1*	3459.55	(13^-)	2933.25	(11^-)			

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
533.0 *1*	7.6 *3*	3317.20	15^-	2784.10	13^-			Mult.: A_2=+0.22 *6*.
536.9[&] *3*	0.05[#] *2*	10509.0	34^+	9971.7	33^+	M1	0.0469	
537.6[&] *1*		10916.2	34^-	10378.6	33^-	M1	0.0468	
538.8 *1*	0.60 *5*	1763.91	(5^-)	1225.05	4^-			
544.9 *5*	0.45 *11*	5814.0	22^-	5269.64	20^-			
545.6 *1*	1.9 *1*	2901.22	12^-	2355.62	10^-			
545.6 *1*	1.3 *1*	4157.72	17^+	3612.02	15^+			
546.4 *1*	0.9 *2*	2682.58	10^+	2135.85	8^+	E2	0.01689	Mult.: α(K)exp=0.021 *9*.
549.6[&] *1*	0.065[#] *9*	11075.3	(34^+)	10525.7	(33^+)	(M1)	0.0442	B(M1)(W.u.)>0.00013
552[&b]		11463.1?	(35^-)	10916.2	34^-			
552.3 *1*	1.7 *3*	3235.13	12^+	2682.58	10^+	E2	0.01646	B(E2)(W.u.)>0.015 Mult.: α(K)exp=0.016 *5*.
552.4 *1*	1.7 *2*	3870.80	16^+	3318.53	14^+			
556.5[&] *3*		11065.8	35^+	10509.0	34^+	M1	0.0428	
559.1[&] *1*	0.19[#] *1*	9359.3	(31^+)	8800.1	30^+	M1	0.0423	Mult.: DCO=1.07 *17*.
559.3 *1*	2.3 *2*	2803.79	12^+	2244.25	12^+	M1(+E2)	0.029 *14*	Mult.: α(K)exp=0.037 *20*.
563.4 *1*	2.9 *1*	3558.08	15^-	2994.66	13^-			
563.9 *5*	0.42 *7*	3053.61	11^-	2489.64	11^-			
564.2 *1*	0.8 *2*	3235.13	12^+	2671.58	11^+			
565.0 *1*	2.0 *1*	4238.74	(17)	3673.74	(15)			
567.5 *1*	0.6 *1*	4429.53	18^+	3862.13	16^+	(E2)	0.01543	Mult.: DCO=0.92 *12*.
568.7 *1*	7.4 *3*	3612.70	16^-	3043.99	14^-			Mult.: A_2=+0.19 *8*.
572.0 *1*	0.9 *2*	2911.41	12^+	2339.54	10^+			
572[b] *1*	<0.03	6572.5	25^+	6000.3	23^-	[M2]	0.1161	B(M2)(W.u.)=0.0003 *+4−3*
572.4[&] *1*	0.11[#] *1*	9931.7	(32^+)	9359.3	(31^+)	M1	0.0398	Mult.: DCO=0.48 *10*.
578.9 *1*	23.5 *18*	2244.25	12^+	1665.15	10^+	E2	0.01472	Mult.: A_2=+0.17 *4*, α(K)exp=0.012 *3*.
585.6 *1*	1.4 *1*	4516.08	17^-	3930.42	15^-			
587.1 *1*	1.4 *1*	4248.00	18^+	3660.94	16^+			
588.9 *1*	1.7 *1*	4009.09	16^+	3420.19	14^+			
594.1[&] *2*	0.06[#] *1*	10525.7	(33^+)	9931.7	(32^+)	M1	0.0361	Mult.: DCO=1.11 *5*.
[x]594.7 *5*	1.0 *3*							
595.1 *1*	7.3 *4*	3912.31	17^-	3317.20	15^-			
596.5 *1*	2.0 *2*	4835.2	(19)	4238.74	(17)			
611.8 *1*	7.1 *4*	4099.97	18^+	3488.22	16^+	E2	0.01293	Mult.: A_2=+0.40 *16*.
612.9 *1*	0.9 *2*	2577.36	10^-	1964.25	9^-			
613.4 *1*	1.1 *1*	3514.63	14^-	2901.22	12^-			
614.2 *1*	16.0 *5*	2858.50	14^+	2244.25	12^+	E2	0.01282	Mult.: A_2=+0.27 *6*.
616.5 *1*	2.0 *2*	3420.19	14^+	2803.79	12^+			
617.9 *5*	0.50 *8*	6139.8	23^-	5521.9	21^-			
621.7[&] *1*	0.059[#] *11*	11697.0	(35^+)	11075.3	(34^+)	(M1)	0.0321	
623.7 *1*	0.6 *1*	4753.43	19^+	4129.73	17^+	(E2)	0.01237	Mult.: DCO=1.26 *10*.
624.7 *1*	2.4 *1*	4182.78	17^-	3558.08	15^-			
625.3 *1*	5.4 *3*	4238.01	18^-	3612.70	16^-	E2	0.01230	Mult.: A_2=+0.52 *8*.
625.4 *1*	1.4 *2*	5460.6	(21)	4835.2	(19)			
627.3 *1*	16 *2*	4498.11	18^+	3870.80	16^+			
629.6 *1*	11.4 *5*	3488.22	16^+	2858.50	14^+	E2	0.01211	Mult.: A_2=+0.28 *6*.
630.2 *1*	4.0 *3*	4730.16	20^+	4099.97	18^+	[E2]	0.01208	
637.7 *5*	0.17 *5*	5006.5	(19^+)	4368.6	(17^+)			
639.2 *1*	2.8 *3*	4796.92	19^+	4157.72	17^+			
643.4 *1*	4.4 *2*	4555.71	19^-	3912.31	17^-	(E2)	0.01152	Mult.: A_2=+0.42 *12*.
645.0 *5*	0.40 *4*	7217.3	27^+	6572.5	25^+	E2	0.01146	Mult.: DCO=1.21 *5*.
650.3 *1*	2.7 *2*	1344.42	5^-	693.95	6^+			Mult.: A_2=−0.16 *14*.
654.1 *1*	1.1 *2*	4663.19	18^+	4009.09	16^+			

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
656.7 *5*	0.50 *7*	4171.3	16^-	3514.63	14^-			
662.2 *5*	0.20 *4*	4833.5	(18^-)	4171.3	16^-			
667.1 *1*	0.6 *1*	5096.63	20^+	4429.53	18^+	(E2)	0.01062	Mult.: DCO=1.10 *11*.
667.5 *1*	3.6 *2*	4905.51	20^-	4238.01	18^-			
670.9 *1*	2.0 *1*	4879.52	18^-	4208.68	16^-	E2	0.01048	B(E2)(W.u.)>0.0049 Mult.: α(K)exp=0.0094 *21*.
674.7 *1*	1.6 *1*	2339.54	10^+	1665.15	10^+			
676.0 *1*	1.0 *1*	6136.6	(23)	5460.6	(21)			
678.2 *1*	3.4 *2*	5233.91	21^-	4555.71	19^-			
680.7 *5*	0.3 *1*	6494.2	24^-	5814.0	22^-			
680.9 *1*	1.7 *1*	4863.68	19^-	4182.78	17^-			
686.1 *1*	1.2 *2*	1379.96	4^+	693.95	6^+			
686.8 *5*	0.5 *1*	6000.3	23^-	5313.5	21^-			
689.1 *5*	0.23 *6*	3235.13	12^+	2545.87	12^-			
690.0 *1*	1.2 *2*	5188.11	20^+	4498.11	18^+			
693.6 *1*	2.4 *2*	4941.64	20^+	4248.00	18^+			
697.5 *1*	2.6 *2*	5603.0	22^-	4905.51	20^-			
698.6 *1*	3.4 *2*	5428.76	22^+	4730.16	20^+	[E2]	0.00958	
699.9 *5*	0.30 *8*	3558.08	15^-	2858.50	14^+			
702.2 *1*	1.1 *2*	5455.54	21^+	4753.43	19^+			Mult.: DCO=1.18 *7*. I_γ: 0.72 *3* (1999Cu02).
704[b] *1*	0.15 *7*	5537.4	(20^-)	4833.5	(18^-)			
705.8 *1*	2.2 *2*	5939.7	23^-	5233.91	21^-			
713.6 *1*	0.70 *8*	5577.3	(21^-)	4863.68	19^-			
718.3 *1*	0.9 *1*	5906.41	22^+	5188.11	20^+			
721.9 *5*	0.30 *6*	6299.2	(23^-)	5577.3	(21^-)			
726.6 *5*	0.3 *1*	3053.61	11^-	2327.31	11^-			
728.8 *1*	1.1 *2*	5525.7	21^+	4796.92	19^+			
729.5 *1*	1.4 *1*	6332.5	24^-	5603.0	22^-			
730.5 *1*	0.8 *1*	5827.0	22^+	5096.63	20^+			Mult.: DCO=1.14 *7*.
734.1 *5*	0.3 *1*	6872.7	25^-	6139.8	23^-			
737.5[&] *2*	0.18[#] *2*	7709.2	27^+	6971.4	(25^+)			
743.0[&] *2*	0.25[#] *3*	7336.8	26^+	6593.6	24^+			Mult.: DCO=0.83 *13*.
745.4 *1*	1.2 *1*	6685.1	25^-	5939.7	23^-			
746.9 *1*	1.6 *2*	5688.55	22^+	4941.64	20^+			
749		8897.1	$30^{(-)}$	8148.2	$28^{(-)}$	E2	0.00822	E_γ: from figure 1 of 1998Pu01.
749.7 *1*	0.6 *1*	6886.3	(25)	6136.6	(23)			
750.6 *5*	0.5 *1*	2994.66	13^-	2244.25	12^+			
751.3 *1*	0.60 *6*	7611.5	28^+	6860.2	26^+	E2	0.00817	Mult.: DCO=1.53 *17*.
752.1 *1*	0.8 *1*	6207.6	23^+	5455.54	21^+			Mult.: DCO=1.16 *8*.
757.2[&] *2*	0.14[#] *1*	8905.4	(29^+)	8148.2	$28^{(-)}$	(E1)	0.00302	B(E1)(W.u.)>4.9×10^{-7} Mult.: DCO=0.75 *24*.
758.9[&] *1*	0.09[#] *2*	8096.2	28^+	7336.8	26^+			
759.7 *1*	2.8 *2*	4248.00	18^+	3488.22	16^+	E2	0.00798	Mult.: A_2=+0.24 *20*.
762.9 *1*	2.1 *2*	6389.6	24^-	5626.9	22^-	E2	0.00790	Mult.: α(K)exp=0.0081 *17*.
763.9 *5*	0.4 *1*	6971.4	(25^+)	6207.6	23^+			Mult.: DCO=1.13 *13*.
765.5 *1*	1.8 *2*	6194.3	24^+	5428.76	22^+	[E2]	0.00785	
765.8[&] *1*	0.09[#] *1*	8800.1	30^+	8034.4	29^+	M1	0.0189	B(M1)(W.u.)>9.6×10^{-6} Mult.: DCO=1.10 *20*.
767.0 *5*	0.50 *8*	6593.6	24^+	5827.0	22^+			Mult.: DCO=1.18 *10*.
772.4 *5*	0.2 *1*	6447.5	24^-	5675.0	22^-			
774.1 *1*	0.9 *1*	1915.60	8^+	1141.29	8^+			
777.3 *1*	2.9 *2*	1119.94	3^-	342.53	4^+			Mult.: A_2=−0.33 *14*.
778.5 *5*	0.10 *5*	7272.2	26^-	6494.2	24^-			

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
780.5 *1*	0.8 *1*	7113.0	26^-	6332.5	24^-			
790.9 *1*	0.7 *2*	3235.13	12^+	2444.21	10^+			
791.1[&] *4*	0.16[#] *3*	8499.5	29^+	7709.2	27^+			
793.1[&] *14*		7798.6	27^+	7005.8	25^+			
795.1 *1*	1.0 *1*	6483.65	24^+	5688.55	22^+			
795.4 *5*	0.4 *1*	6795.4	25^-	6000.3	23^-			
799.7[&] *7*	0.13[#] *7*	7005.8	25^+	6207.6	23^+			
799.9[&] *6*	0.15[#] *7*	7392.0	26^+	6593.6	24^+			
802.6 *1*	2.2 *2*	3660.94	16^+	2858.50	14^+	[E2]	0.00709	
803.2 *5*	0.2 *1*	6328.9	23^+	5525.7	21^+			
804.6 *1*	0.60 *9*	7489.7	27^-	6685.1	25^-			
806.2 *5*	0.10 *5*	6858.9	25^-	6052.7	23^-			
817.0 *5*	<0.1	7689.9	27^-	6872.7	25^-			
817.8 *5*	0.40 *8*	8034.4	29^+	7217.3	27^+	E2	0.00681	Mult.: DCO=1.03 *14*.
822.7 *1*	1.0 *1*	7017.0	(26^+)	6194.3	24^+	[E2]	0.00673	
823.4[&] *4*		8919.3	30^+	8096.2	28^+			
823.6 *1*	0.7 *2*	1964.25	9^-	1141.29	8^+			
824.6 *1*	0.90 *7*	2489.64	11^-	1665.15	10^+			
828.8 *5*	0.4 *1*	7218.4	26^-	6389.6	24^-			
833.3[b] *5*	0.5 *1*	7719.3	(27)	6886.3	(25)			
836.0[&] *4*	0.14[#] *3*	8228.0	28^+	7392.0	26^+			
840.5 *5*	0.3 *1*	7288.0	26^-	6447.5	24^-			
841.7 *1*	1.0 *1*	4941.64	20^+	4099.97	18^+	[E2]	0.00641	
846.3 *5*	0.6 *1*	7330.0	26^+	6483.65	24^+			
848.7 *1*	0.60 *8*	7961.7	(28^-)	7113.0	26^-			
850		8121.9	28^-	7272.2	26^-			
856.7[&] *2*	0.22[#] *2*	9356.2	31^+	8499.5	29^+			
861.9 *1*	0.8 *2*	1555.78	6^+	693.95	6^+			
862.2 *5*	0.3 *1*	7657.4	27^-	6795.4	25^-			
864.4[&] *1*	0.28[#] *2*	8475.8	$29^{(-)}$	7611.5	28^+	E1	0.00234	Mult.: DCO=0.68 *13*.
872.6 *5*	0.3 *1*	8484.3	30^+	7611.5	28^+	E2	0.00595	Mult.: DCO=1.10 *9*.
873		7732.0	27^-	6858.9	25^-			
874		8564.1	29^-	7689.9	27^-			
875.4 *5*	0.40 *6*	8365.1	(29^-)	7489.7	27^-			
880.3 *5*	0.5 *1*	7897.3	(28^+)	7017.0	(26^+)	[E2]	0.00584	
882.4 *1*	2.3 *1*	1225.05	4^-	342.53	4^+			Mult.: A_2=−0.09 *16*.
884.8[&] *2*	0.08[#] *2*	9360.7	31^-	8475.8	$29^{(-)}$	E2	0.00578	see comment to 9360-keV level.
891.2[&] *2*	0.27[#] *2*	9810.4	32^+	8919.3	30^+			
893		8111.4	28^-	7218.4	26^-			
895		9016.4	30^-	8121.9	28^-			
895.9[b] *1*	1.6 *2*	2037.00?		1141.29	8^+			
900.1 *1*	1.5 *1*	2041.61	9^-	1141.29	8^+			
901		8188.9	28^-	7288.0	26^-			
907.8 *5*	0.23 *7*	3235.13	12^+	2327.31	11^-			
911		9475.3	31^-	8564.1	29^-			
912.1 *5*	0.3 *1*	2053.93	(7)	1141.29	8^+			
920.8 *1*	3.4 *2*	3053.61	11^-	2132.83	10^-	M1+E2	0.009 *4*	Mult.: A_2=−0.03 *12*, α(K)exp=0.0067 *11*.
921		8578.4	29^-	7657.4	27^-			
923		8655.1	29^-	7732.0	27^-			
924 *1*	0.2 *1*	8957.7	31^+	8034.4	29^+	E2	0.00529	
924.0[&] *3*	0.16[#] *2*	10280.1	33^+	9356.2	31^+			
930.9 *1*	0.6 *1*	8148.2	$28^{(-)}$	7217.3	27^+	E1	0.00204	B(E1)(W.u.)>5.3×10^{-8} Mult.: A_2=−0.45 *20*, DCO=0.62 *3*.

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

$\gamma(^{178}W)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[a]	Comments
931		9947.4	32^-	9016.4	30^-			
936		9124.5	30^-	8188.9	28^-			
938.6 *1*	4.7 *3*	1044.43	2^-	105.80	2^+			Mult.: A_2=−0.12 *10*.
940		9051.4	30^-	8111.4	28^-			
946 *1*	0.05 *2*	6572.5	25^+	5626.9	22^-	(E3)	0.01144	B(E3)(W.u.)=0.07 *3*
954		9532.4	31^-	8578.4	29^-			
956		10766.2	34^+	9810.4	32^+			
957.6[&] *2*		9854.7	32^-	8897.1	$30^{(-)}$	E2	0.00492	
958.6 *5*	0.20 *4*	5688.55	22^+	4730.16	20^+	[E2]	0.00491	
962.1 *1*	1.9 *1*	1656.09	7^-	693.95	6^+			Mult.: A_2=−0.05 *15*.
964.7 *1*	1.1 *1*	3209.05	14^+	2244.25	12^+	[E2]	0.00484	
965[b]		10012.8?	(32^-)	9051.4	30^-			
966 *1*	0.30 *9*	4879.52	18^-	3912.31	17^-			
968 *1*	<0.2	9453.6	32^+	8484.3	30^+			
970.7 *1*	16.4 *6*	1664.73	6^+	693.95	6^+	M1	0.01041	B(M1)(W.u.)=2.8×10^{-6} *10* Mult.: A_2=−0.06 *5*, α(K)exp=0.0097 *10*.
982		10514.4	33^-	9532.4	31^-			
985		11265.2	35^+	10280.1	33^+			
991.0 *1*	1.2 *2*	3235.13	12^+	2244.25	12^+	M1(+E2)	0.007 *3*	Mult.: α(K)exp=0.0071 *14*.
994.2 *1*	0.6 *1*	2135.85	8^+	1141.29	8^+			
1001.9 *1*	1.2 *1*	1344.42	5^-	342.53	4^+			
1012.1 *5*	0.24 *6*	3053.61	11^-	2041.61	9^-			
1014		11780.2	36^+	10766.2	34^+			
1014.1[&] *1*	0.16[#] *2*	9971.7	33^+	8957.7	31^+	E2	0.00438	
1014.5 *5*	0.30 *8*	1119.94	3^-	105.80	2^+			
1016.9 *1*	1.0 *2*	2682.58	10^+	1665.15	10^+			
1017.7[&] *7*		10378.6	33^-	9360.7	31^-	E2	0.00435	
1037.4 *1*	2.4 *2*	1379.96	4^+	342.53	4^+	M1(+E2)	0.0065 *24*	Mult.: α(K)exp=0.0071 *14*.
1041		12306.2	37^+	11265.2	35^+			
1052.8 *1*	1.0 *1*	2717.94	(11)	1665.15	10^+			
1055.5[&] *3*	0.17[#] *2*	10509.0	34^+	9453.6	32^+	E2	0.00405	
1057.0 *1*	1.4 *1*	4711.62	(17^+)	3654.72	15^+	E2	0.00403	α(K)exp=0.0026 *9*; E1 assignment cannot be ruled out (1998Pu01).
1060.5[&] *7*		10916.2	34^-	9854.7	32^-	E2	0.00401	
1065[b]		12844.9	(38^+)	11780.2	36^+			
1088[b]		13393.8	(39^+)	12306.2	37^+			
1089.6 *1*	4.3 *3*	3053.61	11^-	1964.25	9^-	E2	0.00380	B(E2)(W.u.)>0.0011 Mult.: A_2=+0.07 *10*, α(K)exp=0.0031 *5*.
1090[&b]		11463.1?	(35^-)	10378.6	33^-			
1095.5[&] *7*	0.06[#] *2*	11065.8	35^+	9971.7	33^+	E2	0.00376	Mult.: DCO=1.28 *36*.
1132.0[&] *5*	0.009[#] *2*	9931.7	(32^+)	8800.1	30^+	(E2)	0.00353	
1144		11075.3	(34^+)	9931.7	(32^+)			
1150.6 *5*	0.50 *8*	4009.09	16^+	2858.50	14^+			
1166.1[&] *4*	0.019[#] *4*	10525.7	(33^+)	9359.3	(31^+)	(E2)	0.00333	
1176.0 *1*	1.0 *1*	3420.19	14^+	2244.25	12^+			
1180.3 *1*	1.7 *1*	2845.45	12^+	1665.15	10^+	[E2]	0.00325	
1187.3[&] *4*	0.020[#] *2*	8800.1	30^+	7611.5	28^+	E2	0.00322	B(E2)(W.u.)>0.00018
1206.4 *1*	1.1 *1*	2347.72	(9)	1141.29	8^+			
1246.3 *1*	0.8 *1*	2911.41	12^+	1665.15	10^+			
1266 *1*	0.20 *8*	4879.52	18^-	3612.70	16^-			
1274.2 *1*	1.5 *2*	1379.96	4^+	105.80	2^+	E2	0.00282	Mult.: A_2=+0.1 *3*, α(K)exp=0.0027 *12*.
1322.4 *1*	27.1 *9*	1664.73	6^+	342.53	4^+	E2	0.00263	B(E2)(W.u.)=0.00046 *16*

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^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)

γ(^{178}W) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
						Mult.: A_2=+0.01 *4*, α(K)exp=0.00217 *25*.
1326.9 *1*	0.70 *7*	2468.14	(9$^-$)	1141.29	8$^+$	
1360.0 *1*	0.8 *1*	2053.93	(7)	693.95	6$^+$	
1382.1 *5*	0.40 *7*	2075.98	(7$^-$)	693.95	6$^+$	
1388.5 *5*	0.4 *2*	3053.61	11$^-$	1665.15	10$^+$	
1442.4 *5*	0.4 *1*	2135.85	8$^+$	693.95	6$^+$	
1450.6 *1*	7 *1*	3694.85		2244.25	12$^+$	
1478.7 *5*	0.40 *6*	3143.9		1665.15	10$^+$	
1541.9 *1*	0.6 *1*	2682.58	10$^+$	1141.29	8$^+$	
1570.6 *1*	1.6 *2*	3235.13	12$^+$	1664.73	6$^+$	

[†] γ-ray energies from 1998Pu01, unless otherwise stated. Δ(Eγ) assigned as 0.1 keV for Iγ>0.5, 0.5 keV for I$\gamma\leq$0.5, and 1 keV when Eγ specified to nearest keV, based on a general statement by the authors of 1998Pu01.

[‡] γ-intensities from 1998Pu01, except as otherwise specified.

[#] γ-intensities from 1999Cu02, renormalized to Iγ=43 *2* for the 267-keV γ-ray in the case of the K^π=15$^+$ band, and to Iγ=25 *2* for the 288-keV γ-ray in the K^π=25$^+$, K^π=28$^-$, K^π=(29$^+$), K^π=30$^+$, and K^π=(34$^+$) bands.

[@] Based on conversion data and angular distribution coefficients A_2 (1998Pu01) and/or DCO ratios (1999Cu02). Some assignments deduced by evaluators from experimental internal conversion coefficients.

[&] γ-ray only seen by 1999Cu02.

[a] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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

[x] γ ray not placed in level scheme.

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme

Intensities: Relative I_γ

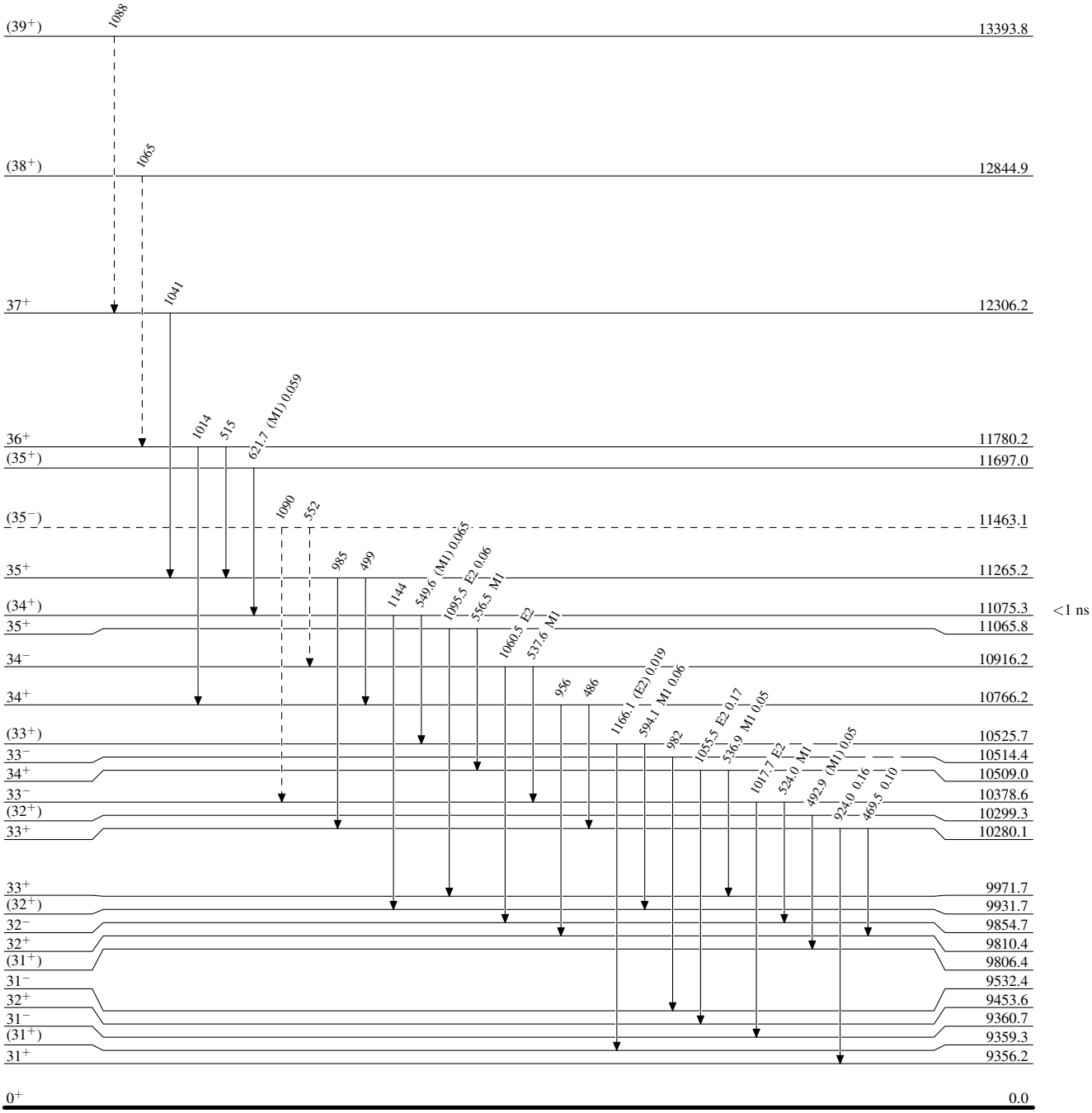
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



$^{178}_{74}W_{104}$

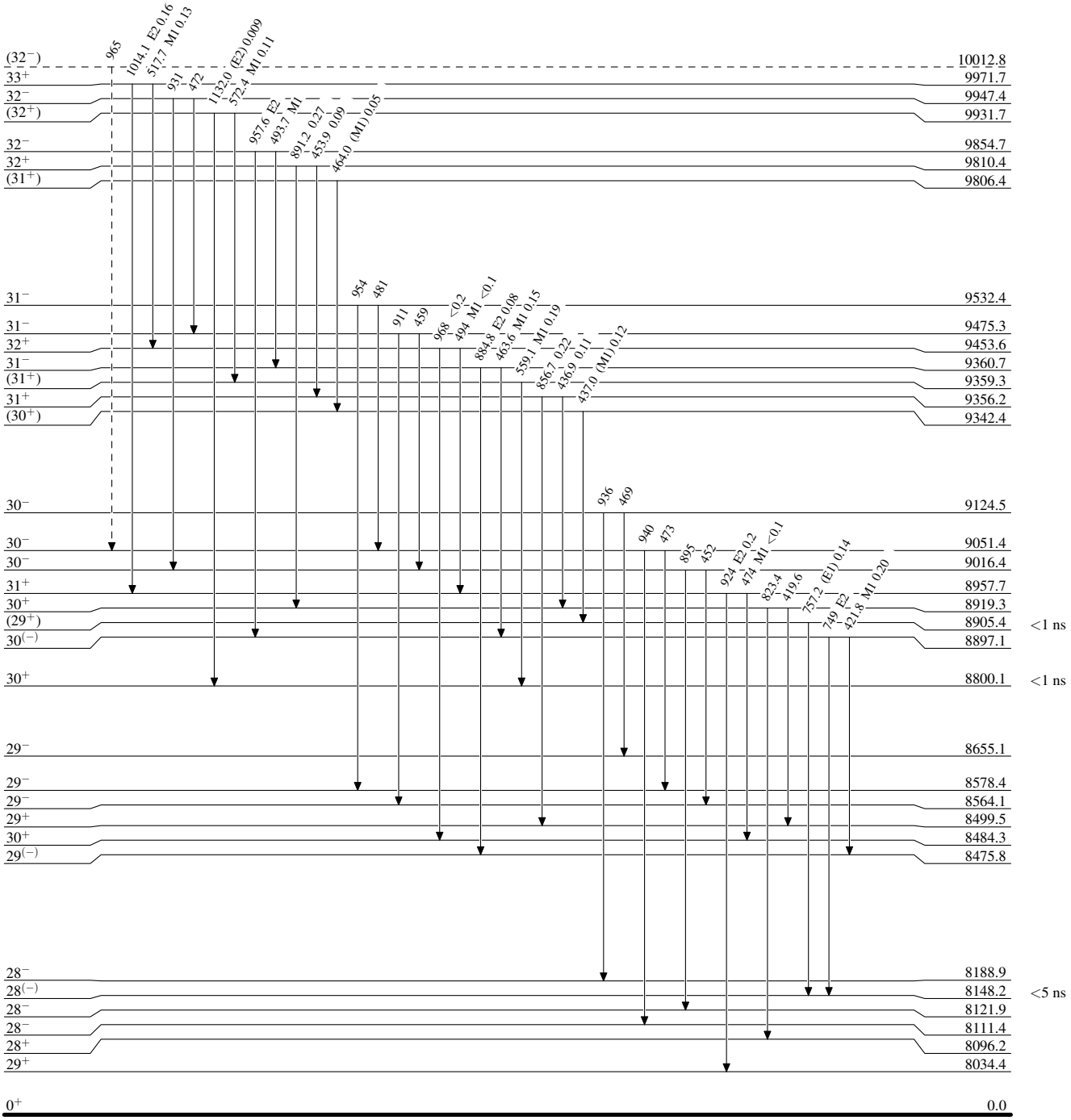
^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ

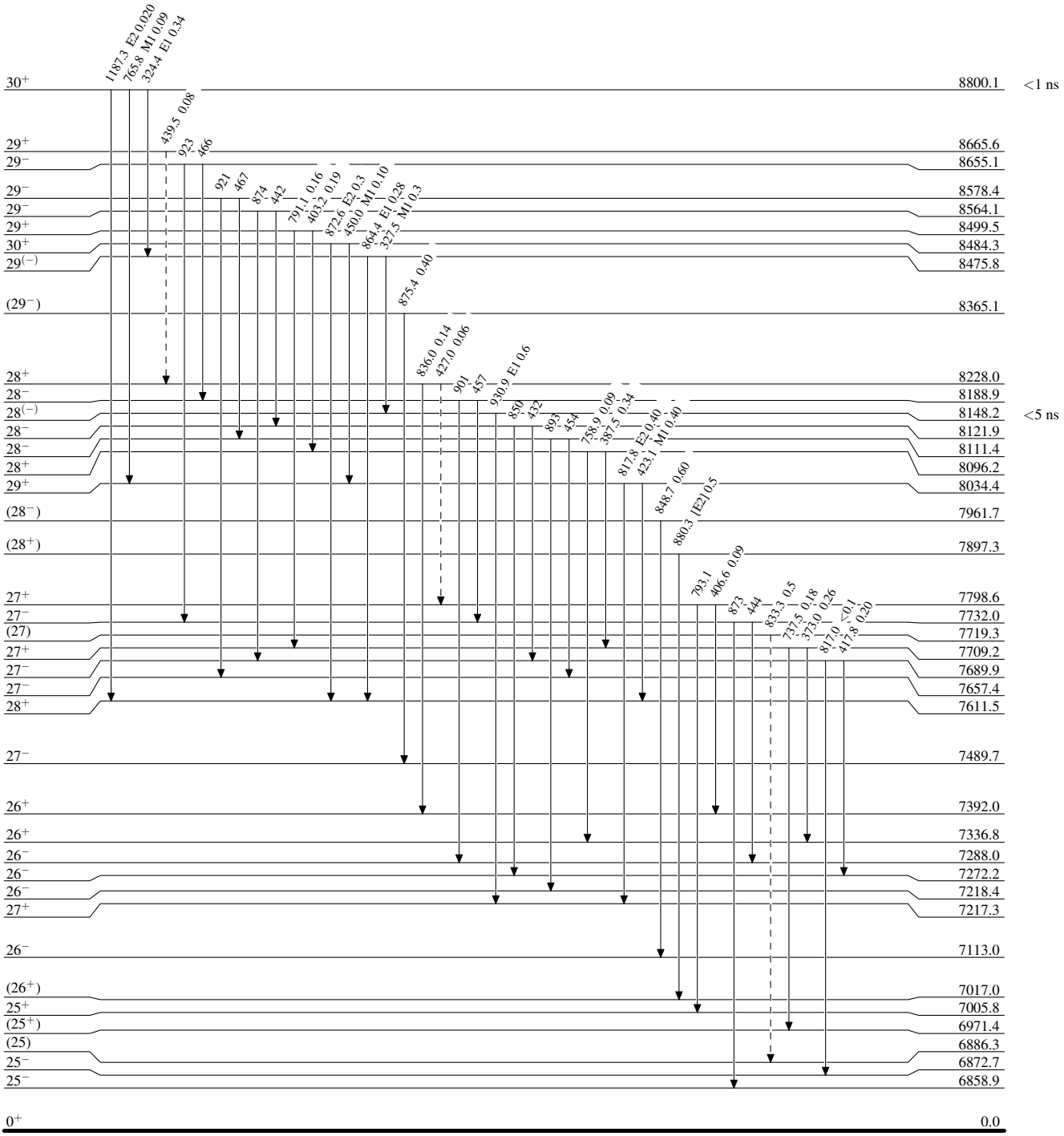
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



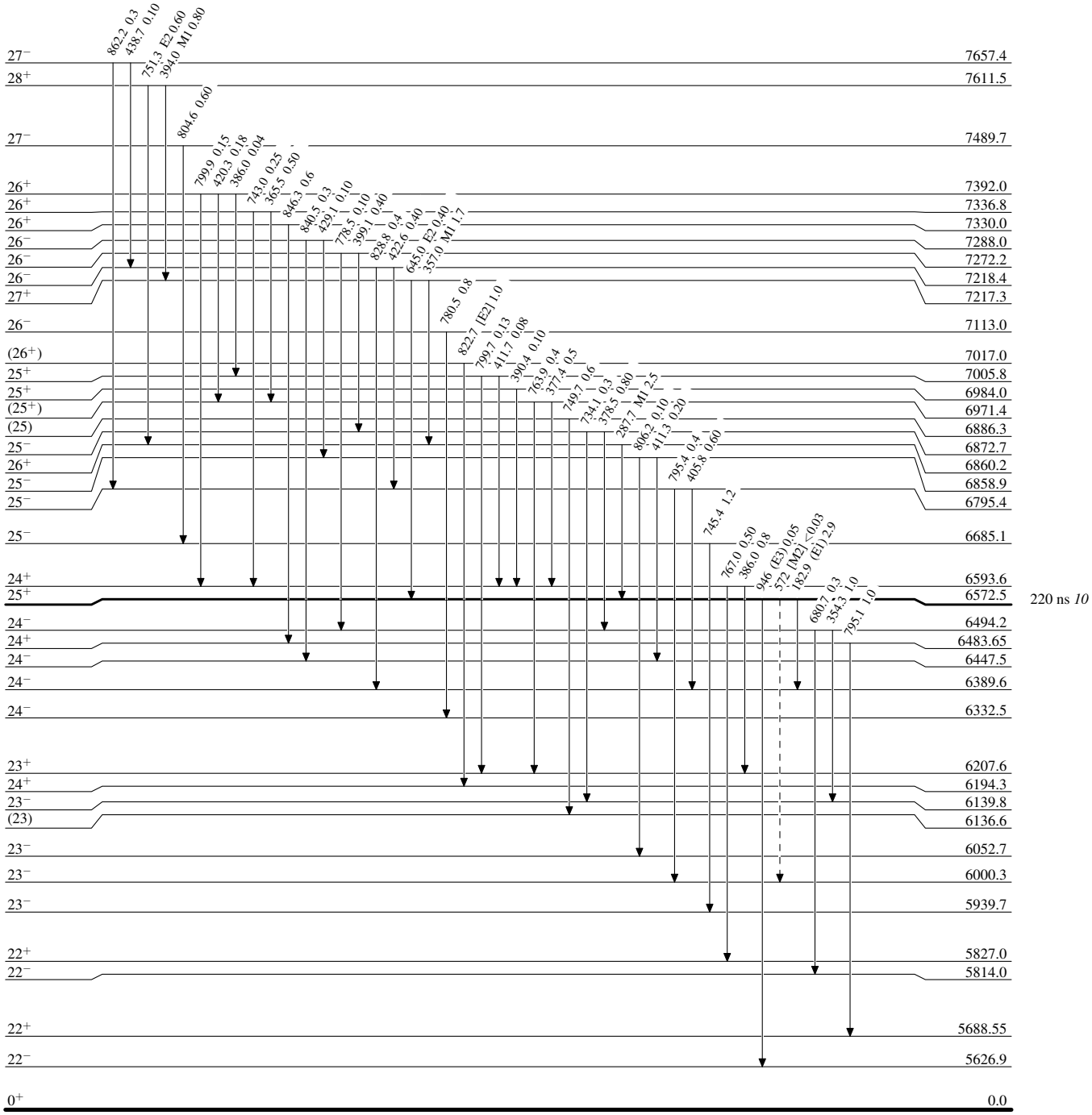
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

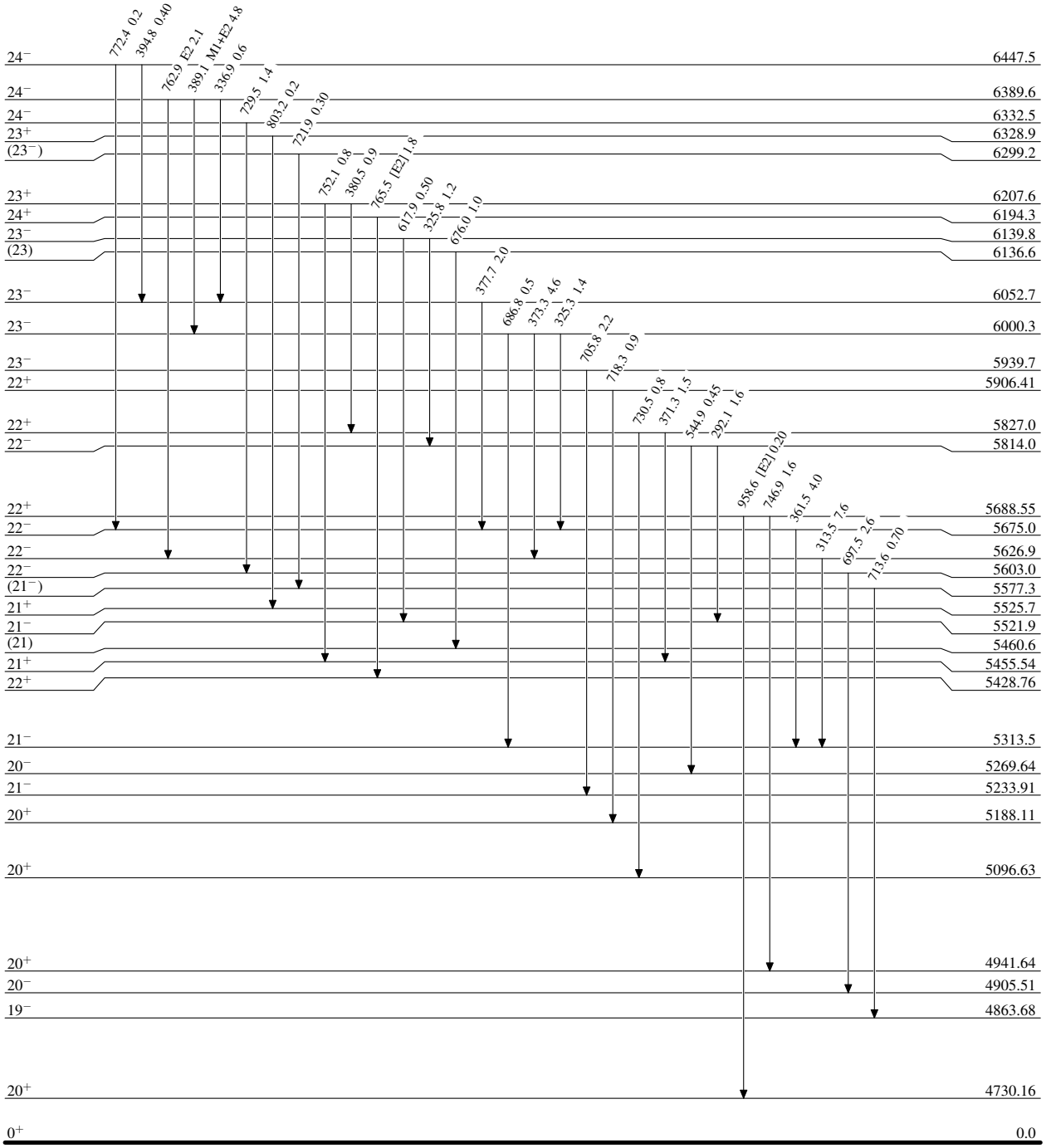
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{178}_{74}W_{104}$

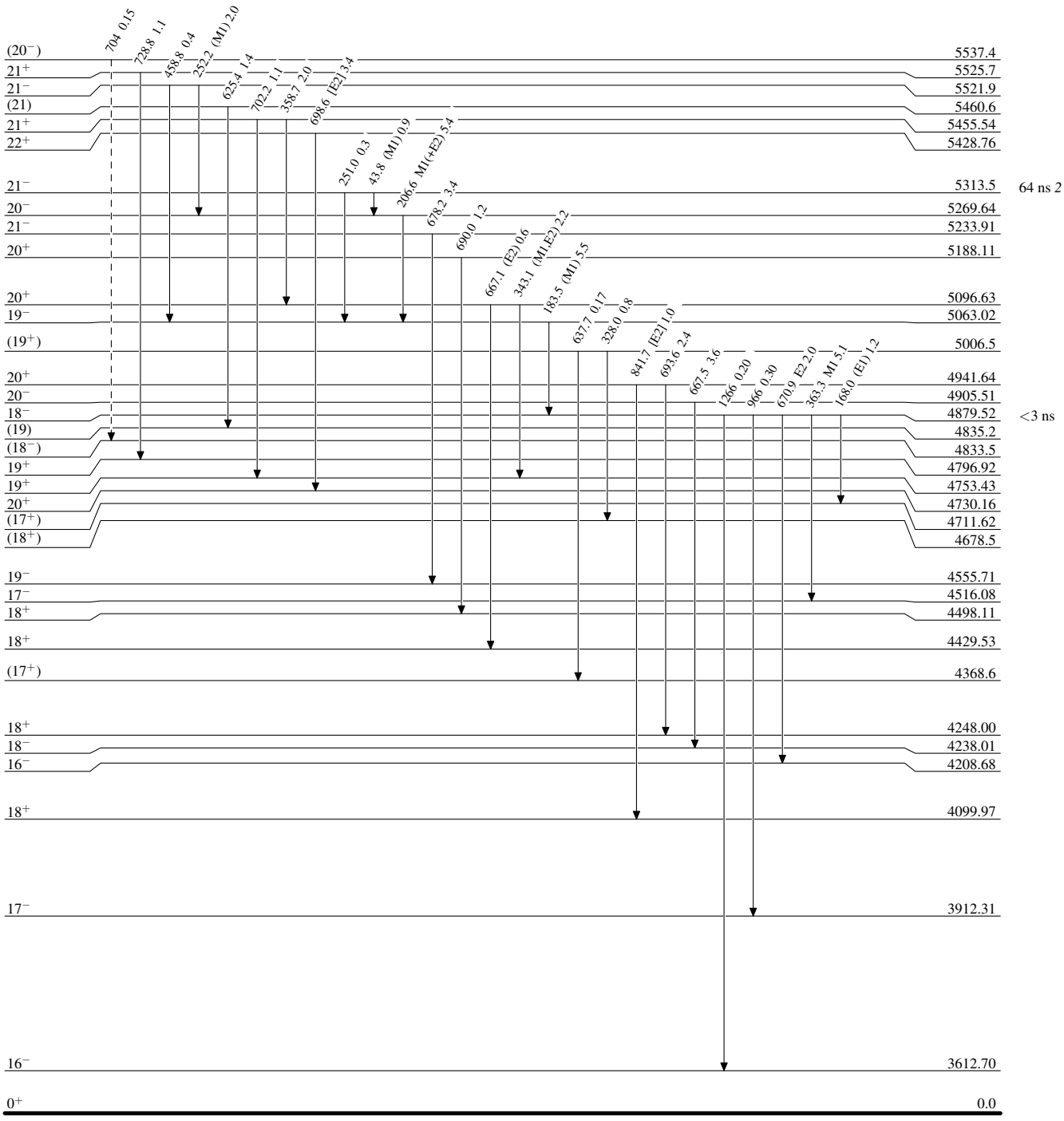
^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)

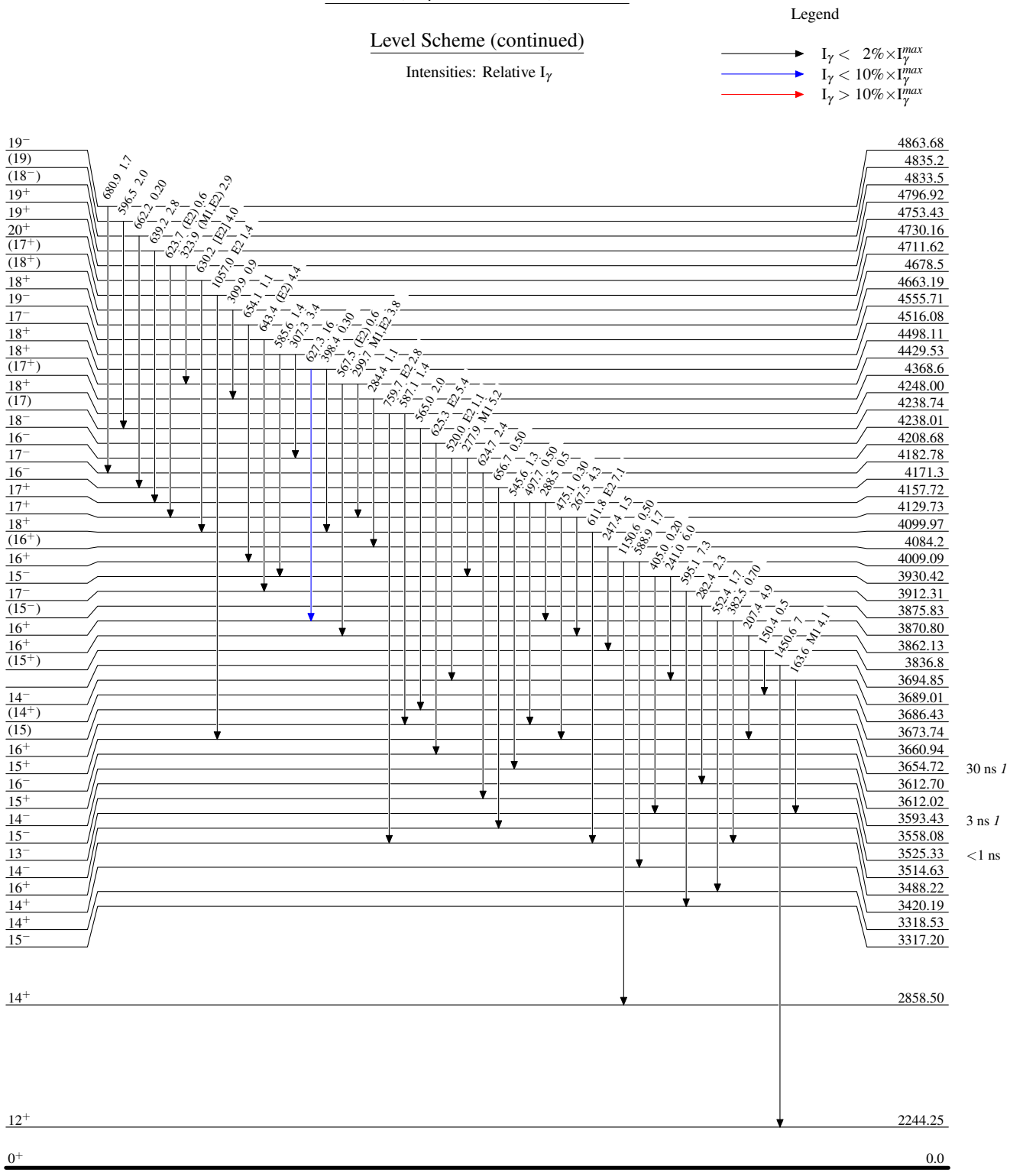


$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ



$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

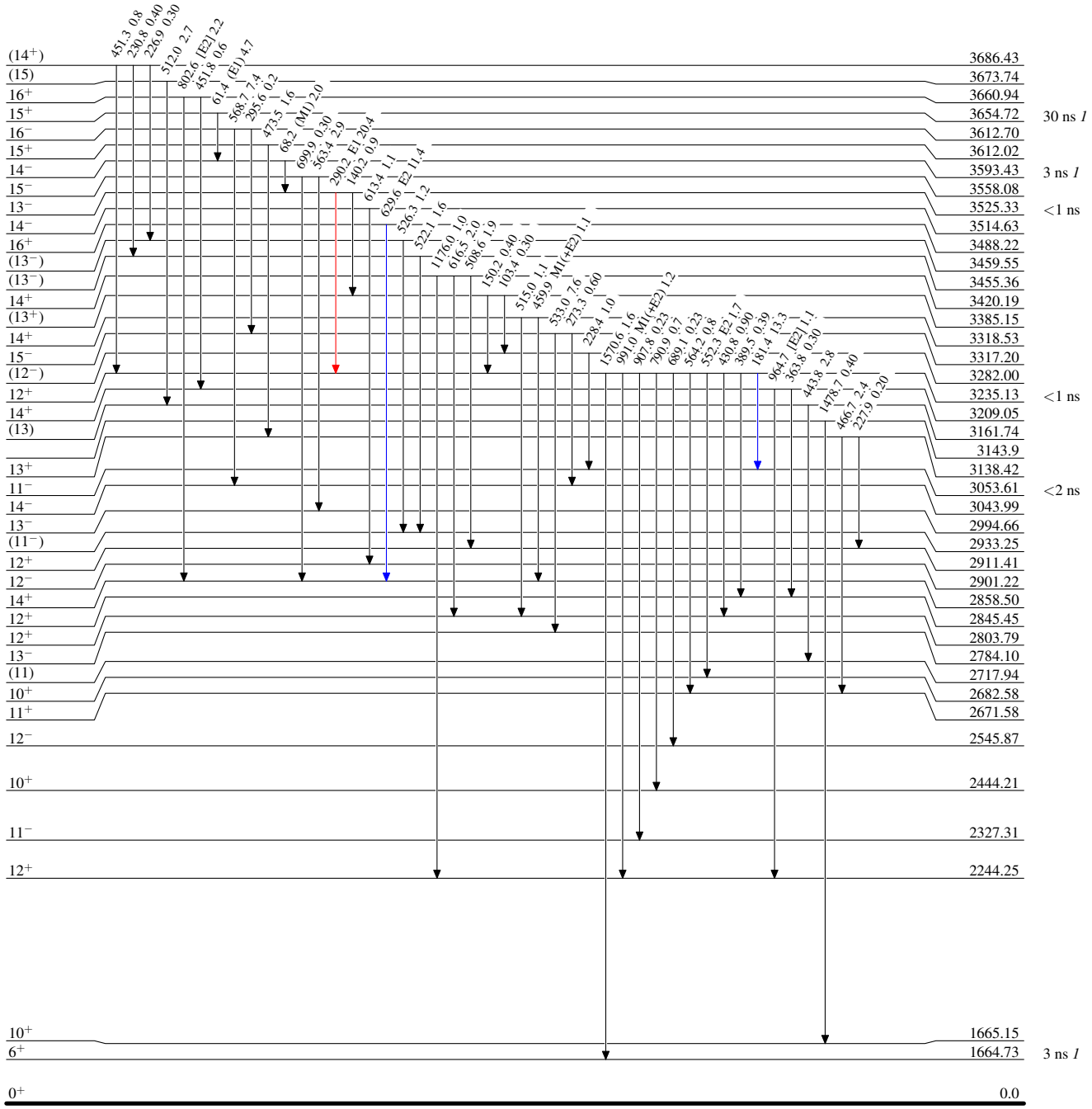
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



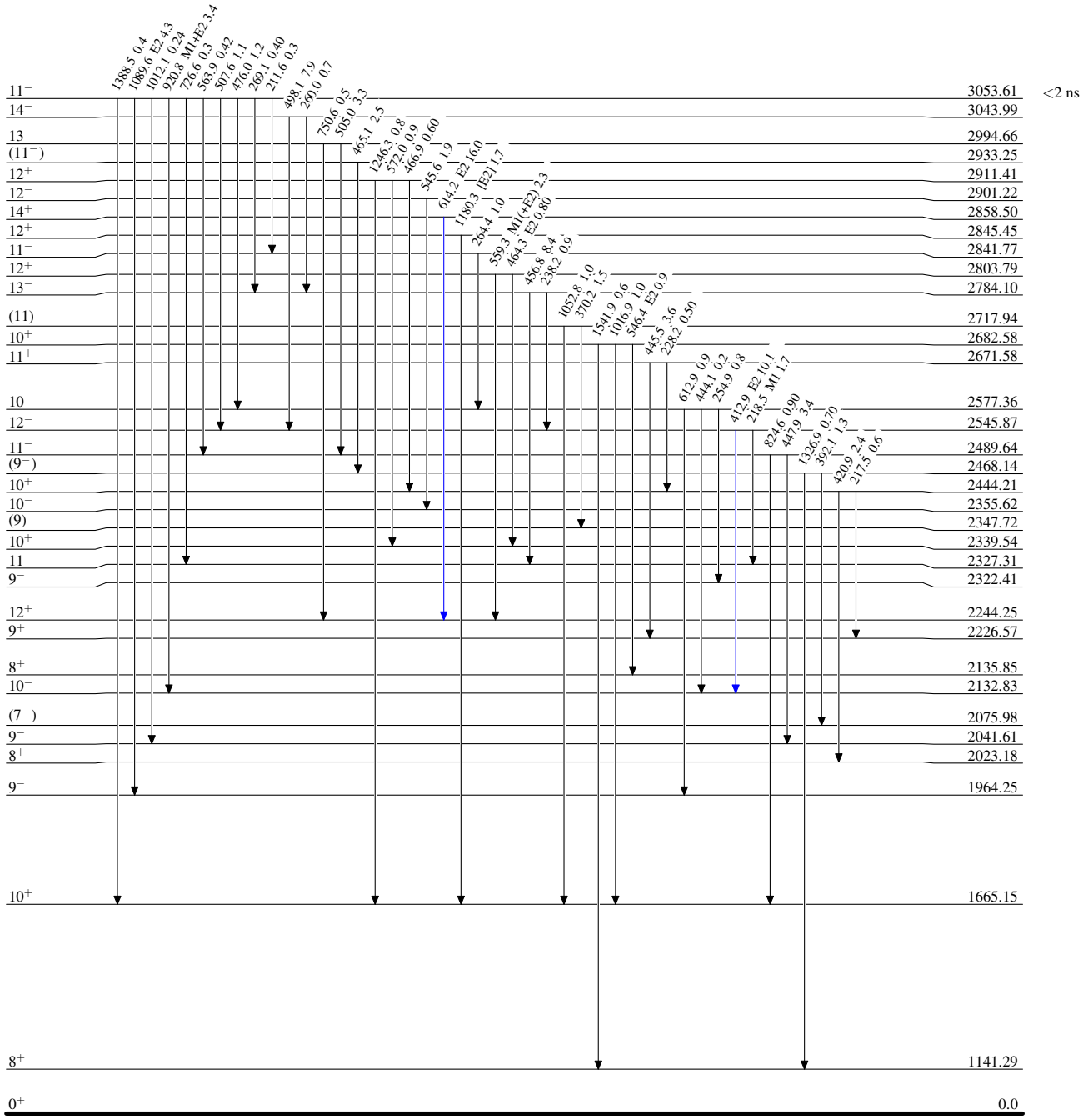
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{178}_{74}W_{104}$

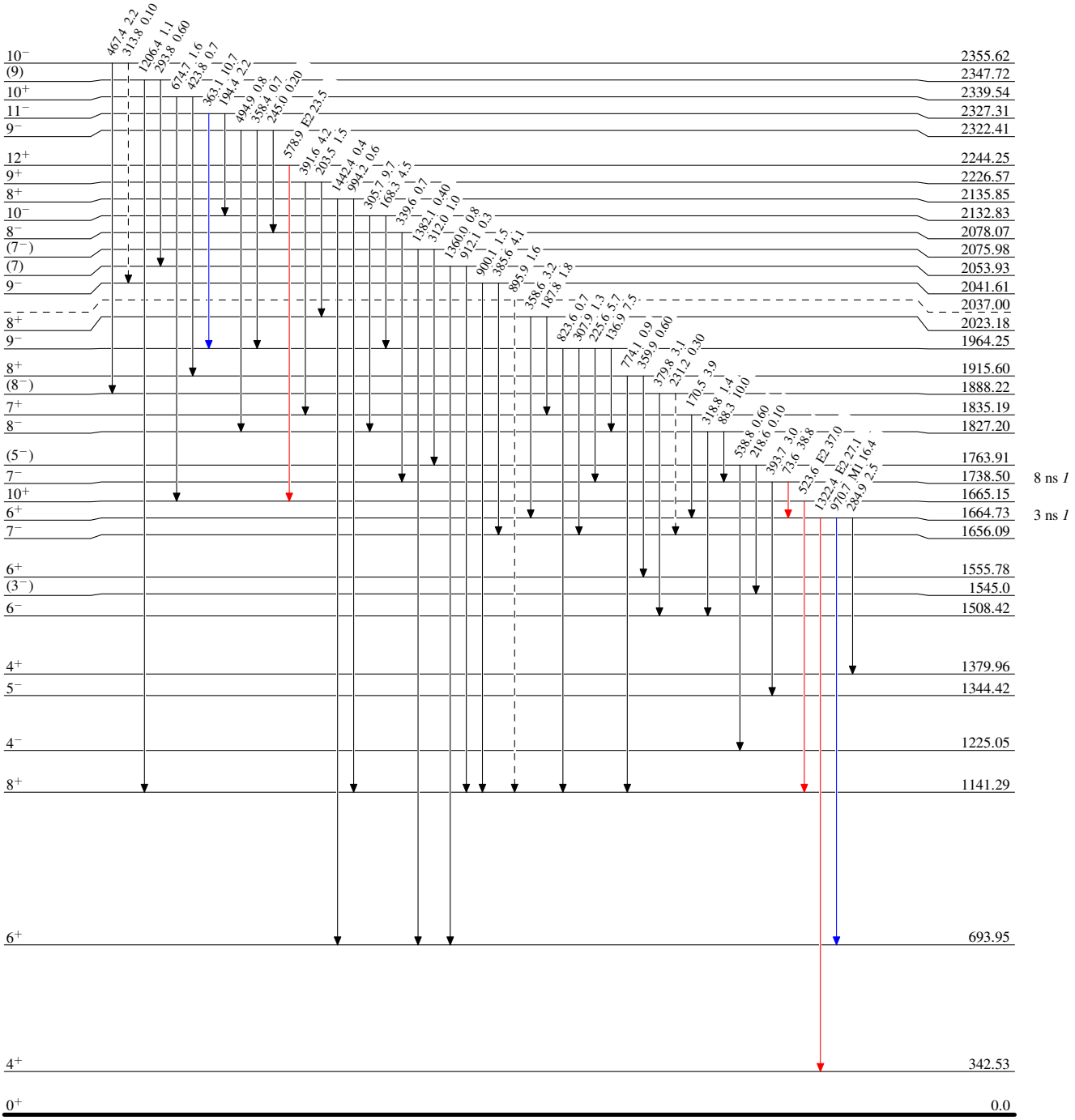
^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01

Level Scheme (continued)

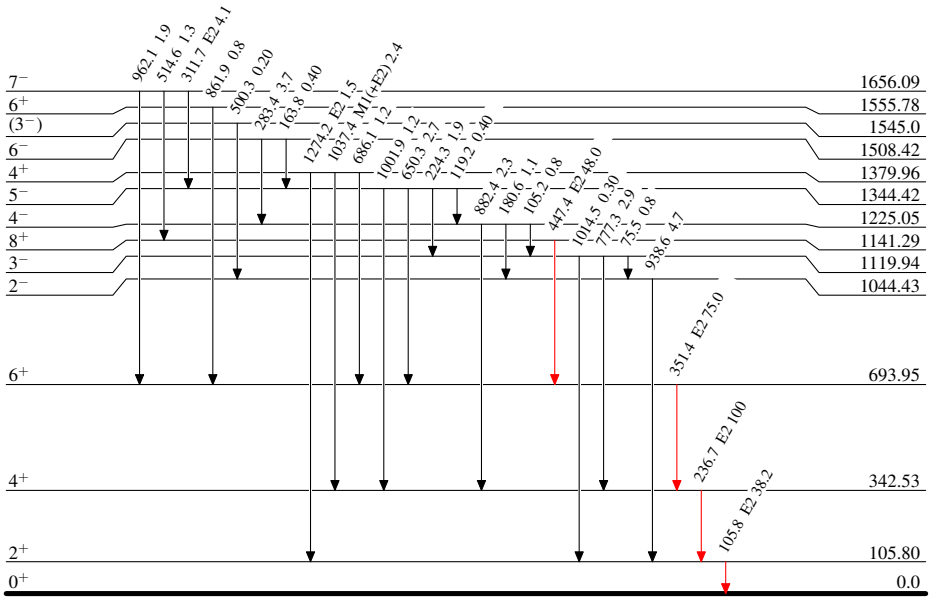
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

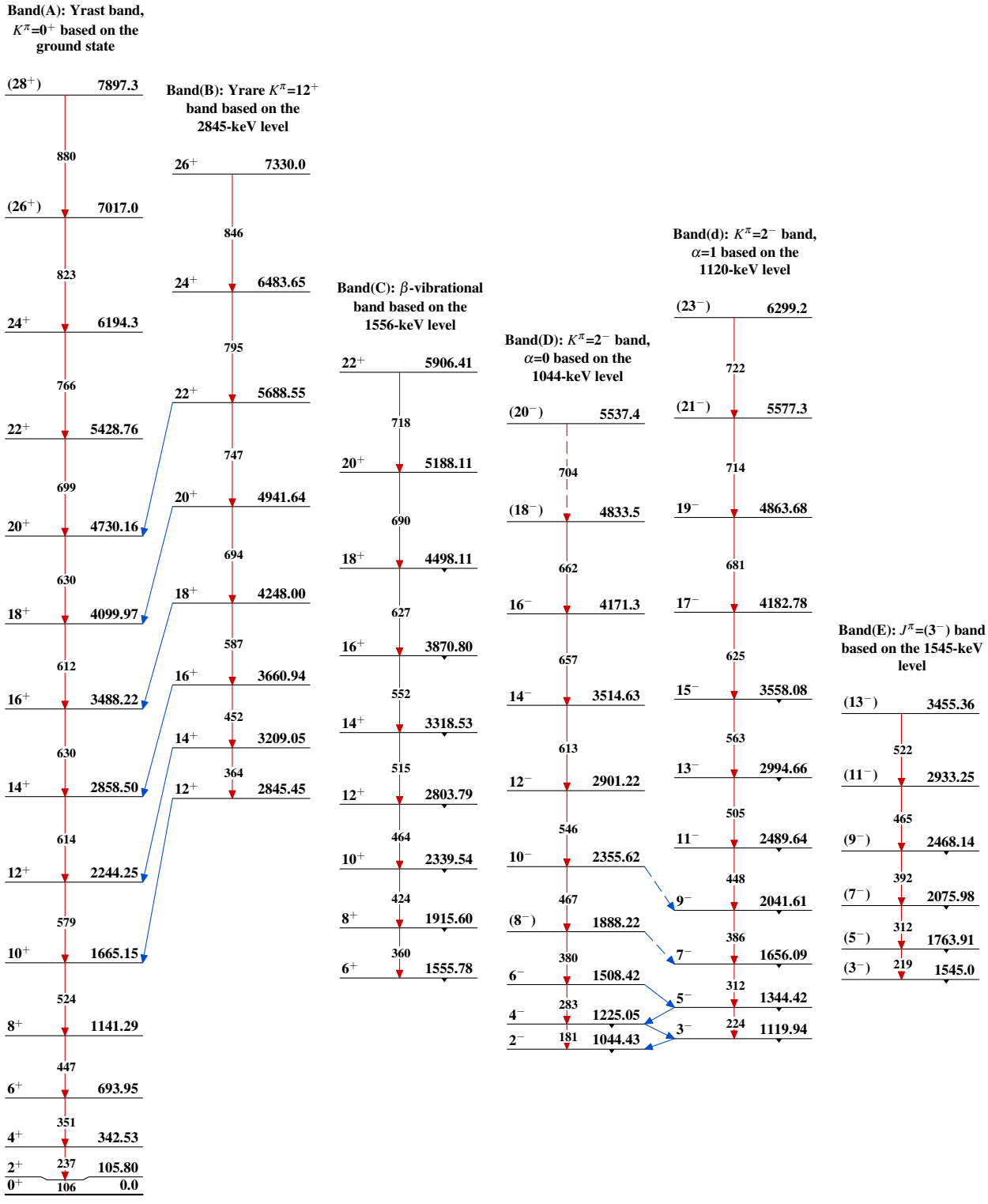
$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



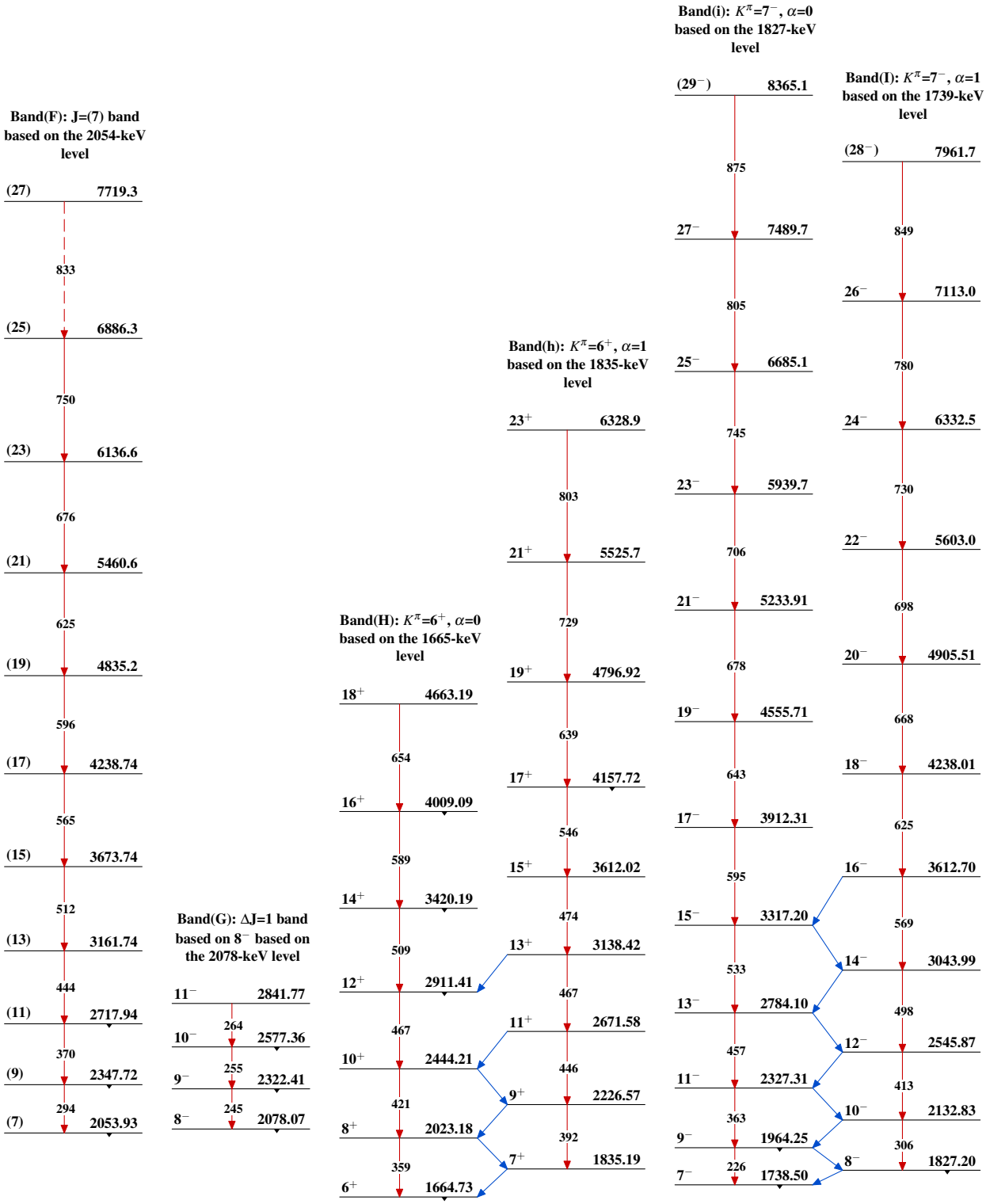
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01



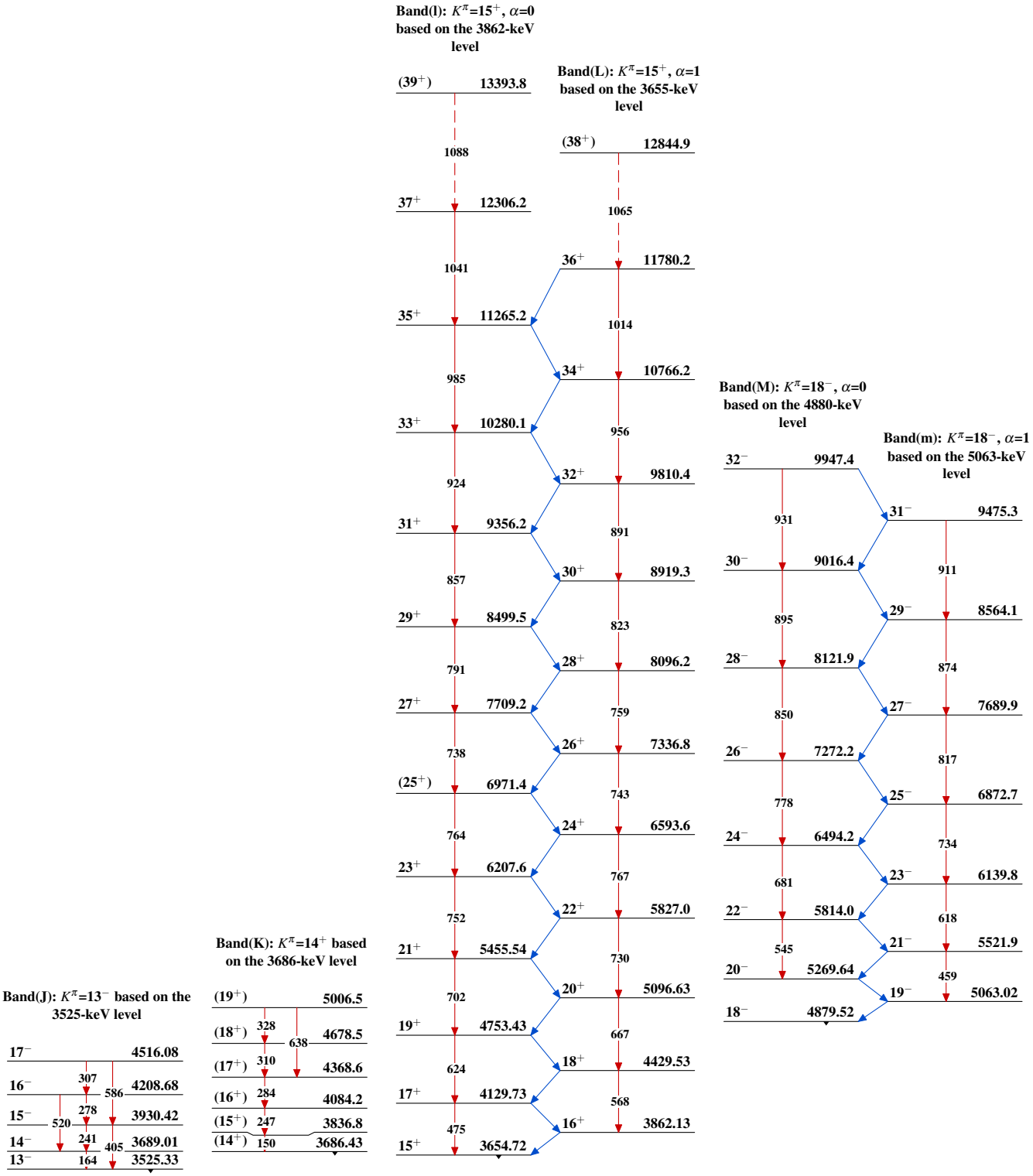
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)



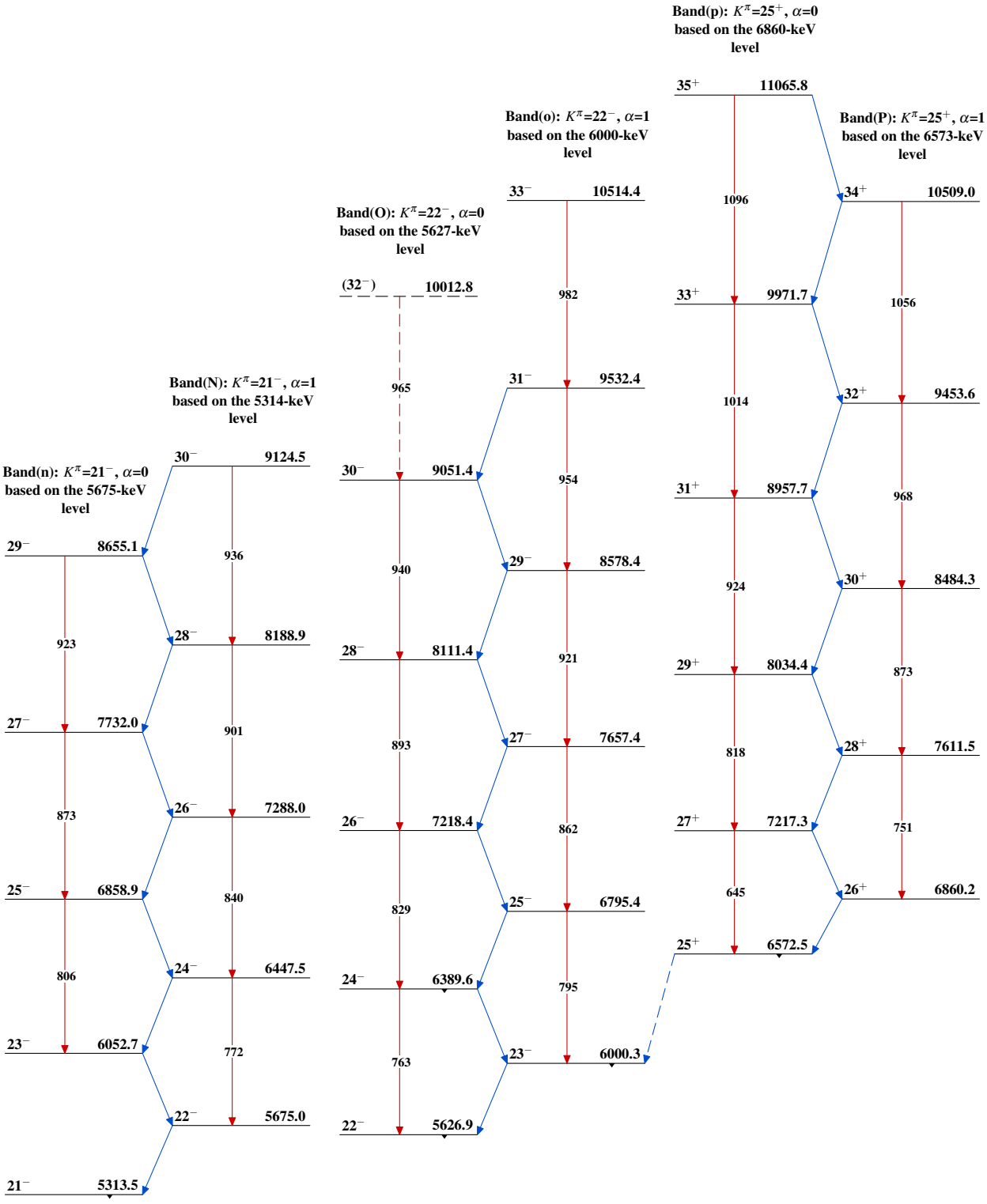
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)



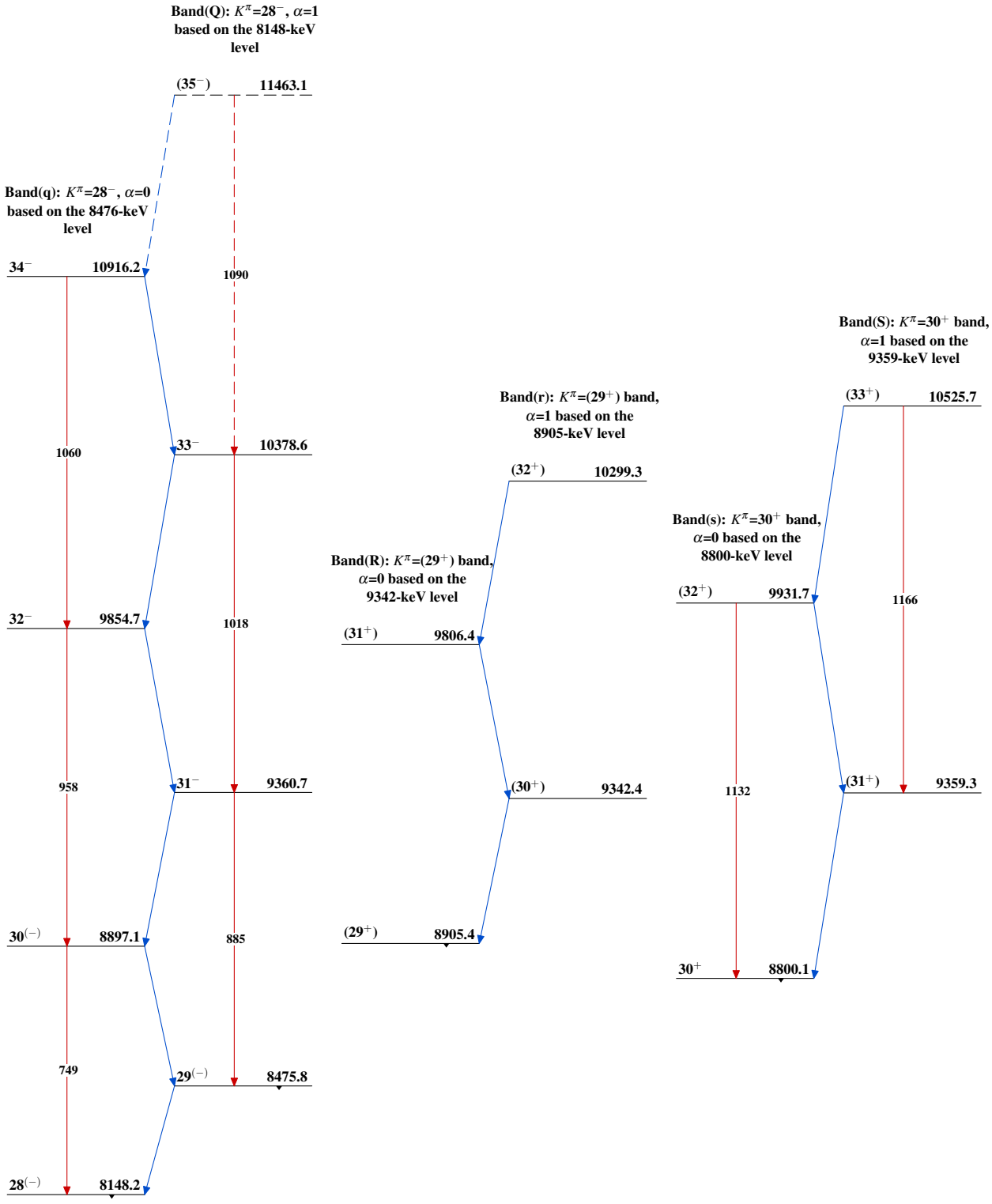
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)



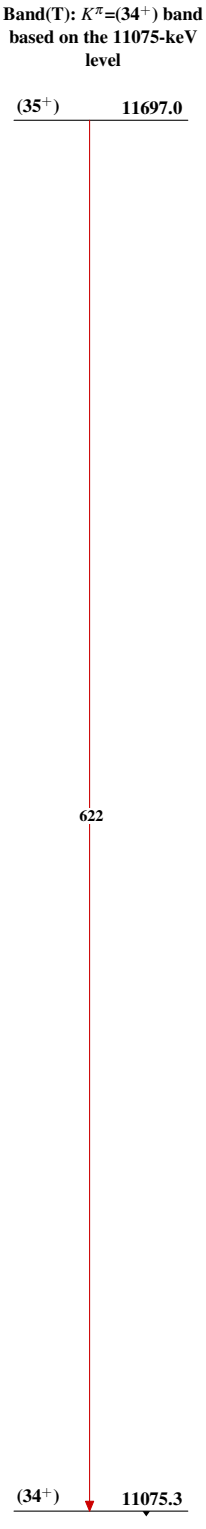
$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)



$^{178}_{74}W_{104}$

^{170}Er(^{13}C,5nγ) 1999Cu02,1998Pu01 (continued)



$^{178}_{74}W_{104}$