^{194}Pt(n,n′γ),(n,n′) 1981Fi01,1985Mi20,1987Hi04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

1981Fi01: (n,n′γ) E=1.2-4.5 MeV neutrons were produced by ^{3}He(p,n) reaction with pulsed proton beams from the 6.5-MV Van de Graaff accelerator of University of Kentucky. Target was 41 g metallic 97.4% enriched ^{194}Pt. γ rays were detected with a coaxial Ge(Li) detector. Measured Eγ, Iγ, γ(θ) and excitation function. Time of flight technique used to suppress background events in the γ-detector. Resolution for neutron spectrum=70 keV. γ(θ) measured at E(n)=2.5 MeV for 12 angles between 40° and 150° (lab).

1985Mi20, 1987Hi04 (also 1987HiZO): (n,n′) E=2.5 MeV, 4.55 MeV and 8 MeV neutrons were produced via ^{3}He(p,n) with proton beams from the University of Kentucky 6.5-MV accelerator. Measured σ(θ) data for g.s., first two 2^+ levels, 3^+ and 4^+ level at E(n)=2.5 MeV. Coupled-channel analysis. Total cross sections given for several levels for E(n)=0.3 to 4 MeV. The same research group also reported (n,n′) data for E(n)=0.3 to 30 MeV (1987HiZX). See also 1988Hi07, from the same research group, for analysis of data for E(n)<10 MeV.

1989Cl08: E=8 MeV neutrons were produced by the ^{2}H(d,n) reaction with pulsed deuteron beams from the tandem accelerator of the Centre d′Etudes de Bruyeres-le-Chatel. Measured scattered neutrons at θ=20° to 160° with time-of-flight technique. Levels populated at 0 keV (0^+), 328 keV (2^+), 622 keV (2^+), 811 keV (4^+), 1374 keV (5^-), and 1432 keV (3^-). Coupled-channel calculations.

^{194}Pt Levels

E(level)†	Jπ‡	Comments
0.0	0^+	
328.45 *3*	2^+	β_2=0.170 *5* (1987Hi04) From a fit to (n,n′) data, 1987Hi04 deduce Q=0.18.
621.96 *5*	2^+	
811.32 *6*	4^+	β_4=0.040 *5* (1987Hi04)
922.67 *7*	3^+	
1229.49 *8*	4^+	
1267.08 *10*	0^+	
1373.96 *10*	(5^-)	Jπ: 562.6γ(θ) consistent with J=5 and not with J=4 or 3. Excitation function (1981Fi01) consistent with J≥4.
1411.62 *21*	6^+	
1422.33 *10*	$(3,4)^+$	
1432.49 *7*	3^-	
1479.26 *21*	0^+	
1498.58 *21*	(5^+)	Jπ: 575.9γ(θ) consistent with stretched E2 to 3^+. Excitation function (1981Fi01) consistent with J=4,5.
1512.01 *8*	2^+	
1547.25 *13*	0^+	
1622.01 *12*	2^+	
1670.54 *11*	2^+	
1778.71 *15*	2^+	
1783.65 *14*	(6^-)	
1797.40 *10*	1^-	
1816.86 *8*	$(2)^+$	
1888.29 *12*	(2,3,4)	Jπ: 455.8γ(θ) does not allow ΔJ=2.
1924.04 *15*	1^+	
1930.24 *9*	2^+	
1961.49 *22*	2^-	
2003.73 *16*	(2^+)	
2043.59 *15*	1^+	
2053.6 *3*	$(2)^+$	
2063.63 *17*	2^+	
2134.04 *19*	$1^+,2^+$	
2140.67 *21*	$(1^+,2^+)$	
2157.86 *21*	$(2)^+$	

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^{194}Pt(n,n′γ),(n,n′) 1981Fi01,1985Mi20,1987Hi04 (continued)

^{194}Pt Levels (continued)

E(level)†	Jπ‡
2215.22 *16*	1+
2298.1 *3*	1+
2397.3 *5*	2+

† From a least-squares fit to Eγ data.
‡ From Adopted Levels, unless otherwise stated.

γ(^{194}Pt)

A_2 coefficients given under comments are from 1981Fi01.

Eγ†	Iγ†	E_i(level)	J^π_i	E_f	J^π_f	Comments
202.8 *2*	0.8 *1*	1432.49	3−	1229.49	4+	
293.50 *5*	28.8 *15*	621.96	2+	328.45	2+	A_2=−0.04 *4*
300.74 *7*	10.6 *5*	922.67	3+	621.96	2+	A_2=+0.02 *4*
304.8 *3*	1.1 *1*	1816.86	(2)+	1512.01	2+	A_2=+0.02 *4*
328.45 *3*	100	328.45	2+	0.0	0+	A_2=+0.12 *4*
364.8 *2*	0.59 *6*	1797.40	1−	1432.49	3−	
409.69 *10*	0.47 *5*	1783.65	(6−)	1373.96	(5−)	A_2=+0.40 *14*
417.96 *11*	0.62 *6*	1229.49	4+	811.32	4+	A_2=+0.13 *15*
455.80 *9*	1.9 *2*	1888.29	(2,3,4)	1432.49	3−	A_2=−0.28 *3*
482.80 *6*	19.0 *10*	811.32	4+	328.45	2+	A_2=+0.29 *2*
499.65 *9*	2.9 *3*	1422.33	(3,4)+	922.67	3+	
529.0 *2*	0.94 *9*	1961.49	2−	1432.49	3−	A_2=+0.30 *9*
562.64 *8*	6.5 *3*	1373.96	(5−)	811.32	4+	A_2=−0.24 *3*
575.9 *2*	1.1 *1*	1498.58	(5+)	922.67	3+	A_2=+0.33 *9*
589.18 *11*	0.48 *5*	1512.01	2+	922.67	3+	
594.3 *2*	1.2 *1*	922.67	3+	328.45	2+	
600.3 *2*	0.57 *6*	1411.62	6+	811.32	4+	
607.63 *9*	4.3 *4*	1229.49	4+	621.96	2+	A_2=+0.24 *3*
621.4 *2*	2.2 *2*	1432.49	3−	811.32	4+	
622.0 *2*	3.5 *4*	621.96	2+	0.0	0+	
645.16 *10*	0.85 *9*	1267.08	0+	621.96	2+	A_2=+0.09 *14*
x684.08 *12*	0.45 *5*					
700.5 *2*	0.61 *6*	1512.01	2+	811.32	4+	
810.5 *2*	0.46 *5*	1432.49	3−	621.96	2+	A_2=−0.24 *14*
x816.2 *3*	0.53 *5*					
889.90 *15*	0.41 *4*	1512.01	2+	621.96	2+	
894.51 *13*	0.78 *8*	1816.86	(2)+	922.67	3+	A_2=+0.08 *9*
901.05 *17*	0.31 *3*	1229.49	4+	328.45	2+	
925.5 *3*	0.34 *3*	1547.25	0+	621.96	2+	
938.6 *2*	0.52 *5*	1267.08	0+	328.45	2+	A_2=+0.01 *8*
948.3 *2*	0.43 *4*	2215.22	1+	1267.08	0+	A_2=−0.18 *25*
999.99 *14*	0.56 *6*	1622.01	2+	621.96	2+	A_2=−0.32 *12*
1007.57 *9*	0.93 *9*	1930.24	2+	922.67	3+	A_2=+0.06 *7*
1048.55 *13*	0.84 *8*	1670.54	2+	621.96	2+	A_2=+0.02 *8*
x1059.8 *3*	0.28 *3*					
1093.9 *2*	0.68 *7*	1422.33	(3,4)+	328.45	2+	A_2=+0.34 *12*
1104.01 *8*	5.9 *3*	1432.49	3−	328.45	2+	A_2=−0.23 *3*
1118.7 *3*	0.28 *3*	1930.24	2+	811.32	4+	
x1137.8 *2*	0.68 *7*					

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^{194}Pt(n,n′γ),(n,n′) 1981Fi01,1985Mi20,1987Hi04 (continued)

γ(^{194}Pt) (continued)

E_γ †	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Comments
1150.8 2	0.91 9	1479.26	0+	328.45	2+	
1156.5 2	0.81 8	1778.71	2+	621.96	2+	
x1165.6 2	0.57 6					
x1169.9 3	0.43 4					
1175.4 2	0.22 2	1797.40	1−	621.96	2+	
1183.60 12	1.4 1	1512.01	2+	328.45	2+	A_2=+0.18 6
1194.8 2	0.69 7	1816.86	(2)+	621.96	2+	A_2=−0.22 6
1218.75 13	0.71 7	1547.25	0+	328.45	2+	A_2=0.00 7
1293.5 2	0.67 7	1622.01	2+	328.45	2+	
1308.3 2	0.76 8	1930.24	2+	621.96	2+	A_2=−0.29 13
1342.12 14	0.90 9	1670.54	2+	328.45	2+	A_2=−0.18 12
1431.6 3	0.32 3	2053.6	(2)+	621.96	2+	A_2=+0.08 9
1441.6 3	0.29 3	2063.63	2+	621.96	2+	
1450.5 2	0.68 7	1778.71	2+	328.45	2+	A_2=−0.13 6
1468.99 12	0.85 9	1797.40	1−	328.45	2+	A_2=+0.01 8
1488.6 2	1.5 2	1816.86	(2)+	328.45	2+	A_2=−0.24 7
1511.6 4	0.19 2	2134.04	1+,2+	621.96	2+	
1518.7 2	0.61 6	2140.67	(1+,2+)	621.96	2+	
x1568.8 3	0.42 4					
1595.6 2	0.57 6	1924.04	1+	328.45	2+	
1601.8 2	0.62 6	1930.24	2+	328.45	2+	
1622.4 3	0.74 7	1622.01	2+	0.0	0+	A_2=+0.49 6
1675.27 15	0.93 9	2003.73	(2+)	328.45	2+	A_2=+0.41 9
1715.2 2	0.31 3	2043.59	1+	328.45	2+	
1735.2 2	0.47 5	2063.63	2+	328.45	2+	
1805.7 2	0.59 6	2134.04	1+,2+	328.45	2+	
1829.4 2	0.66 7	2157.86	(2)+	328.45	2+	
1886.6 2	0.61 6	2215.22	1+	328.45	2+	
1924.0 2	0.61 6	1924.04	1+	0.0	0+	
1969.6 3	0.24 3	2298.1	1+	328.45	2+	
2043.5 2	0.63 6	2043.59	1+	0.0	0+	
2068.8 5	0.19 2	2397.3	2+	328.45	2+	

† From 1981Fi01. Values of Iγ are for E(n)=2.5 MeV, with ΔIγ=5% for Iγ>5 and 10% for others.
x γ ray not placed in level scheme.

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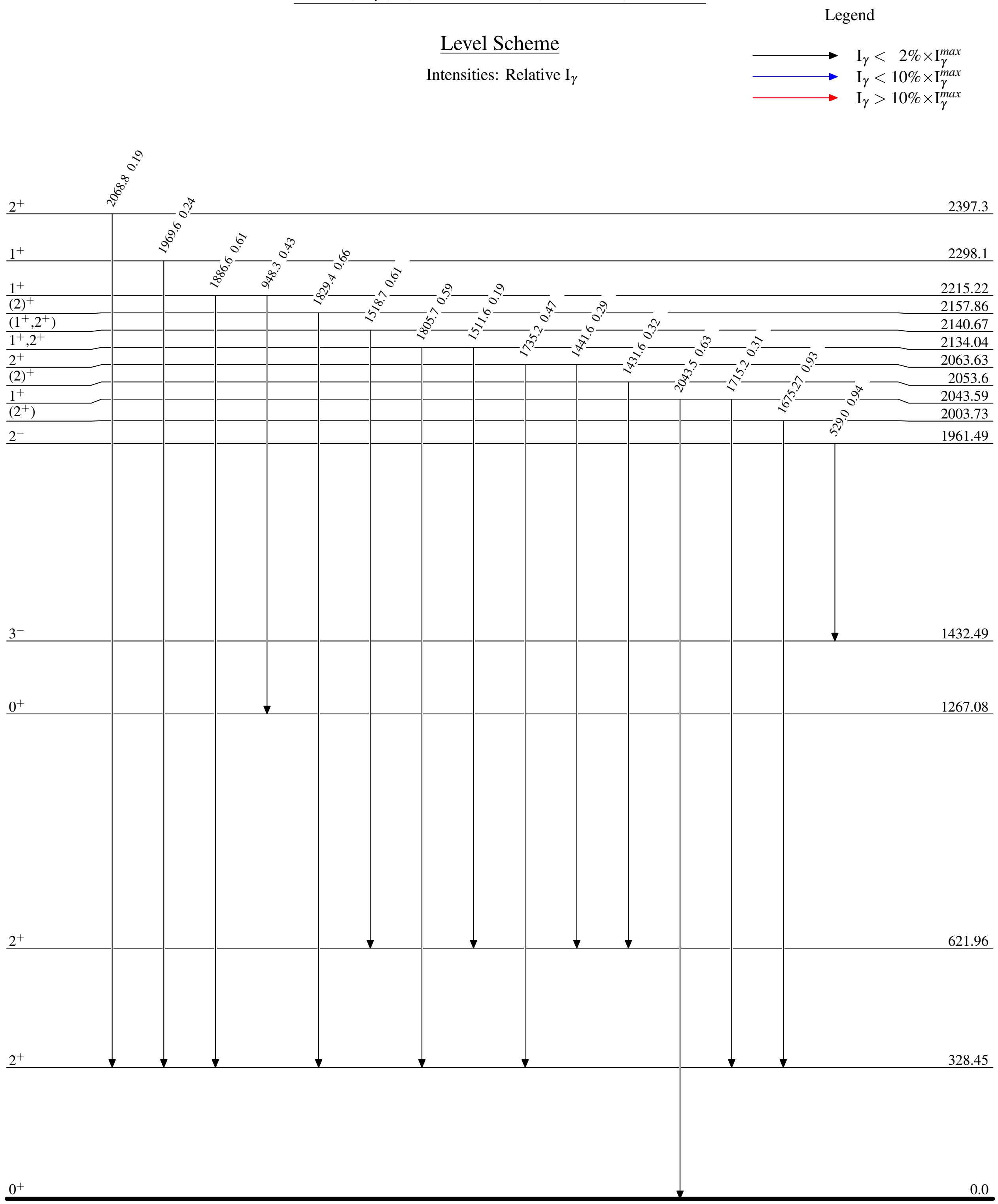
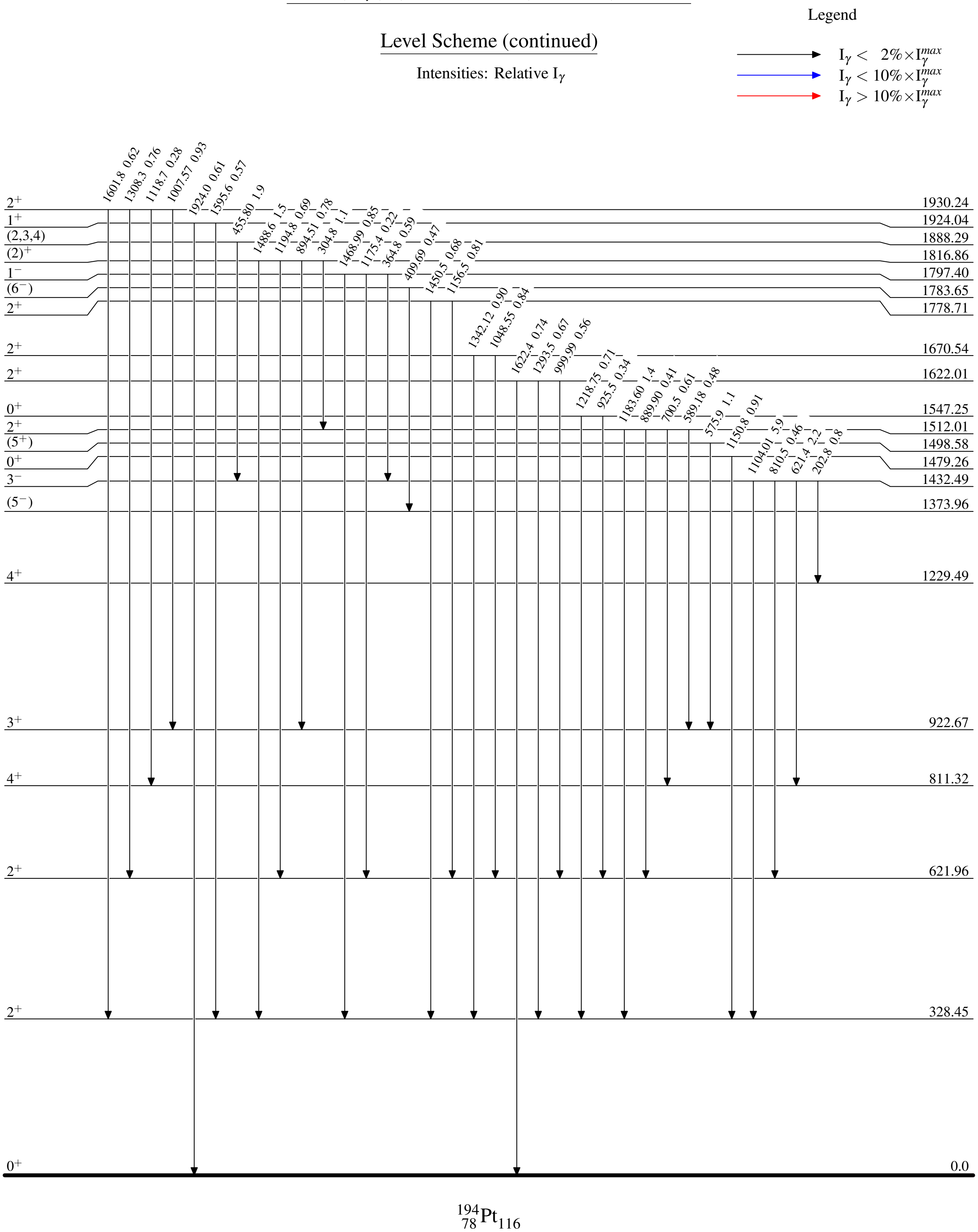


^{194}Pt(n,n′γ),(n,n′) 1981Fi01,1985Mi20,1987Hi04

Level Scheme (continued)

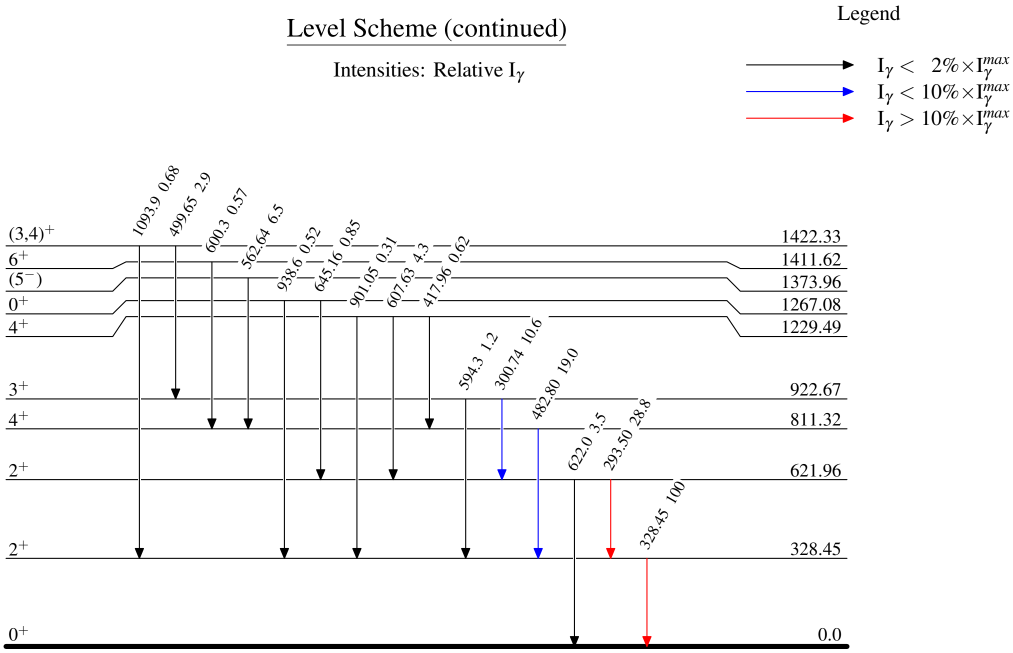
Intensities: Relative I_γ



$^{194}Pt(n,n'\gamma),(n,n')$ 1981Fi01,1985Mi20,1987Hi04

Level Scheme (continued)

Intensities: Relative I_γ



$^{194}_{78}Pt_{116}$