

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong, Zhou Chunmei		NDS 104,283 (2005)	1-Jan-2002

Q(β^-)=719.0 6; S(n)=5846.4 3; S(p)=8.27×10³ 4; Q(α)=549 3 [2012Wa38](#)
 Note: Current evaluation has used the following Q record 718.7 6 5846.29 278273 38 545.326 [2003Au03](#).

¹⁹⁷Pt Levels

For quadrupole collective motion, see [1987Vo02](#).
 For interacting boson model, see [1985Su05](#).
 For interacting boson-fermion model analysis of β decay for ¹⁹⁷Pt, see [1988Na03](#).
 For multi-J supersymmetry schemes, see [1984Va03](#), [1984Su01](#), and [1983Ve02](#).

Cross Reference (XREF) Flags

A	¹⁹⁷ Ir β^- decay (5.8 min+8.9 min)	E	¹⁹⁶ Pt(n, γ) E=0.565 keV	I	¹⁹⁸ Pt(pol d,t), (d,t)
B	¹⁹⁷ Pt IT decay (95.41 min)	F	¹⁹⁶ Pt(n, γ) E=2,24 keV	J	¹⁹⁸ Pt(³ He, α)
C	¹⁹⁵ Pt(t,p)	G	¹⁹⁶ Pt(d,p)	K	¹⁹⁶ Pt(t,d)
D	¹⁹⁶ Pt(n, γ) E=thermal	H	¹⁹⁸ Pt(p,d)		

E(level) [†]	J π	T _{1/2}	XREF	Comments
0.0	1/2 ⁻	19.8915 h 19	ABCDEFGHIK	$\% \beta^- = 100$ $\mu = 0.51$ 2 (2001StZZ) J π : J=1/2 from atomic beam (1976Fu06) and $\pi = -$ from L=1 in ¹⁹⁶ Pt(d,p) and ¹⁹⁸ Pt(p,d),(d,t). μ : Other: +0.5 to +0.6 characterizes 1/2 ⁻ g.s. of ¹⁹⁵ Pt, ¹⁹⁵ Hg, ¹⁹⁷ Hg. T _{1/2} : from 1992An13 , γ (t) following β -decay. Others: 19.96 h 5 (2000Mo05), 18.3 h 3 (1970Bo22), 18 h (1937Mc04), 20.00 h 12 (1960Br11) scin β^- , 17.5 h (1965Ha15) semi 77 γ decay, 18 h (1965Ha15) semi 191 γ decay. See also 1941Sh08 , 1952Ch18 , 1952Co12 , 1952Ha16 .
53.088 19	5/2 ⁻	16.58 ns 17	ABCD GHIJK	$\mu = 0.85$ 3 (2001StZZ) J π : E2 γ to 1/2 ⁻ , L=3 in ¹⁹⁶ Pt(d,p) and ¹⁹⁸ Pt(p,d),(p,d). T _{1/2} : from $\gamma\gamma$ (t) measurements (¹⁹⁷ Pt IT decay, 1982So05). Others: 18.5 ns 15 (1967Ma46) and 16.5 ns 15 (1970Ge01). μ : Other: +0.851 25 (1989Ra17 , 1981Sa30 , 1982So05).
71.60 7	3/2 ⁻ \ddagger		A CDEFGHIK	
98.60 8	3/2 ⁻ \ddagger		CD FGHIK	XREF: H(101).
130.98 4	1/2 ⁻		CD FGHIK	J π : L=0 in ¹⁹⁵ Pt(t,p).
269.11 3	1/2 ⁻ , 3/2 ⁻ #		A CD F I K	XREF: C(271). J π : L=1 in (d,t) and (t,d), L=2 in (p,t) for E=271 5.
273? 3	(5/2 ⁻ , 7/2 ⁻)		c H	J π : L=(3) in ¹⁹⁸ Pt(p,d). Only seen in ¹⁹⁸ Pt(p,d).
299.33 4	5/2 ⁻ \ddagger		A CD F HIJK	XREF: C(301)H(301)J(302).
371? 6	(7/2 ⁺ , 9/2 ⁺)		H	L=(4) in ¹⁹⁸ Pt(p,d).
399.59 20	13/2 ⁺ \ddagger	95.41 min 18	ABC GHIJK	$\% \beta^- = 3.3$ 4; $\% IT = 96.7$ 4 From (I($\gamma+ce$)(279 γ)+I($\gamma+ce$)(202 γ))/I($\gamma+ce$) (346 γ). I γ (346 γ):I γ (279 γ):I γ (202 γ)=100:0.21 2:0.0031 12\$. J π : 13/2 ⁺ is also consistent with L=6 in ¹⁹⁶ Pt(d,p) and ¹⁹⁸ Pt(p,d),(d,t) and M4 γ to 5/2 ⁻ .

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Adopted Levels, Gammas (continued) ^{197}Pt Levels (continued)

E(level) [†]	J ^π	XREF	Comments
			T _{1/2} : from γ(t) measurements in ^{197}Pt IT decay (1982So05). Others: 94.4 min 8 (1973Ur01, semi γ-decay curves), 95 min (1965Ha15), 83 min 4 (1970Bo22), 96 min 4 (1970Wi19). See also 1941Sh08, 1948Ho37, 1948Mo33, 1952Ch18, 1964Gr02, 1964Po05, 1964Pr06, 1970Wi19.
			E(level): 13/2 ⁺ isomerism in ^{195}Pt and ^{199}Pt occurs at 259 and 424 keV, respectively.
425.7?& 6		D	E(level): seen only in primary γ-ray in $^{196}\text{Pt}(n,\gamma)$ E=thermal.
456.88 5	5/2 ⁻ ‡	A CD HI K	XREF: H(460)I(461.5). L=1+3 in $^{198}\text{Pt}(p,d)$, L=3 in $^{198}\text{Pt}(\text{pol } d,t)$ and $^{196}\text{Pt}(t,d)$.
483 1	(7/2) ⁻ ‡	GHI K	XREF: G(481.6). May be doublet. J ^π : J=7/2 ⁻ , (3/2 ⁻); L=3,(1) in $^{198}\text{Pt}(\text{pol } d,t)$. J=(1/2 ⁻ , 3/2 ⁻); L=1+3 in $^{198}\text{Pt}(p,d)$. L(d,p)=(1).
502.43 5	3/2 ⁻ ‡	D FGHI	XREF: H(507)I(505.1). J ^π : consistent with L=1 in $^{198}\text{Pt}(p,d),(d,t)$ and primary γ-ray in $^{196}\text{Pt}(n,\gamma)$ E=thermal.
520 5	7/2 ⁺ , 9/2 ⁺	C J	J ^π : L=4 in $^{198}\text{Pt}(^3\text{He},\alpha)$.
529 1	7/2 ⁻ ‡	C GHI K	
595.31 8	(5/2) ⁻ , (1/2) ⁻	CD HI	J ^π : J ^π =(5/2) ⁻ from (pol d,t), J ^π =(5/2 ⁻ , 1/2 ⁻) from (n,γ) E=thermal. E(level): unresolved doublet with L(d,t)=3, L(p,d)=3 for E=591.5. L(t,p)=4 for E=590.4 is inconsistent with single-particle transfer values. Weakly populated in both reactions.
612 10	(13/2) ⁺ @	J	L=6 in $^{198}\text{Pt}(^3\text{He},\alpha)$.
708.37 5	3/2 ⁻ ‡	A CDEFGHI K	
713 10	5/2 ⁻ , 7/2 ⁻	J	J ^π : L=3 in $^{198}\text{Pt}(^3\text{He},\alpha)$.
747.82 9	1/2 ⁻	CD FGHI	XREF: H(755). J ^π : L=0 in $^{195}\text{Pt}(t,p)$.
767 10	(17/2 ⁺)@	J	
797 5		C	
810.3 ^a		F IJK	XREF: J(813.6). J ^π : 1/2 ⁺ , 3/2 ⁺ , 5/2 from average resonance neutron capture in $^{196}\text{Pt}(n,\gamma)$ E=2,24 keV; tentative (1/2) ⁻ from σ(θ) DWBA analysis (L=1) and vector analyzing power in $^{198}\text{Pt}(\text{pol } d,t)$, too weakly populated in (pol t,d) and (d,t) reactions.
825 6	1/2 ⁻ , 3/2 ⁻	H	L=1 in $^{198}\text{Pt}(p,d)$.
854 1	7/2 ⁻ ‡	C IJ	XREF: J(852). J ^π : L=3 in $^{198}\text{Pt}(^3\text{He},\alpha)$, (pol d,t).
859 5	5/2 ⁻	C H	XREF: H(865). J ^π : L=3 in $^{198}\text{Pt}(p,d)$. L=2 in (t,p).
894.8 5	1/2 ⁻ , 3/2 ⁻ ‡	C F HI	XREF: H(912)I(898). J ^π : L=1 in $^{198}\text{Pt}(p,d)$, (pol d,t). J ^π =(1/2) ⁻ in (pol d,t), but too weakly populated.
955.9? ^a 14		F	
965? 10		J	L=2,3,4 in $^{198}\text{Pt}(^3\text{He},\alpha)$.
970.9 5	1/2 ⁻ , 3/2 ⁻	EF I K	XREF: E(965)I(972)K(970). J ^π : L=1 in $^{198}\text{Pt}(\text{pol } d,t)$ and primary γ-ray to this level in $^{196}\text{Pt}(n,\gamma)$ E=2,24 keV. J ^π =3/2 ⁻ in (pol d,t), but too weakly populated.
977.9 ^a 5	1/2 ⁻ , 3/2 ⁻ #	CD F H JK	XREF: H(991)J(978)K(970). J ^π : J ^π =3/2 ⁻ from L=1 analyzing power in $^{198}\text{Pt}(\text{pol } d,t)$, but too weakly populated.
1028 1	7/2 ⁻ ‡	IJ	
1055 5	5/2 ⁻ , 7/2 ⁻	C H	XREF: H(1047). J ^π : L=3 in $^{198}\text{Pt}(p,d)$.

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Adopted Levels, Gammas (continued)

¹⁹⁷Pt Levels (continued)

E(level) [†]	J ^π	XREF	Comments
1060.5 5	3/2 ⁻ ‡	F I	J ^π : L=(1) in ¹⁹⁸ Pt(d,t),(pol d,t).
1081.0 ^a 5	1/2 ⁻ ,3/2 ⁻ #	EF H	XREF: E(1076)H(1077). J ^π : L=1 in ¹⁹⁸ Pt(p,d).
1099 5		C I	
1107.7 8	1/2,3/2	FG I K	J ^π : L=1 in ¹⁹⁸ Pt(p,d), L=3 in ¹⁹⁸ Pt(pol d,t).
1124 10	(5/2 ⁻ ,7/2 ⁻)	H	J ^π : L=(3) in ¹⁹⁸ Pt(p,d).
1135.3 ^a 7	1/2 ⁻ ,3/2 ⁻	F I	J ^π : J=1/2,3/2 from av res cap in ¹⁹⁶ Pt(n,γ) E=2,24 keV and from L=1 in ¹⁹⁸ Pt(pol d,t).
1136 10	(13/2) ⁺ @	C J	XREF: C(1162). L=6 in ¹⁹⁸ Pt(³ He,α).
1158.7 ^a 5	(1/2) ⁻	C FGHI	XREF: C(1162)H(1149). J ^π : L=(0) in ¹⁹⁵ Pt(t,p), L=1 in ¹⁹⁸ Pt(pol d,t), and J=1/2,3/2 in av res cap. L=1+6 in ¹⁹⁸ Pt(p,d). Probable doublet.
1175 7		H	
1212 3		G I K	
1248 2	7/2 ⁻ ‡	C IJ	XREF: J(1231).
1276 5	5/2 ⁻ ,7/2 ⁻	C H	XREF: H(1266). J ^π : L=3 in ¹⁹⁸ Pt(p,d).
1292 5	5/2 ⁻	C G J	XREF: G(1290)J(1294). J ^π : L=3 in ¹⁹⁸ Pt(³ He,α). L=4 in (t,p),(³ He,α).
1297.0 ^a 6	1/2,3/2#	F I	
1318 6	5/2 ⁻ ,7/2 ⁻	H	J ^π : L=3 in ¹⁹⁸ Pt(p,d).
1330 2	3/2 ⁻ ‡	I	
1350 6	1/2 ⁻ ,3/2 ⁻	H	J ^π : L=1 in ¹⁹⁸ Pt(p,d),(d,t).
1378 3	(5/2 ⁻)‡	IJK	J ^π : L=3 in ¹⁹⁸ Pt(³ He,α).
1397 2	3/2 ⁻ ‡	I K	
1412 10		H	L=1+(4) in ¹⁹⁸ Pt(p,d).
1431 10	(13/2 ⁺)@	C J	XREF: C(1439). L=5,6 in ¹⁹⁸ Pt(³ He,α).
1464 5	(1/2 ⁻ ,3/2 ⁻)	I	J L=(1) in (pol d,t).
1507 5		C G	XREF: G(1516).
1525 5		I	
1548 10	(13/2 ⁺)@	C IJ	XREF: C(1540)I(1570). L=5,6 in ¹⁹⁸ Pt(³ He,α).
1582 5	(5/2 ⁻ ,7/2 ⁻)	I	J ^π : L=(3) in (pol d,t).
1608 5		C	
1632 3	(1/2 ⁻ ,3/2 ⁻)	G K	L=(1) in ¹⁹⁸ Pt(d,p).
1657 5		C I	XREF: I(1670).
1687 5		C G	XREF: G(1706).
1711 5	(1/2 ⁻ ,3/2 ⁻)	G I	J ^π : L=(1) in (pol d,t).
1743 5		C G I	XREF: G(1754)I(1753).
1775 10	(13/2 ⁺)@	C K	XREF: C(1761). L=5,6 in ¹⁹⁸ Pt(³ He,α).
1792 3	(7/2) ⁻ ‡	C K	
1797	(9/2 ⁺)	C G	XREF: C(1787). J ^π : L=(4) in ¹⁹⁶ Pt(d,p), L=4 (1971WiYZ) IAR. Configuration: (d,p) strength and L=4 suggest g9/2 neutron state.
1812 5	(-)	C G K	XREF: G(1822)K(1816). L=(1) in ¹⁹⁶ Pt(d,p), L(1,3) in ¹⁹⁶ (t,d).
1861 10	(13/2 ⁺)@	C J	XREF: C(1874). L=5,6 in ¹⁹⁸ Pt(³ He,α).

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Adopted Levels, Gammas (continued)

¹⁹⁷Pt Levels (continued)

E(level) [†]	J ^π	XREF	Comments
1908 5	7/2 ⁻ ,9/2 ⁻	C	J ^π : L=4 in ¹⁹⁵ Pt(t,p).
1929 10	(13/2 ⁺) [@]	J	L=5,6 in ¹⁹⁸ Pt(³ He,α).
1947 5		C I	XREF: I(1955).
1999 5		C I	XREF: I(1985).
2009 5		I	
2050 20		I	
2082 5	(1/2 ⁻ ,3/2 ⁻)	I	J ^π : L=(1) in (pol d,t).
2143 10		J	L=5,6 in ¹⁹⁸ Pt(³ He,α).
2176?		G	
2186 5		C G I	XREF: G(2214)I(2210).
2560? 20		I	

[†] For the states with connecting γ's, E(levels) are from level scheme and adopted γ radiations, using least-squares fit to data.

[‡] From σ(θ) DWBA analysis and vector analyzing power in ¹⁹⁸Pt(pol d,t) (1990Bu26).

From 2- and 24-keV average resonance neutron capture in ¹⁹⁶Pt(n,γ), E=2,24 keV (1983Ca04).

@ From σ(θ) DWBA analysis and systematics of ¹⁹¹Pt, ¹⁹³Pt, ¹⁹⁵Pt and ¹⁹⁷Pt; quasiparticle-core coupling model in ¹⁹⁸Pt(³He,α) (1985Th02).

& From primary γ rays in ¹⁹⁶Pt(n,γ) E=thermal.

^a From primary γ rays in ¹⁹⁶Pt(n,γ) E=2,24 keV.

γ(¹⁹⁷Pt)

For the unplaced γ rays, see ¹⁹⁷Ir β⁻ decay.

E _i (level)	J _i ^π	E _γ [†]	I _γ [‡]	E _f	J _f ^π	Mult. [#]	α [@]	Comments
53.088	5/2 ⁻	53.10 2	100	0.0	1/2 ⁻	E2	87.5	B(E2)(W.u.)=13.4 5
71.60	3/2 ⁻	71.53 17	100	0.0	1/2 ⁻			
98.60	3/2 ⁻	98.58 10	100	0.0	1/2 ⁻			
130.98	1/2 ⁻	130.98 5	100	0.0	1/2 ⁻			
269.11	1/2 ⁻ ,3/2 ⁻	138.13 4	32 14	130.98	1/2 ⁻			
		216.05 7	19 4	53.088	5/2 ⁻			
		269.12 4	100 9	0.0	1/2 ⁻			
299.33	5/2 ⁻	227.62 15	21 8	71.60	3/2 ⁻			
		246.15 15	47 13	53.088	5/2 ⁻			
		299.34 4	100 11	0.0	1/2 ⁻			
399.59	13/2 ⁺	346.5 2	100	53.088	5/2 ⁻	M4	7.71	B(M4)(W.u.)=1.47 4
456.88	5/2 ⁻	157.38 19	13 7	299.33	5/2 ⁻			
		404.03 10	9 4	53.088	5/2 ⁻			
		456.81 6	100 11	0.0	1/2 ⁻			
502.43	3/2 ⁻	233.27 13	12 4	269.11	1/2 ⁻ ,3/2 ⁻			
		371.45 34	8 5	130.98	1/2 ⁻			
		430.89& 5	65 7	71.60	3/2 ⁻			
		502.44 5	100 7	0.0	1/2 ⁻			
595.31	(5/2) ⁻ ,(1/2 ⁻)	523.77 7	100 9	71.60	3/2 ⁻			
		542.22& 9	100 9	53.088	5/2 ⁻			
		595.17 11	54 9	0.0	1/2 ⁻			
708.37	3/2 ⁻	439.35 10	19 3	269.11	1/2 ⁻ ,3/2 ⁻			
		636.73 10	17 3	71.60	3/2 ⁻			
		708.35 5	100 6	0.0	1/2 ⁻			
747.82	1/2 ⁻	649.22 5	100	98.60	3/2 ⁻			

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Adopted Levels, Gammas (continued) $\gamma(^{197}\text{Pt})$ (continued)

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\ddagger</u>	<u>E_f</u>	<u>J_f^π</u>
747.82	1/2 ⁻	676.12 14	3.1 5	71.60	3/2 ⁻
		695.04 21	3.9 7	53.088	5/2 ⁻

† From $^{196}\text{Pt}(n,\gamma)$, E=thermal, except for 53 γ which is from ^{197}Ir β^- decay.

‡ Relative photon branching from each level. Data are from $^{196}\text{Pt}(n,\gamma)$, E=thermal.

From ^{197}Pt IT decay.

@ 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.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----▶ γ Decay (Uncertain)