Adopted Levels, Gammas

Type	Author	Citation	Literature Cutoff Date
	History		
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

Q(β^-)=−12550 *SY*; S(n)=11860 *SY*; S(p)=1494 *30*; Q(α)=6707 *3* 2017Wa10
ΔQ(β^-)=ΔS(n)=200 (2017Wa10).
S(2n)=21434 *151*; S(2p)=882 *21*; Q(εp)=7135 (syst) *31* (2017Wa10).

^{170}Pt Levels

Cross Reference (XREF) Flags

- A ^{171}Au p decay (17 μs)
- B ^{171}Au p decay (1.02 ms)
- C ^{174}Hg α decay
- D (HI,xnγ)

E(level)‡	Jπ†	$T_{1/2}$	XREF	Comments
0.0#	0+@	13.8 ms *5*	ABCD	%α=98 *2*; %ε+%β^+=2 calc $T_{1/2}$: weighted average of 14.7 ms *5* (1996Bi07) and 13.5 ms *3* (1998Ki20). Other $T_{1/2}$: 6 ms *+5−2* from α(t) measurement (1981Ho10); 15 ms *+16−6* (1997Uu01). %α: Gross β decay theory calculations predict partial β half-life to be≈2 s (1973Ta30) and 1997Mo25 predict 0.38 s, implying %ε+%β^+≈0.7 or 3.6, respectively; based on this, the evaluator adopts %α=98 *2*. α decay of ^{170}Pt has been observed (1981Ho10,1982En03,1996Bi07), but %α has not been measured. ε+β^+ decay has not been observed.
509.20# *20*	2+@		D	
1171.90# *23*	4+@		D	
1514.3& *8*	(3−)		D	
1898.3& *4*	(5−)		D	Jπ: D 726γ to 4+.
1912.30# *25*	6+@		D	
1972.5? *7*			D	
2111.5& *4*	(7−)		D	Jπ: intraband stretched Q 213γ to (5−).
2436.8# *4*	8+@		D	Jπ: intraband stretched Q 524γ to 6+.
2443.7? *5*			D	
2495.5& *11*	(9−)		D	
2501.3? *11*			D	
2509.6? *7*			D	
2629.0? *5*			D	
3025.2# *4*	(10+)@		D	Jπ: The 10+ member of the g.s. band is either the 3025 or the 3038 level; 2006Jo04 assign 10+ to 3025 in level scheme in figure 1 and in the text, but assign 10+ to 3038 in table I. 2005Jo18 assigned the 3038 level as the J=10 band member.
3038.2 *5*	(10+)		D	Jπ: see comment on 3025 level.
3067.3?& *11*			D	
3121.5? *12*			D	
3708.2?& *11*			D	

† Based on data from (HI,xnγ). The three strongest γ-rays form a cascade of stretched Q transitions, and the energy of the

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{170}Pt Levels (continued)

strongest agrees closely with that expected for the first 2^+ state (based on energy systematics for the first excited states of even-A Pt isotopes from ^{172}Pt to ^{190}Pt (see, e.g., fig. 4 of 1998Se20)). 1998Ki20, therefore, assign the three strongest γ-rays from (HI,xnγ) to the 0^+ g.s. band of ^{170}Pt. Values given without further comment are based on band structure from (HI,xnγ).

‡ From least-squares fit to Eγ.

Band(A): $K^\pi=0^+$ g.s. band (2006Jo04). Weakly-deformed; possibly crossed by a deformed intruder configuration At J≈8$\hbar$ (2006Jo04).

@ Definite J^π assigned to members of g.s. band up to possible band crossing based on independently-established $J^\pi=0^+$ for g.s. and stretched Q multipolarities for J=2 to 0 and J=8 to 6 509γ and 524γ.

& Band(B): sequence on (3^-) 1514 (2006Jo04).

$\gamma(^{170}Pt)$

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.‡	α#	Comments
509.20	2^+	509.2 *2*	100	0.0	0^+	(E2)	0.0237	
1171.90	4^+	662.7 *1*	100	509.20	2^+	(E2)	0.01288	
1514.3	(3^-)	1005.0 *10*	100	509.20	2^+			
1898.3	(5^-)	384.0 *10*	<74	1514.3	(3^-)			
		726.4 *3*	100 *23*	1171.90	4^+	(E1)		placement from (^{60}Ni,2nγ), where $\gamma\gamma$ coin rules out alternative placement within g.s. band tentatively suggested In (HI,xnγ) for a 725.9γ. Mult.: $\Delta\pi$=yes from level scheme for D transition.
1912.30	6^+	740.4 *1*	100	1171.90	4^+	(E2)	0.01013	
1972.5?		800.6@ *6*	100	1171.90	4^+			
2111.5	(7^-)	213.2 *1*	100	1898.3	(5^-)	(E2)	0.290	
2436.8	8^+	524.5 *2*	100	1912.30	6^+	(E2)	0.0220	
2443.7?		545.4@ *2*	100	1898.3	(5^-)			
2495.5	(9^-)	384.0 *10*	100	2111.5	(7^-)			
2501.3?		603.0@ *10*	100	1898.3	(5^-)			
2509.6?		537.1@ *1*	100	1972.5?				
2629.0?		185.3@ *1*	100	2443.7?				
3025.2	(10^+)	588.4 *2*	100	2436.8	8^+			
3038.2	(10^+)	601.4 *3*	100	2436.8	8^+			
3067.3?		571.8@ *2*	100	2495.5	(9^-)			
3121.5?		620.2@ *4*	100	2501.3?				
3708.2?		640.9@ *2*	100	3067.3?				

† From ^{112}Sn(^{60}Ni,2nγ), E=266 MeV reaction In (HI,xnγ).

‡ Based on angular distribution ratio R (2006Jo04 In (HI,xnγ)) where R=Iγ(158°)/[Iγ(86°)+ Iγ(94°)]. R=1.32 *5* and 0.86 *2* for known ΔJ=2 443γ and ΔJ=1 947γ In ^{170}Os, respectively. Supported by Iγ(157.6°)/Iγ(79° and 101°) values (from 1998Ki20 In (HI,xnγ)) which are consistent with value expected for stretched Q transition for several transitions. $\Delta\pi$=(No) has been assigned to intraband transitions.

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.

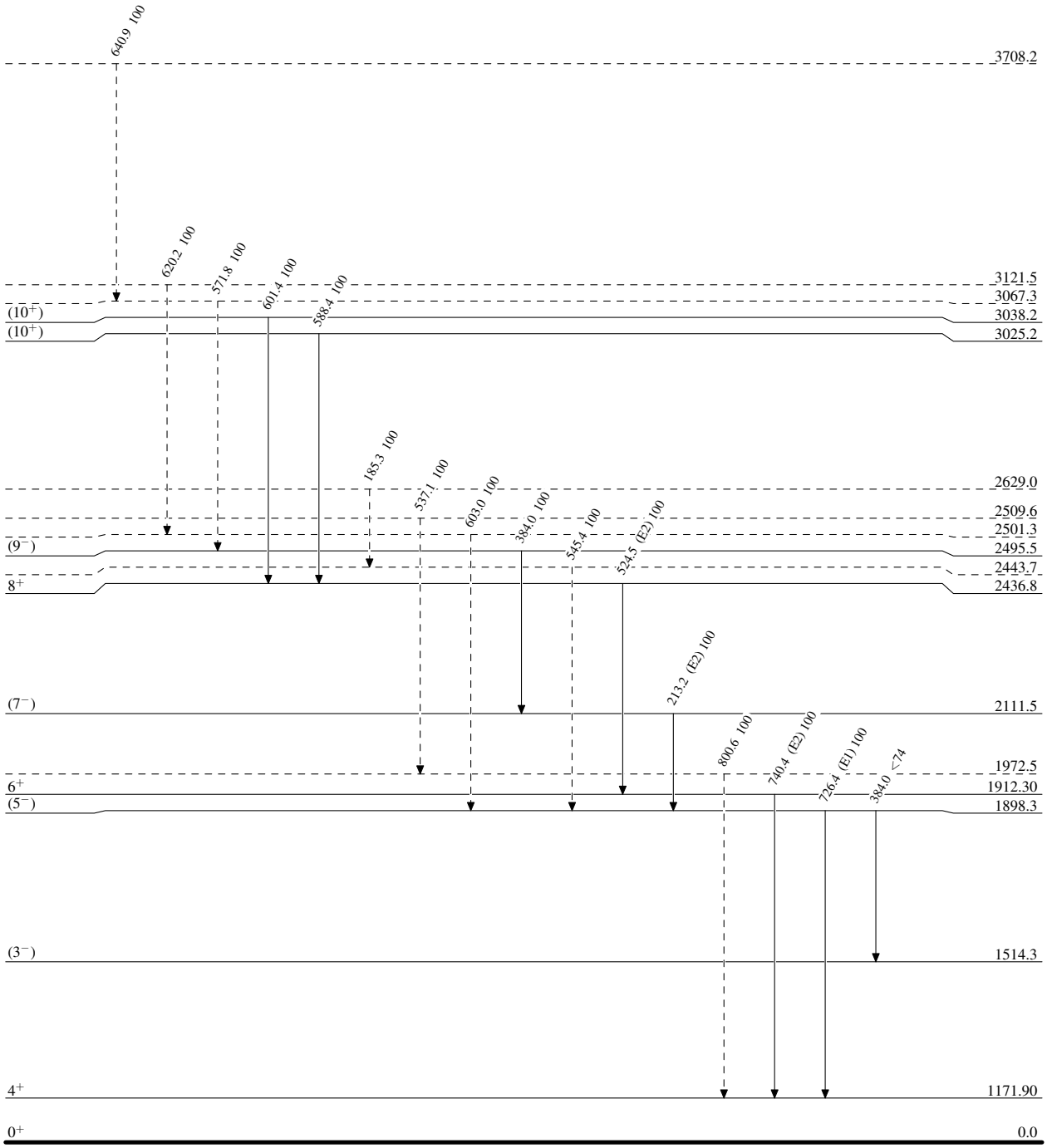
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

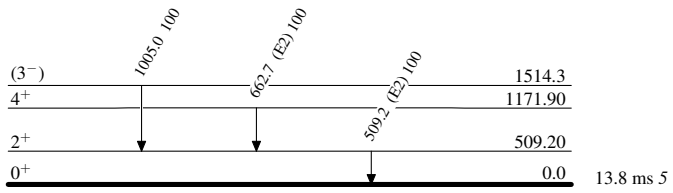


$^{170}_{78}Pt_{92}$

Adopted Levels, Gammas

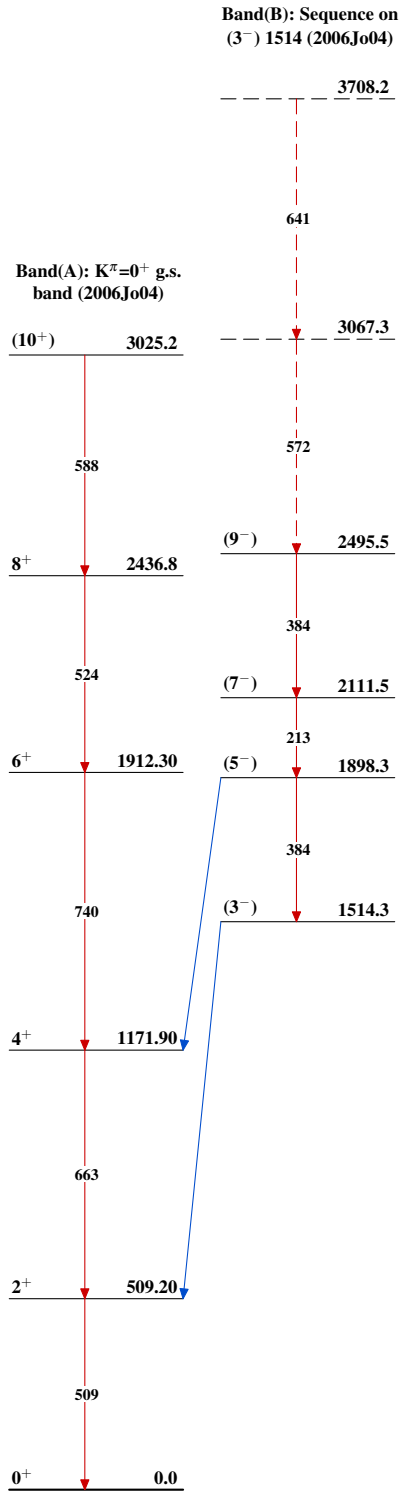
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{170}_{78}Pt_{92}$

Adopted Levels, Gammas



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