Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 133, 221 (2016)	1-Dec-2015

Q(β^-)=−323.7 *21*; S(n)=7555.1 *21*; S(p)=8929 *20*; Q(α)=107 *4* 2012Wa38
For interacting boson model theory, see 1985Su05, 1985Zi03, 1985Sc07, and 1983Ve02.

^{198}Pt Levels

Cross Reference (XREF) Flags

A	^{198}Ir β^- decay	E	^{198}Pt(d,d′)	I	^{198}Pt(^{136}Xe,Xγ)
B	^{196}Pt(t,p)	F	^{198}Pt(α,α′)	J	^{9}Be(^{208}Pb,Xγ)
C	^{198}Pt(n,n′),(n,n′γ)	G	^{198}Pt(d,pnγ)		
D	^{198}Pt(p,p′),(p,p′γ)	H	Coulomb excitation		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[@]	0$^+$	stable	ABCDEFGHIJ	%2β^-=? β_2=−0.103; β_4=−0.039 T$_{1/2}$: Double β^- decay to ^{198}Hg. From measurements of double β^- decay, half-life limits for decay to ^{198}Hg g.s. have been determined: T$_{1/2}$(2β^-)≥3.5×10^{18} y (2011Be32, value given for double β^- decay to the 411.8 keV state of ^{198}Hg including both two-neutrino and neutrinoless processes based on a fitted peak of 13 counts *10*, which excludes 29 counts at 90% confidence level). β_2, β_4: From (α,α′) and (p,p′), unweighted average. <r^2>$^{1/2}$=5.440 fm *6* (2004An14). Δ<r^2>=0.151 fm^2 *6* (1992Hi07), relative to ^{194}Pt; other Δ<r^2>=0.209 fm^2 *11*, Δ<β^2>=−0.0181 *10* (1988Le22), relative to ^{190}Pt; <β^2>$^{1/2}$=0.11 (1981Mo24). J$^\pi$: From L=0 in ^{196}Pt(t,p).
407.22[@] *5*	2$^+$	22.25 ps *15*	ABCDEFGHIJ	μ=+0.63 *2* (1995An15,2011StZZ) T$_{1/2}$: From B(E2)=1.090 *7* (Coulomb excitation). Others: 24.0 ps *8* (B(E2)=1.01 *3*), 24.3 ps *21* (1981Bo32), 23.3 ps *11* (1980Ke04), 23.2 ps *8* (1983St18) in Coulomb excitation. μ: Transient field integral perturbed angular correlation (TF); and ^{194}Pt standard (1995An15). Others: +0.70 *6* (1993Ta07, TF; ^{194}Pt standard), +0.59 *7* (1991St04, TF), +0.69 *6* (1981St13, TF; ^{196}Pt standard), +0.62 *10* (1979Ha06, TF; ^{194}Pt standard). Q=+0.42 *12* or +0.54 *12* (1989Ra17,1986Gy04,2011StZZ). Q: Coulomb Excitation Reorientation(CER). Other: +1.2 *5* (1969Gl08).
774.72[b] *7*	2$^+$	27 ps *4*	BCDEFGHIJ	μ=+0.61 *11* (1992Br03,2011StZZ) β_2=−0.109 *5* μ: Re-evaluated data. Other: +0.72 *13* (1981St13, TF; ^{196}Pt standard). β_2: From (p,p′), (p,p′γ). J$^\pi$: From $\gamma(\theta)$ in ^{198}Pt(n,n′),(n,n′γ).
914.52 *21*	0$^+$		A CD	J$^\pi$: From n′(θ) in ^{198}Pt(n,n′),(n,n′γ).
985.07[@] *8*	4$^+$	3.3 ps *3*	BCDEFGHIJ	β_4=−0.030 *1* XREF: B(990)E(960)F(991). μ=+1.2 *2* (1992Br03,2011StZZ, Re-evaluated). Other: +1.4 *3* (1981St13. TF; ^{196}Pt standard). β_4: From (p,p′), (p,p′γ). J$^\pi$: From $\gamma(\theta)$ in ^{198}Pt(n,n′),(n,n′γ).
1140 *20*			E	
1248.01 *10*	(3$^+$)		CD G I	J$^\pi$: From n′(θ) in ^{198}Pt(n,n′),(n,n′γ).
1279.44 *9*	2$^+$	9.7 ps *5*	CDE GH	XREF: E(1240-1280).

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Adopted Levels, Gammas (continued)

^{198}Pt Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				Jπ: From γ(θ) in Coulomb excitation.
1286.14[b] *16*	(4+)	9.3 ps *22*	BCD FGHI	β_4=−0.026 *1* β_4: From (p,p′), (p,p′γ). Jπ: From L=(4) in ^{196}Pt(t,p).
1367.03 *10*	(5−)		BCD G IJ	Jπ: From γ(θ) in ^{198}Pt(n,n′),(n,n′γ).
1445.32 *22*			CD	
1481.23 *21*	0+		BCD	Jπ: From L=0 in ^{196}Pt(t,p).
1501.93[&] *14*	(7−)	3.4 ns *2*	D G IJ	$T_{1/2}$: From ce(t) in ^{198}Pt(d,pnγ). Configuration=(($\pi h_{11/2}$)$^{-1}$$d_{3/2}$)+(($\nu i_{13/2}$)$^{-1}$$p_{1/2}$)) (1987CoZY).
1517 *8*			B E	XREF: E(1530).
1550.39 *18*	(2+)		BCD	Jπ: From L=(2) in ^{196}Pt(t,p).
1636.93 *21*	(2+)		BCD	Jπ: From L=(2) in ^{196}Pt(t,p).
1656.68 *19*			BCD	
1672.13 *12*	(1,2)		C	Jπ: From ^{198}Pt(n,n′γ).
1680.33 *15*	3−		BCD G	β_3=0.050 *5* β_3: From (p,p′), (p,p′γ).
1714.17[@] *22*	(6+)	<0.7 ps	C GHI	Jπ: From interacting boson approximation calculations and systematics of even Pt isotopes (1981Bo32).
1718 *5*	(2+)		B	Jπ: From L=(2) in ^{196}Pt(t,p).
1722 *3*			D F	L=3 suggested by 1976Ba35 in (α,α′) for E=1722 probably corresponds to the 1680 level. L(1722)=3 is not confirmed by 1981De12.
1741.13 *14*			E G I	XREF: E(1750).
1784.52 *22*	(4+)		BCD	β_4=−0.019 *2* β_4: From (p,p′), (p,p′γ).
1815 *6*			B	
1827 *4*			D	
1849.21? *22*			G	
1869 *5*	0+		B	Jπ: From L=0 in ^{196}Pt(t,p).
1892 *5*	(4+)		B D	XREF: D(1900). Jπ: From L=(4) in ^{196}Pt(t,p).
1943.9[b] *3*	6+		B G I	XREF: B(1938). Jπ: From band structure.
1949 *2*	(2+)		B D	XREF: B(1956). Jπ: From L=(2) in ^{196}Pt(t,p).
1979.43 *25*			B D G	XREF: D(1971).
1995.83 *25*			D G I	XREF: D(2000).
2059 *6*			B	
2070 *2*			D	
2083 *7*	(4+)		B	Jπ: From L=(4) in ^{196}Pt(t,p).
2089.0[&] *9*	(9−)		I	Jπ: From band analysis.
2120 *2*	(2+)		B D	XREF: D(2100). Jπ: From L=(2) in ^{196}Pt(t,p).
2155 *2*	(4+)		B D	XREF: B(2149). Jπ: From L=(4) in ^{196}Pt(t,p).
2160.0[a] *9*	(8−)		I	Jπ: Band head.
2178 *2*	(2+)		B D	XREF: B(2170). Jπ: From L=(2) in ^{196}Pt(t,p).
2229 *6*	(2+)		B E	XREF: E(2210). Jπ: From L=(2) in ^{196}Pt(t,p).
2252 *7*			B	
2289 *6*	(4+)		B	Jπ: From L=(4) in ^{196}Pt(t,p).
2319 *2*	(2+)		B DE	XREF: B(2325)E(2330). Jπ: From L=(2) in ^{196}Pt(t,p).
2339? *2*			D	
2356 *2*	(2+)		B D	XREF: B(2352).

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Adopted Levels, Gammas (continued)

^{198}Pt Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				Jπ: From L=(2) in ^{196}Pt(t,p).
2387 *2*			B D	XREF: B(2373).
2411 *6*	(2+)		B	Jπ: From L=(2) in ^{196}Pt(t,p).
2441 *2*	(3−)		B D	β_3=0.037 *4* β_3: From (p,p′), (p,p′γ).
2469 *2*			B D	
2514 *3*	(3−)		B DE	β_3=0.020 *2* XREF: B(2530). β_3: From (p,p′), (p,p′γ).
2527.1[@] *9*	(8+)		I	
2573 *3*			B D	
2603.5 *5*	(3−)		D	β_3=0.052 *5* β_3: From (p,p′), (p,p′γ).
2633 *3*			B D	XREF: B(2628).
2666 *3*			B D	XREF: B(2683).
2680.0[a] *13*	(10−)		I	
2726 *3*			DE	XREF: E(2730).
2747[b] *2*	8+		B I	XREF: B(2740). Jπ: From band structure.
2782 *3*			B D	
2796 *3*	(3−)		D	β_3=0.037 *4* β_3: From (p,p′), (p,p′γ).
2802 *7*	0+		B	Jπ: From L=0 in ^{196}Pt(t,p).
2826 *3*	(3−)		D	β_3=0.041 *4* β_3: From (p,p′), (p,p′γ).
2884 *3*			D	
2912.0[&] *9*	(11−)		D I	XREF: D(2910).
3005 *4*			D	
3017.0[a] *17*	(12−)	36 ns *2*	D I	XREF: D(3018). E(level): It is assumed that the isomer decays directly by 337γ, but possibility of a low-energy γ transition preceding 337γ is not ruled out. $T_{1/2}$: (Target like recoil fragments)γ(t) (2004Va03,2004Re11); 407γ and 658γ double γ-ray gates.
3170 *5*			D	
3197 *5*			D	

[†] For the states connected by γ′s, E(level)′s are from Adopted Gamma radiations by using least-squares fit to data, others are from (p,p′), except as noted.
[‡] From L value measured in ^{198}Pt(p,p′),(p,p′γ), except as noted.
[#] From recoil distance measurements in Coulomb excitation (1981Bo32), except as noted.
[@] Band(A): g.s. band.
[&] Band(B): Band based on (7−), α=1.
[a] Band(b): Band based on (8−), α=0.
[b] Band(C): 2+ band.

Adopted Levels, Gammas (continued)

$\gamma(^{198}Pt)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	δ	α[&]	Comments
407.22	2^+	407.21 *5*	100	0.0	0^+	[E2]		0.0417	B(E2)(W.u.)=31.81 *22*
774.72	2^+	367.48 *6*	100 *7*	407.22	2^+	M1+E2	−2.9 *+4−6*	0.068 *4*	B(M1)(W.u.)=0.0016 *5*; B(E2)(W.u.)=37 *7* Mult.: From mult=D+Q (Coulomb excitation), and RUL. δ: From Coulomb excitation (1981St13,1981Bo32).
		774.8 *2*	3.8 *10*	0.0	0^+	[E2]		0.00920	B(E2)(W.u.)=0.038 *12*
914.52	0^+	507.3 *2*	100	407.22	2^+	[E2]		0.0239	B(E2)(W.u.)=26 *7*
985.07	4^+	577.82 *6*	100	407.22	2^+	[E2]		0.01755	B(E2)(W.u.)=38 *4*
1248.01	(3^+)	473.27 *7*	100	774.72	2^+				
1279.44	2^+	504.7 *3*	23 *7*	774.72	2^+	[M1,E2]		0.05 *3*	B(M1)(W.u.)=0.0015 *10*; B(E2)(W.u.)=2.2 *15*
		872.18 *8*	100 *10*	407.22	2^+	[M1,E2]		0.013 *6*	B(M1)(W.u.)=0.0013 *8*; B(E2)(W.u.)=0.6 *4*
		1279.7 *3*	27 *7*	0.0	0^+	[E2]		0.00341	B(E2)(W.u.)=0.05 *3*
1286.14	(4^+)	300.9[‡] *2*	11[‡]	985.07	4^+				
		511.6[‡] *2*	100[‡]	774.72	2^+				
1367.03	(5^-)	381.96 *6*	100	985.07	4^+				
1445.32		670.6 *2*	100	774.72	2^+				
1481.23	0^+	1074.0 *2*	100	407.22	2^+				
1501.93	(7^-)	134.9[‡] *1*	100[‡]	1367.03	(5^-)	[E2]		1.489	B(E2)(W.u.)=21.8 *13*
1550.39	(2^+)	775.8 *3*	60 *16*	774.72	2^+				
		1143.1 *2*	100 *8*	407.22	2^+				
1636.93	(2^+)	1229.7 *2*	100	407.22	2^+				
1656.68		671.0[#] *4*	[#]	985.07	4^+				
		1249.6 *2*	100	407.22	2^+				
1672.13	(1,2)	424.1 *1*	37 *11*	1248.01	(3^+)				
		897.2 *2*	100 *16*	774.72	2^+				
		1265.2 *2*	53 *11*	407.22	2^+				
1680.33	3^-	313.3[#] *2*	22[#] *7*	1367.03	(5^-)				
		400.7[#] *3*	33[#] *9*	1279.44	2^+				
		432.2[#] *4*	11[#] *7*	1248.01	(3^+)				
		695.4[#] *3*	100[#] *15*	985.07	4^+				
		1273.4[#] *5*	52[#] *15*	407.22	2^+				
1714.17	(6^+)	729.1[‡] *2*	100[‡]	985.07	4^+	[E2]		0.01047	B(E2)(W.u.)>57
1741.13		374.1[‡] *1*	100[‡]	1367.03	(5^-)				
1784.52	(4^+)	1009.8 *2*	100	774.72	2^+				
1849.21?		601.2[‡] *2*	100[‡]	1248.01	(3^+)				
1943.9	6^+	657.8[‡] *2*	100[‡]	1286.14	(4^+)				
1979.43		477.5[‡] *2*	100[‡]	1501.93	(7^-)				
1995.83		493.9[‡] *2*	100[‡]	1501.93	(7^-)				
2089.0	(9^-)	587[@]	100[@]	1501.93	(7^-)				
2160.0	(8^-)	658[@]	100[@]	1501.93	(7^-)				
2527.1	(8^+)	813[@]	100[@]	1714.17	(6^+)				
2603.5	(3^-)	923.2[#] *4*	100[#]	1680.33	3^-				
2680.0	(10^-)	520[@]	100[@]	2160.0	(8^-)				
2747	8^+	802[@]	100[@]	1943.9	6^+				
2912.0	(11^-)	385[@]	100[@]	2527.1	(8^+)				
		752[@]	100[@]	2160.0	(8^-)				

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Adopted Levels, Gammas (continued)

$\gamma(^{198}Pt)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
2912.0	(11^-)	823 @	100 @	2089.0	(9^-)
3017.0	(12^-)	104 @ *a*	100 @	2912.0	(11^-)
		337 @	100 @	2680.0	(10^-)

† From ^{198}Pt(n,n′),(n,n′γ), except as noted.
‡ From ^{198}Pt(d,pnγ).
# From ^{198}Pt(p,p′),(p,p′γ).
@ From $^{198}Pt(^{136}Xe,X\gamma)$.
& 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.
a Placement of transition in the level scheme is uncertain.

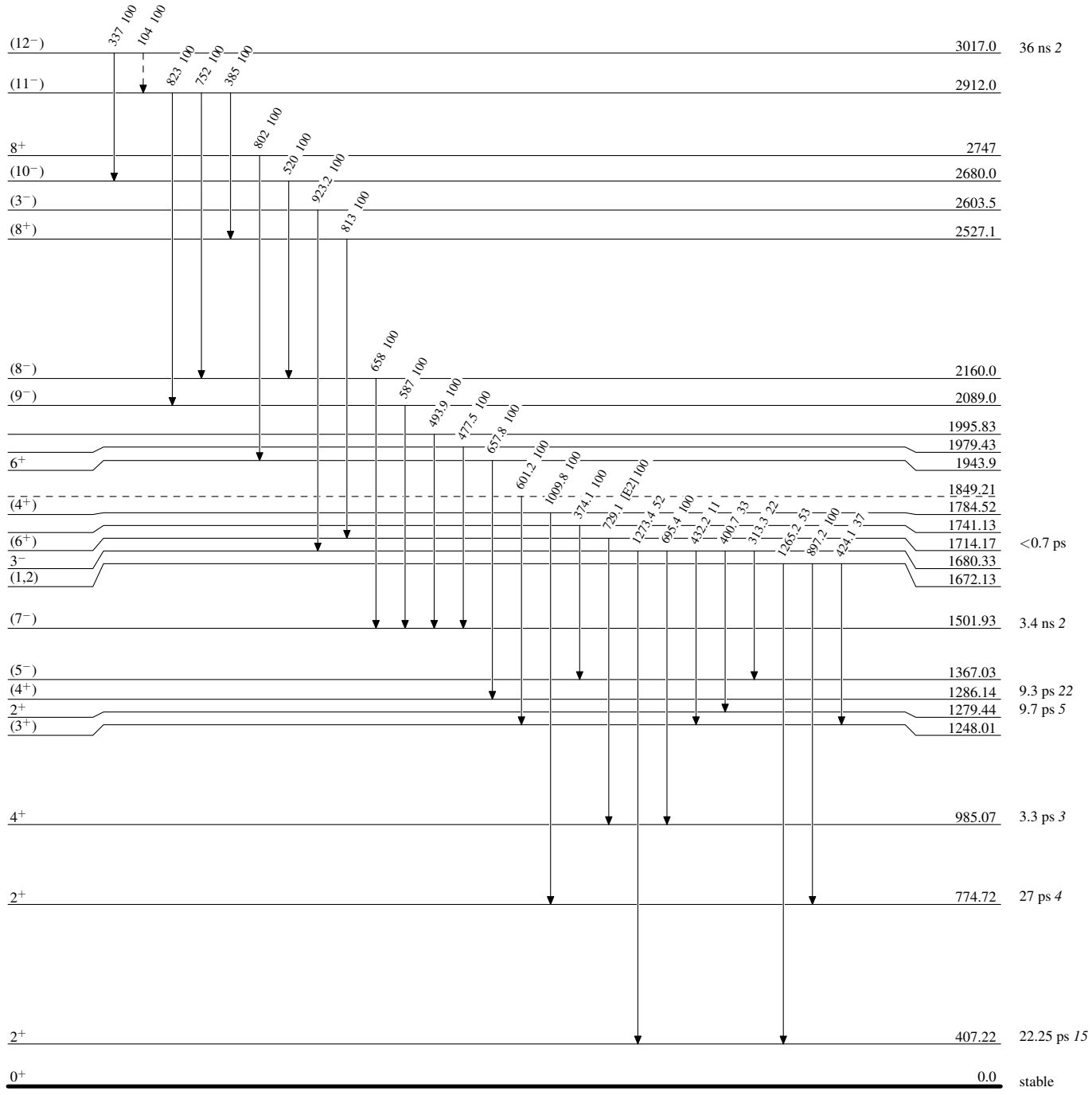
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

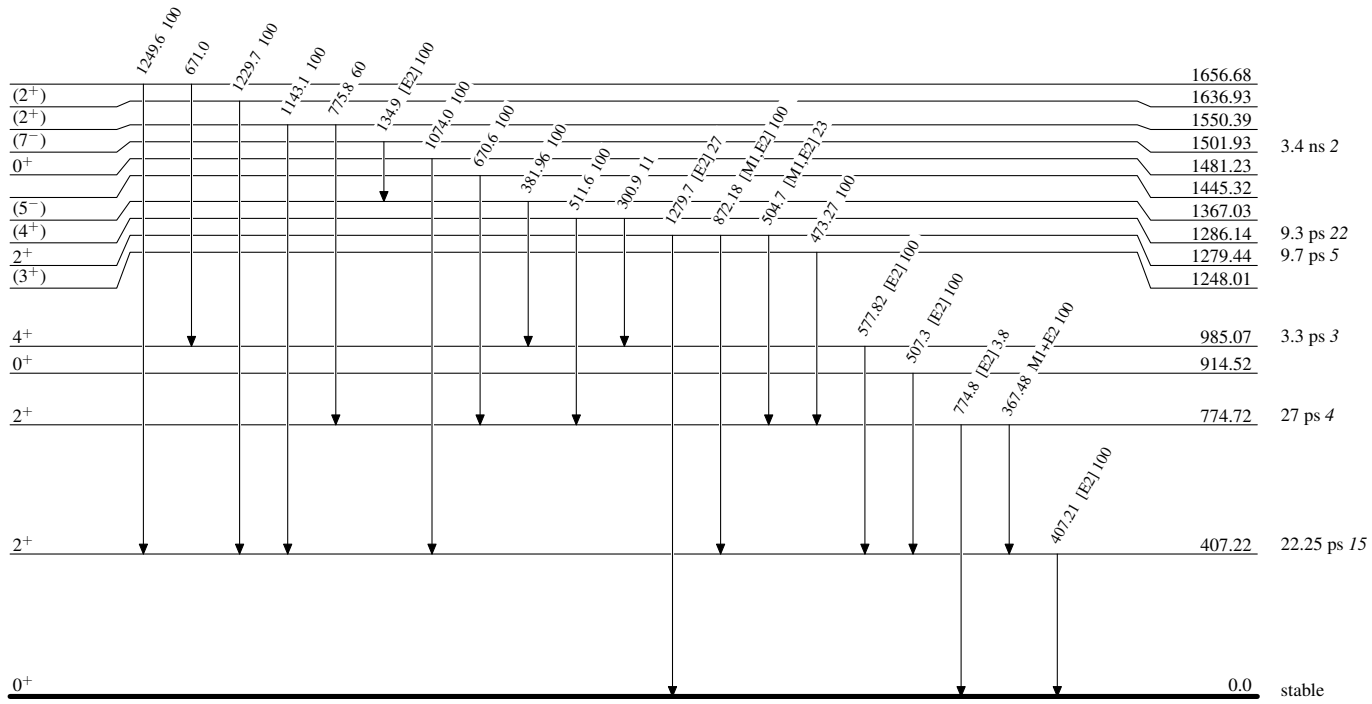


$^{198}_{78}Pt_{120}$

Adopted Levels, Gammas

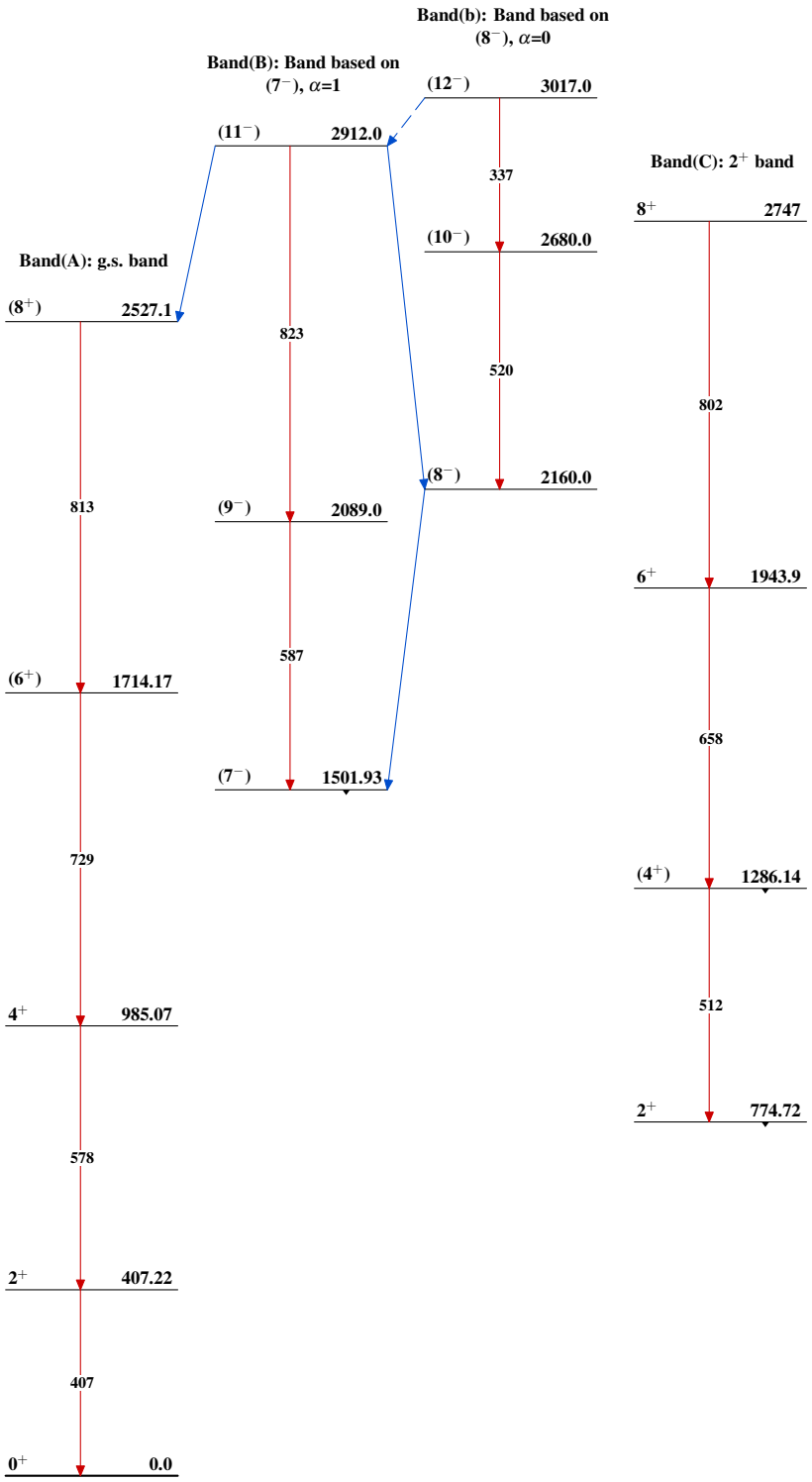
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{198}_{78}Pt_{120}$

Adopted Levels, Gammas



$^{198}_{78}Pt_{120}$