^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 134, 149 (2016)	15-Apr-2015

2000Pu01: E=55 MeV; CAESAR array (6 Compton-suppressed coaxial Ge detectors, 2 planar Ge LEPS); pulsed beam (1 ns pulse width, 1.7 μs pulse separation); measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$(t), $\gamma(\theta)$, excit (49-61 MeV).

1998Ha51: E=57, 52 MeV; pulsed 52 MeV beam (10 μs on, 2 ms off); NORDBALL detector array; measured Eγ, Iγ, $\gamma\gamma$ coin, lifetimes; 50 pA beam to reduce random coincidenc events.

^{183}Re Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0[#]	5/2$^+$		
114.52[@] *7*	7/2$^+$		
259.81[#] *7*	9/2$^+$		
435.22[@] *8*	11/2$^+$		
496.23[c] *10*	9/2$^-$		
598.82[a] *12*	5/2$^-$		
617.28[a] *9*	9/2$^-$		
638.95[#] *9*	13/2$^+$		
664.06[d] *11*	11/2$^-$		
759.18[a] *14*	13/2$^-$		
851.58[&] *8*	7/2$^+$		
861.06[c] *11*	13/2$^-$		
870.42[@] *10*	15/2$^+$		
1002.55[&] *8*	9/2$^+$		
1022.77[a] *16*	17/2$^-$		
1084.70[d] *12*	15/2$^-$		
1127.25[#] *10*	17/2$^+$		
1183.68[&] *8*	11/2$^+$		
1335.06[c] *12*	17/2$^-$		
1348.50[b] *16*	15/2$^-$		
1393.64[&] *9*	13/2$^+$		
1402.91[a] *18*	21/2$^-$		
1409.51[@] *11*	19/2$^+$		
1413.20[o] *11*	13/2$^-$		
1608.23[d] *13*	19/2$^-$		
1628.32[p] *12*	15/2$^-$		
1630.90[&] *10*	15/2$^+$		
1670.36[o] *13*	(15/2)		
1713.44[#] *12*	21/2$^+$		
1740.12[b] *17*	19/2$^-$		
1763.46[q] *12*	17/2$^-$		
1819.49[p] *12*	17/2$^-$		
1892.99[a] *20*	25/2$^-$		
1894.25[&] *10*	17/2$^+$		
1906.81[c] *13*	21/2$^-$		
1907.19[e] *14*	25/2$^+$	1.04 ms *4*	$T_{1/2}$: from 2000Pu01. Other: 0.82 ms *2* from 1998Ha51.
1925.13[o] *13*	(17/2)		
1927.51 *15*	15/2$^+$		

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

^{183}Re Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
1936.62[q] *13*	19/2$^-$		
1936.62+x[rv]	(21/2)	10 ns *4*	$T_{1/2}$: from 2000Pu01.
2019.89[p] *14*	19/2$^-$		
2036.93[t] *14*	(19/2$^+$)		
2039.84[@] *13*	23/2$^+$		
2137.82[q] *14*	21/2		
2181.32[&] *10*	19/2$^+$		
2186.35+x[r] *8*	(23/2)		
2209.65[o] *20*	(19/2)		
2211.91[f] *14*	27/2$^+$		
2221.65[d] *14*	23/2$^-$		
2232.04[s] *17*	(21/2$^+$)		
2237.18[b] *18*	23/2$^-$		
2238.26[p] *14*	21/2$^-$		
2365.17[q] *15*	23/2$^-$		
2383.92[#] *13*	25/2$^+$		
2454.73[t] *18*	(23/2$^+$)		
2463.99+x[r] *8*	(25/2)		
2476.45[p] *15*	23/2$^-$		
2483.90[&] *13*	21/2$^+$		
2485.50[a] *22*	29/2$^-$		
2491.93[n] *12*	21/2$^+$		
2513.9[o] *4*	(21/2)		
2538.02[e] *14*	29/2$^+$		
2563.66[c] *15*	25/2$^-$		
2616.41[q] *15*	25/2$^-$		
2702.16[s] *18*	(25/2$^+$)		
2734.13[p] *15*	25/2$^-$		
2737.40[g] *14*	29/2$^-$	6.0[u] ns *5*	
2745.29[@] *14*	27/2$^+$		
2765.53+x[r] *10*	(27/2)		
2826.72[n] *13*	25/2$^+$		
2828.96[b] *21*	27/2$^-$		
2883.95[f] *15*	31/2$^+$		
2888.74[q] *16*	27/2$^-$		
2913.98[d] *15*	27/2$^-$		
2971.89[t] *19*	(27/2$^+$)		
3012.17[p] *18*	27/2$^-$		
3021.38[i] *14*	(29/2)		
3043.08[j] *15*	(29/2$^+$)		
3048.22[h] *16*	31/2$^-$		
3086.18+x[r] *11*	(29/2)		
3117.29[#] *15*	29/2$^+$		
3172.20[a] *24*	33/2$^-$		
3183.22[q] *17*	29/2$^-$		
3207.65[k] *15*	(31/2)		
3247.93[e] *15*	33/2$^+$		
3253.72[n] *17*	29/2$^+$		
3261.97[s] *19*	(29/2$^+$)		

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

^{183}Re Levels (continued)

E(level)†	Jπ‡
3274.82[c] 16	29/2−
3321.31[i] 16	(31/2)
3369.83[j] 16	(31/2)
3374.57[g] 16	33/2−
3419.30+x[r] 13	(31/2)
3452.10[l] 14	(31/2)
3492.12[@] 16	31/2+
3499.25[q] 19	31/2−
3512.0[b] 4	31/2−
3571.10[t] 20	(31/2+)
3589.29[k] 16	(33/2)
3628.29[f] 16	35/2+
3643.43[i] 15	(33/2)
3680.50[d] 18	31/2−
3712.76[h] 17	35/2−
3721.12[j] 25	(33/2)
3743.71[m] 16	(33/2)
3755.78+x[r] 15	(33/2)
3771.12[n] 20	33/2+
3815.33[l] 15	(33/2)
3833.42[q] 20	33/2−
3852.43[#] 17	33/2+
3898.23[s] 21	(33/2+)
3944.5[a] 3	37/2−
3986.40[k] 16	(35/2)
3986.55[i] 17	(35/2)
4022.57[e] 16	37/2+
4032.8[c] 4	33/2−
4058.34[g] 17	37/2−
4095.75[j] 25	(35/2)
4112.69[m] 17	(35/2)
4198.24[l] 16	(35/2)
4206.38[@] 17	35/2+
4238.91[t] 22	(35/2+)
4345.55[i] 17	(37/2)
4375.82[n] 22	37/2+
4401.22[h] 18	39/2−
4428.65[f] 17	39/2+
4487.9[j] 6	(37/2)
4510.39[m] 19	(37/2)
4595.8[s] 3	(37/2+)
4597.29[l] 17	(37/2)
4722.25[i] 19	(39/2)
4749.21[g] 18	41/2−
4792.6[a] 3	41/2−
4843.14[e] 18	41/2+
4966.2[t] 5	(39/2+)
5010.5[l] 3	(39/2)
5065.2[n] 4	41/2+

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

^{183}Re Levels (continued)

E(level)†	Jπ‡	Comments
5075.94[h] 19	43/2⁻	
5098.95[i] 19	(41/2)	
5266.17[f] 19	43/2⁺	
5439.9[l] 3	(41/2)	
5453.83[g] 20	45/2⁻	
5510.7[i] 4	(43/2)	
5691.34[e] 21	45/2⁺	
5705.8[a] 4	45/2⁻	
5769.34[h] 21	47/2⁻	
5838.3[n] 7	45/2⁺	
6131.2[f] 3	47/2⁺	
6177.7[g] 3	49/2⁻	
6212.1	(49/2⁻)	proposed by authors to be J=49/2 member of Kπ=29/2⁻ band built on 2737 level, but 6178 level, instead, has been adopted here As that member (As proposed by 2000Pu01).
6569.4[e] 4	49/2⁺	
7013.3[f]	(51/2⁺)	

† From least-squares fit to Eγ, assigning 1 keV uncertainty to data for which the authors gave No uncertainty.
‡ Authors′ suggested values.
# Band(A): π 5/2[402] band, α=+1/2.
@ Band(a): π 5/2[402] band, α=−1/2.
& Band(B): π 7/2[404] band.
[a] Band(C): π 1/2[541] band, α=+1/2. J=1/2 band member not identified; calculated E=700 (2000Pu01).
[b] Band(c): π 1/2[541] band, α=−1/2. J=3/2, 7/2, 11/2 members not identified by 2000Pu01.
[c] Band(D): π 9/2[514] band, α=+1/2.
[d] Band(d): π 9/2[514] band, α=−1/2.
[e] Band(E): Kπ=25/2⁺ band, α=+1/2. π5/2[402]ν9/2[624]ν11/2[615] configuration (1998Ha51, 2000Pu01) probably dominates the 1907-keV bandhead.
[f] Band(e): Kπ=25/2⁺ band, α=−1/2. See comment on signature partner band.
[g] Band(F): Kπ=29/2⁻ band, α=+1/2. π9/2[514]ν9/2[624]ν11/2[615], α=+1/2 band (1998Ha51, 2000Pu01).
[h] Band(f): Kπ=29/2⁻ band, α=−1/2. π9/2[514]ν9/2[624]ν11/2[615], α=−1/2 band (1998Ha51, 2000Pu01).
[i] Band(G): K=(25/2) band.
[j] Band(H): band based on (29/2⁺) 3043. Possibly a 3-quasiparticle intrinsic state coupled to a γ-vibration phonon, consistent with observed strong interband transitions (2000Pu01).
[k] Band(I): K=(31/2) band, based on 3208 level.
[l] Band(J): K=(31/2) band, based on 3452 level.
[m] Band(K): K=(33/2) band.
[n] Band(L): π 1/2[660] band.
[o] Band(M): Kπ=13/2⁻ band. Bandhead May be a π9/2[514] K+2 γ vibration state (2000Pu01).
[p] Band(N): Kπ=15/2⁻ band.
[q] Band(O): Kπ=17/2⁻ band.
[r] Band(P): K=(21/2) band.
[s] Band(Q): Kπ=19/2⁺ band, α=+1/2.
[t] Band(q): Kπ=19/2⁺ band, α=−1/2.
[u] From time-difference spectrum (2000Pu01), using 311γ, 637γ, 665γ gates above the isomer and 305γ, 525γ, 631γ gates below it. Other $T_{1/2}$: <10 ns (1998Ha51).

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

^{183}Re Levels (continued)

[v] X<75 keV to account for non-observance of transition feeding the 1937 level. the 1937 level has a 10 ns *4* isomeric feeding component attributed to a low energy transition for which low detection efficiency or strong electron conversion could have rendered it unobservable.

$\gamma(^{183}Re)$

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
x		1936.62+x	(21/2)	1936.62	19/2$^-$	(D)		Mult.: the short half-life favors a D assignment (2000Pu01).
100.2 *1*	3 *2*	2036.93	(19/2$^+$)	1936.62	19/2$^-$			
109.3 *1*	5 *1*	2036.93	(19/2$^+$)	1927.51	15/2$^+$			
114.5 *1*	1.01×10^3 *3*	114.52	7/2$^+$	0.0	5/2$^+$	D+Q		Mult.: A_2=−0.58 *8*.
135.3 *1*	7 *2*	1763.46	17/2$^-$	1628.32	15/2$^-$			
141.9 *1*	306 *12*	759.18	13/2$^-$	617.28	9/2$^-$			
145.3 *1*	630 *15*	259.81	9/2$^+$	114.52	7/2$^+$	D+Q		Mult.: A_2=−0.51 *11*.
151.0 *1*	8 *1*	1002.55	9/2$^+$	851.58	7/2$^+$			
167.8 *1*	526 *20*	664.06	11/2$^-$	496.23	9/2$^-$	D		Mult.: A_2=−0.39 *6*.
173.1 *1*	162 *8*	1936.62	19/2$^-$	1763.46	17/2$^-$			
175.3 *1*	710 *20*	435.22	11/2$^+$	259.81	9/2$^+$	D+Q		Mult.: A_2=−0.44 *10*.
181.1 *1*	15 *2*	1183.68	11/2$^+$	1002.55	9/2$^+$			
182.0 *1*	90 *7*	617.28	9/2$^-$	435.22	11/2$^+$			
191.1 *1*	31 *3*	1819.49	17/2$^-$	1628.32	15/2$^-$			
193.8 *1*	1000 *18*	1907.19	25/2$^+$	1713.44	21/2$^+$			Mult.: E2 (1998Ha51).
195.1 *1*	74 *7*	2232.04	(21/2$^+$)	2036.93	(19/2$^+$)			
197.0 *1*	511 *16*	861.06	13/2$^-$	664.06	11/2$^-$	D		Mult.: A_2=−0.30 *7*.
199.4 *1*	229 *8*	2737.40	29/2$^-$	2538.02	29/2$^+$	E1	0.0650	Mult.: from α(exp)=0.08 *5* based on intensity balance.
200.4 *1*	25 *4*	2019.89	19/2$^-$	1819.49	17/2$^-$			
201.2 *1*	83 *5*	2137.82	21/2	1936.62	19/2$^-$			
203.7 *1*	640 *15*	638.95	13/2$^+$	435.22	11/2$^+$	D		Mult.: A_2=−0.26 *13*.
209.9 *1*	31 *4*	1393.64	13/2$^+$	1183.68	11/2$^+$			
215.2 *1*	25 *3*	1628.32	15/2$^-$	1413.20	13/2$^-$			
218.4 *1*	31 *4*	2238.26	21/2$^-$	2019.89	19/2$^-$			
222.5 *1*	55 *5*	2454.73	(23/2$^+$)	2232.04	(21/2$^+$)			
223.6 *1*	419 *13*	1084.70	15/2$^-$	861.06	13/2$^-$			
227.4 *1*	67 *4*	2365.17	23/2$^-$	2137.82	21/2			
231.5 *1*	545 *16*	870.42	15/2$^+$	638.95	13/2$^+$	D		Mult.: A_2=−0.33 *17*.
236.5 *1*	45 *7*	496.23	9/2$^-$	259.81	9/2$^+$			
237.3 *1*	15 *5*	1630.90	15/2$^+$	1393.64	13/2$^+$			
238.3 *1*	21 *2*	2476.45	23/2$^-$	2238.26	21/2$^-$			
244.5 *1*	16 *2*	3452.10	(31/2)	3207.65	(31/2)			
247.4 *1*	39 *3*	2702.16	(25/2$^+$)	2454.73	(23/2$^+$)			
249.7 *1*	158 *23*	2186.35+x	(23/2)	1936.62+x	(21/2)			
250.3 *1*	230 *9*	1335.06	17/2$^-$	1084.70	15/2$^-$			
251.3 *1*	39 *3*	2616.41	25/2$^-$	2365.17	23/2$^-$			
256.9 *1*	565 *18*	1127.25	17/2$^+$	870.42	15/2$^+$			
257.6 *1*	22 *5*	2734.13	25/2$^-$	2476.45	23/2$^-$			
259.8 *1*	111 *5*	259.81	9/2$^+$	0.0	5/2$^+$			
263.3 *1*	18 *6*	1894.25	17/2$^+$	1630.90	15/2$^+$			
263.7 *1*	675 *30*	1022.77	17/2$^-$	759.18	13/2$^-$			
269.7 *1*	36 *3*	2971.89	(27/2$^+$)	2702.16	(25/2$^+$)			
272.4 *1*	27 *3*	2888.74	27/2$^-$	2616.41	25/2$^-$			
273.2 *1*	164 *7*	1608.23	19/2$^-$	1335.06	17/2$^-$			
273.7 *1*	60 *4*	2036.93	(19/2$^+$)	1763.46	17/2$^-$			
277.7 *1*	50 *4*	2463.99+x	(25/2)	2186.35+x	(23/2)			
277.9 *1*	18 *3*	3012.17	27/2$^-$	2734.13	25/2$^-$			

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

γ(^{183}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
282.3 *1*	326 *12*	1409.51	19/2$^+$	1127.25	17/2$^+$		
287.1 *1*	10 *2*	2181.32	19/2$^+$	1894.25	17/2$^+$		
290.1 *1*	23 *3*	3261.97	(29/2$^+$)	2971.89	(27/2$^+$)		
294.6 *1*	23 *4*	3183.22	29/2$^-$	2888.74	27/2$^-$		
298.6 *1*	101 *6*	1906.81	21/2$^-$	1608.23	19/2$^-$		
301.6 *1*	21 *3*	2765.53+x	(27/2)	2463.99+x	(25/2)		
302.9 *3*	7 *2*	2483.90	21/2$^+$	2181.32	19/2$^+$		
304.1 *1*	600 *17*	1713.44	21/2$^+$	1409.51	19/2$^+$		
305.1 *1*	850 *50*	2211.91	27/2$^+$	1906.81	21/2$^-$		
309.3 *1*	28 *3*	3571.10	(31/2$^+$)	3261.97	(29/2$^+$)		
310.8 *1*	5 *2*	2491.93	21/2$^+$	2181.32	19/2$^+$		
310.9 *1*	303 *9*	3048.22	31/2$^-$	2737.40	29/2$^-$	D+Q	A_2=−0.15 *8*.
315.0 *1*	76 *6*	2221.65	23/2$^-$	1906.81	21/2$^-$		
315.4 *5*	<2	5769.34	47/2$^-$	5453.83	45/2$^-$		
316.1 *3*	4 *2*	3499.25	31/2$^-$	3183.22	29/2$^-$		
320.7 *1*	17 *2*	3086.18+x	(29/2)	2765.53+x	(27/2)		
320.8 *1*	228 *7*	435.22	11/2$^+$	114.52	7/2$^+$		
323.1 *1*	6 *2*	4345.55	(37/2)	4022.57	37/2$^+$		
326.1 *1*	256 *10*	2538.02	29/2$^+$	2211.91	27/2$^+$		
326.4 *1*	116 *6*	3374.57	33/2$^-$	3048.22	31/2$^-$		
326.5 *1*	72 *4*	2039.84	23/2$^+$	1713.44	21/2$^+$		
326.9 *2*	10 *5*	5075.94	43/2$^-$	4749.21	41/2$^-$		
327.1 *1*	13 *3*	3898.23	(33/2$^+$)	3571.10	(31/2$^+$)		
332.1 *1*	11 *2*	1183.68	11/2$^+$	851.58	7/2$^+$		
333.4 *2*	5 *2*	3419.30+x	(31/2)	3086.18+x	(29/2)		
334.8 *1*	14 *2*	2826.72	25/2$^+$	2491.93	21/2$^+$		
338.3 *1*	71 *7*	3712.76	35/2$^-$	3374.57	33/2$^-$		
340.7 *2*	6 *3*	4238.91	(35/2$^+$)	3898.23	(33/2$^+$)		
342.1 *1*	44 *5*	2563.66	25/2$^-$	2221.65	23/2$^-$		
342.8 *1*	10 *2*	2826.72	25/2$^+$	2483.90	21/2$^+$		
342.8 *1*	19 *4*	4401.22	39/2$^-$	4058.34	37/2$^-$		
344.0 *1*	44 *4*	2383.92	25/2$^+$	2039.84	23/2$^+$		
345.6 *1*	34 *5*	4058.34	37/2$^-$	3712.76	35/2$^-$		
345.9 *1*	97 *6*	2883.95	31/2$^+$	2538.02	29/2$^+$		
348.0 *1*	9 *2*	4749.21	41/2$^-$	4401.22	39/2$^-$		
350.3 *1*	45 *6*	2913.98	27/2$^-$	2563.66	25/2$^-$		
350.4 *1*	229 *13*	1763.46	17/2$^-$	1413.20	13/2$^-$		
353.9 *1*	6 *1*	4206.38	35/2$^+$	3852.43	33/2$^+$		
357.5 *1*	17 *3*	617.28	9/2$^-$	259.81	9/2$^+$		
358.5 *1*	7 *2*	3986.55	(35/2)	3628.29	35/2$^+$		
360 *1*	7 *1*	3852.43	33/2$^+$	3492.12	31/2$^+$		
360.9 *1*	21 *4*	3274.82	29/2$^-$	2913.98	27/2$^-$		
361.3 *1*	32 *3*	2745.29	27/2$^+$	2383.92	25/2$^+$		
363.3 *1*	72 *4*	3815.33	(33/2)	3452.10	(31/2)		
364.0 *1*	49 *5*	3247.93	33/2$^+$	2883.95	31/2$^+$		
364.8 *1*	64 *6*	861.06	13/2$^-$	496.23	9/2$^-$		
368.9 *1*	83 *4*	4112.69	(35/2)	3743.71	(33/2)		
369.4 *5*	2 *1*	3743.71	(33/2)	3374.57	33/2$^-$		
371.9 *1*	21 *2*	3117.29	29/2$^+$	2745.29	27/2$^+$		
374.3 *1*	29 *4*	2137.82	21/2	1763.46	17/2$^-$		
374.8 *1*	12 *2*	3492.12	31/2$^+$	3117.29	29/2$^+$		
377.9 *1*	8 *2*	5453.83	45/2$^-$	5075.94	43/2$^-$		
379.2 *1*	340 *10*	638.95	13/2$^+$	259.81	9/2$^+$		
380.3 *1*	565 *20*	1402.91	21/2$^-$	1022.77	17/2$^-$		
380.6 *1*	26 *5*	3628.29	35/2$^+$	3247.93	33/2$^+$		
381.6 *1*	38 *3*	3589.29	(33/2)	3207.65	(31/2)		

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

γ(^{183}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
381.7 *1*	960 *50*	496.23	9/2$^-$	114.52	7/2$^+$		
382.7 *1*	38 *6*	4198.24	(35/2)	3815.33	(33/2)		
391.0 *1*	28 *5*	1393.64	13/2$^+$	1002.55	9/2$^+$		
391.5 *1*	20 *2*	1740.12	19/2$^-$	1348.50	15/2$^-$		
391.5 *2*	8 *2*	2019.89	19/2$^-$	1628.32	15/2$^-$		
394.4 *1*	15 *3*	4022.57	37/2$^+$	3628.29	35/2$^+$		
395.4 *1*	26 *3*	3643.43	(33/2)	3247.93	33/2$^+$		
397.2 *1*	26 *3*	3986.40	(35/2)	3589.29	(33/2)		
397.7 *1*	63 *5*	4510.39	(37/2)	4112.69	(35/2)		
398.6 *1*	16 *3*	4597.29	(37/2)	4198.24	(35/2)		E_γ: fits placement poorly.
400[#]		4112.69	(35/2)	3712.76	35/2$^-$		
406.0 *1*	9 *2*	4428.65	39/2$^+$	4022.57	37/2$^+$		
406.1 *3*	7 *3*	1819.49	17/2$^-$	1413.20	13/2$^-$		
407 *1*	7 *2*	3680.50	31/2$^-$	3274.82	29/2$^-$		
408.4 *2*	6 *2*	6177.7	49/2$^-$	5769.34	47/2$^-$		
408.9 *1*	81 *4*	3452.10	(31/2)	3043.08	(29/2$^+$)		
411.6 *9*	3 *1*	2019.89	19/2$^-$	1608.23	19/2$^-$		
414.4 *2*	6 *2*	4843.14	41/2$^+$	4428.65	39/2$^+$		
417.9 *3*	12 *2*	2454.73	(23/2$^+$)	2036.93	(19/2$^+$)		
418.8 *1*	21 *5*	2238.26	21/2$^-$	1819.49	17/2$^-$		
420.7 *1*	142 *10*	1084.70	15/2$^-$	664.06	11/2$^-$		
423.1 *2*	5 *2*	5266.17	43/2$^+$	4843.14	41/2$^+$		
426		5691.34	45/2$^+$	5266.17	43/2$^+$		reported by 1998Ha51 only.
427.0 *1*	18 *2*	3253.72	29/2$^+$	2826.72	25/2$^+$		
428.2 *1*	43 *8*	1763.46	17/2$^-$	1335.06	17/2$^-$		
428.6 *1*	52 *7*	2365.17	23/2$^-$	1936.62	19/2$^-$		
430.6 *1*	61 *4*	3452.10	(31/2)	3021.38	(29/2)		
435.2 *1*	403 *13*	870.42	15/2$^+$	435.22	11/2$^+$		
437.2 *1*	39 *4*	3321.31	(31/2)	2883.95	31/2$^+$		
445.6 *1*	20 *2*	3815.33	(33/2)	3369.83	(31/2)		
447.2 *1*	34 *4*	1630.90	15/2$^+$	1183.68	11/2$^+$		
456.5 *1*	13 *3*	2476.45	23/2$^-$	2019.89	19/2$^-$		
470.3 *1*	11 *2*	2702.16	(25/2$^+$)	2232.04	(21/2$^+$)		
470.3 *1*	106 *5*	3207.65	(31/2)	2737.40	29/2$^-$		Mult.: A_2=−0.08 *15*.
473.9 *1*	98 *9*	1335.06	17/2$^-$	861.06	13/2$^-$		
478.5 *1*	72 *6*	2616.41	25/2$^-$	2137.82	21/2		
483.3 *1*	69 *5*	3021.38	(29/2)	2538.02	29/2$^+$		
484.3 *1*	509 *18*	598.82	5/2$^-$	114.52	7/2$^+$		
484.5 *1*	10 *3*	1819.49	17/2$^-$	1335.06	17/2$^-$		
488.4 *1*	576 *12*	1127.25	17/2$^+$	638.95	13/2$^+$		
490.1 *1*	390 *17*	1892.99	25/2$^-$	1402.91	21/2$^-$		
494.1 *1*	11 *2*	3815.33	(33/2)	3321.31	(31/2)		
495.8 *1*	19 *4*	2734.13	25/2$^-$	2238.26	21/2$^-$		
496.9 *1*	25 *2*	2237.18	23/2$^-$	1740.12	19/2$^-$		
500.5 *1*	59 *7*	1894.25	17/2$^+$	1393.64	13/2$^+$		
502.8 *1*	65 *9*	617.28	9/2$^-$	114.52	7/2$^+$		
504.9 *1*	23 *3*	3043.08	(29/2$^+$)	2538.02	29/2$^+$		
517.0 *1*	23 *3*	2971.89	(27/2$^+$)	2454.73	(23/2$^+$)		
517.4 *1*	23 *2*	3771.12	33/2$^+$	3253.72	29/2$^+$		
523.5 *1*	100 *8*	1608.23	19/2$^-$	1084.70	15/2$^-$		
523.6 *1*	49 *6*	2888.74	27/2$^-$	2365.17	23/2$^-$		
525.5 *1*	196 *12*	2737.40	29/2$^-$	2211.91	27/2$^+$	D	Mult.: A_2=−0.26 *7*.
527.4 *1*	97 *7*	2463.99+x	(25/2)	1936.62+x	(21/2)		
536.3 *2*	16 *4*	3012.17	27/2$^-$	2476.45	23/2$^-$		
539.1 *1*	429 *14*	1409.51	19/2$^+$	870.42	15/2$^+$		
541.2 *1*	40 *3*	3589.29	(33/2)	3048.22	31/2$^-$		

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

$\gamma(^{183}Re)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
550.5 *1*	26 *8*	2181.32	19/2$^+$	1630.90	15/2$^+$		
560.0 *1*	35 *9*	3261.97	(29/2$^+$)	2702.16	(25/2$^+$)		
566.7 *1*	67 *8*	3183.22	29/2$^-$	2616.41	25/2$^-$		
568.2 *3*	10 *3*	3452.10	(31/2)	2883.95	31/2$^+$		
569.7 *4*	<2	2476.45	23/2$^-$	1906.81	21/2$^-$		
571.7 *1*	81 *7*	1906.81	21/2$^-$	1335.06	17/2$^-$		
579.1 *1*	69 *4*	2765.53+x	(27/2)	2186.35+x	(23/2)		
586.2 *1*	980 *20*	1713.44	21/2$^+$	1127.25	17/2$^+$		
589.2 *1*	38 *3*	1348.50	15/2$^-$	759.18	13/2$^-$		
589.6 *1*	10 *3*	2483.90	21/2$^+$	1894.25	17/2$^+$		
591.7 *2*	10 *2*	2828.96	27/2$^-$	2237.18	23/2$^-$		
592.5 *1*	224 *10*	2485.50	29/2$^-$	1892.99	25/2$^-$		
597.5 *1*	69 *8*	2491.93	21/2$^+$	1894.25	17/2$^+$		
599[#]		598.82	5/2$^-$	0.0	5/2$^+$		
599.0 *1*	28 *2*	3571.10	(31/2$^+$)	2971.89	(27/2$^+$)		
604.7 *1*	43 *7*	4375.82	37/2$^+$	3771.12	33/2$^+$		
610.5 *1*	38 *5*	3499.25	31/2$^-$	2888.74	27/2$^-$		
611.7 *1*	9 *1*	3986.40	(35/2)	3374.57	33/2$^-$		
613.4 *1*	88 *9*	2221.65	23/2$^-$	1608.23	19/2$^-$		
622.1 *1*	26 *3*	3643.43	(33/2)	3021.38	(29/2)		
622.2 *1*	61 *5*	3086.18+x	(29/2)	2463.99+x	(25/2)		
630.0 *2*	6 *4*	2238.26	21/2$^-$	1608.23	19/2$^-$		
630.2 *1*	119 *7*	2039.84	23/2$^+$	1409.51	19/2$^+$		
631.1 *1*	487 *25*	2538.02	29/2$^+$	1907.19	25/2$^+$		
636.3 *1*	28 *5*	3898.23	(33/2$^+$)	3261.97	(29/2$^+$)		
637.1 *1*	151 *8*	3374.57	33/2$^-$	2737.40	29/2$^-$		
650.2 *1*	16 *3*	3833.42	33/2$^-$	3183.22	29/2$^-$		
653.7 *1*	39 *3*	3419.30+x	(31/2)	2765.53+x	(27/2)		
656.7 *1*	55 *6*	2563.66	25/2$^-$	1907.19	25/2$^+$		
664.5 *1*	205 *8*	3712.76	35/2$^-$	3048.22	31/2$^-$		
665.0 *1*	21 *3*	3986.55	(35/2)	3321.31	(31/2)		
667.8 *1*	25 *5*	4238.91	(35/2$^+$)	3571.10	(31/2$^+$)		
669.6 *1*	21 *2*	3755.78+x	(33/2)	3086.18+x	(29/2)		
670.5 *1*	113 *6*	2383.92	25/2$^+$	1713.44	21/2$^+$		
672.0 *1*	268 *14*	2883.95	31/2$^+$	2211.91	27/2$^+$		
674.7 *1*	29 *3*	5075.94	43/2$^-$	4401.22	39/2$^-$		
678.7 *1*	213 *15*	1763.46	17/2$^-$	1084.70	15/2$^-$	D+Q	Mult.: A_2=−0.66 *15*.
683.2 *5*	<10	3512.0	31/2$^-$	2828.96	27/2$^-$		
683.7 *1*	110 *7*	4058.34	37/2$^-$	3374.57	33/2$^-$		
684.8 *2*	8 *3*	2019.89	19/2$^-$	1335.06	17/2$^-$		
686.7 *1*	110 *7*	3172.20	33/2$^-$	2485.50	29/2$^-$		
688.5 *1*	72 *5*	4401.22	39/2$^-$	3712.76	35/2$^-$		
689.4 *3*	12 *2*	5065.2	41/2$^+$	4375.82	37/2$^+$		
690.9 *1*	36 *5*	4749.21	41/2$^-$	4058.34	37/2$^-$		
692.4 *1*	54 *8*	2913.98	27/2$^-$	2221.65	23/2$^-$		
693.4 *1*	14 *2*	5769.34	47/2$^-$	5075.94	43/2$^-$		
695.2 *2*	9 *2*	3743.71	(33/2)	3048.22	31/2$^-$		
697.6 *2*	15 *4*	4595.8	(37/2$^+$)	3898.23	(33/2$^+$)		
702.0 *1*	31 *4*	4345.55	(37/2)	3643.43	(33/2)		
704.6 *1*	13 *3*	5453.83	45/2$^-$	4749.21	41/2$^-$		
705.5 *1*	87 *7*	2745.29	27/2$^+$	2039.84	23/2$^+$		
710.0 *1*	217 *12*	3247.93	33/2$^+$	2538.02	29/2$^+$		
711.1 *1*	36 *7*	3274.82	29/2$^-$	2563.66	25/2$^-$		
714.3 *1*	14 *3*	4206.38	35/2$^+$	3492.12	31/2$^+$		
717.3 *1*	43 *3*	1740.12	19/2$^-$	1022.77	17/2$^-$		

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

γ(^{183}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
723.9 *3*	3 *2*	6177.7	49/2$^-$	5453.83	45/2$^-$		
727.3 *4*	8 *2*	4966.2	(39/2$^+$)	4238.91	(35/2$^+$)		
733.4 *1*	61 *9*	3117.29	29/2$^+$	2383.92	25/2$^+$		
734.8 *1*	43 *6*	1819.49	17/2$^-$	1084.70	15/2$^-$		
735.1 *1*	28 *6*	3852.43	33/2$^+$	3117.29	29/2$^+$		
735.7 *1*	22 *4*	4722.25	(39/2)	3986.55	(35/2)		
738.2 *1*	47 *5*	4112.69	(35/2)	3374.57	33/2$^-$		
744.5 *1*	128 *7*	3628.29	35/2$^+$	2883.95	31/2$^+$		
745.9 *1*	38 *5*	4198.24	(35/2)	3452.10	(31/2)		
746.9 *1*	33 *5*	3492.12	31/2$^+$	2745.29	27/2$^+$		
749.2 *1*	37 *3*	1413.20	13/2$^-$	664.06	11/2$^-$		
753.4 *1*	14 *2*	5098.95	(41/2)	4345.55	(37/2)		
757		6212.1	(49/2$^-$)	5453.83	45/2$^-$		E_γ: reported by 1998Ha51 only. Also, see comment on 6212 level.
758.0 *3*	17 *5*	4032.8	33/2$^-$	3274.82	29/2$^-$		
759.4 *1*	20 *3*	3643.43	(33/2)	2883.95	31/2$^+$		
766.5 *1*	20 *5*	3680.50	31/2$^-$	2913.98	27/2$^-$		
767.3 *1*	57 *9*	1628.32	15/2$^-$	861.06	13/2$^-$		
772.3 *1*	42 *5*	3944.5	37/2$^-$	3172.20	33/2$^-$		
773.1 *5*	4 *1*	5838.3	45/2$^+$	5065.2	41/2$^+$		
774.6 *1*	92 *8*	4022.57	37/2$^+$	3247.93	33/2$^+$		
778.8 *1*	13 *2*	3986.40	(35/2)	3207.65	(31/2)		
782.4 *1*	31 *5*	4597.29	(37/2)	3815.33	(33/2)		E_γ: fits placement poorly.
783.3 *2*	18 *3*	3321.31	(31/2)	2538.02	29/2$^+$		
788.4 *3*	6 *2*	5510.7	(43/2)	4722.25	(39/2)		
797.6 *3*	10 *2*	4510.39	(37/2)	3712.76	35/2$^-$		
800.4 *1*	63 *5*	4428.65	39/2$^+$	3628.29	35/2$^+$		
809.4 *1*	26 *3*	1670.36	(15/2)	861.06	13/2$^-$		
809.4 *1*	19 *3*	3021.38	(29/2)	2211.91	27/2$^+$		
812.3 *2*	12 *4*	5010.5	(39/2)	4198.24	(35/2)		
820.6 *1*	47 *5*	4843.14	41/2$^+$	4022.57	37/2$^+$		
830.6 *1*	53 *6*	2737.40	29/2$^-$	1906.81	21/2$^-$		
834.4 *1*	33 *3*	2237.18	23/2$^-$	1402.91	21/2$^-$		
837.5 *1*	31 *4*	5266.17	43/2$^+$	4428.65	39/2$^+$		
840.6 *1*	21 *3*	1925.13	(17/2)	1084.70	15/2$^-$		
842.6 *2*	11 *3*	5439.9	(41/2)	4597.29	(37/2)		
848.1 *1*	17 *3*	4792.6	41/2$^-$	3944.5	37/2$^-$		
848.2 *1*	21 *3*	5691.34	45/2$^+$	4843.14	41/2$^+$		
851.6 *1*	22 *7*	851.58	7/2$^+$	0.0	5/2$^+$		
865.0 *2*	9 *2*	6131.2	47/2$^+$	5266.17	43/2$^+$		
874.7 *2*	7 *2*	2209.65	(19/2)	1335.06	17/2$^-$		
878.1 *3*	4 *2*	6569.4	49/2$^+$	5691.34	45/2$^+$		
881		7013.3	(51/2$^+$)	6131.2	47/2$^+$		reported by 1998Ha51 only.
887.9 *1*	8 *1*	1002.55	9/2$^+$	114.52	7/2$^+$		
902.5 *1*	87 *9*	1763.46	17/2$^-$	861.06	13/2$^-$	(Q)	Mult.: A_2=+0.20 *17* from table 1, +0.14 *7* from text of 2000Pu01.
913.2 *3*	5 *2*	5705.8	45/2$^-$	4792.6	41/2$^-$		
914.1 *1*	35 *4*	3452.10	(31/2)	2538.02	29/2$^+$		
917.1 *1*	112 *7*	1413.20	13/2$^-$	496.23	9/2$^-$	(Q)	Mult.: A_2=+0.32 *15* (from table 1 of 2000Pu01; uncertainty is 0.14 In text).
923.8 *1*	20 *3*	1183.68	11/2$^+$	259.81	9/2$^+$		
931.4 *2*	10 *2*	3815.33	(33/2)	2883.95	31/2$^+$		
936.0 *1*	26 *3*	2828.96	27/2$^-$	1892.99	25/2$^-$		
958.5 *1*	31 *4*	1393.64	13/2$^+$	435.22	11/2$^+$		
958.9 *3*	7 *3*	1819.49	17/2$^-$	861.06	13/2$^-$		
964.2 *1*	35 *6*	1628.32	15/2$^-$	664.06	11/2$^-$		

Continued on next page (footnotes at end of table)

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)

$\gamma(^{183}Re)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
991.9 *2*	10 *3*	1630.90	$15/2^+$	638.95	$13/2^+$		
1006.2 *1*	55 *6*	1670.36	(15/2)	664.06	$11/2^-$		
1006.3 *1*	135 *9*	3743.71	(33/2)	2737.40	$29/2^-$		Mult.: A_2=+0.13 *16*.
1023.8 *1*	18 *4*	1894.25	$17/2^+$	870.42	$15/2^+$		
1026.4 *3*	17 *3*	3512.0	$31/2^-$	2485.50	$29/2^-$		
1054.2 *1*	15 *4*	2181.32	$19/2^+$	1127.25	$17/2^+$		
1063.9 *1*	26 *3*	1925.13	(17/2)	861.06	$13/2^-$		
1064[#]		4112.69	(35/2)	3048.22	$31/2^-$		
1074[&] *1*	<3	2483.90	$21/2^+$	1409.51	$19/2^+$		
1114.4 *2*	49 *5*	3021.38	(29/2)	1907.19	$25/2^+$		
1124.7 *3*	6 *2*	2209.65	(19/2)	1084.70	$15/2^-$		
1136[#]		4510.39	(37/2)	3374.57	$33/2^-$		
1136.3 *1*	157 *9*	3043.08	$(29/2^+)$	1907.19	$25/2^+$	Q	Mult.: A_2=+0.48 *27*.
1158.0 *1*	58 *4*	3369.83	(31/2)	2211.91	$27/2^+$		
1178.8 *3*	6 *2*	2513.9	(21/2)	1335.06	$17/2^-$		
1183.1 *2*	31 *4*	3721.12	(33/2)	2538.02	$29/2^+$		
1211.8 *2*	20 *3*	4095.75	(35/2)	2883.95	$31/2^+$		
1240.0 *5*	5 *2*	4487.9	(37/2)	3247.93	$33/2^+$		
1287.6 *3*	33 *4*	1927.51	$15/2^+$	638.95	$13/2^+$		
1491.8 *5*	39 *4*	1927.51	$15/2^+$	435.22	$11/2^+$		

[†] From 2000Pu01, except As noted. Eγ data from 1998Ha51 (uncertainties unstated) are In excellent agreement. intensities are not reported by 1998Ha51.

[‡] From $\gamma(\theta)$ (2000Pu01), except As noted.

[#] γ shown in figure 1 only; absent in table 1 of 2000Pu01.

[@] 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.

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

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

Level Scheme

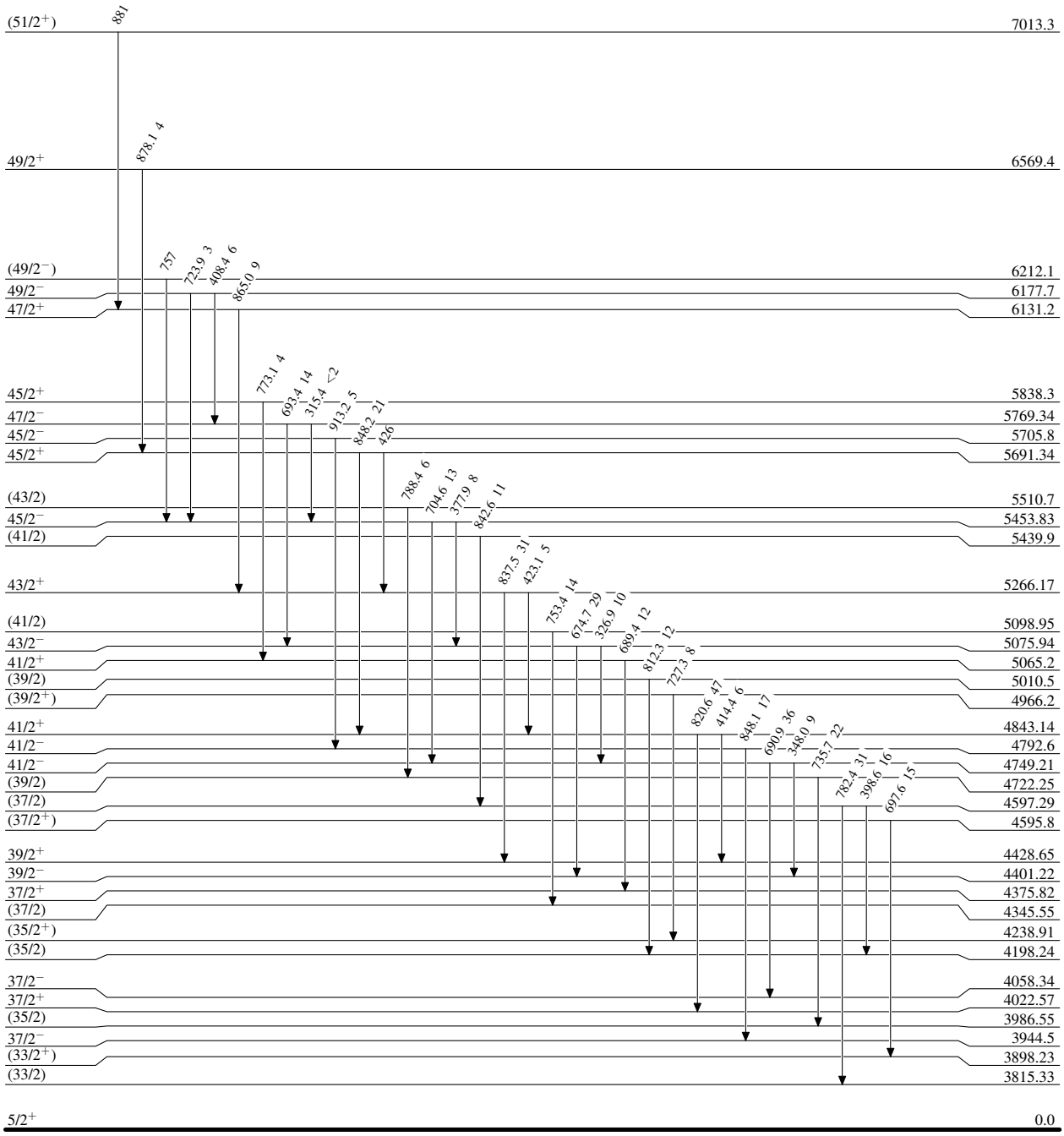
Intensities: Relative I_γ

Legend

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

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

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



$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

Level Scheme (continued)

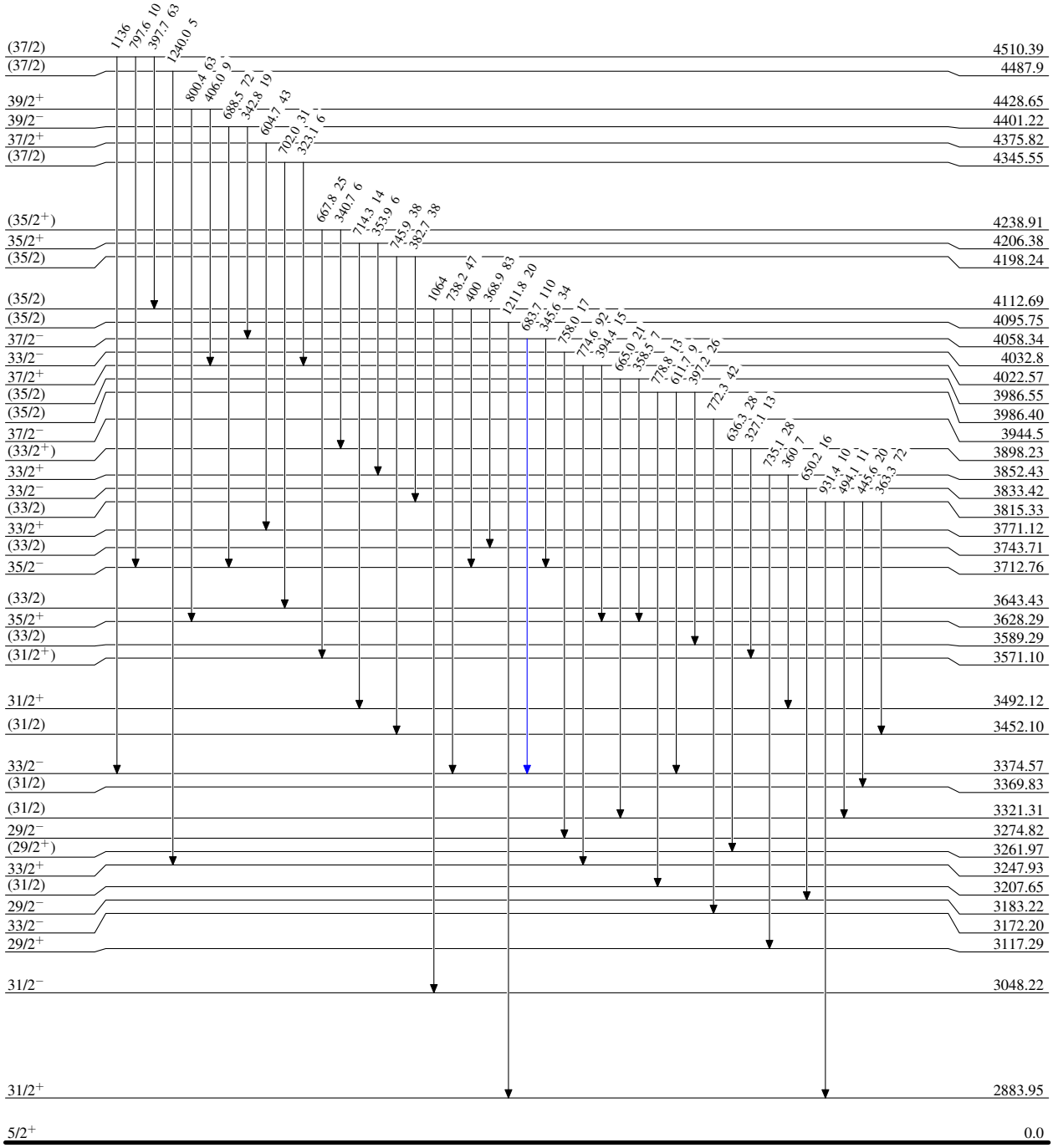
Intensities: Relative I_γ

Legend

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

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

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



$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

Level Scheme (continued)

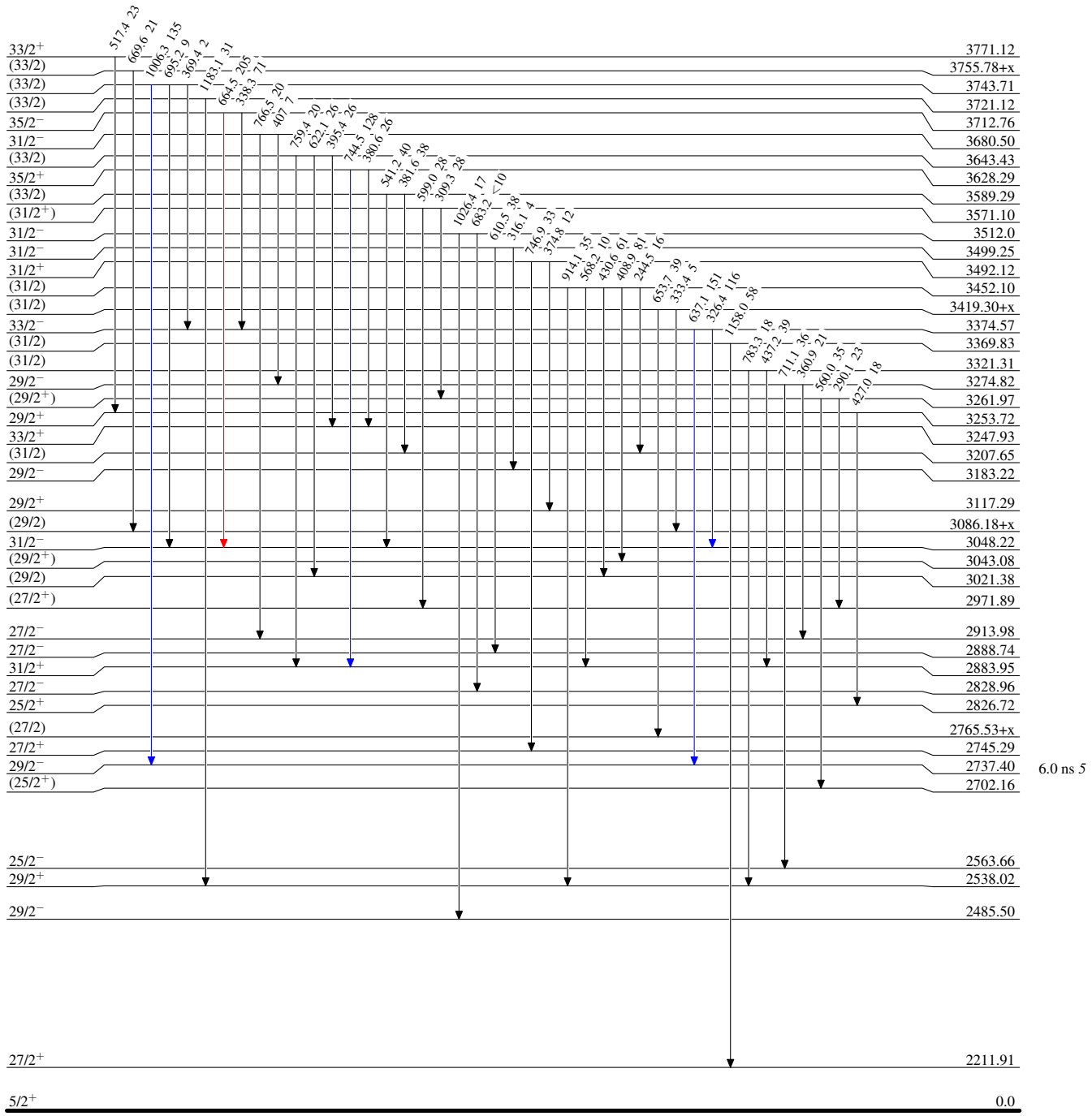
Intensities: Relative I_γ

Legend

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

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

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



$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

Level Scheme (continued)

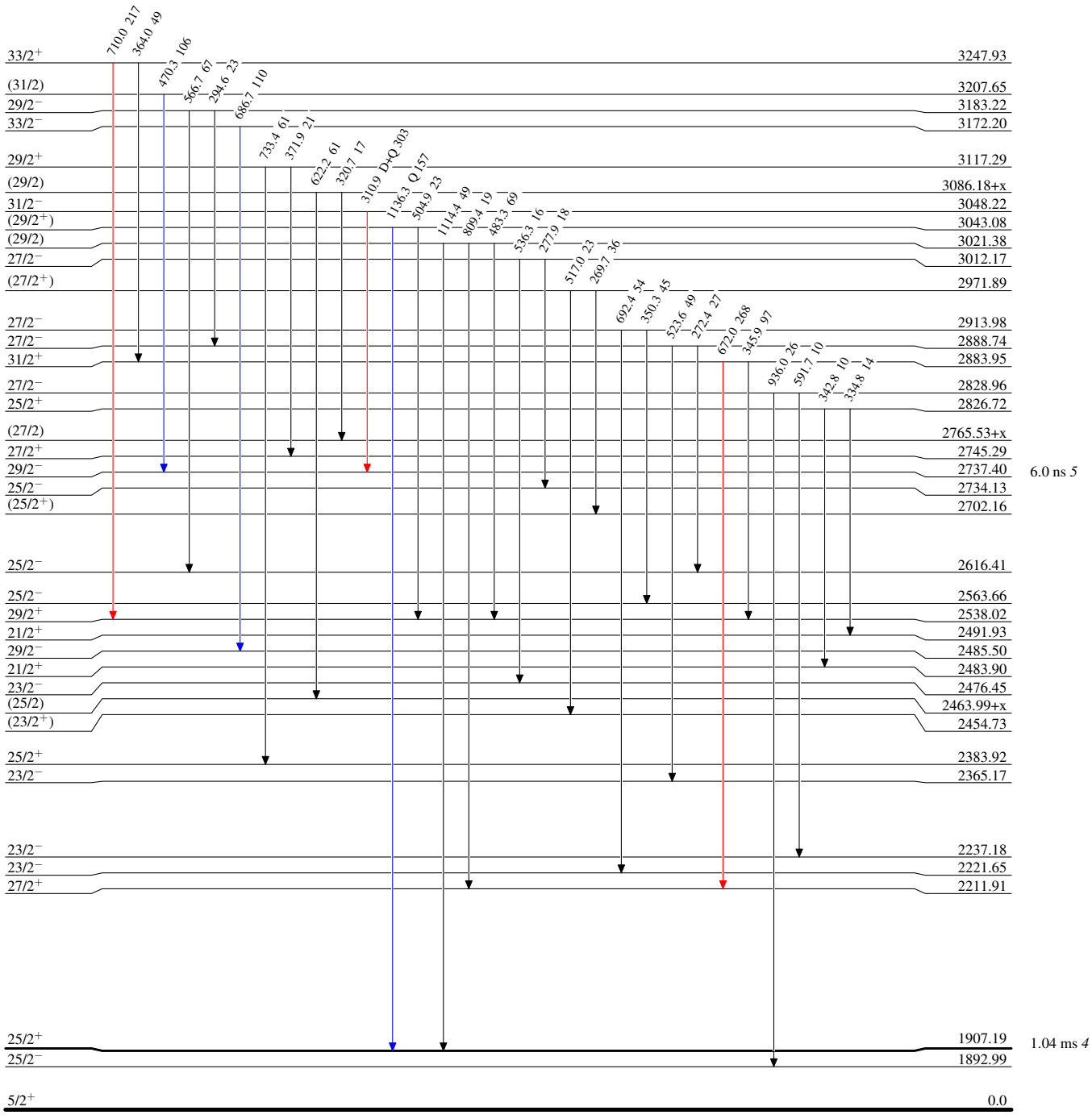
Intensities: Relative I_γ

Legend

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

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

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



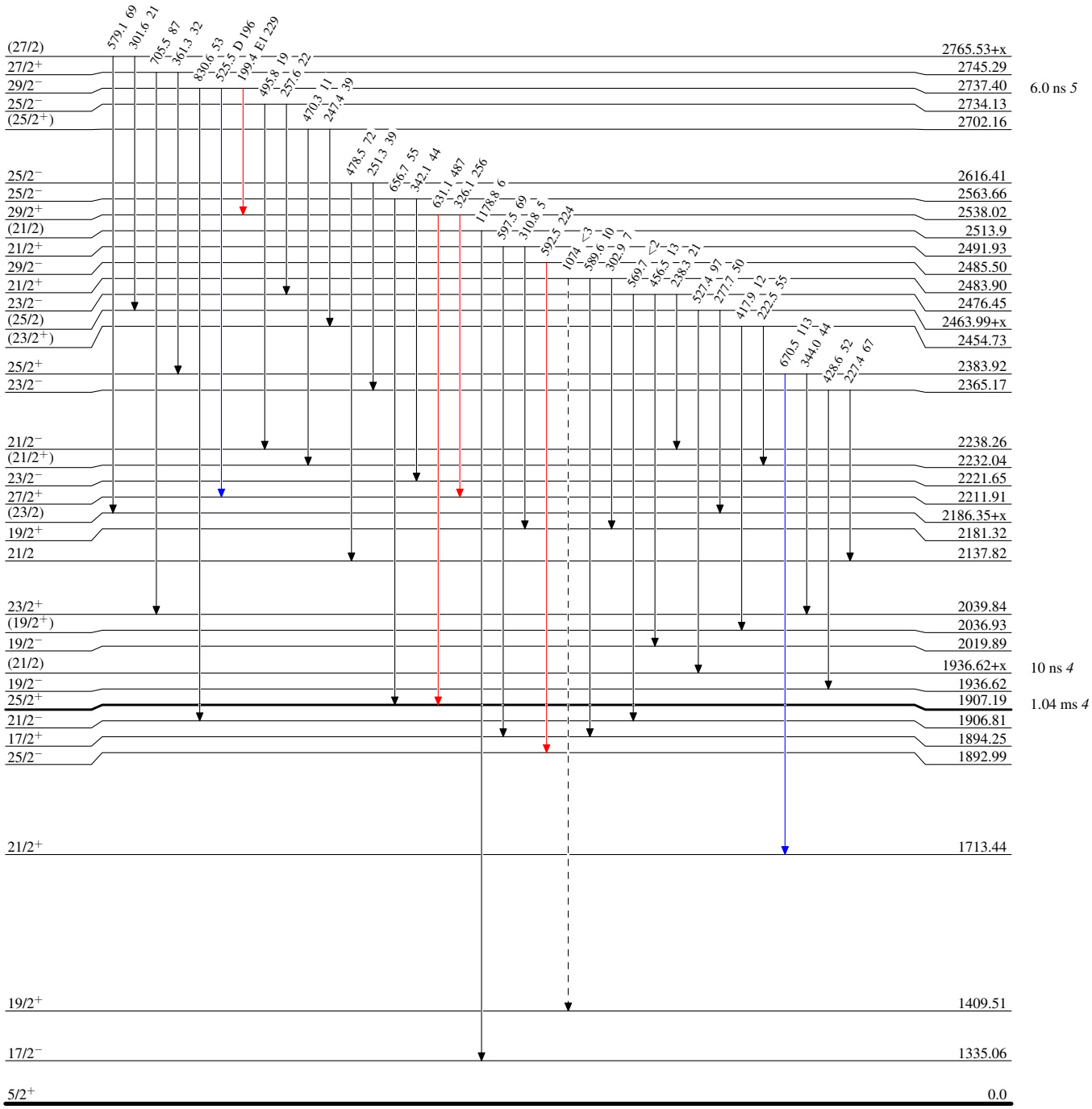
$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

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)



$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

Level Scheme (continued)

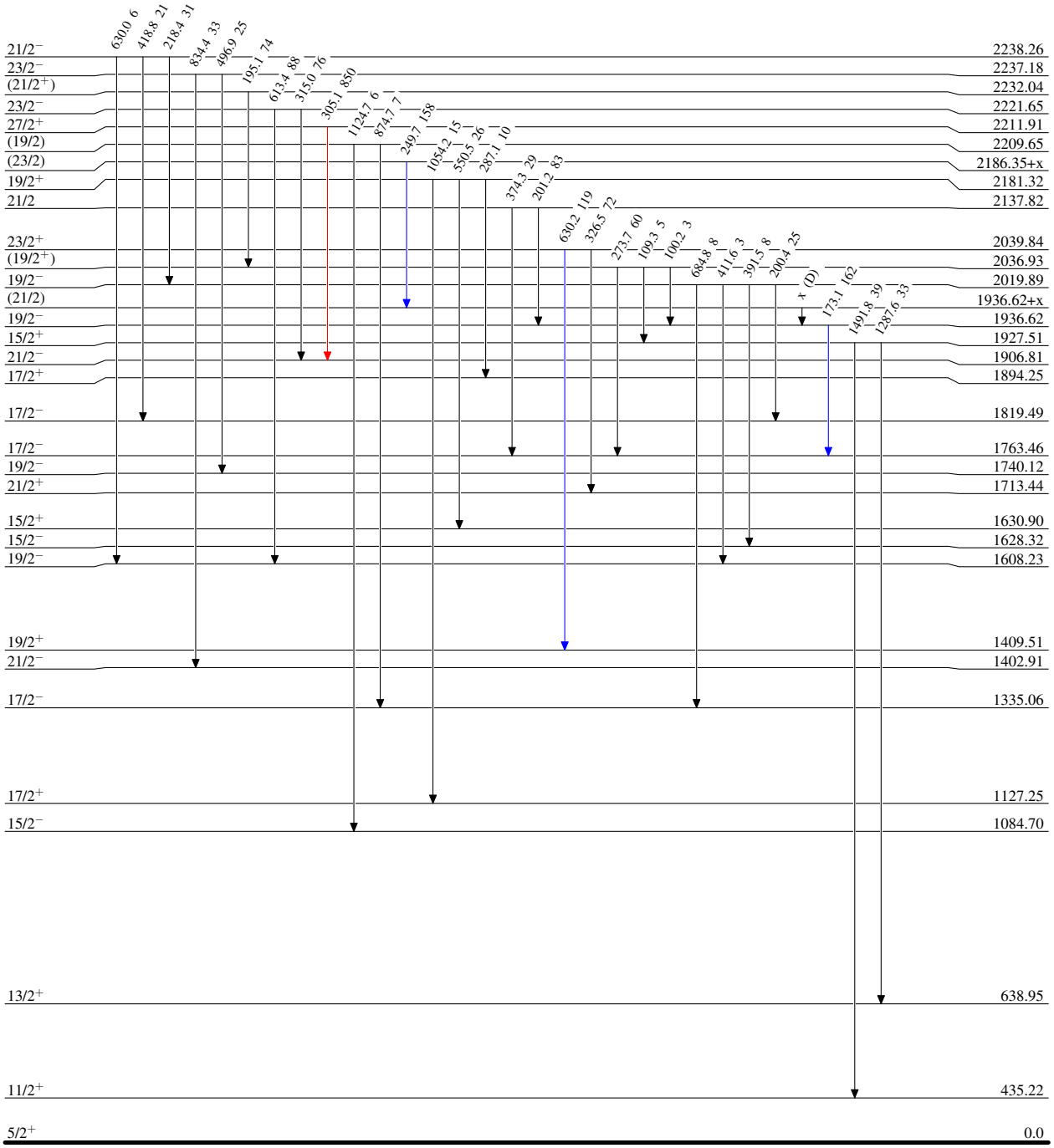
Intensities: Relative I_γ

Legend

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

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

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



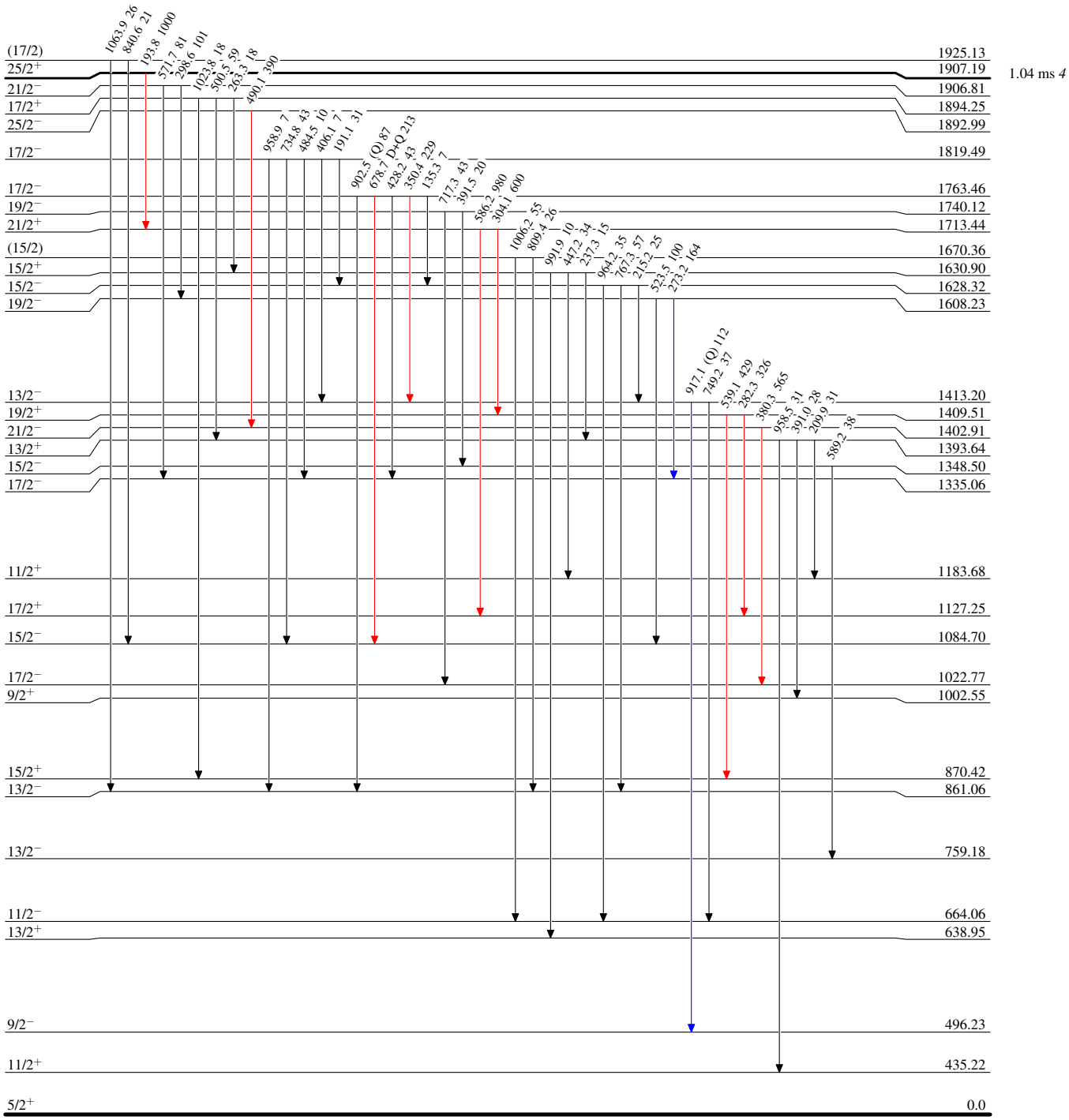
$^{183}_{75}Re_{108}$

$^{176}Yb(^{11}B,4n\gamma)$ 2000Pu01,1998Ha51

Level Scheme (continued)

Intensities: Relative I_γ

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



$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51

Level Scheme (continued)

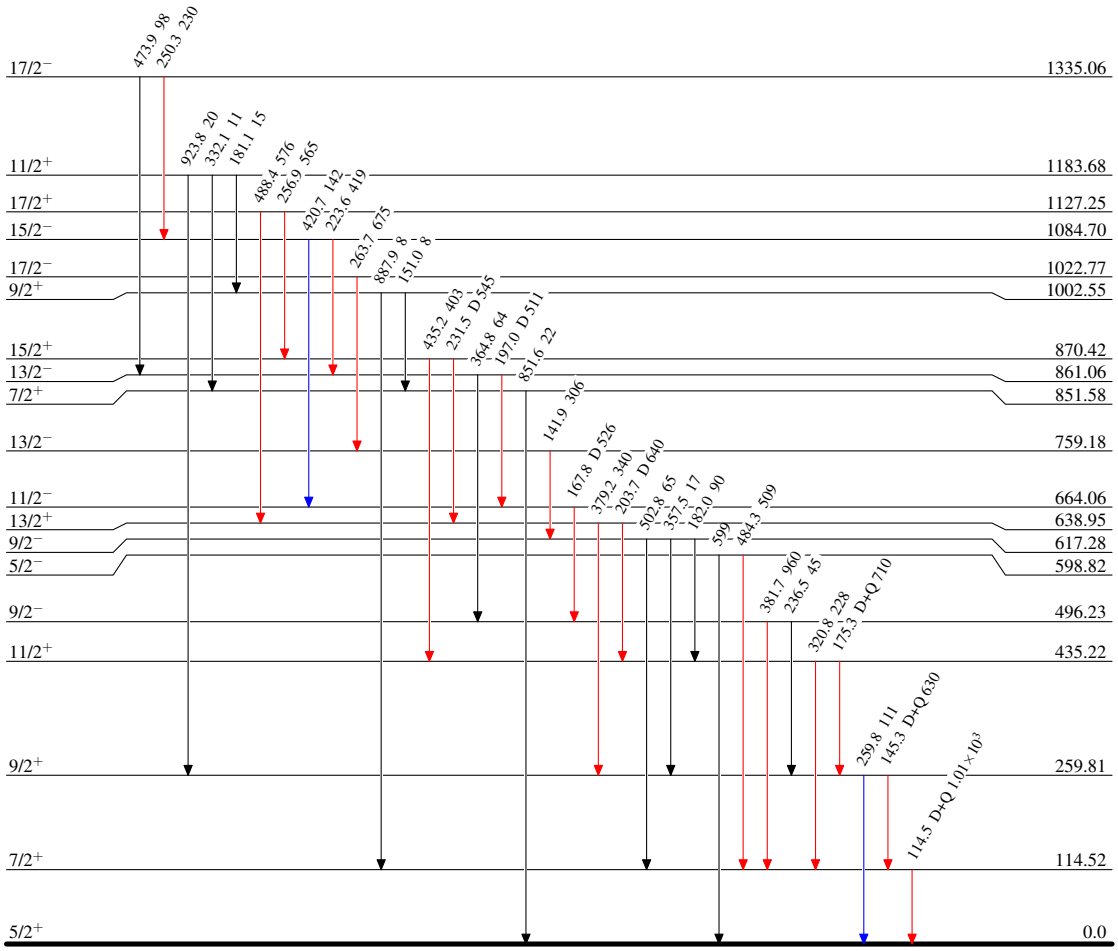
Intensities: Relative I_γ

Legend

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

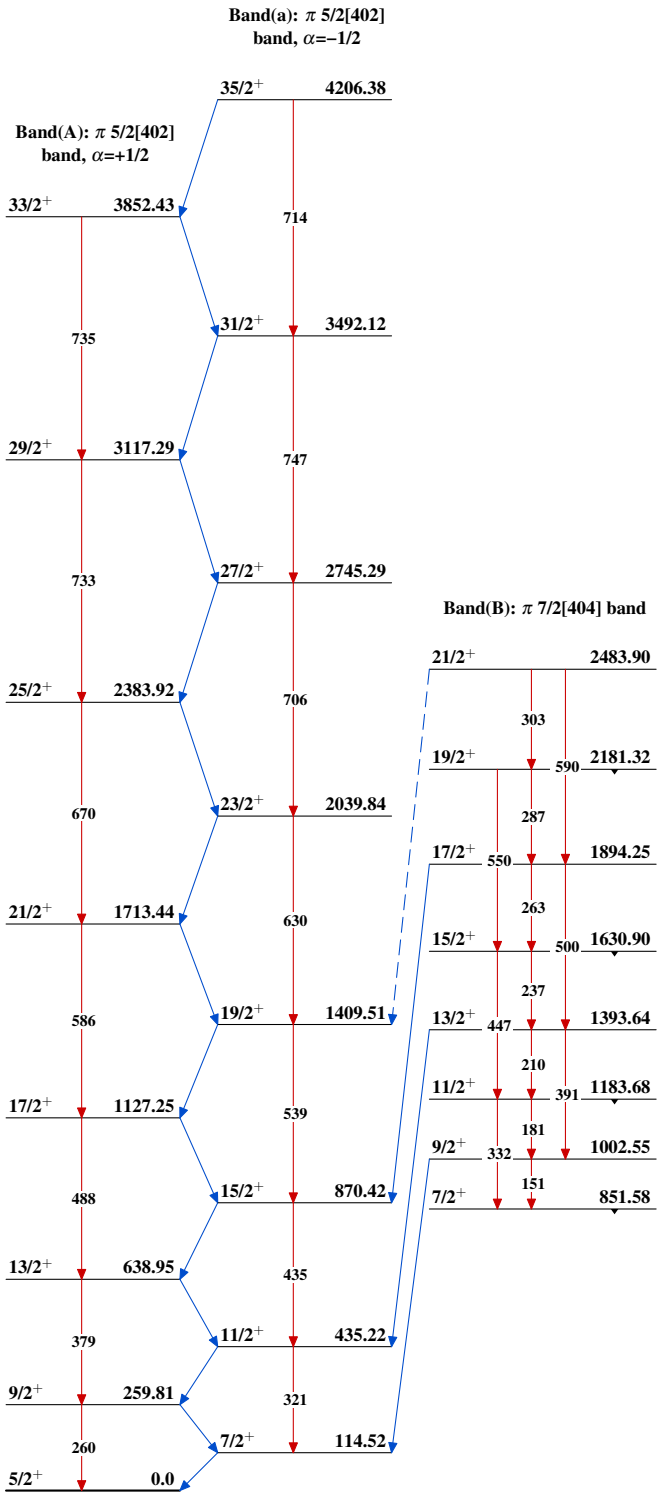
$I_\gamma < 10\% \times I_\gamma^{max}$

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



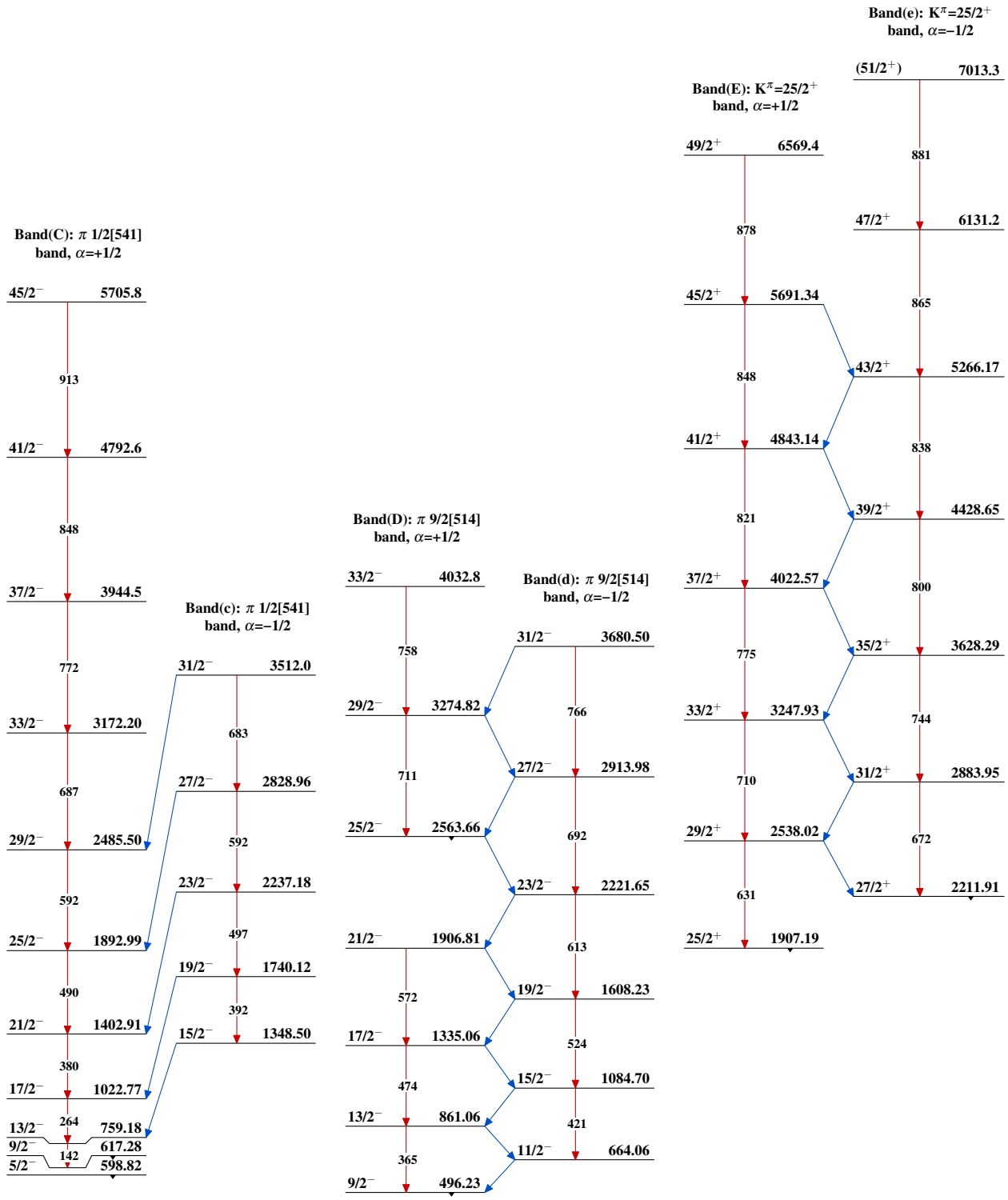
$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51



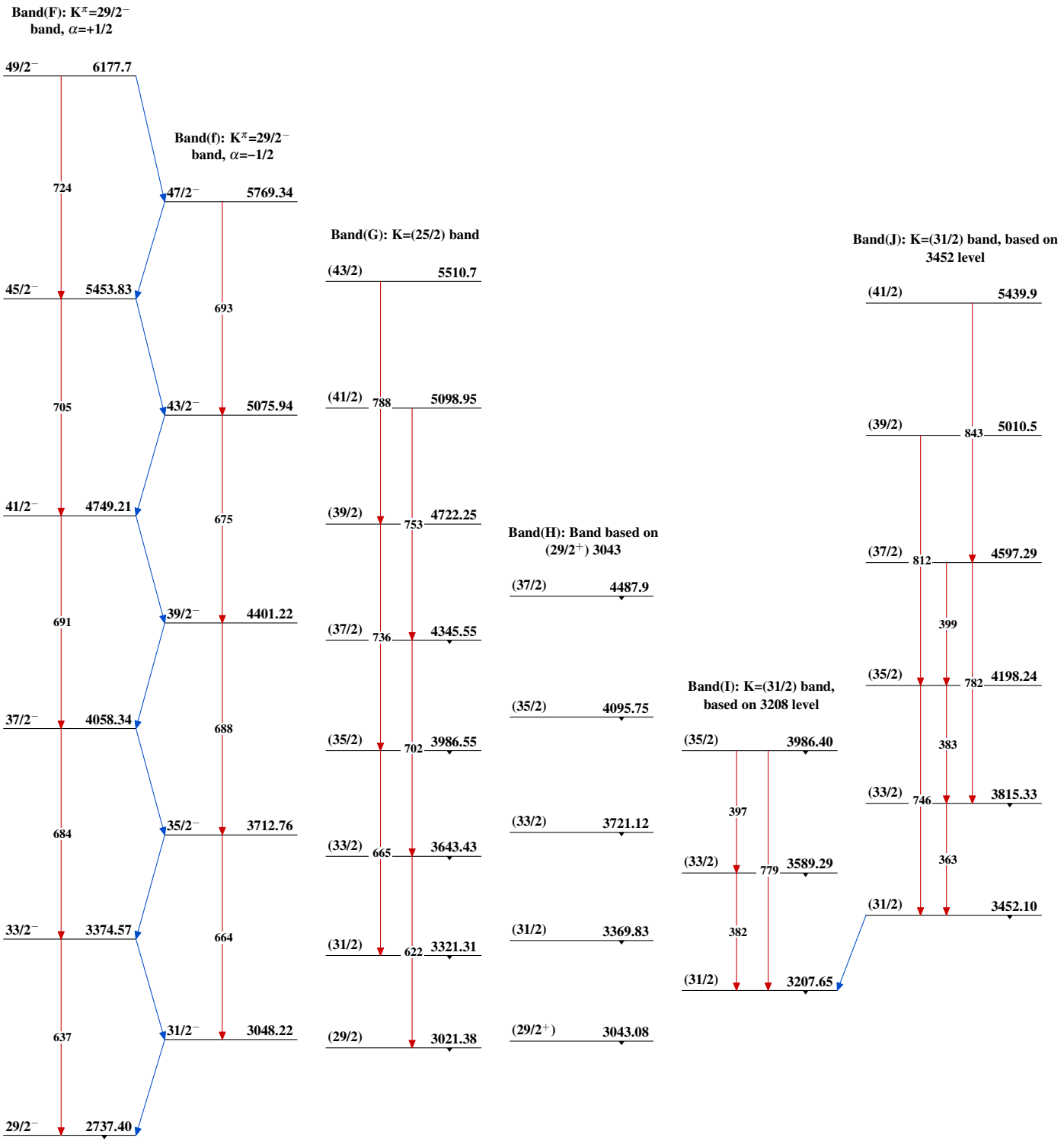
$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)



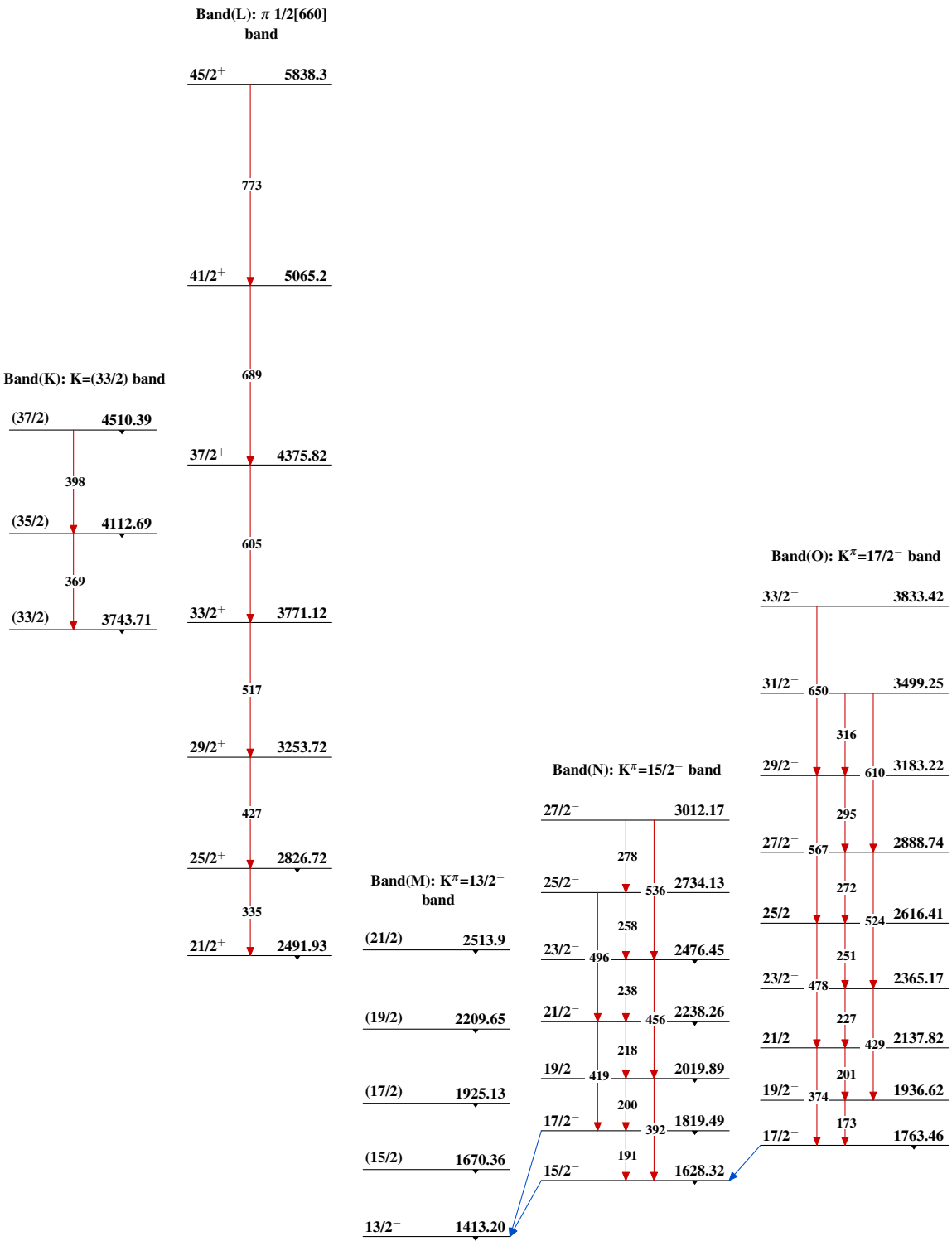
$^{183}_{75}Re_{108}$

$^{176}Yb(^{11}B,4n\gamma)$ 2000Pu01,1998Ha51 (continued)



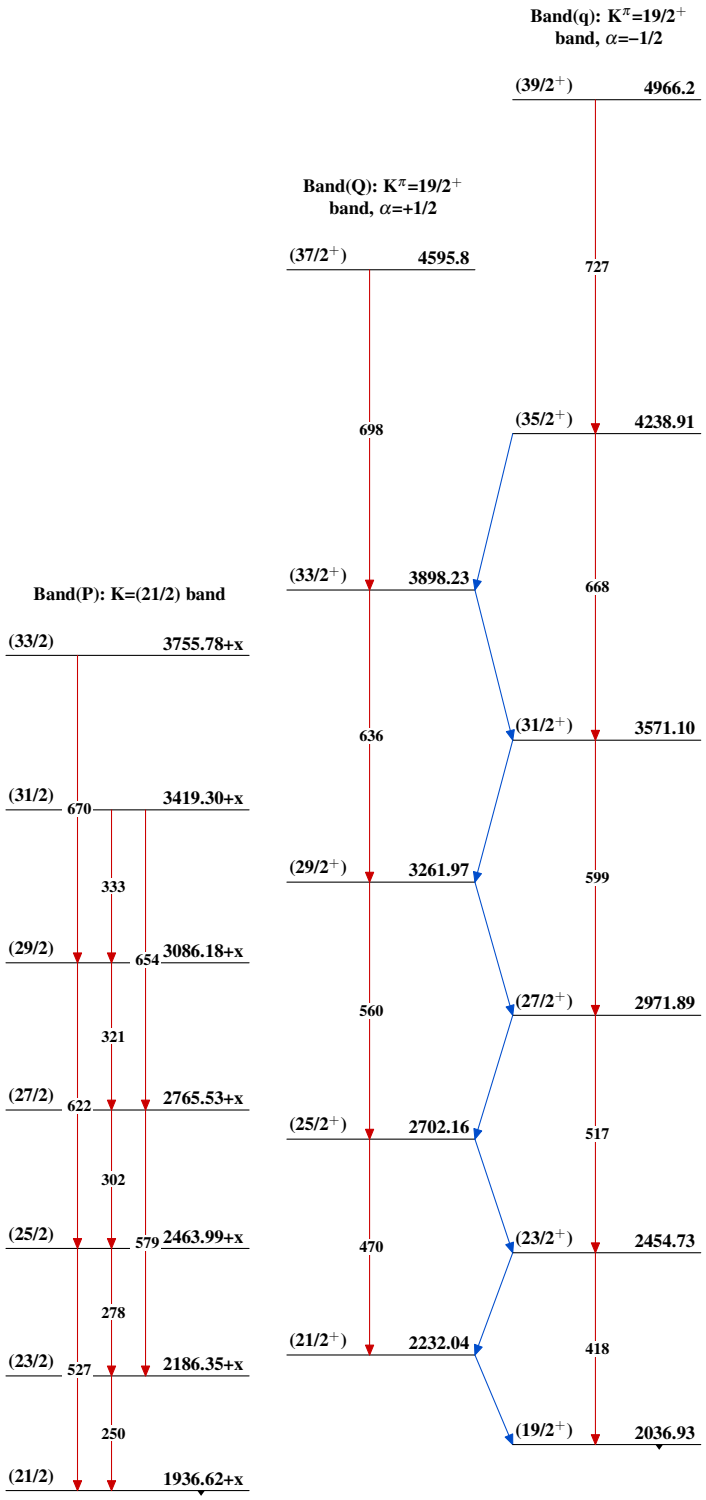
$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)



$^{183}_{75}Re_{108}$

^{176}Yb(^{11}B,4nγ) 2000Pu01,1998Ha51 (continued)



$^{183}_{75}Re_{108}$