^{176}Yb(^{13}C,α3nγ) 1995Sh27

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 130, 21 (2015)	15-Jul-2015

1995Sh27: E=65 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$(DCO), (particle)γ coin using 4π Si detector array for particle detection and NORDBALL array for γ ray detection.

Other: 1994Re03: E=65 MeV. See ^{176}Yb(^{9}Be,3nγ) dataset where ^{176}Yb(^{13}C,α3nγ) reaction may have been used for some of the measurements.

^{182}W Levels

The two g_K values in each case refer to positive and negative signs of mixing ratio of ΔJ=1, M1+E2 in-band transition. The g_K values were deduced from (g_K-g_R)/Q_0 using g_R=0.25 and Q_0=7.0.

E(level)[†]	J$^{\pi}$[‡]	Comments
0.0[#]	0$^+$	
100.20[#] *10*	2$^+$	
329.29[#] *14*	4$^+$	
680.13[#] *16*	6$^+$	
1144.03[#] *19*	8$^+$	
1289.31[@] *14*	2$^-$	
1373.89[@] *16*	3$^-$	
1487.45[@] *16*	4$^-$	
1553.00[b] *16*	4$^-$	
1621.14[@] *16*	5$^-$	
1660.18[b] *16*	5$^-$	
1711.53[#] *22*	10$^+$	
1756.56[&] *16*	6$^+$	
1768.71[b] *16*	6$^-$	g_K=+0.53 *2* or −0.03 *2*.
1809.09[f] *19*	5$^-$	
1810.55[@] *17*	6$^-$	
1829.17[c] *16*	6$^-$	
1916.77[b] *16*	7$^-$	g_K=+0.41 *1* or +0.09 *1*.
1959.94[c] *17*	7$^-$	
1960.0[f] *3*	6$^-$	
1970.72[&] *19*	7$^+$	
1978.16[d] *19*	(7$^-$)	
1993.44[@] *19*	7$^-$	
2087.10[b] *17*	8$^-$	g_K=+0.44 *1* or +0.06 *1*.
2113.71[c] *17*	8$^-$	g_K=+0.49 *2* or +0.01 *2*.
2119.86[e] *17*	8$^-$	
2130.6[f] *11*	7$^-$	
2204.16[d] *21*	(8$^-$)	
2212.12[&] *21*	8$^+$	g_K=+1.06 *6* or −0.56 *6*.
2225.05[@] *20*	8$^-$	
2230.3[a] *7*	10$^+$	
2273.51[b] *18*	9$^-$	g_K=+0.47 *1* or +0.03 *1*.
2301.22[c] *17*	9$^-$	g_K ≈ +0.39 or ≈ +0.11.

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^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

^{182}W Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
2323.8[f] 11	(8⁻)		
2327.23[e] 18	9⁻		
2372.13[#] 24	12⁺		
2445.74[@] 21	9⁻		
2455.26[d] 23	(9⁻)		g_K>+1.25 or <−0.75.
2479.37[&] 22	9⁺		g_K=+1.09 5 or −0.59 5.
2486.43[b] 18	10⁻		g_K=+0.58 3 or −0.08 3.
2492.4[a] 7	11⁺		
2507.09[c] 18	10⁻		g_K=+0.50 3 or 0.00 3.
2563.32[e] 20	10⁻		g_K ≈ +0.91 or ≈ −0.41.
2710.42[b] 19	11⁻		g_K=+0.65 3 or −0.15 3.
2730.36[d] 25	(10⁻)		g_K>+1.31 or <−0.81.
2738.86[@] 22	10⁻		
2741.31[c] 20	11⁻		
2768.79[&] 24	10⁺		g_K=+1.17 5 or −0.67 5.
2775.3[a] 7	12⁺		g_K=+0.67 4 or −0.17 4.
2823.30[e] 22	11⁻		g_K=−0.67 3 or −0.17 3.
2972.03[b] 20	12⁻		g_K=+0.62 4 or −0.12 4.
2980.44[@] 24	11⁻		
2980.92[c] 20	12⁻		
3027.5[d] 3	(11⁻)		g_K=+1.25 26 or −0.75 26.
3077.9[a] 7	13⁺		g_K=+0.63 4 or −0.13 4.
3106.10[e] 24	12⁻		g_K=+0.77 3 or −0.27 3.
3112.6[#] 3	14⁺		
3224.02[b] 21	13⁻		
3269.21[c] 22	13⁻		
3319.5[@] 5	(12⁻)		
3342.6[d] 3	(12⁻)		g_K=+1.11 23 or −0.61 23.
3398.0[a] 7	14⁺		g_K=+0.67 7 or −0.17 7.
3409.9[e] 3	13⁻		g_K=+0.73 4 or −0.23 4.
3415.6[k] 7	(12)		
3517.63[c] 22	(14⁻)		
3549.53[b] 22	14⁻		
3567.6[@] 4	(13⁻)		
3676.8[k] 7	(13)		
3733.2[e] 3	14⁻		g_K=+0.67 3 or −0.17 3.
3736.1[a] 7	15⁺		g_K=+0.64 5 or −0.14 5.
3754.5[g] 7	15⁺	37 ns 2	$T_{1/2}$: from time differences between the transitions above and below the isomer: 139γ and 324γ above the isomer and 262γ, 283γ and 356γ below the isomer.
3807.12[b] 24	15⁻		
3879.71[c] 24	15⁻		
3893.3[h] 7	16⁺		
3909.8[#] 3	16⁺		
3965.9[k] 7	(14)		g_K=+0.51 19 or −0.01 19.
4040.2[i] 7	17⁻	20 ns 1	$T_{1/2}$: from time differences between the transitions above and below the isomer: 381γ, 399γ and 740γ above the isomer and 147γ below the isomer.
4074.1[e] 4	15⁻		g_K=+0.72 6 or −0.22 6.
4078.5[g] 7	16⁺		

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^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

^{182}W Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
4081.2[a] *7*	16^{+}	g_K=+0.65 *5* or −0.15 *5*.
4116.5[c] *3*	(16^{-})	
4196.9[@] *5*	(15^{-})	
4210.6[b] *3*	16^{-}	
4279.9[k] *7*	(15)	g_K=+0.61 *25* or −0.11 *25*.
4292.7[h] *7*	17^{+}	
4421.2[i] *7*	18^{-}	
4430.1[g] *7*	17^{+}	g_K=+0.54 *4* or −0.04 *4*.
4453.4[a] *12*	(17^{+})	
4455.7[b] *3*	17^{-}	
4570.5[c] *4*	(17^{-})	
4690.6[#] *3*	18^{+}	
4711.5[h] *7*	18^{+}	g_K=+0.36 *6* or +0.14 *6*.
4779.2[c] *4*	(18^{-})	
4780.0[j] *8*	(18)	
4804.6[g] *8*	18^{+}	g_K=+0.46 *6* or +0.04 *6*.
4819.8[i] *7*	19^{-}	g_K=+0.49 *7* or +0.01 *7*.
4847.1[a] *9*	(18^{+})	
4954.3[b] *11*	(18^{-})	
5148.2[h] *8*	19^{+}	g_K ≈ +0.47 or ≈ +0.03.
5170.3[b] *5*	(19^{-})	
5191.5[j] *8*	(19)	
5199.3[g] *8*	(19^{+})	
5225.5[a] *16*	(19^{+})	
5235.5[i] *8*	20^{-}	g_K=+0.43 *6* or +0.07 *6*.
5338.2[c] *11*	(19^{-})	
5428.3[#] *4*	(20^{+})	
5618.2[j] *8*	(20)	g_K ≈ +0.32 or ≈ +0.18.
5666.6[i] *10*	21^{-}	g_K ≈ +0.49 or ≈ +0.01.

[†] From least-squares fit to Eγ data. The data for β and γ bands are not reported by 1995Sh27 even though these bands and associated transitions have been seen by these authors. Normalized χ^2=0.96.

[‡] As proposed by 1995Sh27 based on $\gamma\gamma(\theta)$ data and band assignments. The assignments in Adopted Levels are the same, except that many are placed in parentheses when strong arguments are lacking.

[#] Band(A): K^{π}=0^{+}, g.s. band. Backbending at $\hbar\omega$≈0.38 MeV.

[@] Band(B): K^{π}=2^{-}, octupole band.

[&] Band(C): π5/2[402]⊗π7/2[404], K^{π}=6^{+} g_K(exp)=+1.11 *5*.

[a] Band(D): ν9/2[624]⊗ν11/2[615], K^{π}=10^{+} g_K(exp)=−0.15 *2*.

[b] Band(E): ν9/2[624]⊗ν1/2[510], K^{π}=4^{-} g_K(exp)=+0.05 *4*.

[c] Band(F): ν9/2[624]⊗ν3/2[512], K^{π}=6^{-} g_K(exp)=+0.01 *1*.

[d] Band(G): π9/2[514]⊗π5/2[402], K^{π}=7^{-} g_K(exp)=+1.17 *7*.

[e] Band(H): ν9/2[624]⊗ν7/2[503], K^{π}=8^{-} g_K(exp)=−0.21 *5* excludes 7/2[514] neutron orbital when compared with theoretical value.

[f] Band(I): ν9/2[624]⊗ν1/2[510], K^{π}=5^{-}.

[g] Band(J): $\nu^2_{(8^-)}$⊗$\pi^2_{(7^-)}$, K^{π}=15^{+}. ν^2(8^{-}): ν9/2[624]⊗ν7/2[503]; π^2(7^{-}): π9/2[514]⊗π5/2[402]. g_K(exp)=+0.52 *4*. For K^{π}=8^{-} neutron configuration, 7/2[514] orbital is excluded by the comparison of experimental g_K and corresponding theoretical

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^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

^{182}W Levels (continued)

value.
[h] Band(K): $\nu^2_{(8^-)}\otimes\pi^2_{(8^-)}$, K^π=16$^+$. ν^2(8$^-$): ν9/2[624]$\otimes\nu$7/2[503]; π^2(8$^-$): π9/2[514]$\otimes\pi$7/2[404]. g_K(exp)=+0.36 *6*. For K^π=8$^-$ neutron configuration, 7/2[514] orbital is excluded by the comparison of experimental g_K and corresponding theoretical value.
[i] Band(L): $\nu^2_{(10^+)}\otimes\pi^2_{(7^-)}$, K^π=17$^-$. ν^2(10$^+$):ν9/2[624]$\otimes\nu$11/2[615]; π^2(7$^-$):π9/2[514]$\otimes\pi$5/2[402]. g_K(exp)=+0.46 *3*.
[j] Band(M): $\nu^2_{(10^+)}\otimes\pi^2_{(8^-)}$, K^π=18$^-$. ν^2(10$^+$):ν9/2[624]$\otimes\nu$11/2[615]; π^2(8$^-$):π9/2[514]$\otimes\pi$7/2[404]. g_K(exp)≈+0.32.
[k] Band(N): K=(12) band.

γ(^{182}W)

DCO ratios correspond to gates on ΔJ=2, quadrupole transitions, unless otherwise stated.
(g_K-g_R)/Q_0 values have been deduced by 1995Sh27 from ΔJ=2/ΔJ=1 branching ratios, assuming rotational model. The values of (M1+E2) mixing ratios for ΔJ=1 transitions were also deduced by these authors but not listed in the paper.

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	α[@]	Comments
84.8 *1*	1.7 *3*	1373.89	3$^-$	1289.31	2$^-$	D+Q		DCO=0.5 *3*.
100.2 *1*	33 *6*	100.20	2$^+$	0.0	0$^+$	Q		DCO=1.0 *1*.
106.3 *1*	0.4 *1*	1916.77	7$^-$	1810.55	6$^-$			
107.2 *1*	0.6 *1*	1660.18	5$^-$	1553.00	4$^-$			
108.5 *1*	0.5 *1*	1768.71	6$^-$	1660.18	5$^-$	D+Q		DCO=0.5 *3*. (g_K-g_R)/Q_0=0.039 *3* for Iγ(215.4γ)/Iγ(108.5γ)= 0.87 *13*.
113.7 *1*	3.3 *6*	1487.45	4$^-$	1373.89	3$^-$	D+Q		DCO=0.8 *3*.
130.8 *1*	2.9 *5*	1959.94	7$^-$	1829.17	6$^-$			
133.8 *1*	2.7 *5*	1621.14	5$^-$	1487.45	4$^-$			
138.8 *1*	3.6 *6*	3893.3	16$^+$	3754.5	15$^+$	(M1)[#]	1.86	α(K)=1.545 *22*; α(L)=0.245 *4*; α(M)=0.0558 *8* α(N)=0.01344 *19*; α(O)=0.00219 *4*; α(P)=0.0001559 *22*
146.9 *1*	4.4 *7*	4040.2	17$^-$	3893.3	16$^+$	(E1)[#]	0.1384	α(K)=0.1141 *16*; α(L)=0.0188 *3*; α(M)=0.00428 *6* α(N)=0.001015 *15*; α(O)=0.0001566 *23*; α(P)=8.59×10^{-6} *13*
147.8 *1*	1.1 *2*	1768.71	6$^-$	1621.14	5$^-$			
148.2 *1*	0.5 *1*	1916.77	7$^-$	1768.71	6$^-$			(g_K-g_R)/Q_0=0.023 *2* for Iγ(256.5γ)/Iγ(148.2γ)= 2.51 *25*.
148.9 *4*	0.3 *1*	1978.16	(7$^-$)	1829.17	6$^-$			
149.0 *11*	0.2 *1*	1960.0	6$^-$	1810.55	6$^-$			
153.5 *5*	1.2 *2*	2113.71	8$^-$	1959.94	7$^-$			(g_K-g_R)/Q_0=0.034 *3* for Iγ(285.1γ)/Iγ(153.5γ)=0.52 *7*.
160.0 *1*	1.7 *3*	2119.86	8$^-$	1959.94	7$^-$			
169.0 *1*	2.4 *4*	1829.17	6$^-$	1660.18	5$^-$			
170.4 *1*	1.1 *2*	2087.10	8$^-$	1916.77	7$^-$			(g_K-g_R)/Q_0=0.027 *1* for Iγ(318.4γ)/Iγ(170.4γ)=4.9 *3*.
172.7 *1*	1.4 *2*	1660.18	5$^-$	1487.45	4$^-$			
179.2 *1*	0.9 *1*	1553.00	4$^-$	1373.89	3$^-$			
181.3 *10*	0.2 *1*	2301.22	9$^-$	2119.86	8$^-$			
182.8 *5*	<0.2	1993.44	7$^-$	1810.55	6$^-$			
186.5 *1*	0.9 *1*	2273.51	9$^-$	2087.10	8$^-$			(g_K-g_R)/Q_0=0.032 *1* for Iγ(356.7γ)/Iγ(186.5γ)=6.1 *4*.
187.6 *3*	0.4 *1*	2301.22	9$^-$	2113.71	8$^-$			(g_K-g_R)/Q_0 ≈ 0.020 for Iγ(341.3γ)/Iγ(187.6γ)≈2.25.
187.9 *6*	<0.1	1809.09	5$^-$	1621.14	5$^-$			
189.4 *1*	0.8 *1*	1810.55	6$^-$	1621.14	5$^-$			
191.3 *1*	2.8 *5*	1959.94	7$^-$	1768.71	6$^-$			
197.4 *2*	0.3 *1*	2113.71	8$^-$	1916.77	7$^-$			
198.2 *1*	2.4 *4*	1487.45	4$^-$	1289.31	2$^-$	Q		DCO=1.3 *5*.
205.8 *2*	0.3 *1*	2507.09	10$^-$	2301.22	9$^-$			(g_K-g_R)/Q_0=0.035 *4* for Iγ(393.4γ)/Iγ(205.8γ)=2.1 *4*.
207.2 *1*	1.3 *2*	2327.23	9$^-$	2119.86	8$^-$			
213.0 *1*	0.9 *1*	2486.43	10$^-$	2273.51	9$^-$			(g_K-g_R)/Q_0=0.047 *4* for Iγ(399.3γ)/Iγ(213.0γ)=4.1 *5*.

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^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

γ(^{182}W) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	Comments
213.6 *1*	1.9 *3*	2327.23	9⁻	2113.71	8⁻		
214.2 *1*	2.6 *4*	1970.72	7⁺	1756.56	6⁺	D+Q	DCO=1.1 *2*, ΔJ=1 gated.
214.2 *10*	<0.3	2301.22	9⁻	2087.10	8⁻		
215.4 *3*	0.5 *1*	1768.71	6⁻	1553.00	4⁻		
221.6 *1*	1.4 *2*	1978.16	(7⁻)	1756.56	6⁺		
224.0 *1*	0.8 *1*	2710.42	11⁻	2486.43	10⁻		$(g_K-g_R)/Q_0$=0.057 *4* for Iγ(436.9γ)/Iγ(224.0γ)=4.3 *6*.
226.0 *1*	5.5 *8*	2204.16	(8⁻)	1978.16	(7⁻)	(D+Q)	DCO=1.0 *1*, ΔJ=1 gated.
229.1 *1*	100	329.29	4⁺	100.20	2⁺	Q	DCO=1.0 *1*.
233.8 *10*	<0.2	2507.09	10⁻	2273.51	9⁻		
236.0 *1*	2.5 *4*	2563.32	10⁻	2327.23	9⁻		$(g_K-g_R)/Q_0$=0.094 for Iγ(443.8γ)/Iγ(236.0γ)=0.09.
ˣ237.1 *1*	1.8 *3*					(D+Q)	DCO=0.8 *3*, ΔJ=1 gated.
241.4 *1*	2.0 *3*	2212.12	8⁺	1970.72	7⁺	D+Q	DCO=1.1 *4*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.116 *9* for Iγ(454.9γ)/Iγ(241.4γ)=0.14 *2*.
247.3 *1*	5.3 *9*	1621.14	5⁻	1373.89	3⁻	Q	DCO=0.9 *3*.
251.1 *1*	4.2 *6*	2455.26	(9⁻)	2204.16	(8⁻)	(D+Q)	DCO=0.9 *2*, ΔJ=1 gated. $(g_K-g_R)/Q_0$>0.14 for Iγ(477.1γ)/Iγ(251.1γ)<0.07.
256.1 *1*	2.4 *4*	1809.09	5⁻	1553.00	4⁻		
256.5 *1*	1.4 *2*	1916.77	7⁻	1660.18	5⁻	Q	DCO=1.1 *3*.
260.0 *1*	1.7 *2*	2823.30	11⁻	2563.32	10⁻		$(g_K-g_R)/Q_0$=0.060 *4* for Iγ(496.0γ)/Iγ(260.0γ)=0.48 *5*.
261.2 *1*	1.4 *2*	3676.8	(13)	3415.6	(12)		
261.6 *2*	0.4 *1*	2972.03	12⁻	2710.42	11⁻		$(g_K-g_R)/Q_0$=0.053 *5* for Iγ(485.6γ)/Iγ(261.6γ)=5.2 *9*.
ˣ261.9 *1*	1.4 *2*					(D+Q)	DCO=1.0 *4*, ΔJ=1 gated.
262.1 *1*	19 *3*	2492.4	11⁺	2230.3	10⁺	D+Q	DCO=1.0 *1*, ΔJ=1 gated.
263.4 *1*	1.2 *2*	1553.00	4⁻	1289.31	2⁻		
267.2 *1*	1.7 *3*	2479.37	9⁺	2212.12	8⁺	D+Q	DCO=0.9 *3*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.120 *7* for Iγ(508.8γ)/Iγ(267.2γ)=0.29 *3*.
275.1 *1*	2.9 *4*	2730.36	(10⁻)	2455.26	(9⁻)	(D+Q)	DCO=1.0 *2*, ΔJ=1 gated. $(g_K-g_R)/Q_0$>0.15 for Iγ(526.2γ)/Iγ(275.1γ)<0.14.
276.0 *1*	1.5 *2*	1829.17	6⁻	1553.00	4⁻		
281.3 *1*	6.2 *9*	1768.71	6⁻	1487.45	4⁻		
282.8[&] *1*	14.0[&] *24*	2775.3	12⁺	2492.4	11⁺	D+Q	DCO=1.1 *1*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.061 *5* for Iγ(545.1γ)/Iγ(282.8γ)=0.18 *3*.
282.8[&] *1*	1.4[&] *2*	3106.10	12⁻	2823.30	11⁻		$(g_K-g_R)/Q_0$=0.074 *4* for Iγ(542.5γ)/Iγ(282.8γ)=0.53 *6*.
285.1 *10*	0.6 *1*	2113.71	8⁻	1829.17	6⁻		
ˣ285.6 *1*	1.2 *2*					(D+Q)	DCO=1.0 *4*, ΔJ=1 gated.
286.2 *1*	3.3 *5*	1660.18	5⁻	1373.89	3⁻		
289.1 *1*	0.8 *4*	3965.9	(14)	3676.8	(13)		$(g_K-g_R)/Q_0$>0.032 for Iγ(550.3γ)/Iγ(289.0γ)<0.31.
289.4 *1*	1.1 *2*	2768.79	10⁺	2479.37	9⁺	D+Q	DCO=1.0 *3*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.131 *7* for Iγ(557.1γ)/Iγ(289.4γ)=0.39 *4*.
290.5 *1*	0.6 *1*	2119.86	8⁻	1829.17	6⁻		
295.6 *1*	5.0 *7*	1916.77	7⁻	1621.14	5⁻		
297.1 *1*	1.7 *2*	3027.5	(11⁻)	2730.36	(10⁻)	(D+Q)	DCO=1.0 *4*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.14 *4* for Iγ(572.2γ)/Iγ(297.1γ)=0.24 *11*.
299.8[&] *2*	0.7[&] *1*	1959.94	7⁻	1660.18	5⁻		
299.8[&] *2*	<0.1[&]	1960.0	6⁻	1660.18	5⁻		
302.5 *1*	9.1 *18*	3077.9	13⁺	2775.3	12⁺	D+Q	DCO=0.9 *1*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.054 *6* for Iγ(585.6γ)/Iγ(302.5γ)=0.47 *9*.
303.8 *1*	0.8 *1*	3409.9	13⁻	3106.10	12⁻		$(g_K-g_R)/Q_0$=0.068 *6* for Iγ(586.8γ)/Iγ(303.8γ)= 0.88 *13*.
ˣ307.4 *1*	0.7 *1*					(D+Q)	DCO=1.0 *5*, ΔJ=1 gated.
314.0 *1*	0.6 *4*	4279.9	(15)	3965.9	(14)		$(g_K-g_R)/Q_0$>0.044 for Iγ(603.1γ)/Iγ(314.0γ)<0.43.
315.1 *1*	0.7 *1*	3342.6	(12⁻)	3027.5	(11⁻)	(D+Q)	DCO=1.0 *5*, ΔJ=1 gated. $(g_K-g_R)/Q_0$=0.12 *3* for Iγ(612.2γ)/Iγ(315.1γ)=0.44 *22*.
318.4 *1*	5.4 *8*	2087.10	8⁻	1768.71	6⁻	Q	DCO=1.0 *2*.
320.0 *1*	6.7 *17*	3398.0	14⁺	3077.9	13⁺	D+Q	DCO=1.0 *2*, ΔJ=1 gated.

Continued on next page (footnotes at end of table)

^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

γ(^{182}W) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	Comments
							$(g_K-g_R)/Q_0$=0.060 *10* for Iγ(622.7γ)/Iγ(320.0γ)= 0.61 *18*.
323.2 *1*	3.5 *5*	1810.55	6⁻	1487.45	4⁻	Q	DCO=1.0 *4*.
323.3 *1*	0.5 *1*	3733.2	14⁻	3409.9	13⁻		$(g_K-g_R)/Q_0$=0.060 *4* for Iγ(627.4γ)/Iγ(323.3γ)= 1.44 *19*.
324.0 *1*	2.4 *4*	4078.5	16⁺	3754.5	15⁺		
[x]327.5 *1*	0.4 *1*					(D+Q)	DCO=1.1 *6*, ΔJ=1 gated.
338.0 *1*	1.4 *3*	3736.1	15⁺	3398.0	14⁺		$(g_K-g_R)/Q_0$=0.055 *7* for Iγ(658.2γ)/Iγ(338.0γ)= 0.94 *20*.
338.7 *2*	1.5 *2*	1959.94	7⁻	1621.14	5⁻		
340.9 *2*	0.3 *1*	4074.1	15⁻	3733.2	14⁻		$(g_K-g_R)/Q_0$=0.067 *9* for Iγ(664.2γ)/Iγ(340.9γ)=1.5 *4*.
341.3 *1*	1.2 *5*	2301.22	9⁻	1959.94	7⁻		I_γ: 1995Sh27 list 0.9 +*8*−*2*.
345.0 *1*	1.3 *2*	2113.71	8⁻	1768.71	6⁻		
345.1 *2*	0.3 *1*	4081.2	16⁺	3736.1	15⁺		$(g_K-g_R)/Q_0$=0.057 *8* for Iγ(683.2γ)/Iγ(345.1γ)=1.2 *3*.
350.8 *1*	103 *22*	680.13	6⁺	329.29	4⁺	Q	DCO=1.0 *1*.
351.6 *1*	1.1 *2*	4430.1	17⁺	4078.5	16⁺		$(g_K-g_R)/Q_0$=0.042 *6* for Iγ(675.5γ)/Iγ(351.6γ)=0.17 *4*.
356.5 *1*	7.1 *25*	3754.5	15⁺	3398.0	14⁺	D+Q	DCO=0.9 *2*, ΔJ=1 gated.
356.7 *1*	5.4 *8*	2273.51	9⁻	1916.77	7⁻	Q	DCO=1.2 *2*.
361.9 *10*	<0.4	2130.6	7⁻	1768.71	6⁻		
371.3[a] *10*	<0.1	4453.4	(17⁺)	4081.2	16⁺		
372.3 *1*	1.8 *3*	1993.44	7⁻	1621.14	5⁻	Q	DCO=0.9 *3*.
374.5 *2*	0.4 *1*	4804.6	18⁺	4430.1	17⁺		$(g_K-g_R)/Q_0$=0.029 *9* for Iγ(725.7γ)/Iγ(374.5γ)=0.6 *3*.
380.9 *1*	2.4 *4*	4421.2	18⁻	4040.2	17⁻		
384.4 *1*	1.1 *2*	2301.22	9⁻	1916.77	7⁻		
387.1 *2*	1.2 *6*	2507.09	10⁻	2119.86	8⁻		I_γ: 1995Sh27 list 0.8 +*10*−*2*.
393.4 *2*	0.6 *1*	2507.09	10⁻	2113.71	8⁻		
394.7 *2*	0.3 *1*	5199.3	(19⁺)	4804.6	18⁺		
398.5 *1*	1.1 *3*	4819.8	19⁻	4421.2	18⁻		$(g_K-g_R)/Q_0$=0.034 *11* for Iγ(779.9γ)/Iγ(398.5γ)= 0.24 *11*.
399.3 *1*	3.6 *7*	2486.43	10⁻	2087.10	8⁻	Q	DCO=1.0 *2*.
399.4 *1*	2.9 *5*	4292.7	17⁺	3893.3	16⁺		
407.0 *10*	<0.2	2323.8	(8⁻)	1916.77	7⁻		
411.4 *2*	0.4 *1*	5191.5	(19)	4780.0	(18)		
414.5 *1*	1.7 *3*	2225.05	8⁻	1810.55	6⁻	Q	DCO=1.3 *5*.
415.6 *2*	0.4 *1*	5235.5	20⁻	4819.8	19⁻		$(g_K-g_R)/Q_0$=0.025 *9* for Iγ(814.8γ)/Iγ(415.6γ)=0.7 *3*.
418.8 *1*	1.1 *2*	4711.5	18⁺	4292.7	17⁺		$(g_K-g_R)/Q_0$=0.015 *9* for Iγ(818.1γ)/Iγ(418.8γ)= 0.66 *25*.
420.0 *1*	1.0 *2*	2507.09	10⁻	2087.10	8⁻		
426.7 *2*	<0.2	5618.2	(20)	5191.5	(19)		$(g_K-g_R)/Q_0 \approx$ 0.010 for Iγ(838.4γ)/Iγ(426.6γ)≈0.72.
431.2 *10*	<0.1	5666.6	21⁻	5235.5	20⁻		$(g_K-g_R)/Q_0 \approx$ 0.034 for Iγ(846.7γ)/Iγ(431.2γ)≈0.71.
436.6 *9*	0.4 *1*	5148.2	19⁺	4711.5	18⁺		$(g_K-g_R)/Q_0 \approx$ 0.032 for Iγ(855.5γ)/Iγ(436.6γ)≈0.65.
436.9 *1*	3.4 *6*	2710.42	11⁻	2273.51	9⁻	Q	DCO=0.9 *2*.
440.1 *1*	1.7 *3*	2741.31	11⁻	2301.22	9⁻	Q	DCO=0.8 *3*.
443.8 *2*	<0.2	2563.32	10⁻	2119.86	8⁻		
452.3 *1*	1.9 *3*	2445.74	9⁻	1993.44	7⁻	Q	DCO=1.0 *3*.
454.9 *4*	0.3 *1*	2212.12	8⁺	1756.56	6⁺		
463.9 *1*	89 *21*	1144.03	8⁺	680.13	6⁺	Q	DCO=1.0 *1*.
467.7 *5*	0.6 *1*	2741.31	11⁻	2273.51	9⁻		
473.8 *1*	1.6 *3*	2980.92	12⁻	2507.09	10⁻		
477.1 *10*	<0.3	2455.26	(9⁻)	1978.16	(7⁻)		
485.6 *1*	2.0 *4*	2972.03	12⁻	2486.43	10⁻	Q	DCO=1.1 *3*.
494.6 *2*	0.6 *1*	2980.92	12⁻	2486.43	10⁻		
496.0 *5*	0.8 *1*	2823.30	11⁻	2327.23	9⁻		
508.8 *2*	0.5 *1*	2479.37	9⁺	1970.72	7⁺		
513.6 *1*	2.6 *5*	3224.02	13⁻	2710.42	11⁻	Q	DCO=1.1 *2*.
513.8 *1*	1.3 *2*	2738.86	10⁻	2225.05	8⁻	Q	DCO=1.0 *3*.
519[‡]		2230.3	10⁺	1711.53	10⁺		
526.2 *10*	<0.4	2730.36	(10⁻)	2204.16	(8⁻)		
527.9 *1*	1.3 *2*	3269.21	13⁻	2741.31	11⁻	Q	DCO=0.8 *3*.
534.7 *1*	1.4 *2*	2980.44	11⁻	2445.74	9⁻	Q	DCO=1.2 *3*.

Continued on next page (footnotes at end of table)

^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

γ(^{182}W) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	Comments
536.7 *1*	1.0 *2*	3517.63	(14⁻)	2980.92	12⁻		
542.5 *5*	0.7 *1*	3106.10	12⁻	2563.32	10⁻		
545.1 *2*	2.6 *5*	2775.3	12⁺	2230.3	10⁺	Q	DCO=1.8 *5*, ΔJ=1 gated.
545.7 *5*	0.4 *1*	3517.63	(14⁻)	2972.03	12⁻		
550.3 *10*	0.2 *1*	3965.9	(14)	3415.6	(12)		
557.1 *5*	0.4 *1*	2768.79	10⁺	2212.12	8⁺		
567.5 *1*	45 *10*	1711.53	10⁺	1144.03	8⁺	Q	DCO=1.0 *1*.
568.6[a] *10*	<0.2	3549.53	14⁻	2980.92	12⁻		
572.2 *20*	0.4 *2*	3027.5	(11⁻)	2455.26	(9⁻)		
577.5 *1*	0.9 *2*	3549.53	14⁻	2972.03	12⁻	Q	DCO=1.0 *2*.
580.6 *4*	0.2 *1*	3319.5	(12⁻)	2738.86	10⁻		
583.1 *1*	1.3 *2*	3807.12	15⁻	3224.02	13⁻	Q	DCO=1.2 *3*.
585.6 *1*	4.2 *9*	3077.9	13⁺	2492.4	11⁺	Q	DCO=1.8 *4*, ΔJ=1 gated.
586.8 *5*	0.7 *1*	3409.9	13⁻	2823.30	11⁻		
587.2 *3*	0.7 *1*	3567.6	(13⁻)	2980.44	11⁻	(Q)	DCO=0.8 *4*.
598.9 *2*	0.5 *1*	4116.5	(16⁻)	3517.63	(14⁻)		
603.1 *10*	0.2 *1*	4279.9	(15)	3676.8	(13)		
610.5 *1*	0.8 *1*	3879.71	15⁻	3269.21	13⁻	Q	DCO=1.1 *6*.
612.6 *10*	0.3 *2*	3342.6	(12⁻)	2730.36	(10⁻)		
622.7 *1*	4.1 *11*	3398.0	14⁺	2775.3	12⁺	Q	DCO=1.8 *4*, ΔJ=1 gated.
627.4 *5*	0.7 *1*	3733.2	14⁻	3106.10	12⁻		
629.3 *2*	0.3 *1*	4196.9	(15⁻)	3567.6	(13⁻)		
648.6 *2*	0.6 *1*	4455.7	17⁻	3807.12	15⁻	Q	DCO=1.0 *3*.
658.2 *1*	1.3 *3*	3736.1	15⁺	3077.9	13⁺		
660.6 *1*	10.9 *16*	2372.13	12⁺	1711.53	10⁺	Q	DCO=0.9 *1*.
661.1 *2*	0.7 *2*	4210.6	16⁻	3549.53	14⁻	Q	DCO=0.9 *3*.
662.7 *2*	0.4 *1*	4779.2	(18⁻)	4116.5	(16⁻)		
664.2 *5*	0.4 *1*	4074.1	15⁻	3409.9	13⁻		
675.5 *11*	0.2 *1*	4430.1	17⁺	3754.5	15⁺		
676.8 *2*	3.6 *13*	3754.5	15⁺	3077.9	13⁺	Q	DCO=1.7 *6*, ΔJ=1 gated.
683.2 *3*	0.5 *2*	4081.2	16⁺	3398.0	14⁺		
690.8 *3*	0.3 *1*	4570.5	(17⁻)	3879.71	15⁻		
714.6 *3*	<0.3	5170.3	(19⁻)	4455.7	17⁻		
717.3 *10*	0.3 *1*	4453.4	(17⁺)	3736.1	15⁺		
725.7 *5*	0.2 *1*	4804.6	18⁺	4078.5	16⁺		
737.7 *2*	<0.3	5428.3	(20⁺)	4690.6	18⁺		
739.8 *2*	0.9 *2*	4780.0	(18)	4040.2	17⁻		
740.5 *1*	4.3 *6*	3112.6	14⁺	2372.13	12⁺	Q	DCO=0.9 *1*.
743.7 *10*	0.3 *1*	4954.3	(18⁻)	4210.6	16⁻		
765.9 *10*	0.3 *1*	4847.1	(18⁺)	4081.2	16⁺		
767.7 *10*	<0.2	5338.2	(19⁻)	4570.5	(17⁻)		
772.1 *10*	<0.2	5225.5	(19⁺)	4453.4	(17⁺)		
779.9 *3*	0.3 *1*	4819.8	19⁻	4040.2	17⁻		
780.8 *1*	0.6 *2*	4690.6	18⁺	3909.8	16⁺	Q	DCO=0.9 *2*.
797.2 *1*	1.3 *2*	3909.8	16⁺	3112.6	14⁺	Q	DCO=0.9 *2*.
814.8 *4*	0.3 *1*	5235.5	20⁻	4421.2	18⁻		
818.1 *6*	0.7 *3*	4711.5	18⁺	3893.3	16⁺		
838.4 *5*	<0.1	5618.2	(20)	4780.0	(18)		
846.7 *10*	<0.1	5666.6	21⁻	4819.8	19⁻		
855.5 *4*	<0.2	5148.2	19⁺	4292.7	17⁺		
901.8 *3*	0.3 *1*	3676.8	(13)	2775.3	12⁺		
923.1 *1*	1.9 *3*	3415.6	(12)	2492.4	11⁺	D+Q	DCO=1.2 *3*, ΔJ=1 gated.
937.3 *10*	0.2 *1*	4847.1	(18⁺)	3909.8	16⁺		
1076.4 *1*	3.0 *4*	1756.56	6⁺	680.13	6⁺		
1086[‡]		2230.3	10⁺	1144.03	8⁺		

Continued on next page (footnotes at end of table)

^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)

γ(^{182}W) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	Comments
[x]1148.0 *1*	2.6 *5*					(D+Q)	DCO=1.0 *2*, ΔJ=1 gated.
1189.1 *1*	3.1 *5*	1289.31	2^-	100.20	2^+		
1273.7 *6*	<6	1373.89	3^-	100.20	2^+		
1427.3 *1*	2.3 *3*	1756.56	6^+	329.29	4^+		

[†] From DCO ratios. The assignment D+Q refers to ΔJ=1 transition implied by DCO ≈ 0.6 for ΔJ=2 gate and ≈ 1 for ΔJ=1 gate; the assignment Q refers to ΔJ=2 transition implied by DCO ≈ 1 for ΔJ=2 gate and ≈ 1.7 for ΔJ=1 gate. All ΔJ=2 transitions are expected to be E2 rather than M2, and ΔJ=1 transitions M1+E2.

[‡] From level-scheme figure 2 of 1995Sh27, not listed in authors′ table 1 of Eγ and Iγ.

[#] 1995Sh27 deduce M1 for 139γ and E1 for 147γ based on expected equality of total transition intensities of 139γ and 147γ. All other possible combinations of multipolarities for these two γ rays give inconsistent ratios.

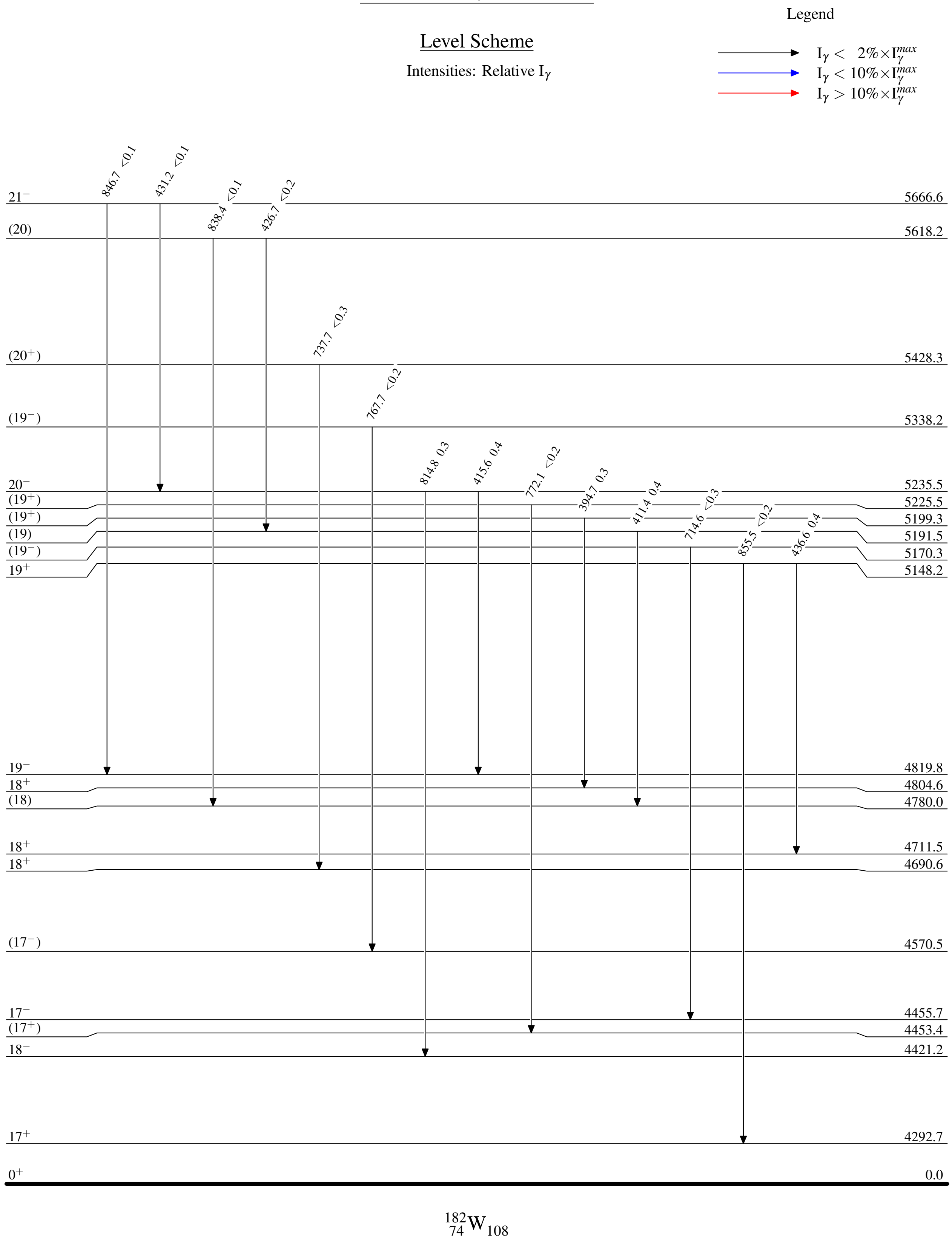
[@] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr.

[&] Multiply placed with intensity suitably divided.

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

[x] γ ray not placed in level scheme.

$^{176}Yb(^{13}C,\alpha 3n\gamma)$ 1995Sh27



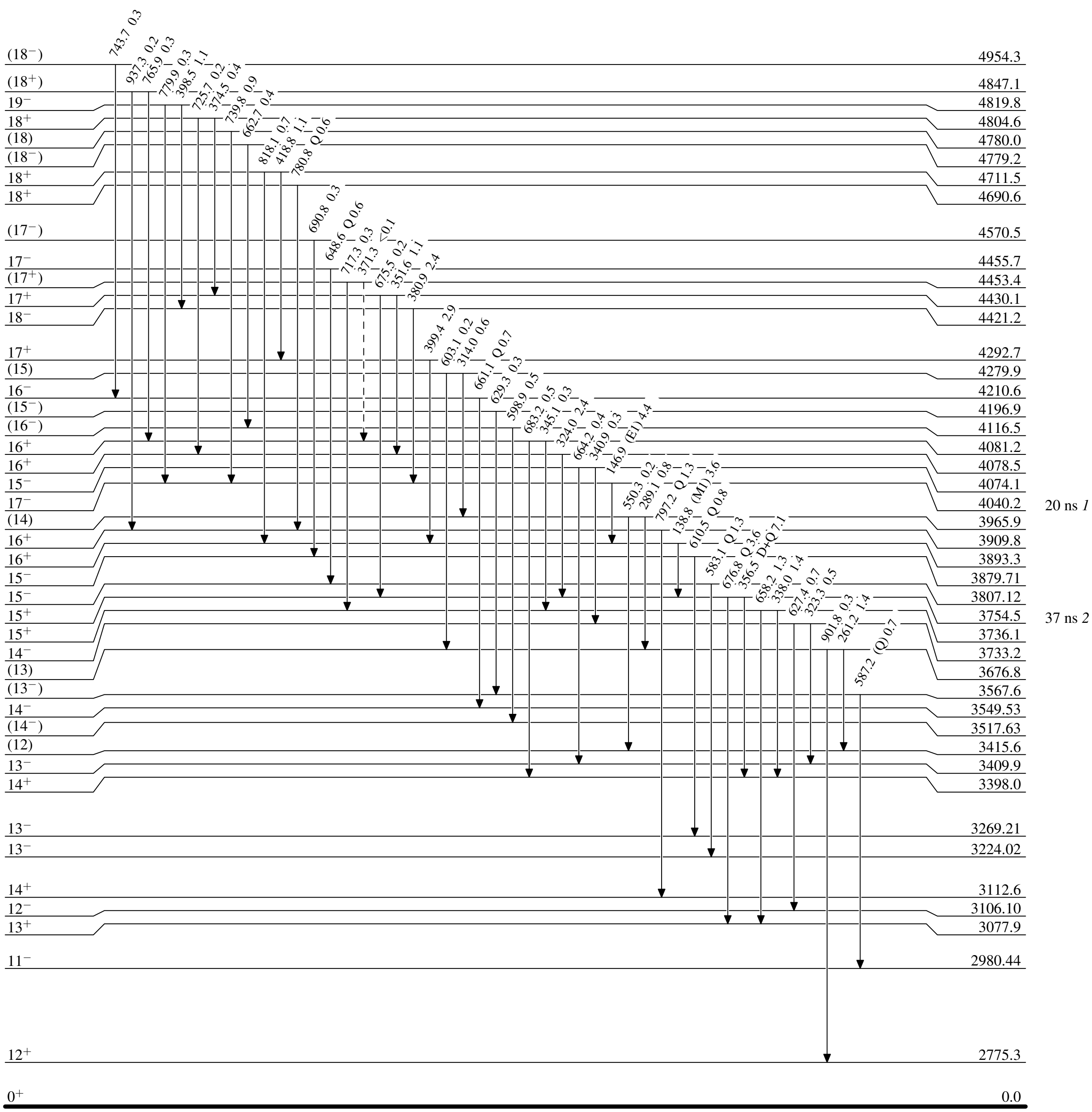
^{176}Yb(^{13}C,α3nγ) 1995Sh27

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)



$^{182}_{74}W_{108}$

^{176}Yb(^{13}C,α3nγ) 1995Sh27

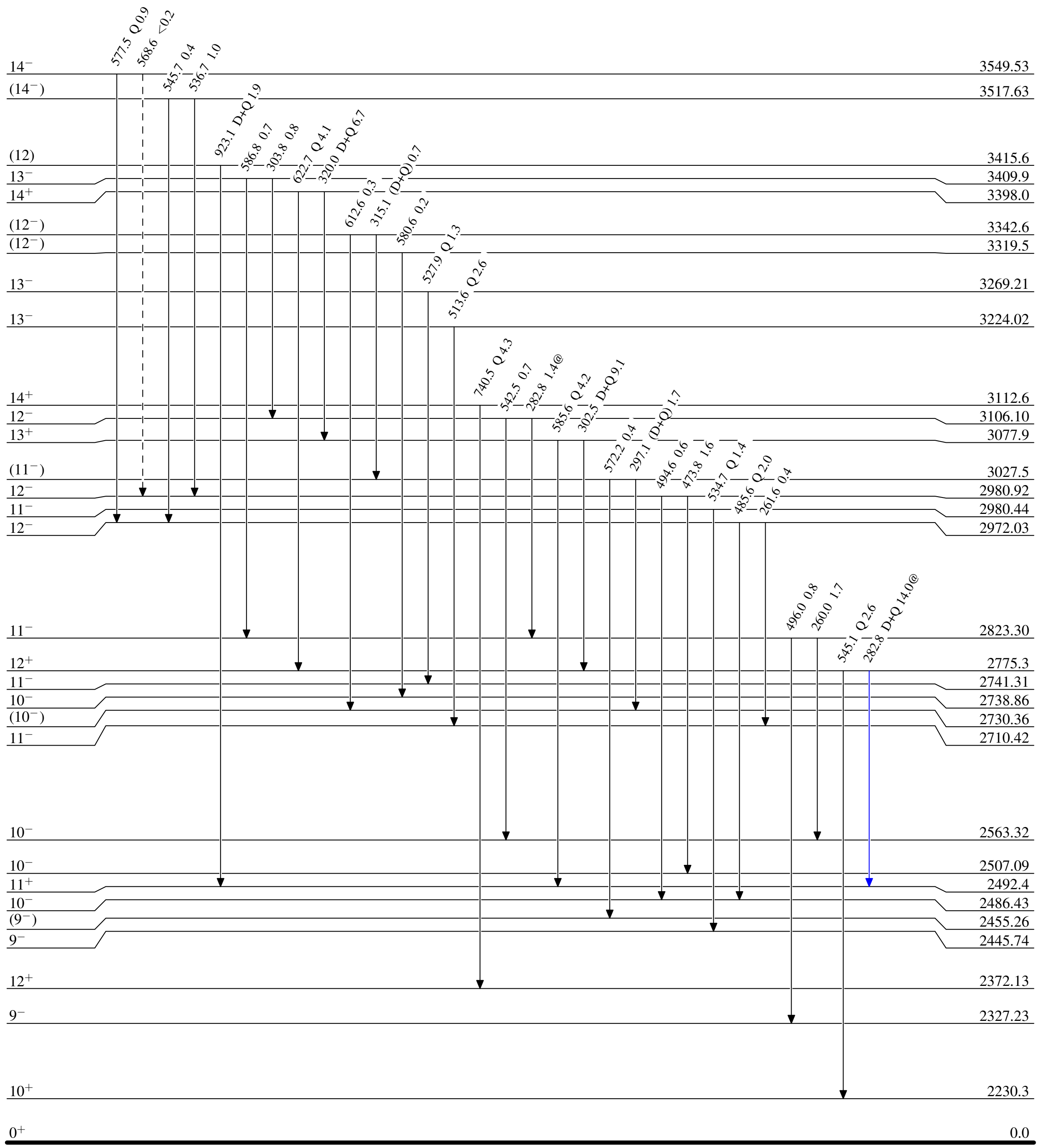
Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

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)



$^{182}_{74}W_{108}$

$^{176}Yb(^{13}C,\alpha 3n\gamma)$ 1995Sh27

Level Scheme (continued)

Intensities: Relative I_γ

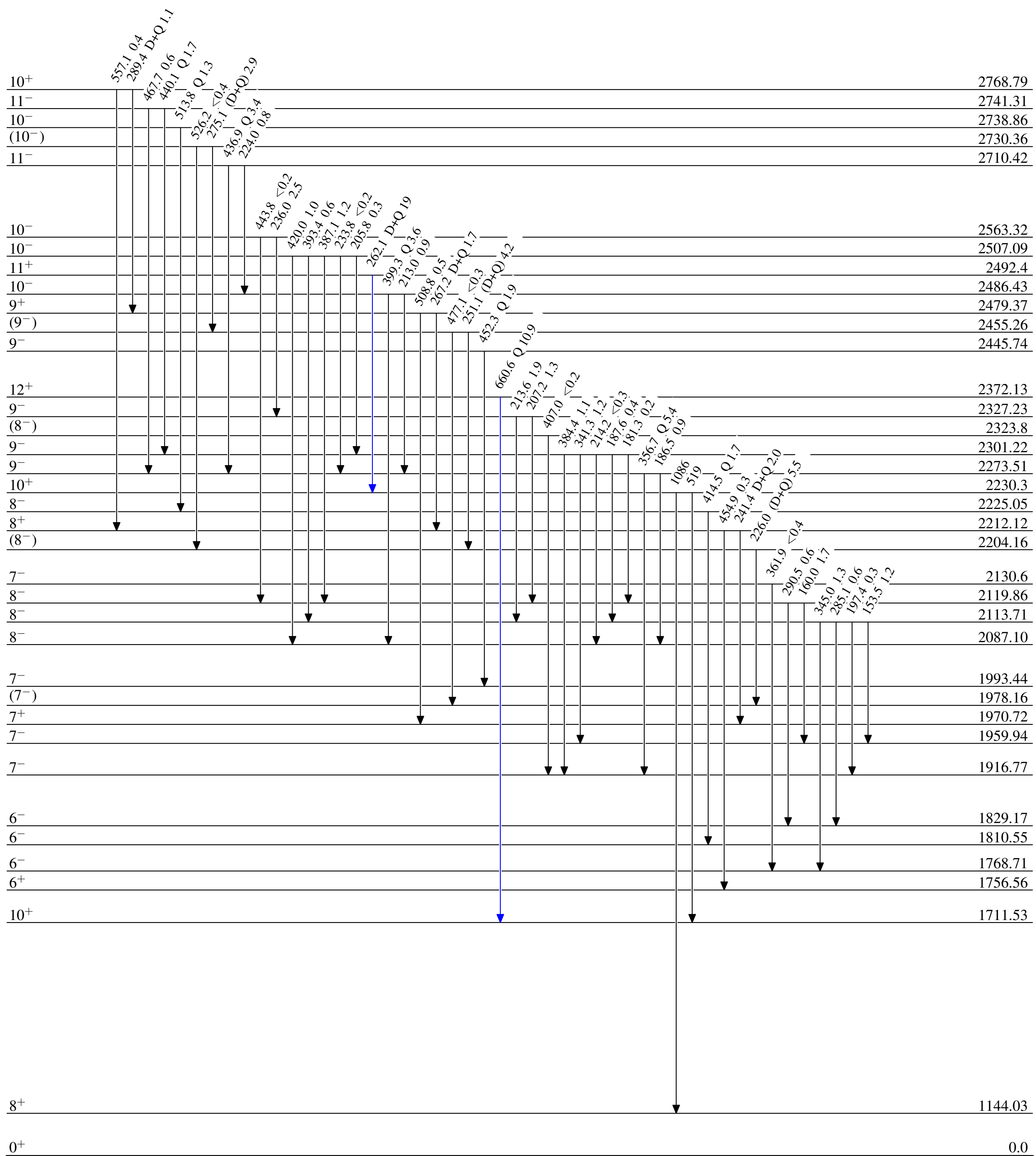
@ Multiply placed: intensity suitably divided

Legend

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

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

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



$^{182}_{74}W_{108}$

^{176}Yb(^{13}C,α3nγ) 1995Sh27

Level Scheme (continued)

Intensities: Relative I_γ

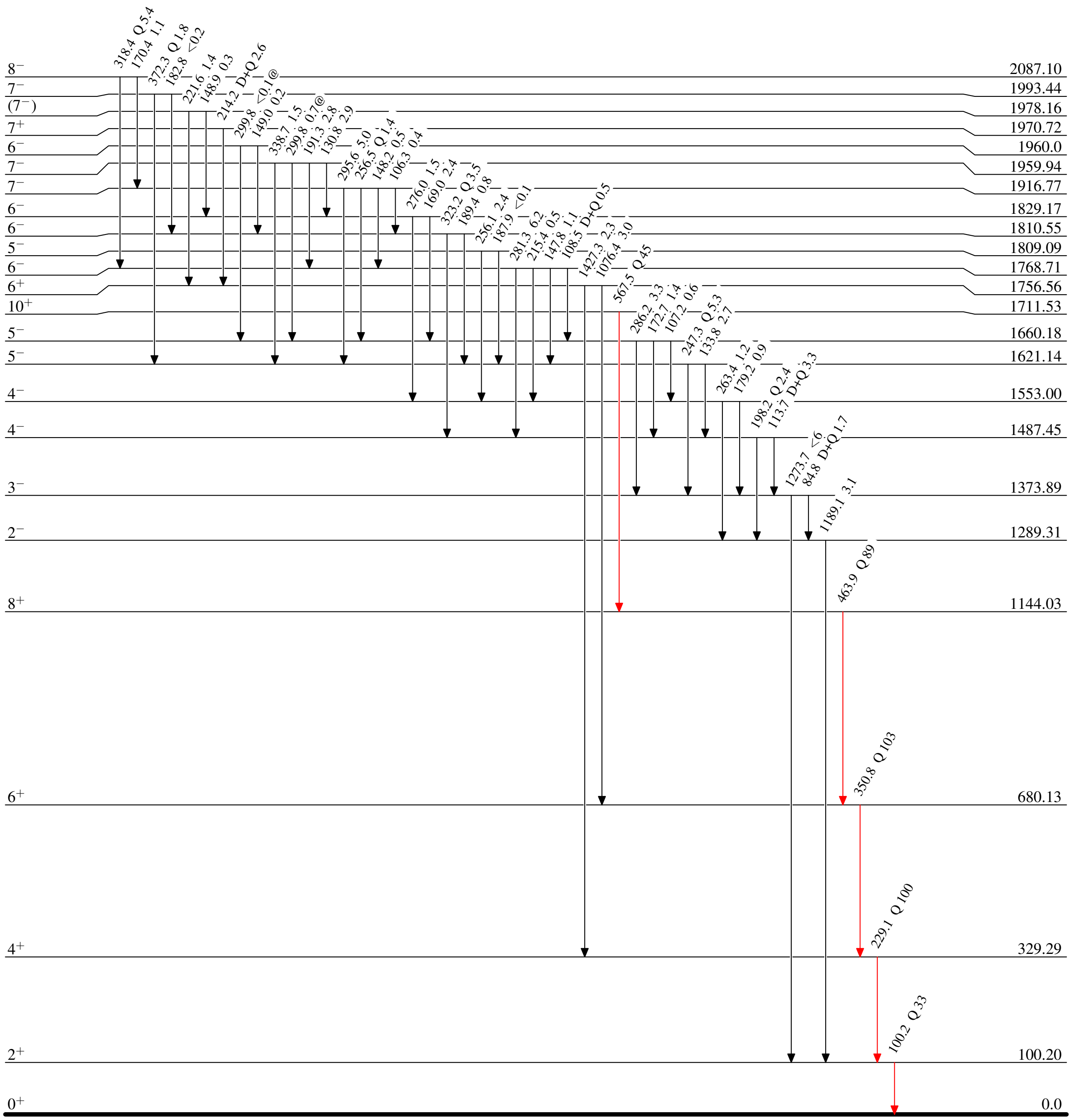
@ Multiply placed: intensity suitably divided

Legend

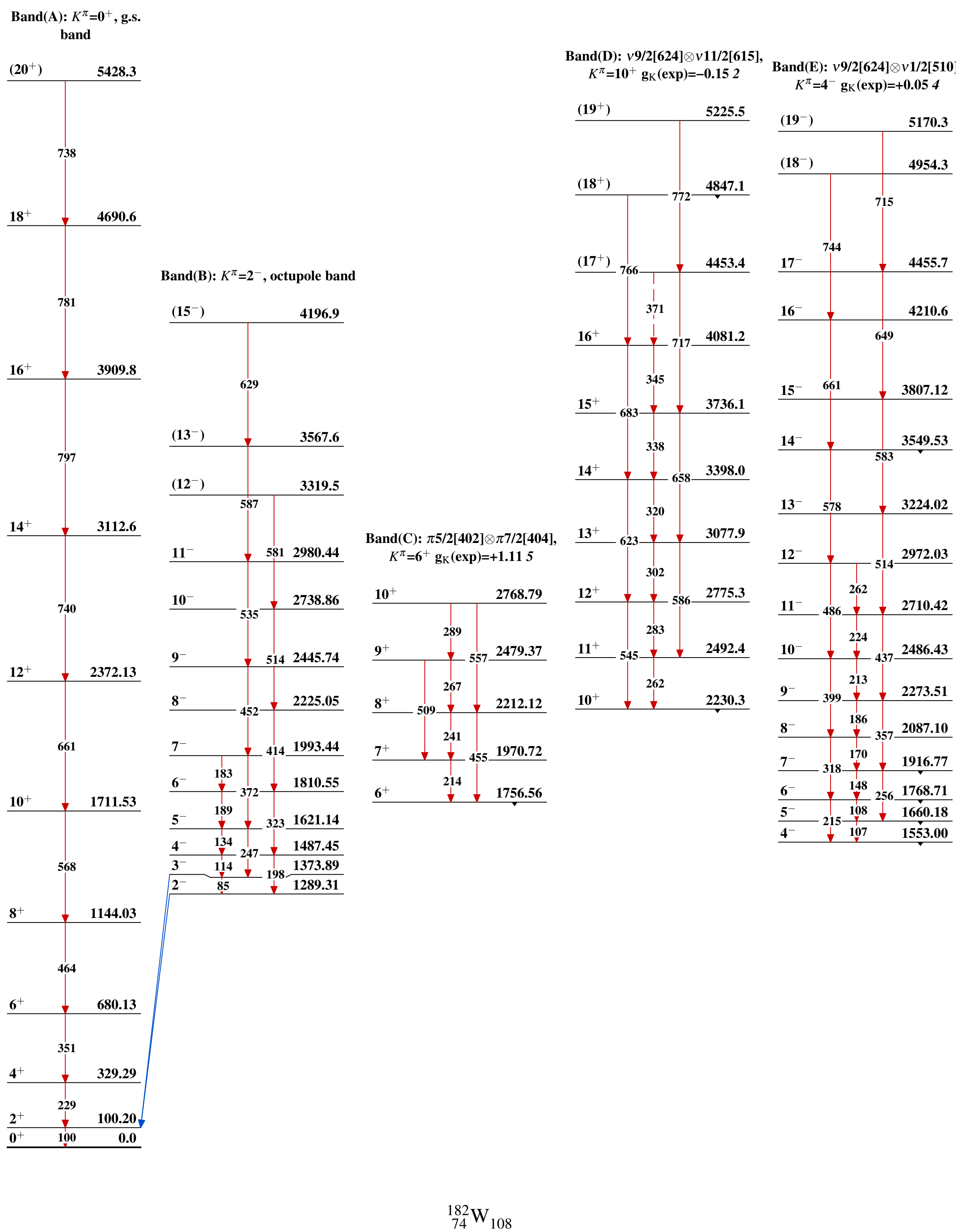
$I_\gamma < 2\% \times I_\gamma^{max}$

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

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



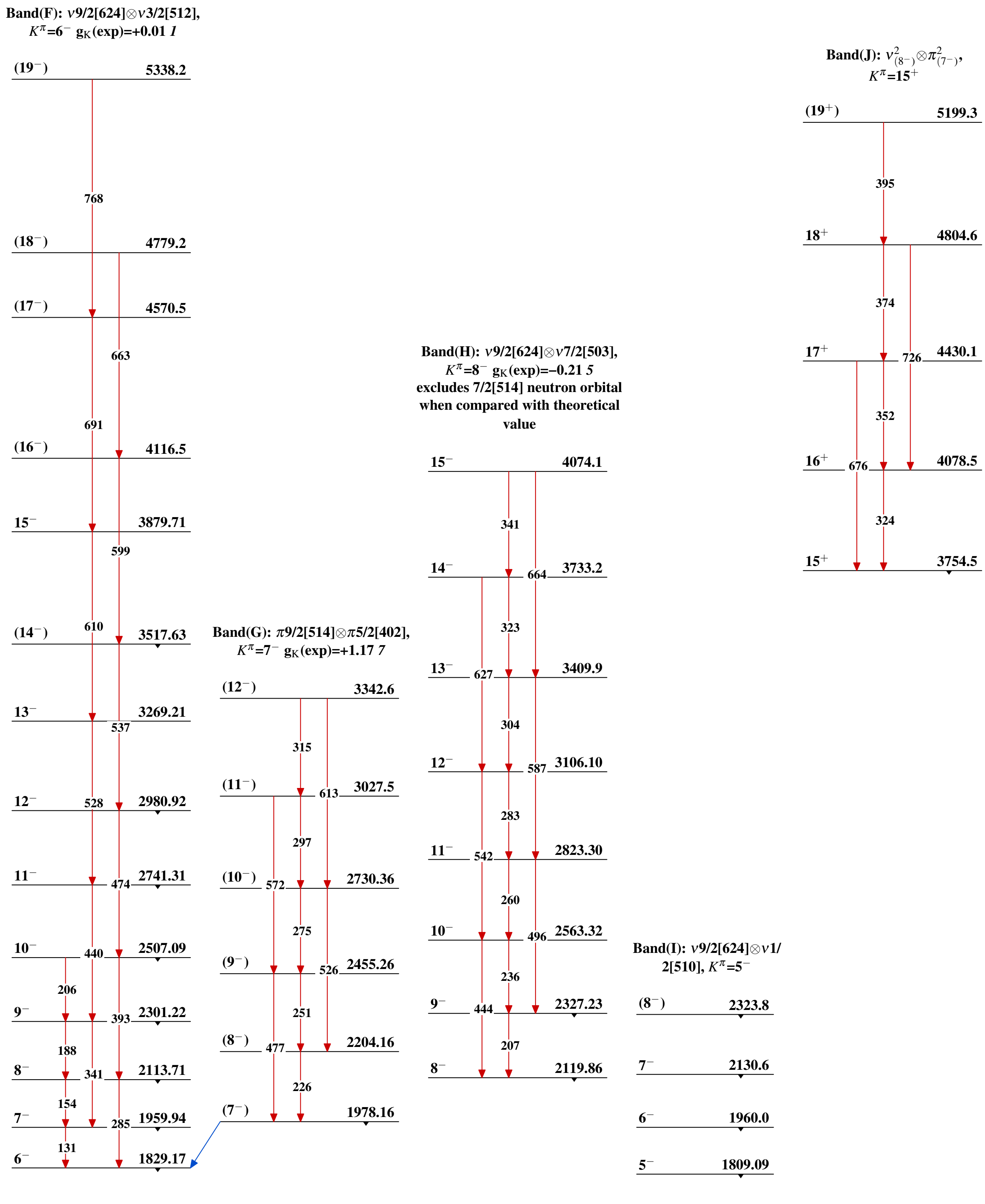
$^{182}_{74}W_{108}$



^{176}Yb(^{13}C,α3nγ) 1995Sh27
Band(A): $K^\pi=0^+$, g.s. band
(20+) 5428.3
738
18+ 4690.6
781
16+ 3909.8
797
14+ 3112.6
740
12+ 2372.13
661
10+ 1711.53
568
8+ 1144.03
464
6+ 680.13
351
4+ 329.29
229
2+ 100.20
0+ 100 0.0
Band(B): $K^\pi=2^-$, octupole band
(15−) 4196.9
629
(13−) 3567.6
(12−) 3319.5
587
11− 581 2980.44
10− 2738.86
535
9− 514 2445.74
8− 2225.05
452
7− 414 1993.44
6− 183 1810.55
372
5− 189 1621.14
323
4− 134 1487.45
247
3− 114 1373.89
198
2− 85 1289.31
Band(C): π5/2[402]⊗π7/2[404], $K^\pi=6^+$ g$_K$(exp)=+1.11 5
10+ 2768.79
289
9+ 557 2479.37
267
8+ 509 2212.12
241
7+ 455 1970.72
214
6+ 1756.56
Band(D): ν9/2[624]⊗ν11/2[615], $K^\pi=10^+$ g$_K$(exp)=−0.15 2
(19+) 5225.5
(18+) 772 4847.1
(17+) 766 4453.4
371
16+ 717 4081.2
345
15+ 683 3736.1
338
14+ 658 3398.0
320
13+ 623 3077.9
302
12+ 586 2775.3
283
11+ 545 2492.4
262
10+ 2230.3
Band(E): ν9/2[624]⊗ν1/2[510], $K^\pi=4^-$ g$_K$(exp)=+0.05 4
(19−) 5170.3
(18−) 4954.3
715
744
17− 4455.7
16− 4210.6
649
15− 661 3807.12
14− 3549.53
583
13− 578 3224.02
12− 514 2972.03
262
11− 486 2710.42
224
10− 437 2486.43
213
9− 399 2273.51
186
8− 357 2087.10
170
7− 318 1916.77
148
6− 256 1768.71
108
5− 215 1660.18
107
4− 1553.00

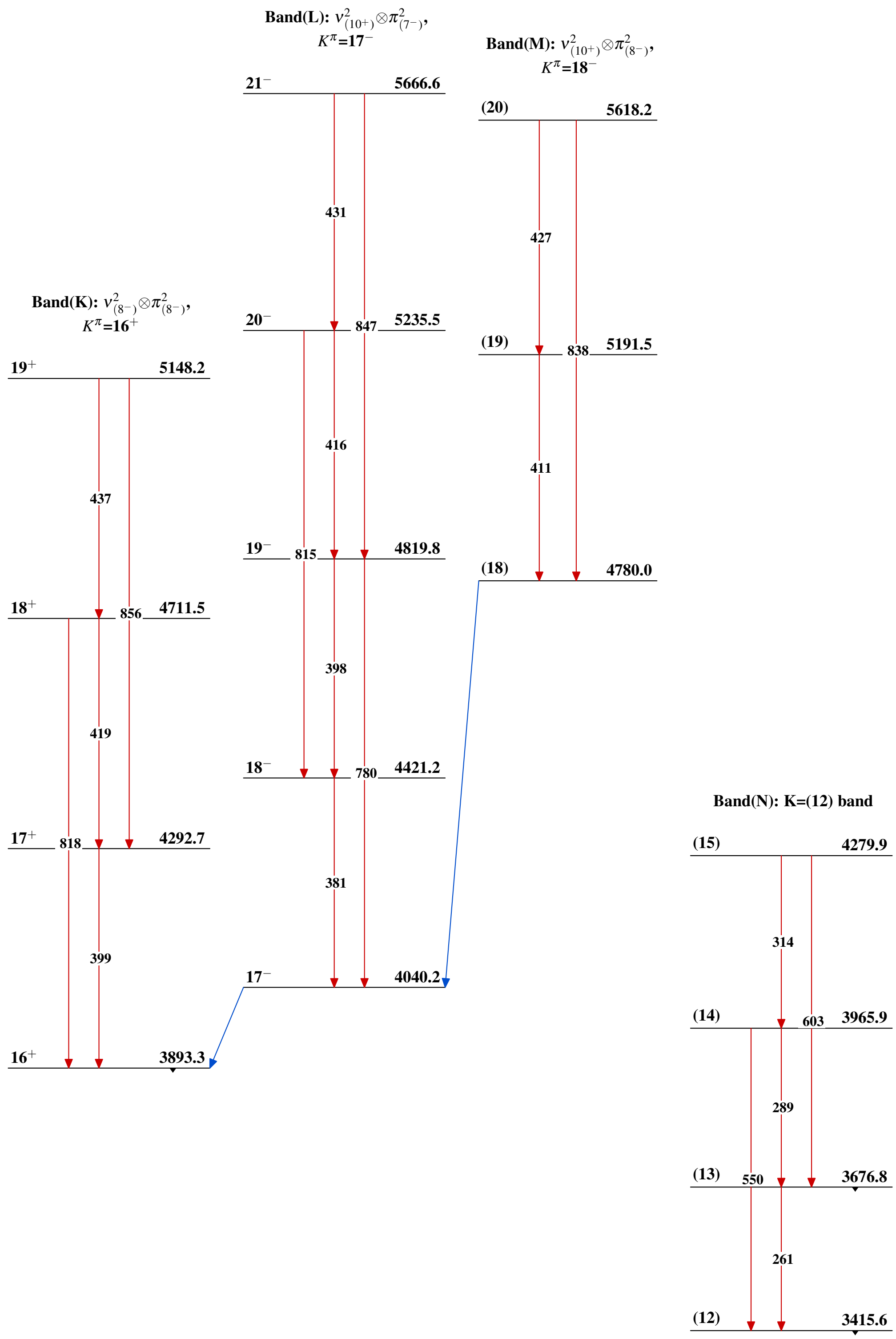
$^{182}_{74}W_{108}$

^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)



$^{182}_{74}W_{108}$

^{176}Yb(^{13}C,α3nγ) 1995Sh27 (continued)



$^{182}_{74}W_{108}$