^{186}W(^{11}B,p5nγ) 2005Ku01

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

2005Ku01: E=85 MeV. Enrichment not given (enriched target 99.79%, 2006KuZW). Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$ with the Eurogam-II multidetector array, which consisted of 30 large (73%) volume Compton-suppressed Ge detectors, and 24 "clover"-type Ge detectors; four-fold coincidence events used.

^{191}Pt Levels

Nomenclature for quasiparticle labels:
A: $\nu i_{13/2}$, α=+1/2, $i_x\approx$6 h\.
B: $\nu i_{13/2}$, α=−1/2.
C: $\nu i_{13/2}$, α=+1/2, $i_x\approx$4 h\.
F: $\nu h_{9/2}$, α=+1/2.
G: νj, α=−1/2.
H: νj, α=+1/2.
e: $\pi h_{11/2}$, α=−1/2.
f: $\pi h_{11/2}$, α=+1/2.
a: πj, α=+1/2.
b: πj, α=−1/2.

E(level)[†]	J$^\pi$[#]	Comments
0.0[‡]	3/2$^-$[‡]	
149.040[‡@] *22*	(13/2)$^+$[‡]	Additional information 1.
173.432[‡&] *23*	(11/2)$^+$[‡]	Additional information 2.
471.1[@] *4*	(17/2)$^+$	
529.3 *5*	15/2$^+$	
599.1 *5*	15/2$^+$	
951.0[@] *5*	(21/2)$^+$	
989.3[&] *5*	(19/2)$^+$	
1158.1 *5*	(19/2)$^+$	
1381.3[d] *5*	(21/2)$^-$	
1545.4[d] *7*	(25/2)$^-$	T$_{1/2}$=1.07 ns *6*, from direct measurement of conversion electrons relative to cyclotron beam bursts (1978Ti02).
1550.2[@] *7*	(25/2)$^+$	
1862.5[e] *7*	(27/2)$^-$	
2125.0[d] *7*	(29/2)$^-$	
2151.2[f] *7*	(29/2)$^-$	
2233.3[@] *7*	(29/2)$^+$	
2385.1[g] *7*	(29/2)$^-$	
2467.2[e] *8*	(31/2$^-$)	
2607.9[f] *8*	(33/2$^-$)	
2737.9[d] *8*	(33/2)$^-$	
2824.9[a] *9*	(33/2)$^+$	
2826.3[g] *8*	(33/2)$^-$	
2889.9[h] *8*	(33/2)$^-$	
2940.7 *8*	(33/2)$^+$	Configuration=Aef.
2956.5 *8*	(33/2)$^+$	
3108.5[e] *9*	(35/2$^-$)	

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^{186}W(^{11}B,p5nγ) 2005Ku01 (continued)

^{191}Pt Levels (continued)

E(level)[†]	Jπ[#]	Comments
3188.7[h] 8	(37/2)$^-$	
3272.1[a] 10	(37/2)$^+$	
3277.7 8		
3299.4 8	(37/2$^+$)	
3301.0[f] 8	(37/2)$^-$	
3317.1 8	(35/2)$^+$	Configuration=Bef.
3432.9[d] 10	(37/2$^-$)	
3451.8[b] 8	(39/2)$^+$	
3678.8[b] 9	(43/2)$^+$	
3685.0 9		
3716.3[h] 10	(41/2)$^-$	
3780.1[e] 11	(39/2$^-$)	
3874.0[a] 10	(41/2)$^+$	
4004.9[c] 10	(45/2$^+$)	
4329.7[b] 10	(47/2)$^+$	
4389.0[h] 11	(45/2$^-$)	
4419.0[e] 12	(43/2$^-$)	
4515.8[c] 10	(49/2$^+$)	
4587.6[a] 10	(45/2)$^+$	
4629.7 13	(43/2,45/2)	
4991.7[b] 10	(51/2)$^+$	
5296.4[c] 10	(53/2$^+$)	
5365.8[a] 10	(49/2)$^+$	
5437.7[b] 11	(55/2)$^+$	
5576.3[a] 11	(53/2)$^+$	
5882.7[b] 12	(59/2)$^+$	
6121.4[a] 12	(57/2)$^+$	
6148.7 13	(63/2$^+$)	

[†] From least-squares fit to Eγ's. 149.035 and 173.427 level energies were held fixed in least-squares fitting. Calculated 63.7γ and 441γ were not used.

[‡] From Adopted Levels.

[#] Adopted spins and parities, partially based on this experiment (see Adopted Levels); adopted and 2005Ku01 values differ mainly on the use of parentheses.

[@] Band(A): A band, $\nu i^{-1}_{13/2}$, α=+1/2, favored.

[&] Band(a): B band, $\nu i^{-1}_{13/2}$, α=−1/2, unfavored.

[a] Band(B): ABC band, α=+1/2. Continuation of A band with crossing at $\hbar\omega\approx$0.27 MeV, second crossing at spin 49/2$^+$ and $\hbar\omega\approx$0.29 MeV.

[b] Band(C): ABFeb band, α=−1/2.

[c] Band(c): ABFea band, α=+1/2.

[d] Band(D): Beb and BCH band, α=+1/2.

[e] Band(d): Bea and BCG band, α=−1/2.

[f] Band(E): ABH band, α=+1/2.

[g] Band(F): BCF band, α=+1/2.

[h] Band(G): ABF band, α=+1/2.

^{186}W(^{11}B,p5nγ) 2005Ku01 (continued)

$\gamma(^{191}Pt)$

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	Comments
63.6[a]	1.8 *10*	2889.9	$(33/2)^-$	2826.3	$(33/2)^-$			E_γ: from level energies difference – Eγ not seen in γ-ray spectrum. 64 in Table I (2005Ku01). I_γ: deduced from coincidences between transitions in bands (F), (I), and (J).
134.5 *5*	12 *2*	3451.8	$(39/2)^+$	3317.1	$(35/2)^+$	E2	1.506 *30*	A_2=−0.06 *6*; A_4=+0.06 *8* α(K)=0.434 *7*; α(L)=0.806 *18*; α(M)=0.208 *5* α(N)=0.0507 *11*; α(O)=0.00795 *17*; α(P)=4.22×10^{-5} *7* Mult.: from intensity balance; disagrees with γ(θ) data.
151.0 *5*	7 *1*	3451.8	$(39/2)^+$	3301.0	$(37/2)^-$	E1		A_2=−0.40 *10*; A_4=+0.15 *13* Mult.: Also from intensity balance.
152.6 *5*	2.2 *6*	3451.8	$(39/2)^+$	3299.4	$(37/2^+)$			
164.0 *5*	64 *5*	1545.4	$(25/2)^-$	1381.3	$(21/2)^-$	E2		A_2=+0.01 *10*; A_4=−0.01 *9*
173.7 *5*	1.9 *7*	3451.8	$(39/2)^+$	3277.7				
207.0 *5*	1.1 *7*	1158.1	$(19/2)^+$	951.0	$(21/2)^+$			E_γ: 207 in Table I and Fig. 1.
210.5 *5*	6 *1*	5576.3	$(53/2)^+$	5365.8	$(49/2)^+$	E2		A_2=+0.31 *15*; A_4=−0.03 *20*
210.7 *5*	3.6 *10*	4629.7	(43/2,45/2)	4419.0	$(43/2^-)$	(D)		A_2=−0.09 *10*; A_4=+0.02 *13*
223.1 *5*	47 *6*	1381.3	$(21/2)^-$	1158.1	$(19/2)^+$	E1		A_2=−0.23 *6*; A_4=−0.14 *11* I_γ: from 430.6γ Iγ and adopted branching of the 1381, $21/2^-$ level.
227.0 *5*	51 *4*	3678.8	$(43/2)^+$	3451.8	$(39/2)^+$	E2		A_2=+0.24 *10*; A_4=−0.11 *7*
259.8 *5*	11 *2*	2385.1	$(29/2)^-$	2125.0	$(29/2)^-$	M1		A_2=+0.34 *14*; A_4=+0.24 *20*
262.5 *5*	6 *2*	2125.0	$(29/2)^-$	1862.5	$(27/2)^-$	M1		A_2=−0.19 *7*; A_4=−0.13 *11*
263.0 *5*	21 *2*	3451.8	$(39/2)^+$	3188.7	$(37/2)^-$	E1		A_2=−0.25 *9*; A_4=−0.02 *14* Mult.: Also from intensity balance.
266.0 *5*	5 *1*	6148.7	$(63/2^+)$	5882.7	$(59/2)^+$	(E2)		A_2=+0.57 *16* E_γ: 266 in Table I (2005Ku01).
280.0 *5*	1.5 *8*	5576.3	$(53/2)^+$	5296.4	$(53/2^+)$			E_γ: 280 in Table I (2005Ku01).
282.0 *5*	3 *1*	2889.9	$(33/2)^-$	2607.9	$(33/2^-)$	M1		A_2=+0.53 *17*; A_4=+0.35 *25* E_γ: 282 in Table I (2005Ku01).
288.9 *5*	7 *2*	2151.2	$(29/2)^-$	1862.5	$(27/2)^-$	M1		A_2=+0.03 *12*; A_4=+0.35 *21*
298.8 *5*	35 *3*	3188.7	$(37/2)^-$	2889.9	$(33/2)^-$	E2		A_2=+0.29 *7*; A_4=−0.10 *10*
316.0 *5*	7 *2*	2467.2	$(31/2^-)$	2151.2	$(29/2)^-$	M1		A_2=+0.08 *10*; A_4=+0.08 *17* E_γ: 316 in Table I (2005Ku01).
317.0 *5*	16 *2*	1862.5	$(27/2)^-$	1545.4	$(25/2)^-$	M1		A_2=−0.11 *6*; A_4=−0.09 *10*
322.0 *5*	>100	471.1	$(17/2)^+$	149.040	$(13/2)^+$	E2[@]	0.0800 *12*	α(K)=0.0513 *7*; α(L)=0.02174 *33*; α(M)=0.00543 *8* α(N)=0.001330 *20*; α(O)=0.0002177 *33*; α(P)=5.21×10^{-6} *8* E_γ: 322 in Table I (2005Ku01). I_γ: Deduced by the evaluator from intensity balance and α.
326.1 *5*	10 *2*	4004.9	$(45/2^+)$	3678.8	$(43/2)^+$	M1		A_2=+0.04 *8*
336.7 *5*	3.3 *9*	3277.7		2940.7	$(33/2)^+$			
342.4 *5*	7 *1*	2467.2	$(31/2^-)$	2125.0	$(29/2)^-$	M1		A_2=+0.14 *12*; A_4=0.00 *17*
343.0 *3*	2.5 *9*	3299.4	$(37/2^+)$	2956.5	$(33/2)^+$			E_γ: 343 in Table I (2005Ku01).
356.0 *5*		529.3	$15/2^+$	173.432	$(11/2)^+$			E_γ: 356 in Fig. 1.
358.6 *5*	8 *1*	3299.4	$(37/2^+)$	2940.7	$(33/2)^+$	(E2)		A_2=+0.23 *11*; A_4=−0.2 *2*
376.6 *5*	19 *2*	3317.1	$(35/2)^+$	2940.7	$(33/2)^+$	M1		A_2=−0.03 *7*; A_4=−0.08 *10*
385.6 *5*	4 *2*	3685.0		3299.4	$(37/2^+)$			A_2=+0.23 *10*; A_4=−0.20 *17*
392.0 *5*	26 *4*	1381.3	$(21/2)^-$	989.3	$(19/2)^+$	E1		A_2=−0.18 *10*; A_4=+0.07 *8*

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^{186}W(^{11}B,p5nγ) 2005Ku01 (continued)

$\gamma(^{191}Pt)$ (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	Comments
								I_γ: from 430.6γ Iγ and adopted branching of the 1381, 21/2$^-$ level.
430.6 *5*	31 *3*	1381.3	(21/2)$^-$	951.0	(21/2)$^+$	E1		A_2=+0.44 *11*; A_4=−0.11 *8* Mult.: $\gamma(\theta)$ data is consistent with a ΔJ=0 transition.
441.2	2.5 *9*	2826.3	(33/2)$^-$	2385.1	(29/2)$^-$			E_γ: from level energies difference. 441 in Table I, transition was very weak and unresolved from the strong multiplet at 445 keV. Its existence was confirmed indirectly from coincidences (2005Ku01). I_γ: deduced from observed coincidences.
445.0 *5*	13 *2*	5882.7	(59/2)$^+$	5437.7	(55/2)$^+$	E2		E_γ: 445 in Table I (2005Ku01). A_2=+0.43 *13*, A_4=+0.10 *20* for 445γ + 446γ doublet.
446.0 *5*	18 *2*	5437.7	(55/2)$^+$	4991.7	(51/2)$^+$	E2		E_γ: 446 in Table I (2005Ku01). A_2=+0.43 *13*, A_4=+0.10 *20* for 445γ + 446γ doublet.
447.2 *5*	11 *2*	3272.1	(37/2)$^+$	2824.9	(33/2)$^+$	E2		A_2=+0.33 *10*; A_4=−0.06 *13*
450.0 *5*		599.1	15/2$^+$	149.040	(13/2)$^+$			E_γ: 450 in Fig. 1.
456.6 *5*	18 *2*	2607.9	(33/2$^-$)	2151.2	(29/2)$^-$	E2		A_2=+0.40 *8*; A_4=−0.10 *6*
460.0[‡] *5*		989.3	(19/2)$^+$	529.3	15/2$^+$			E_γ: 460 in Fig. 1.
476.0 *5*	5 *2*	4991.7	(51/2)$^+$	4515.8	(49/2$^+$)			E_γ: 476 in Table I (2005Ku01).
480.0 *5*	96 *6*	951.0	(21/2)$^+$	471.1	(17/2)$^+$	E2[@]	0.0274 *4*	α(K)=0.02001 *28*; α(L)=0.00560 *8*; α(M)=0.001365 *20* α(N)=0.000335 *5*; α(O)=5.65×10^{-5} *8*; α(P)=2.103×10^{-6} *30* E_γ: 480 in Table I (2005Ku01). I_γ: Deduced by the evaluator from intensity balance and α.
490.6 *5*	12 *2*	3317.1	(35/2)$^+$	2826.3	(33/2)$^-$	E1		A_2=−0.10 *9*; A_4=−0.05 *7*
504.7 *5*	15 *2*	2889.9	(33/2)$^-$	2385.1	(29/2)$^-$	E2		A_2=+0.39 *9*; A_4=−0.09 *10*
510.8 *5*	12 *2*	4515.8	(49/2$^+$)	4004.9	(45/2$^+$)	E2		A_2=+0.36 *10*; A_4=−0.10 *12*
518.0[‡] *5*		989.3	(19/2)$^+$	471.1	(17/2)$^+$			E_γ: 518 in Fig. 1.
527.6 *5*	13 *2*	3716.3	(41/2)$^-$	3188.7	(37/2)$^-$	E2		A_2=+0.42 *11*; A_4=+0.05 *13*
545.1 *5*	7 *2*	6121.4	(57/2)$^+$	5576.3	(53/2)$^+$	E2		A_2=+0.42 *10*; A_4=−0.06 *15*
559.0[‡] *5*		1158.1	(19/2)$^+$	599.1	15/2$^+$			E_γ: 559 in Fig. 1.
563.5 *5*	5 *1*	3301.0	(37/2)$^-$	2737.9	(33/2)$^-$	E2		A_2=+0.40 *11*
579.6 *5*	52 *4*	2125.0	(29/2)$^-$	1545.4	(25/2)$^-$	E2		A_2=+0.23 *9*; A_4=−0.03 *2*
591.6 *5*	12 *2*	2824.9	(33/2)$^+$	2233.3	(29/2)$^+$	E2		A_2=+0.46 *10*; A_4=−0.08 *10*
599.2 *5*	66 *5*	1550.2	(25/2)$^+$	951.0	(21/2)$^+$	E2		A_2=+0.28 *9*; A_4=−0.09 *11*
602.0 *5*	10 *3*	3874.0	(41/2)$^+$	3272.1	(37/2)$^+$	E2		A_2=+0.42 *11*; A_4=−0.19 *12* E_γ: 602 in Table I (2005Ku01).
604.5 *5*	16 *2*	2467.2	(31/2$^-$)	1862.5	(27/2)$^-$	E2		A_2=+0.34 *5*, A_4=−0.02 *7* for 604.5γ + 605.7γ doublet.
605.7 *5*	29 *3*	2151.2	(29/2)$^-$	1545.4	(25/2)$^-$	E2		A_2=+0.34 *5*, A_4=−0.02 *7* for 604.5γ + 605.7γ doublet.
613.2 *5*	14 *2*	2737.9	(33/2)$^-$	2125.0	(29/2)$^-$	E2		A_2=+0.28 *9*; A_4=−0.29 *14*
638.9 *5*	9 *2*	4419.0	(43/2$^-$)	3780.1	(39/2$^-$)	E2		A_2=+0.20 *8*, A_4=−0.01 *11* for 638.9γ + 641.3γ doublet.
641.3 *5*	15 *2*	3108.5	(35/2$^-$)	2467.2	(31/2$^-$)	E2		A_2=+0.20 *8*, A_4=−0.01 *11* for 638.9γ + 641.3γ doublet.
650.9 *5*	33 *3*	4329.7	(47/2)$^+$	3678.8	(43/2)$^+$	E2		A_2=+0.48 *11*; A_4=−0.12 *12*
662.0 *5*	19 *3*	4991.7	(51/2)$^+$	4329.7	(47/2)$^+$	E2		A_2=+0.20 *9*; A_4=−0.10 *11*
671.6 *5*	12 *2*	3780.1	(39/2$^-$)	3108.5	(35/2$^-$)	E2		A_2=+0.44 *10*; A_4=+0.14 *15*

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^{186}W(^{11}B,p5nγ) 2005Ku01 (continued)

$\gamma(^{191}Pt)$ (continued)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
672.7 *5*	5 *1*	4389.0	$(45/2^-)$	3716.3	$(41/2)^-$	(E2)	A_2=+0.47 *16*
683.2 *5*	64 *4*	2233.3	$(29/2)^+$	1550.2	$(25/2)^+$	E2	A_2=+0.34 *10*; A_4=−0.07 *7*
687.0[‡] *5*		1158.1	$(19/2)^+$	471.1	$(17/2)^+$		E_γ: 687 in Fig. 1.
693.1 *5*	9 *2*	3301.0	$(37/2)^-$	2607.9	$(33/2^-)$	E2	A_2=+0.28 *9*; A_4=−0.10 *11*
695.0 *5*	6 *2*	3432.9	$(37/2^-)$	2737.9	$(33/2)^-$		E_γ: 695 in Table I (2005Ku01).
701.0 *5*	19 *2*	2826.3	$(33/2)^-$	2125.0	$(29/2)^-$	E2	A_2=+0.24 *9*; A_4=+0.15 *15*
707.0 *5*	40 *4*	2940.7	$(33/2)^+$	2233.3	$(29/2)^+$	E2	A_2=+0.26 *9*; A_4=+0.07 *10*
713.6 *5*	9 *2*	4587.6	$(45/2)^+$	3874.0	$(41/2)^+$	E2	A_2=+0.45 *10*; A_4=−0.20 *20*
723.4 *5*	8 *2*	2956.5	$(33/2)^+$	2233.3	$(29/2)^+$	E2	A_2=+0.49 *8*; A_4=−0.08 *11*
738.8 *5*	9 *2*	2889.9	$(33/2)^-$	2151.2	$(29/2)^-$	(E2)	A_2=+0.46 *13*
778.3 *5*	6 *2*	5365.8	$(49/2)^+$	4587.6	$(45/2)^+$	E2	A_2=+0.49 *16*; A_4=−0.07 *14*
780.6 *5*	5 *2*	5296.4	$(53/2^+)$	4515.8	$(49/2^+)$	E2	A_2=+0.25 *14*; A_4=−0.19 *24*
840.0 *5*	4 *2*	2385.1	$(29/2)^-$	1545.4	$(25/2)^-$		E_γ: 840 in Table I (2005Ku01).
850.0 *5*	3 *2*	5365.8	$(49/2)^+$	4515.8	$(49/2^+)$		E_γ: 850 in Table I (2005Ku01).

[†] From 2005Ku01, stated $\Delta E\gamma$=0.5 keV.
[‡] From Fig. 1 (2005Ku01), not listed in Table I.
[#] For all transitions with measured $A_2 \geq +0.20$ and $A_4 < 0$, a multipolarity of E2 has been assigned. For several low-energy transitions with measured $A_2 < 0$, coincidence intensity balance results were used to distinguish between M1 and E1 multipolarity in 2005Ku01.
[@] From Adopted Gammas. Eγ used as a gate.
[&] Additional information 3.
[a] Placement of transition in the level scheme is uncertain.

$^{186}W(^{11}B,p5n\gamma)$ **2005Ku01**

Level Scheme

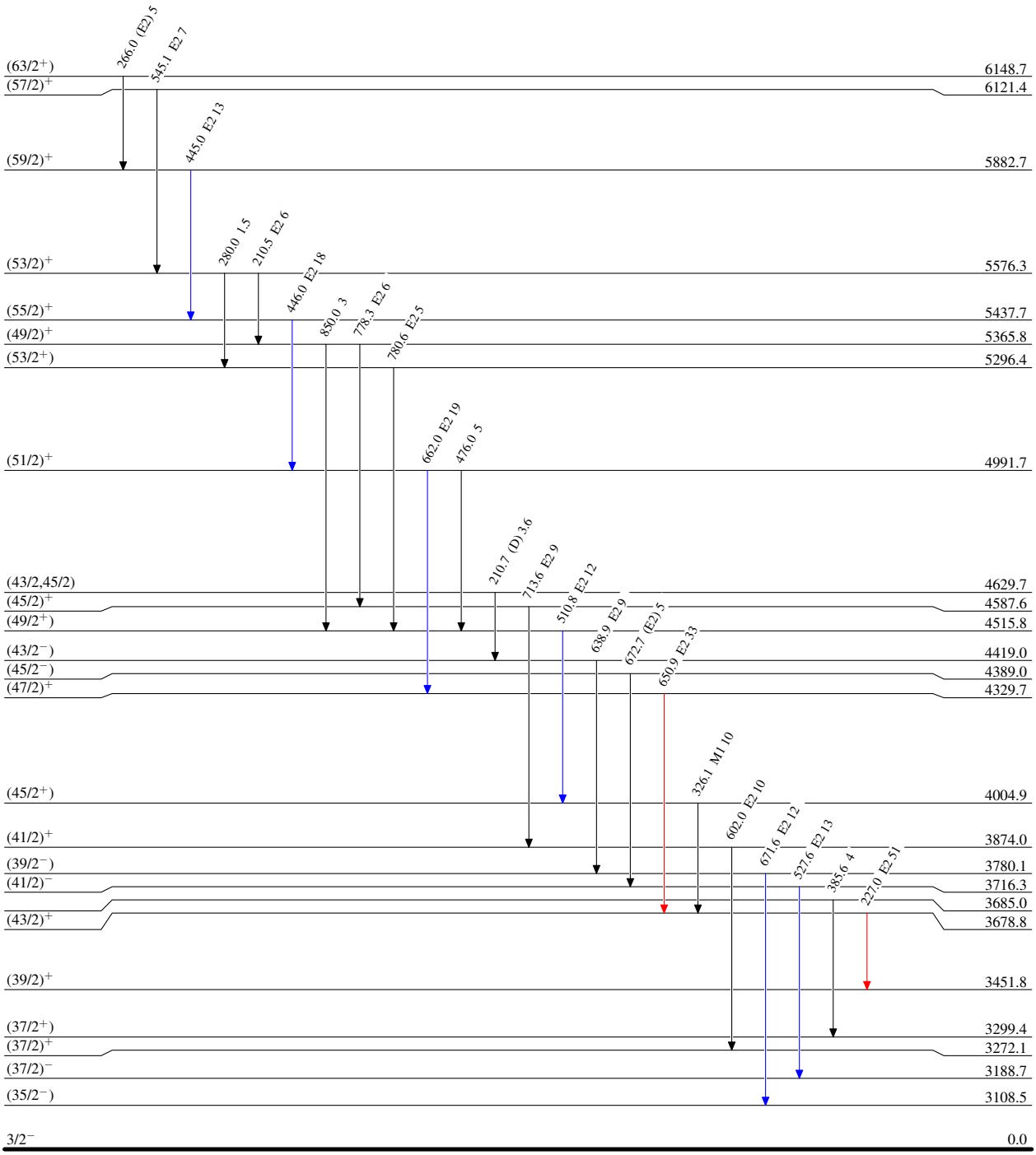
Intensities: Relative I_γ

Legend

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

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

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



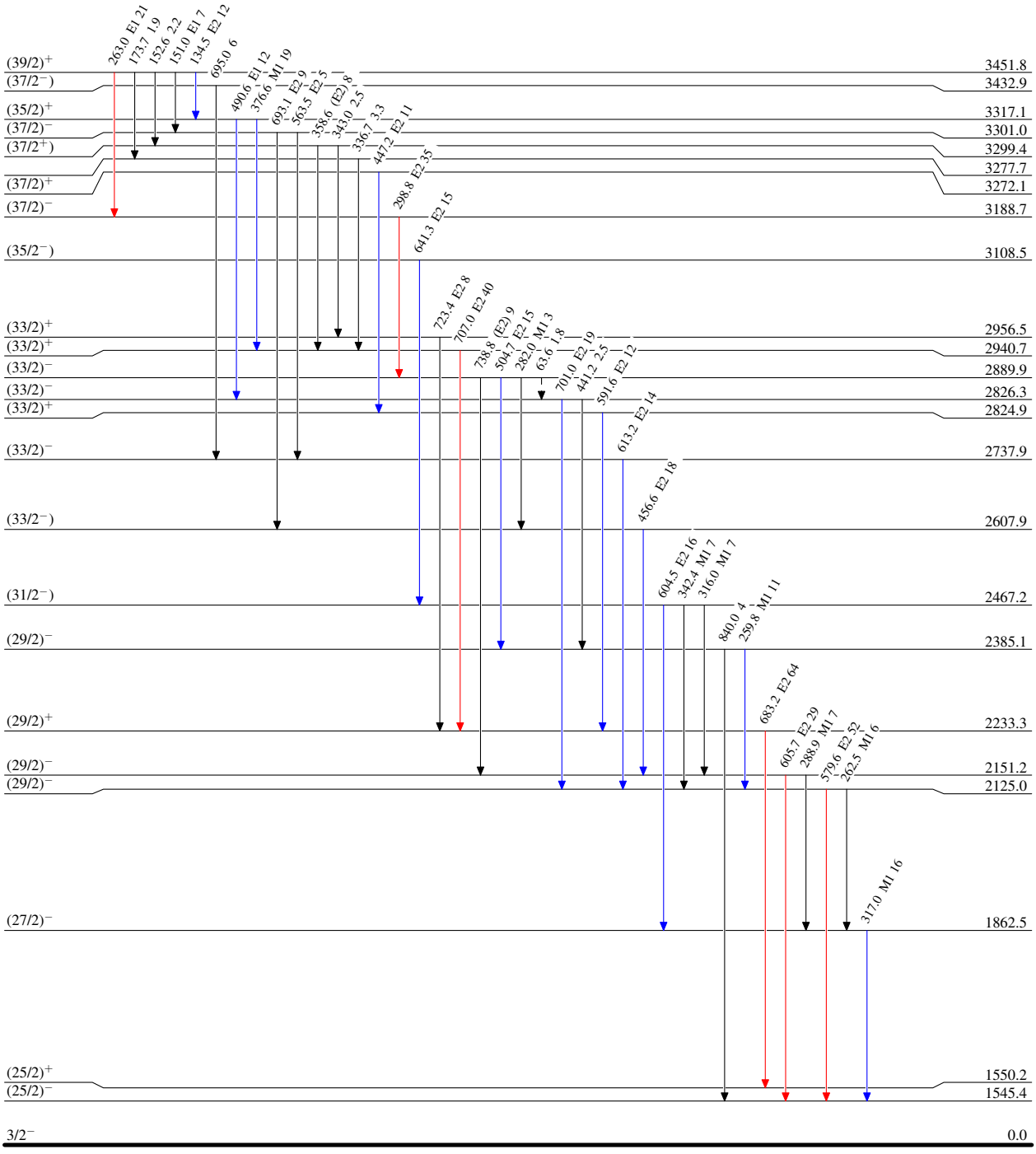
$^{191}_{78}Pt_{113}$

^{186}W(^{11}B,p5nγ) **2005Ku01**

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)

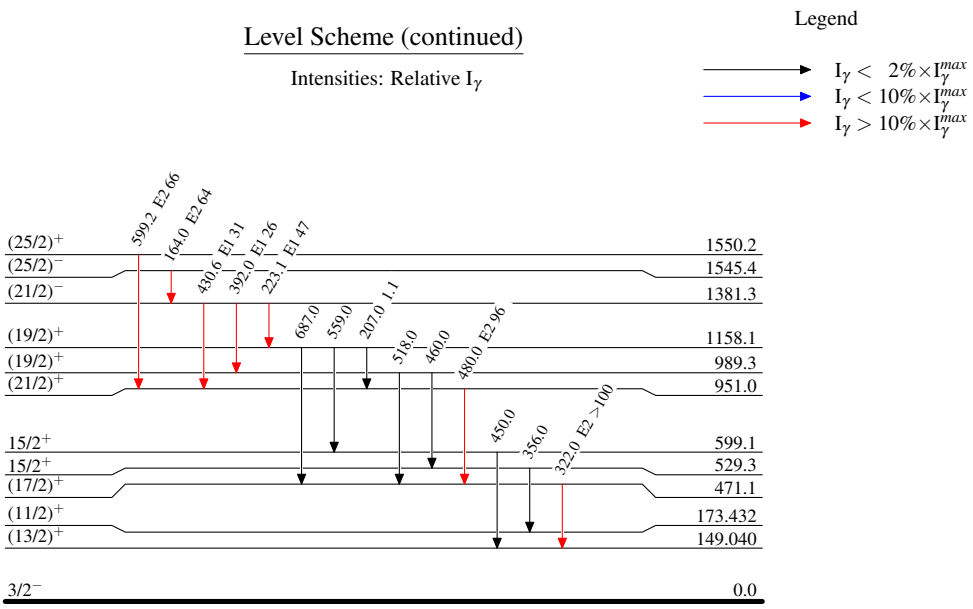


$^{191}_{78}Pt_{113}$

^{186}W(^{11}B,p5nγ) 2005Ku01

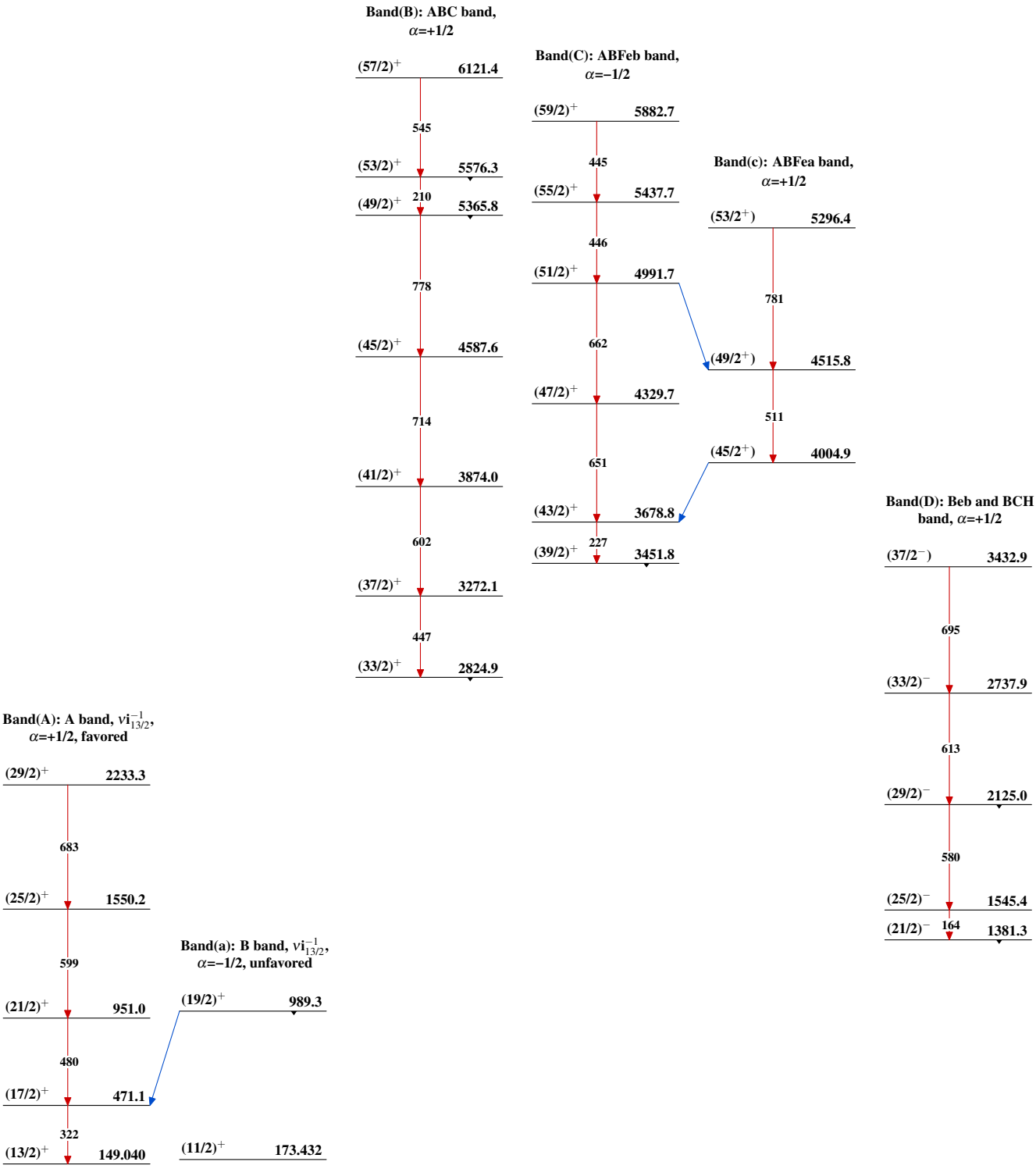
Level Scheme (continued)

Intensities: Relative I_γ



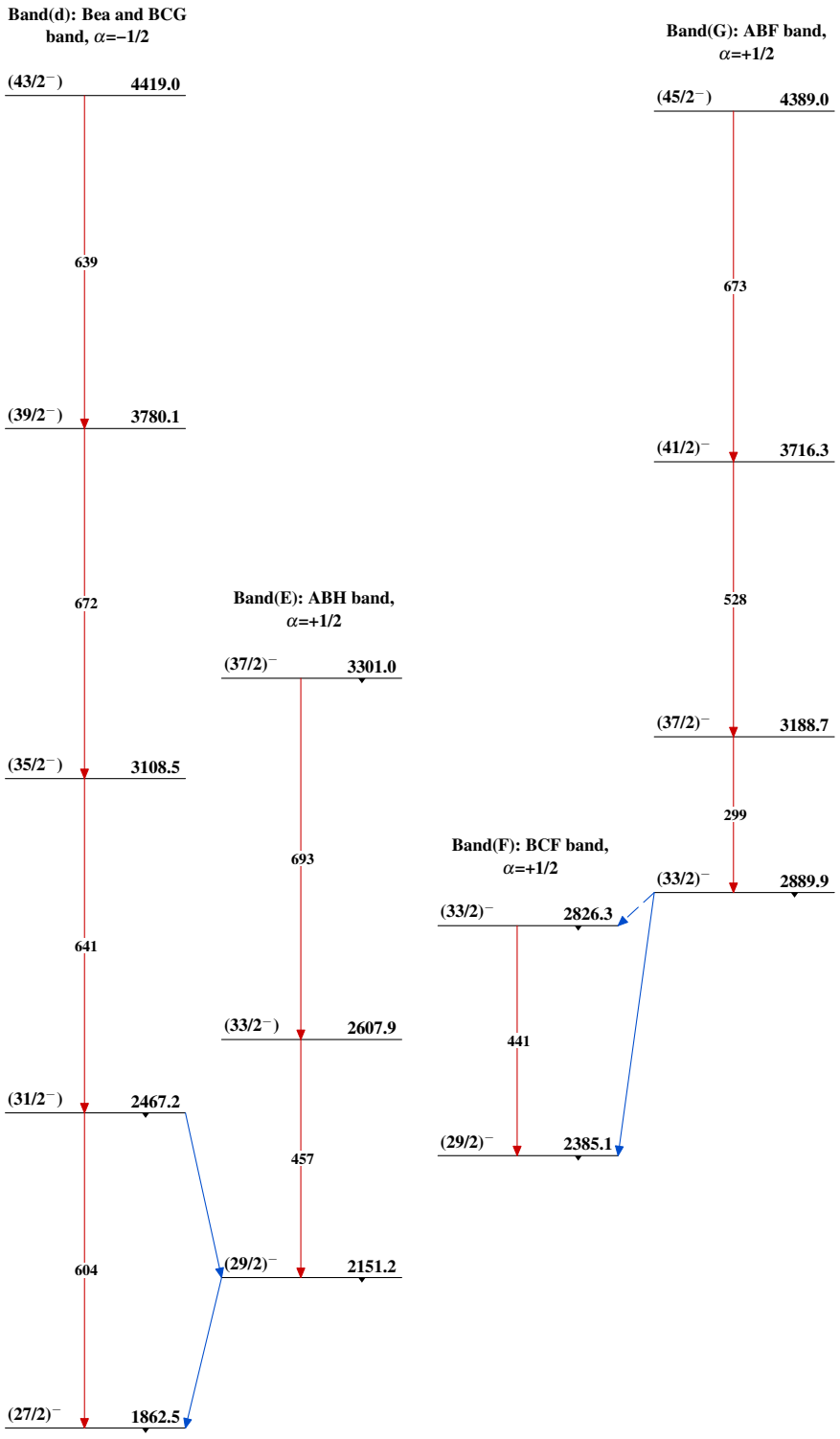
$^{191}_{78}Pt_{113}$

$^{186}W(^{11}B,p5n\gamma)$ 2005Ku01



$^{191}_{78}Pt_{113}$

$^{186}W(^{11}B,p5n\gamma)$ 2005Ku01 (continued)



$^{191}_{78}Pt_{113}$