^{181}Ta(^{11}B,5nγ) 2007CaZV

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 110, 999 (2009)	1-Nov-2008

Target: ^{181}Ta; Projectile: ^{11}B, E=71 MeV; Detectors: 3 clover and 3 Compton-suppressed HPGe; Measured: Eγ, $\gamma\gamma$ coin. Only levels, for which at least 1 depopulating γ-ray matches with that in the ^{173}Yb(^{18}O,4nγ) dataset are adopted. Because supporting arguments for the J$^{\pi}$ assignment and γ-ray placement in the level scheme are not reported in 2007CaZV.

^{187}Pt Levels

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	Comments
0.0[b]	3/2$^-$		
9.3	3/2$^-$		Additional information 1.
26.0[c] 9	5/2$^-$		
57.2[&] 19	7/2$^-$		
75.1 10	3/2$^-$		
175.2[@] 16	11/2$^+$	311 μs 15	T$_{1/2}$: From Adopted Levels.
191.1[e] 7	5/2$^-$		J$^{\pi}$: 3/2$^-$ in Adopted Levels.
203.9[@] 15	13/2$^+$		
205.1[b] 8	7/2$^-$		
226.0[&] 19	9/2$^-$		
306.7[c] 11	9/2$^-$		
431.3[&] 18	11/2$^-$		
465.8[@] 15	15/2$^+$		
501.1[eg] 9	9/2$^-$		
501.5[b] 11	11/2$^-$		
506.0[@] 15	17/2$^+$		
573.0[g] 16	13/2$^+$		
651.6[&] 17	13/2$^-$		
695.6[c] 14	13/2$^-$		
721.9[fg] 15	15/2$^+$		
888.7[b] 13	15/2$^-$		
895.5[&] 17	15/2$^-$		
903.7[@] 15	19/2$^+$		
908.0[eg] 13	13/2$^-$		
929.9[d] 15	17/2$^+$		
944.3[@] 15	21/2$^+$		
1005.9[g] 15	17/2$^+$		
1154.6[&] 16	17/2$^-$		
1162.5[c] 16	17/2$^-$		
1213.8[f] 15	19/2$^+$		
1351.9[b] 14	19/2$^-$		
1389.0[eg] 16	17/2$^-$		
1410.9 14	17/2$^-$		
1419.8[d] 16	21/2$^+$		
1431.5[&] 16	19/2$^-$		
1454.6[@] 16	23/2$^+$		
1497.9[@] 16	25/2$^+$		
1511.4[g] 16	19/2$^+$		
1618.1 15	19/2$^-$		J$^{\pi}$: No assignment in the Adopted Levels.

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^{181}Ta(^{11}B,5nγ) 2007CaZV (continued)

^{187}Pt Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
1659.6[a] *14*	21/2$^-$	
1693.5[c] *17*	21/2$^-$	
1718.7[&] *16*	21/2$^-$	
1791.5[g] *17*	21/2$^-$	
1791.6[f] *16*	23/2$^+$	
1842.0[a] *14*	23/2$^-$	
1872.0[b] *16*	23/2$^-$	
1898.4[a] *15*	25/2$^-$	
1931.0[eg] *19*	21/2$^-$	
1989.7[d] *16*	25/2$^+$	
2008.9[&] *16*	23/2$^-$	
2073.4[c] *16*	25/2$^-$	
2093.8[@] *16*	27/2$^+$	
2145.1[@] *17*	29/2$^+$	
2233.3[a] *16*	29/2$^-$	J$^{\pi}$: (27/2$^-$) in the Adopted Levels.
2265.8[&] *16*	25/2$^-$	
2396.1[b] *16*	27/2$^-$	
2426.8[f] *16*	27/2$^+$	
2436.3[a] *17*	29/2$^-$	
2485.6[c] *18*	29/2$^-$	
2495.8[&] *16*	27/2$^-$	
2521.5[d] *17*	29/2$^+$	
2611.5 *17*	29/2$^-$	
2628.8[f] *16*	29/2$^+$	
2635.3 *18*	(29/2$^-$)	J$^{\pi}$: (31/2$^-$) in the Adopted Levels.
2656.7[d] *19*	29/2$^+$	
2738.3[#a] *19*	33/2$^-$	
2746.9[@] *17*	31/2$^+$	
2747.8[&] *17*	29/2$^-$	
2855.1[@] *18*	33/2$^+$	
2855.7 *16*	31/2$^-$	
2873.8 *18*	(31/2$^+$)	
2902.8[f] *17*	31/2$^+$	
2917.9[b] *18*	31/2$^-$	
2946.3[a] *20*	33/2$^-$	
2999.6[c] *21*	33/2$^-$	
3013.1[&] *14*	31/2$^-$	
3041.2[d] *18*	33/2$^+$	
3068.7 *13*	(31/2$^-$)	J$^{\pi}$: (35/2$^-$) in the Adopted Levels.
3119.1 *18*	33/2$^+$	J$^{\pi}$: No assignment in the Adopted Levels.
3213.8[f] *17*	33/2$^+$	
3301.3[#a] *22*	37/2$^-$	
3335.1[@] *18*	35/2$^+$	
3492.1[@] *19*	37/2$^+$	
3534.8[f] *18*	35/2$^+$	
3556.3[a] *22*	37/2$^-$	
3577.9 *18*	(35/2$^+$)	
3610.6[c] *23*	37/2$^-$	

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^{181}Ta(^{11}B,5nγ) 2007CaZV (continued)

^{187}Pt Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
3893.3[a] 24	41/2−	4049.1[@] 22	41/2+	4728.1[@] 24	45/2+
3907?[f g]	(37/2+)	4254.3[a] 24	41/2−	4992[a] 3	(45/2−)
3980.1[@] 20	39/2+	4311.6[c] 25	41/2−	5090.3?[c g]	(45/2−)
3989.6[g]	(39/2+)	4559[a] 3	(45/2−)	5274.1?[a] 16	47/2−
				5515[@] 3	49/2+

† From a least-squares adjustment to the γ-ray energies, assuming $\Delta E=1$ keV. In most cases, the level energy is higher by about 1 to 3 keV when compared to the ^{173}Yb(^{18}O,4nγ) dataset.
‡ From 2007CaZV. Arguments for J^π assignments are not available (2007CaZV).
# Placements of 505γ-563γ cascade is interchanged between the adjacent levels in this band compared to the ^{173}Yb(^{18}O,4nγ) dataset.
@ Band C.
& Band I.
a Band D and E: 29/2− assignment at 2230.1, which is 27/2− in (^{18}O,4nγ) makes difference in assignment for the upper levels in this band compared to Adopted Levels.
b Band G.
c Band H.
d Band A.
e Band F.
f Band B.
g Level is absent in ^{173}Yb(^{18}O,4nγ) and not adopted.

γ(^{187}Pt)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
(40)	506.0	17/2+	465.8	15/2+	
(41)	1659.6	21/2−	1618.1	19/2−	
(56)	1898.4	25/2−	1842.0	23/2−	
98†	1791.5	21/2−	1693.5	21/2−	
116	191.1	5/2−	75.1	3/2−	
130†	205.1	7/2−	75.1	3/2−	
165	191.1	5/2−	26.0	5/2−	
169	226.0	9/2−	57.2	7/2−	
179	205.1	7/2−	26.0	5/2−	
182#	191.1	5/2−	9.3	3/2−	
182#	1842.0	23/2−	1659.6	21/2−	
191	191.1	5/2−	0.0	3/2−	
195	501.5	11/2−	306.7	9/2−	
197†	1410.9	17/2−	1213.8	19/2+	
199	2635.3	(29/2−)	2436.3	29/2−	E_γ: Placement in Fig 1 is not clear (2007CaZV).
202	2628.8	29/2+	2426.8	27/2+	
203	2436.3	29/2−	2233.3	29/2−	
205#	205.1	7/2−	0.0	3/2−	
205#	431.3	11/2−	226.0	9/2−	
207	1618.1	19/2−	1410.9	17/2−	
220	651.6	13/2−	431.3	11/2−	
224	1842.0	23/2−	1618.1	19/2−	

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^{181}Ta(^{11}B,5nγ) 2007CaZV (continued)

$\gamma(^{187}Pt)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
225	2746.9	$31/2^+$	2521.5	$29/2^+$	
227	2855.7	$31/2^-$	2628.8	$29/2^+$	
228†	1659.6	$21/2^-$	1431.5	$19/2^-$	
230	2495.8	$27/2^-$	2265.8	$25/2^-$	
239	1898.4	$25/2^-$	1659.6	$21/2^-$	
244#	895.5	$15/2^-$	651.6	$13/2^-$	
244#	2855.7	$31/2^-$	2611.5	$29/2^-$	
249	1659.6	$21/2^-$	1410.9	$17/2^-$	
252	2747.8	$29/2^-$	2495.8	$27/2^-$	
257	2265.8	$25/2^-$	2008.9	$23/2^-$	
259	1154.6	$17/2^-$	895.5	$15/2^-$	
262	465.8	$15/2^+$	203.9	$13/2^+$	
263	2495.8	$27/2^-$	2233.3	$29/2^-$	E_γ: Placement of a 263.8γ is from 4256 keV level (different Band) in ^{173}Yb(^{18}O,4nγ).
264	3119.1	$33/2^+$	2855.7	$31/2^-$	
267@	3013.1	$31/2^-$	2746.9	$31/2^+$	
274	2902.8	$31/2^+$	2628.8	$29/2^+$	
277	1431.5	$19/2^-$	1154.6	$17/2^-$	
281	306.7	$9/2^-$	26.0	$5/2^-$	
282	2073.4	$25/2^-$	1791.6	$23/2^+$	E_γ: Placement of a 281.6γ is from $21/2^+$ state at 1442.7 keV in ^{173}Yb(^{18}O,4nγ).
287	1718.7	$21/2^-$	1431.5	$19/2^-$	
290#	465.8	$15/2^+$	175.2	$11/2^+$	
290#	2008.9	$23/2^-$	1718.7	$21/2^-$	
294#†	3041.2	$33/2^+$	2746.9	$31/2^+$	
294#	3335.1	$35/2^+$	3041.2	$33/2^+$	E_γ: Placement of a 294.1γ is from 3075.8 keV level (J=33/2) (different band member) in ^{173}Yb(^{18}O,4nγ).
296#	501.1	$9/2^-$	205.1	$7/2^-$	
296#	501.5	$11/2^-$	205.1	$7/2^-$	
302	506.0	$17/2^+$	203.9	$13/2^+$	
310	501.1	$9/2^-$	191.1	$5/2^-$	E_γ: Placement of a 310.5γ is from 3211 keV level in ^{173}Yb(^{18}O,4nγ).
311	3213.8	$33/2^+$	2902.8	$31/2^+$	
321	3534.8	$35/2^+$	3213.8	$33/2^+$	
323†	2396.1	$27/2^-$	2073.4	$25/2^-$	
335	2233.3	$29/2^-$	1898.4	$25/2^-$	
357	929.9	$17/2^+$	573.0	$13/2^+$	
360	2855.7	$31/2^-$	2495.8	$27/2^-$	
373	3492.1	$37/2^+$	3119.1	$33/2^+$	
374	431.3	$11/2^-$	57.2	$7/2^-$	
376†	2521.5	$29/2^+$	2145.1	$29/2^+$	
378	2611.5	$29/2^-$	2233.3	$29/2^-$	
380	2073.4	$25/2^-$	1693.5	$21/2^-$	
387	888.7	$15/2^-$	501.5	$11/2^-$	
389	695.6	$13/2^-$	306.7	$9/2^-$	
398#	573.0	$13/2^+$	175.2	$11/2^+$	E_γ: Placement of a 397.6γ is only from 902.8 keV level in ^{173}Yb(^{18}O,4nγ) and the 573 keV level is absent.
398#	903.7	$19/2^+$	506.0	$17/2^+$	
402	2635.3	$(29/2^-)$	2233.3	$29/2^-$	
407†	908.0	$13/2^-$	501.1	$9/2^-$	
412	2485.6	$29/2^-$	2073.4	$25/2^-$	
424	929.9	$17/2^+$	506.0	$17/2^+$	
426	651.6	$13/2^-$	226.0	$9/2^-$	
428	2521.5	$29/2^+$	2093.8	$27/2^+$	

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^{181}Ta(^{11}B,5nγ) 2007CaZV (continued)

$\gamma(^{187}Pt)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
432†	2917.9	31/2$^-$	2485.6	29/2$^-$	
433†	1005.9	17/2$^+$	573.0	13/2$^+$	
437@	3068.7	(31/2$^-$)	2628.8	29/2$^+$	
438#	903.7	19/2$^+$	465.8	15/2$^+$	
438#	944.3	21/2$^+$	506.0	17/2$^+$	
446	1659.6	21/2$^-$	1213.8	19/2$^+$	
461@	3068.7	(31/2$^-$)	2611.5	29/2$^-$	
463	1351.9	19/2$^-$	888.7	15/2$^-$	
464#	895.5	15/2$^-$	431.3	11/2$^-$	
464#	929.9	17/2$^+$	465.8	15/2$^+$	
467	1162.5	17/2$^-$	695.6	13/2$^-$	
476	2902.8	31/2$^+$	2426.8	27/2$^+$	
480	3335.1	35/2$^+$	2855.1	33/2$^+$	
481	1389.0	17/2$^-$	908.0	13/2$^-$	E_γ: Placement of a 481.4γ is from 2745 keV level (J^π=29/2$^-$) in ^{173}Yb(^{18}O,4nγ) and this level is absent.
482	2747.8	29/2$^-$	2265.8	25/2$^-$	
487	2495.8	27/2$^-$	2008.9	23/2$^-$	
490#	1419.8	21/2$^+$	929.9	17/2$^+$	
490#	1842.0	23/2$^-$	1351.9	19/2$^-$	
492	1213.8	19/2$^+$	721.9	15/2$^+$	E_γ: Placement of a 490.0γ is from 1839.8 keV level (J^π=23/2$^-$) in ^{173}Yb(^{18}O,4nγ).
500	1005.9	17/2$^+$	506.0	17/2$^+$	
503#	1154.6	17/2$^-$	651.6	13/2$^-$	
503#	1410.9	17/2$^-$	908.0	13/2$^-$	E_γ: Placement of a 502.2γ is from 1153 keV level (J^π=17/2$^-$) only in ^{173}Yb(^{18}O,4nγ).
505#	1659.6	21/2$^-$	1154.6	17/2$^-$	
505#‡	2738.3	33/2$^-$	2233.3	29/2$^-$	
506	1511.4	19/2$^+$	1005.9	17/2$^+$	E_γ: Placement of 504.5γ and 504.7γ from 3297.5 keV and 1657.9 keV levels, respectively, in ^{173}Yb(^{18}O,4nγ) and this level is absent.
510#	1454.6	23/2$^+$	944.3	21/2$^+$	
510#	2946.3	33/2$^-$	2436.3	29/2$^-$	
514	2999.6	33/2$^-$	2485.6	29/2$^-$	
516	1419.8	21/2$^+$	903.7	19/2$^+$	
518†	721.9	15/2$^+$	203.9	13/2$^+$	
520#	1872.0	23/2$^-$	1351.9	19/2$^-$	
520#@	3013.1	31/2$^-$	2495.8	27/2$^-$	
520#	3041.2	33/2$^+$	2521.5	29/2$^+$	
522	2917.9	31/2$^-$	2396.1	27/2$^-$	
524	2396.1	27/2$^-$	1872.0	23/2$^-$	
531	1693.5	21/2$^-$	1162.5	17/2$^-$	
532	2521.5	29/2$^+$	1989.7	25/2$^+$	
535	1989.7	25/2$^+$	1454.6	23/2$^+$	E_γ: Placement of a 534.8γ is from 3574.1 keV level (same band structure) in ^{173}Yb(^{18}O,4nγ).
536	1431.5	19/2$^-$	895.5	15/2$^-$	
538	2436.3	29/2$^-$	1898.4	25/2$^-$	
542	1931.0	21/2$^-$	1389.0	17/2$^-$	E_γ: Placement of a 542.0γ is from 3287.1 keV level (J^π=33/2$^-$) in ^{173}Yb(^{18}O,4nγ) and this level is absent.
547#	721.9	15/2$^+$	175.2	11/2$^+$	E_γ: Placement of a 546.6γ is from 2263.7 keV level (J^π=25/2$^-$) only in ^{173}Yb(^{18}O,4nγ) and this level is absent.
547#	2265.8	25/2$^-$	1718.7	21/2$^-$	

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^{181}Ta(^{11}B,5nγ) 2007CaZV (continued)

$\gamma(^{187}Pt)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
551	1454.6	$23/2^+$	903.7	$19/2^+$	
554	1497.9	$25/2^+$	944.3	$21/2^+$	
557	4049.1	$41/2^+$	3492.1	$37/2^+$	
563‡	3301.3	$37/2^-$	2738.3	$33/2^-$	
564	1718.7	$21/2^-$	1154.6	$17/2^-$	
570	1989.7	$25/2^+$	1419.8	$21/2^+$	
578#	1791.6	$23/2^+$	1213.8	$19/2^+$	
578#	2008.9	$23/2^-$	1431.5	$19/2^-$	
585	3213.8	$33/2^+$	2628.8	$29/2^+$	
588	3335.1	$35/2^+$	2746.9	$31/2^+$	
592	3893.3	$41/2^-$	3301.3	$37/2^-$	
596	2093.8	$27/2^+$	1497.9	$25/2^+$	
597	2495.8	$27/2^-$	1898.4	$25/2^-$	E_γ: Placement of a 595.7γ is from 3613.2 keV (J=35/2) in ^{173}Yb(^{18}O,4nγ).
602	2746.9	$31/2^+$	2145.1	$29/2^+$	
610	3556.3	$37/2^-$	2946.3	$33/2^-$	
611	3610.6	$37/2^-$	2999.6	$33/2^-$	
612	1618.1	$19/2^-$	1005.9	$17/2^+$	E_γ: Placement of a 610.5γ is from 3606.7 keV level ($37/2^-$) in ^{173}Yb(^{18}O,4nγ).
629	1791.5	$21/2^-$	1162.5	$17/2^-$	E_γ: Placement of a 628.1γ is from 2070.8 keV ($J^\pi=25/2^-$) in ^{173}Yb(^{18}O,4nγ).
632	3534.8	$35/2^+$	2902.8	$31/2^+$	
635	2426.8	$27/2^+$	1791.6	$23/2^+$	
637	3492.1	$37/2^+$	2855.1	$33/2^+$	
639#	2093.8	$27/2^+$	1454.6	$23/2^+$	
639#	2628.8	$29/2^+$	1989.7	$25/2^+$	
645	3980.1	$39/2^+$	3335.1	$35/2^+$	
647	2145.1	$29/2^+$	1497.9	$25/2^+$	
653	2746.9	$31/2^+$	2093.8	$27/2^+$	
657@	3989.6	$(39/2^+)$	3335.1	$35/2^+$	
666	4559	$(45/2^-)$	3893.3	$41/2^-$	
667	2656.7	$29/2^+$	1989.7	$25/2^+$	
674†	1618.1	$19/2^-$	944.3	$21/2^+$	
679	4728.1	$45/2^+$	4049.1	$41/2^+$	
689†	1410.9	$17/2^-$	721.9	$15/2^+$	
694†@	3907?	$(37/2^+)$	3213.8	$33/2^+$	
698	4254.3	$41/2^-$	3556.3	$37/2^-$	
701	4311.6	$41/2^-$	3610.6	$37/2^-$	
704	3577.9	$(35/2^+)$	2873.8	$(31/2^+)$	
708	1213.8	$19/2^+$	506.0	$17/2^+$	
710	2855.1	$33/2^+$	2145.1	$29/2^+$	
713@	2611.5	$29/2^-$	1898.4	$25/2^-$	
715	1659.6	$21/2^-$	944.3	$21/2^+$	
720@	5274.1?	$47/2^-$	4559	$(45/2^-)$	
737@	2635.3	$(29/2^-)$	1898.4	$25/2^-$	E_γ: Placement of a 736.5γ is from 4986.2 keV level ($J^\pi=45/2^-$) in ^{173}Yb(^{18}O,4nγ).
738	4992	$(45/2^-)$	4254.3	$41/2^-$	
756	1659.6	$21/2^-$	903.7	$19/2^+$	
780	2873.8	$(31/2^+)$	2093.8	$27/2^+$	
783†@	5090.3?	$(45/2^-)$	4311.6	$41/2^-$	
787	5515	$49/2^+$	4728.1	$45/2^+$	
802†	1005.9	$17/2^+$	203.9	$13/2^+$	
831	3577.9	$(35/2^+)$	2746.9	$31/2^+$	
847	1791.6	$23/2^+$	944.3	$21/2^+$	
905	1410.9	$17/2^-$	506.0	$17/2^+$	

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^{181}Ta(^{11}B,5nγ) 2007CaZV (continued)

$\gamma(^{187}Pt)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π
929	2426.8	$27/2^+$	1497.9	$25/2^+$
945	1410.9	$17/2^-$	465.8	$15/2^+$
974	3119.1	$33/2^+$	2145.1	$29/2^+$
1005†	1511.4	$19/2^+$	506.0	$17/2^+$
1112†	1618.1	$19/2^-$	506.0	$17/2^+$
1131	2628.8	$29/2^+$	1497.9	$25/2^+$

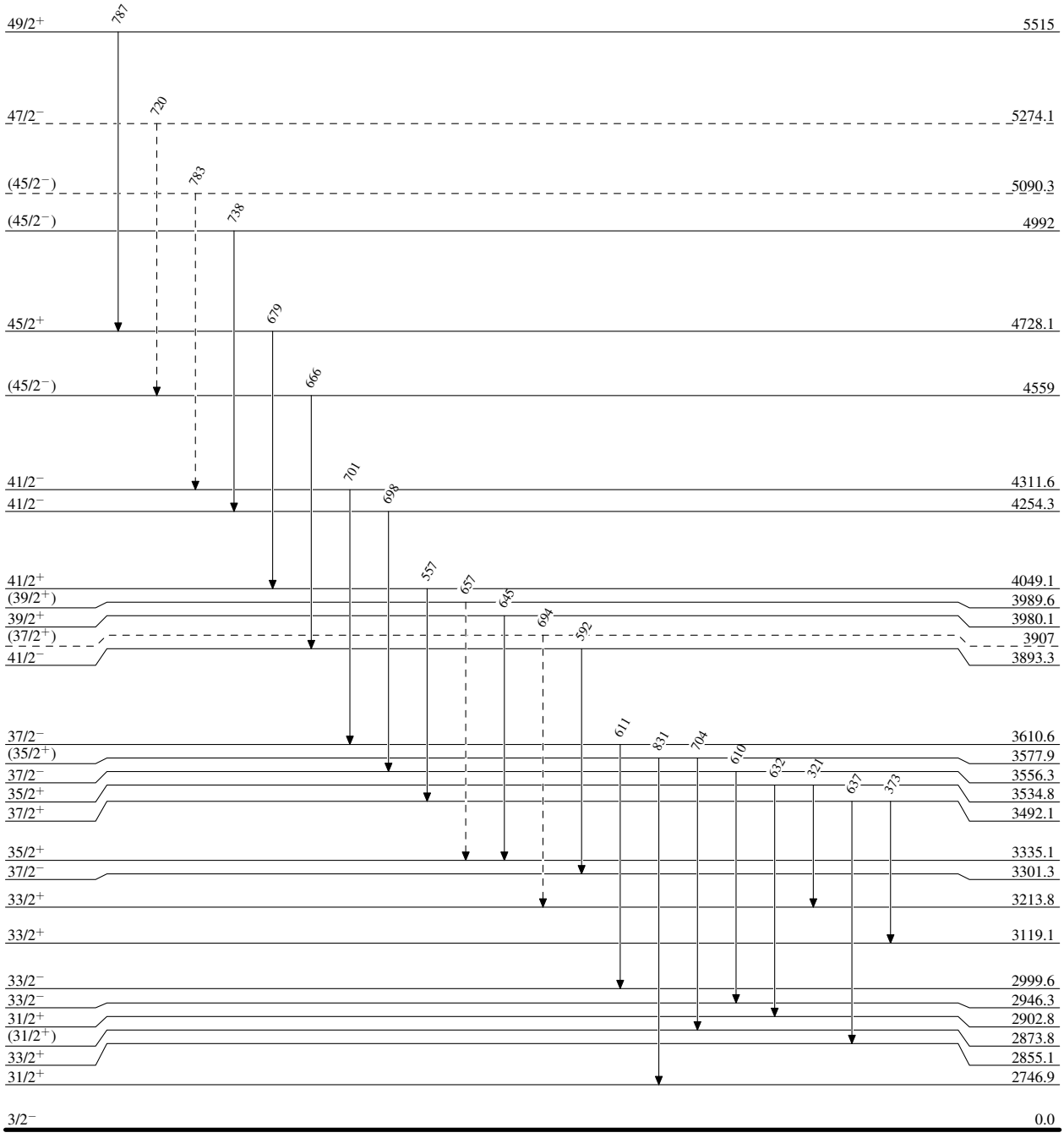
† This γ-ray is absent in ^{173}Yb(^{18}O,4nγ).
‡ Placements of 505γ-563γ cascade is interchanged between the adjacent levels in this band compared to the ^{173}Yb(^{18}O,4nγ) dataset.
# Multiply placed.
@ Placement of transition in the level scheme is uncertain.

Legend

^{181}Ta(^{11}B,5nγ) 2007CaZV

Level Scheme

γ Decay (Uncertain)



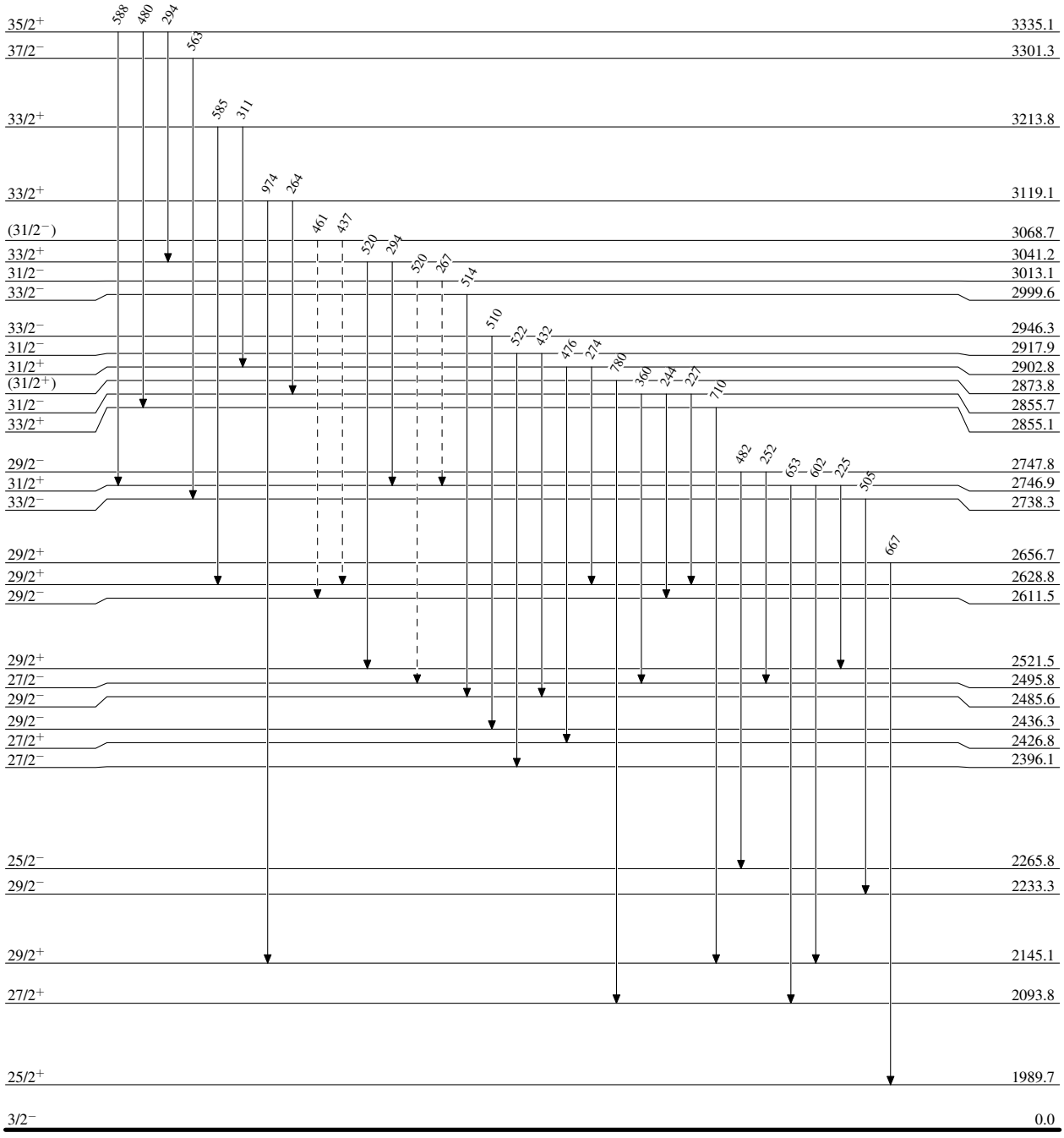
$^{187}_{78}Pt_{109}$

^{181}Ta(^{11}B,5nγ) 2007CaZV

Legend

– – – – – – ► γ Decay (Uncertain)

Level Scheme (continued)



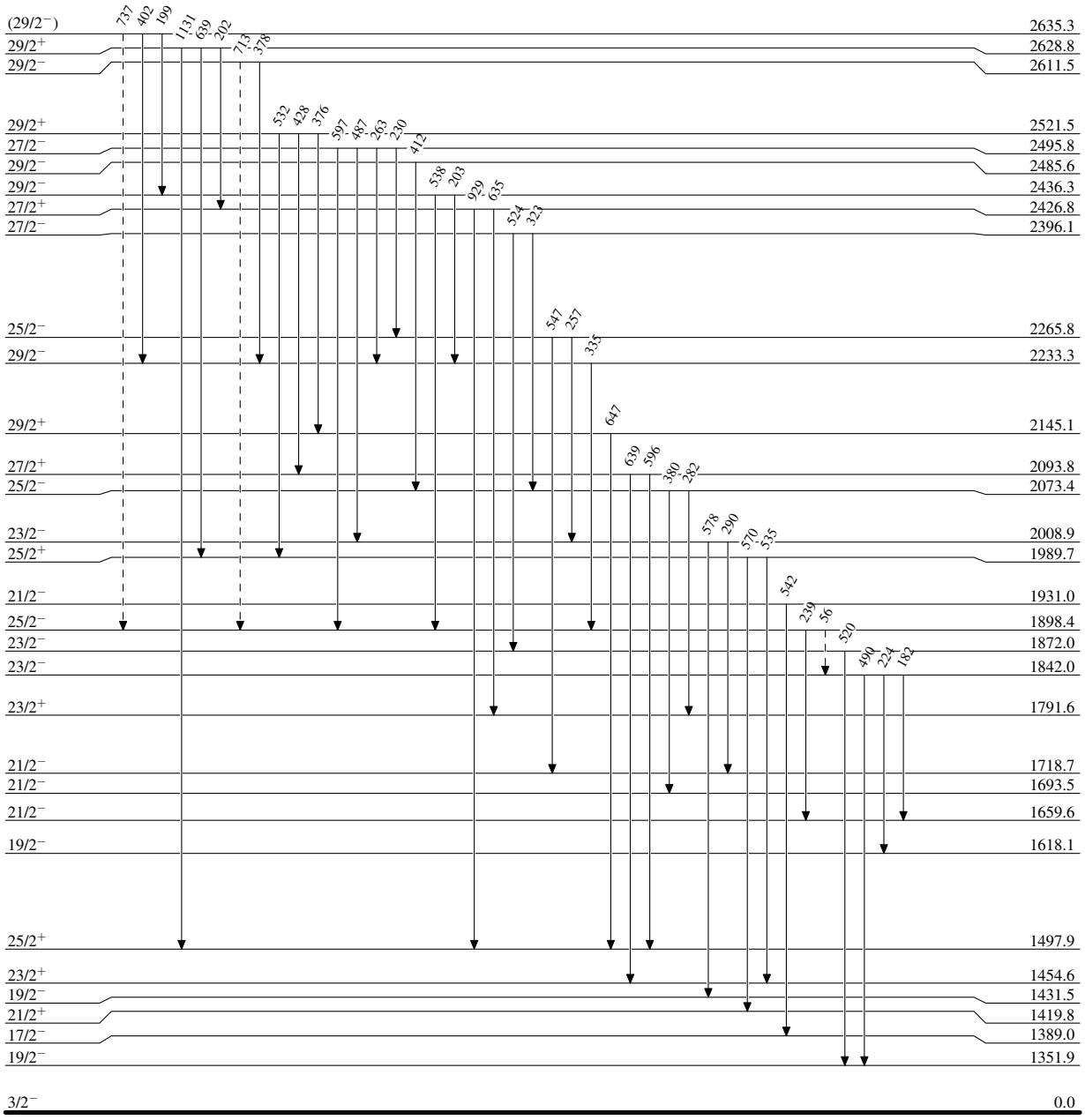
$^{187}_{78}Pt_{109}$

^{181}Ta(^{11}B,5nγ) 2007CaZV

Legend

γ Decay (Uncertain)

Level Scheme (continued)



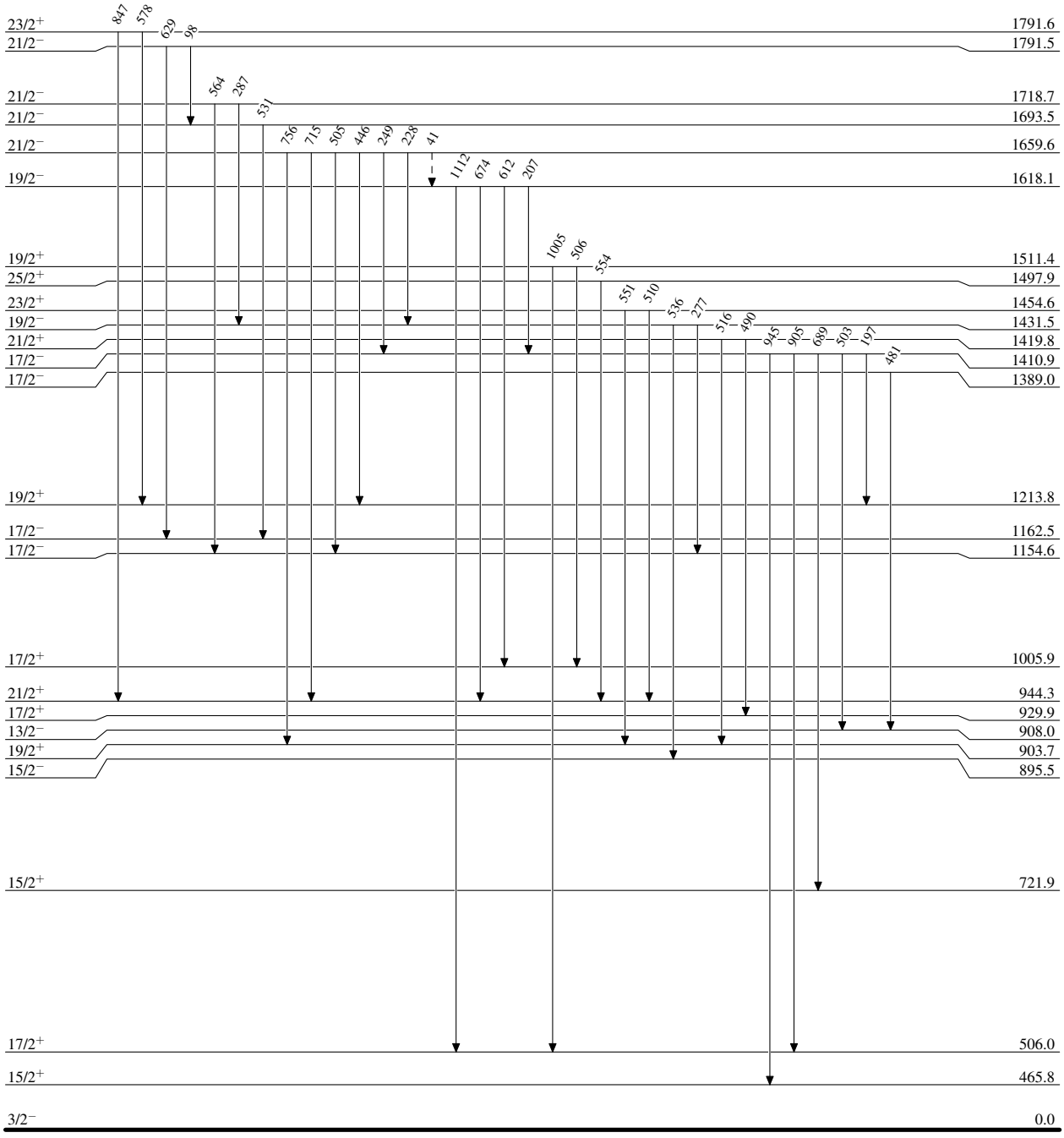
$^{187}_{78}Pt_{109}$

^{181}Ta(^{11}B,5nγ) 2007CaZV

Legend

γ Decay (Uncertain)

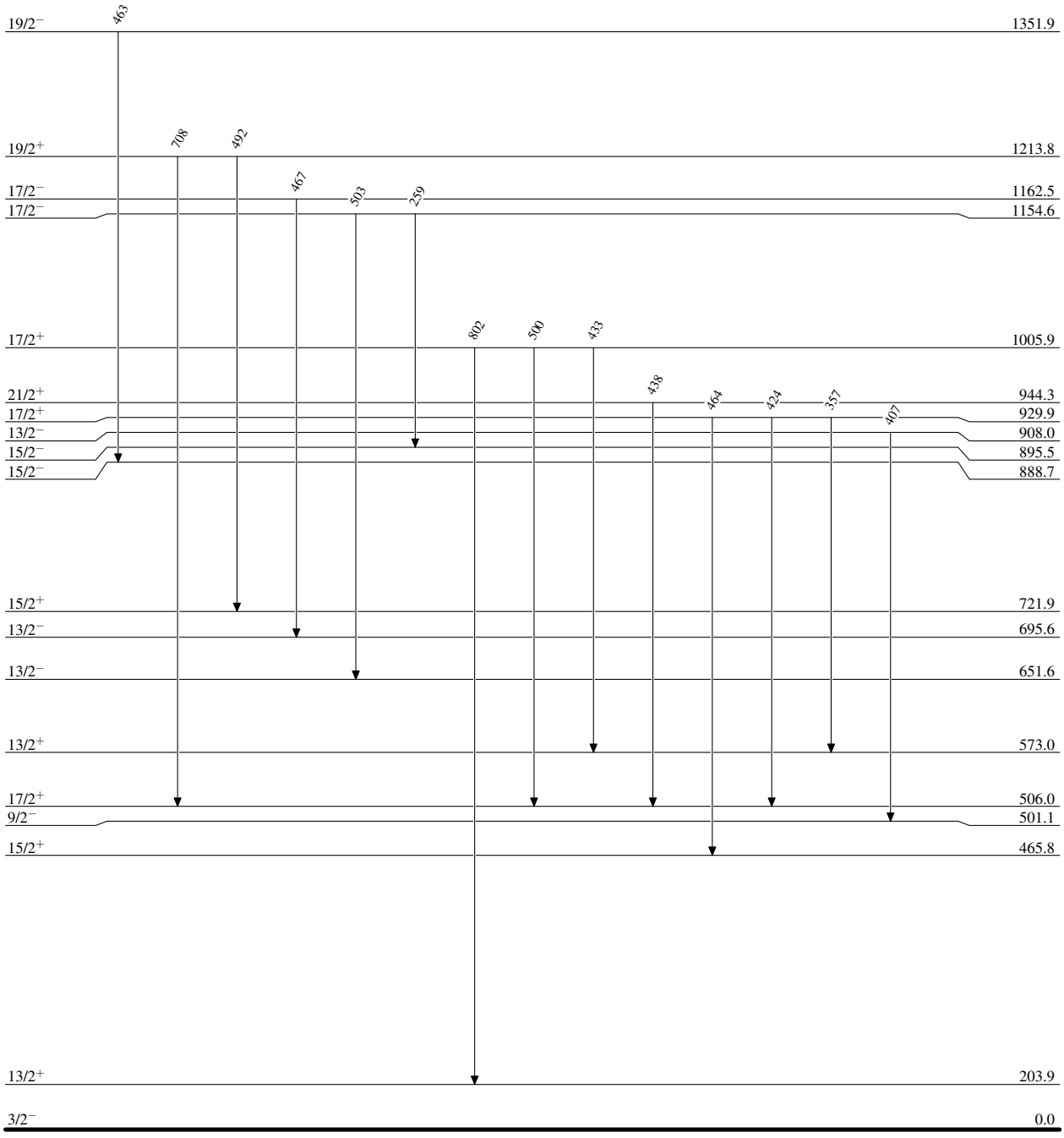
Level Scheme (continued)



$^{187}_{78}Pt_{109}$

^{181}Ta(^{11}B,5nγ) 2007CaZV

Level Scheme (continued)

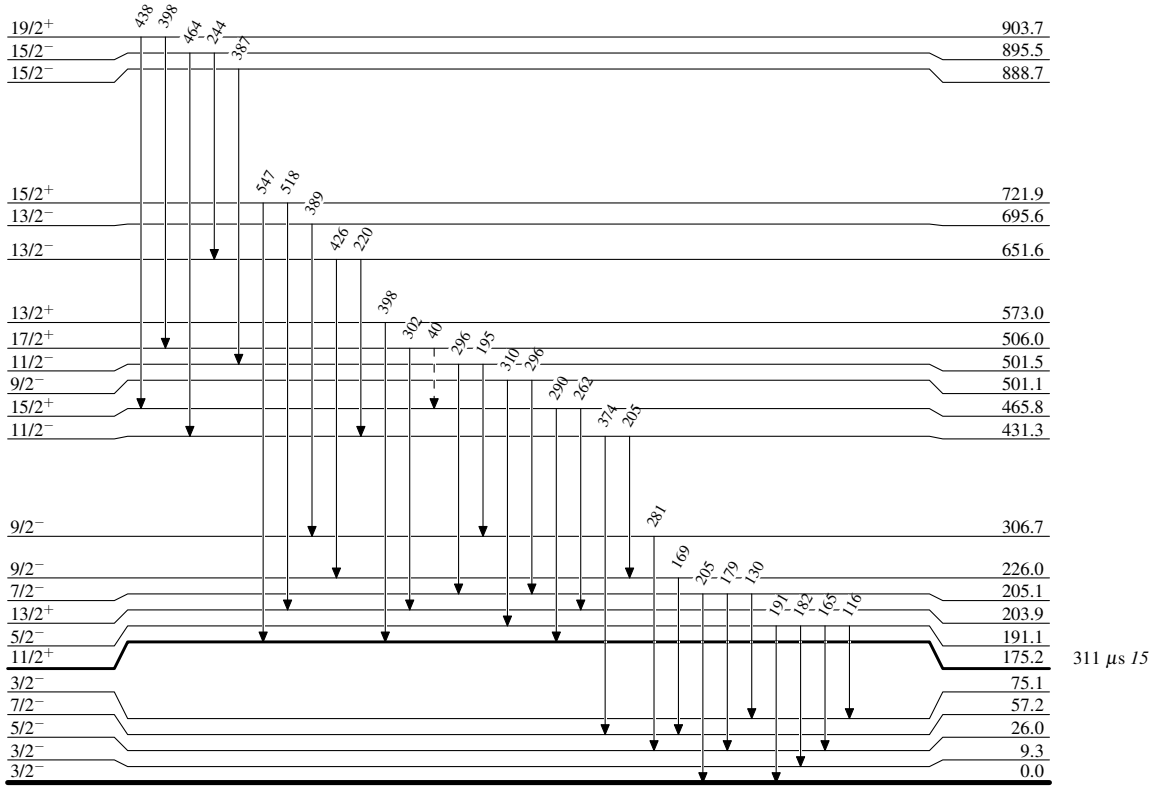


$^{187}_{78}Pt_{109}$

^{181}Ta(^{11}B,5nγ) 2007CaZV Legend

Level Scheme (continued)

γ Decay (Uncertain)



$^{187}_{78}Pt_{109}$