Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Tibor Kibedi and Coral M. Baglin	ENSDF	15-Mar-2010

Q(β^-)=−1.173×10^4 *8*; S(n)=1.170×10^4 *8*; S(p)=1.97×10^3 *4*; Q(α)=6464 *4* 2012Wa38
Note: Current evaluation has used the following Q record −11820 syst 11705 *89* 1960 40 *6464* 4 2003Au03,2009AuZZ.
Q(β^-): Uncertainties: 160 (Q(β^-)) (2003Au03, 2009AuZZ)).
S(n),Q(α): From 2009AuZZ; 11700 *90* and 6465 *4*, respectively, from 2003Au03.
Q(εp)=5900 *22* (2009AuZZ) cf. 5903 *23* (2003Au03).
For details about the production and identification of ^{172}Pt see ^{172}Pt α decay (1981De22,1982En03,1993ToZY).
Theory references: 1984Sa16, 1984Al36, 2005Mc09, 2007Pe30, 2009Ga15, 2010Ro06.

^{172}Pt Levels

Cross Reference (XREF) Flags

A	^{176}Hg α decay
B	^{116}Sn(^{58}Ni,2nγ),
C	^{92}Mo(^{84}Sr,2p2nγ),
D	S(n)(^{60}Ni,xnγ)

E(level)[†]	J^π[‡]	$T_{1/2}$	XREF	Comments
0.0[#]	0^+	97.6 ms *13*	ABCD	%α=94 *6* (2004GoZZ); %ε+%β^+=6 *6* %α: From 2004GoZZ. Other: 94 *+6−32* (1984ScZQ). %ε+%β^+: From 100−%α. J^π: g.s. of even-even nucleus. $T_{1/2}$: 97.6 ms *13* (2003Da06) from 6316α(t). Other data: 104 ms *7* (2002Ro17), 96 ms *3* (1996Pa01), 0.110 s *20* (1993ToZY), 0.09 s *1* (1982En03), 0.12 s *1* (1981De22), 0.10 s *1* (1975Ga25), 0.12 s *5* (1984ScZQ). The weighted average of all data is 97.8 ms *12*.
457.60[#] *10*	$2^{(+)}$		BCD	J^π: stretched Q 458γ to 0^+ g.s..
1069.98[#] *23*	(4^+)		BCD	
1464.7[@] *8*	(3^-)[&]		D	
1753.2[#] *4*	(6^+)		BCD	
1839.2[@] *3*	(5^-)[&]		BCD	
1931.8 *4*			CD	
2081.0[@] *4*	(7^-)[&]		CD	
2164.0? *5*			D	J^π: possible Q (D ΔJ=0) 411γ to 6^+ 1752, so J=(4^+,6,8^+).
2405.8[#] *4*	(8^+)		BCD	
2406.3 *4*			D	
2728.1? *5*			D	
2742.6 *4*			D	
2993.8[#] *6*	(10^+)		CD	
3580.5[#] *12*	(12^+)		D	
4218.0[#] *12*	(14^+)		D	

[†] From least-squares fit to Eγ.
[‡] From Sn(^{60}Ni,xnγ), except as noted. Values for the g.s. band follow from the assumption of a stretched Q γ cascade. Those for the π=(−) band are based on the observation that the lowest excited bands in light neighboring Os and Pt isotopes have π=− and odd J, and this band connects to the g.s. band at its 2^+ state.

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Adopted Levels, Gammas (continued)

^{172}Pt Levels (continued)

[#] Band(A): $K^{\pi}=0^+$ g.s. band (2006Jo04).

[@] Band(B): $\pi=(-)$, $\alpha=1$ band (2006Jo04). Possibly has strong octupole component, but a two-quasiparticle structure such as (ν $i_{13/2}$)(ν h9/2) cannot be ruled out (2003Da06). Possibly analogous to first-excited sidebands in neighboring nuclides. The tentative J^{π} values have been adopted from Sn(^{60}Ni,xnγ); note, however, that 2003Da06, in ^{92}Mo(^{84}Sr,2p2nγ), suggest values 2$\hbar$ lower than those shown here.

[&] See comment on $\pi=(-)$ band.

γ(^{172}Pt)

E_i(level)	J_i^{π}	E_γ[†]	I_γ[‡]	E_f	J_f^{π}	Mult.[#]	α[&]	Comments
457.60	$2^{(+)}$	457.6 *1*	100	0.0	0^+	(E2)	0.0309	
1069.98	(4^+)	612.4[@] *2*	100	457.60	$2^{(+)}$			Other Eγ: 611.5 *6* in (^{58}Ni,2nγ); 612.5 *1* for doublet in (^{60}Ni,xnγ).
1464.7	(3^-)	1006.7 *10*	100	457.60	$2^{(+)}$			
1753.2	(6^+)	683.2 *3*	100	1069.98	(4^+)	(E2)	0.01205	E_γ: unweighted average of 682.6 *3* from (^{58}Ni,2nγ), 683.2 *2* from (^{84}Sr,2p2nγ) and 683.7 *1* from (^{60}Ni,xnγ).
1839.2	(5^-)	374.0 *10*	12 *3*	1464.7	(3^-)			Placement of 374.1 *3* γ feeding 2181 level in (^{84}Sr,2p2nγ) is not adopted. That γ probably belongs here, consistent with implied branching of 15 *4*.
		769.2 *2*	100 *9*	1069.98	(4^+)			Other Eγ: 768.9 *3* in (^{58}Ni,2nγ), 768.5 *2* in (^{84}Sr,2p2nγ).
1931.8		861.8[@] *3*	100	1069.98	(4^+)			E_γ: weighted average of 861.7 *4* from (^{58}Ni,2nγ), 861.9 *5* from (^{84}Sr,2p2nγ) and 862.1 *10* from (^{60}Ni,xnγ).
2081.0	(7^-)	241.80 *21*	100	1839.2	(5^-)	(E2)	0.192	E_γ: unweighted average of 241.5 *2* from (^{58}Ni,2nγ), 241.7 *2* from (^{84}Sr,2p2nγ) and 242.2 *2* from (^{60}Ni,xnγ).
2164.0?		410.8[a] *2*	100	1753.2	(6^+)	Q		Other Eγ: 411.4 *3* in (^{84}Sr,2p2nγ), 410.1 *3* in (^{58}Ni,2nγ).
2405.8	(8^+)	652.6 *1*	100	1753.2	(6^+)			Other Eγ: 651.6 *3* in (^{58}Ni,2nγ), 652.3 *2* in (^{84}Sr,2p2nγ).
2406.3		567.1 *2*	100	1839.2	(5^-)			Other Eγ: 568.4 *5* in (^{58}Ni,2nγ).
2728.1?		564.1[a] *2*	100	2164.0?				Other Eγ: 563.1 *5* in (^{58}Ni,2nγ).
2742.6		336.4 *2*	100 *6*	2406.3				E_γ,I_γ: doublet in Sn(^{60}Ni,xnγ); Eγ is from (^{84}Sr,2p2nγ), Iγ is weighted average from (^{58}Ni,2nγ) and (^{84}Sr,2p2nγ).
		661.6 *4*	60 *7*	2081.0	(7^-)			I_γ: weighted average of 53 *9* from (^{84}Sr,2p2nγ) and 66 *9* from (^{58}Ni,2nγ).
2993.8	(10^+)	588.0[@] *4*	100	2405.8	(8^+)			
3580.5	(12^+)	586.7 *10*	100	2993.8	(10^+)			E_γ: from (^{58}Ni,2nγ). Eγ=586.7 *10* for doublet in (^{60}Ni,xnγ).
4218.0	(14^+)	637.5 *3*	100	3580.5	(12^+)			

[†] From Sn(^{60}Ni,xnγ), except as noted. Note, however, that although these data are in satisfactory agreement with those from ^{92}Mo(^{84}Sr,2p2nγ), they are usually higher than data from ^{116}Sn(^{58}Ni,2nγ). Major discrepancies are noted.

[‡] From Sn(^{60}Ni,xnγ).

[#] From asymmetry ratio in S(n)(^{60}Ni,xnγ), assigning $\Delta\pi$=(no) to intraband transitions.

[@] From ^{92}Mo(^{84}Sr,2p2nγ).

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Adopted Levels, Gammas (continued)

γ(^{172}Pt) (continued)

[&] 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.

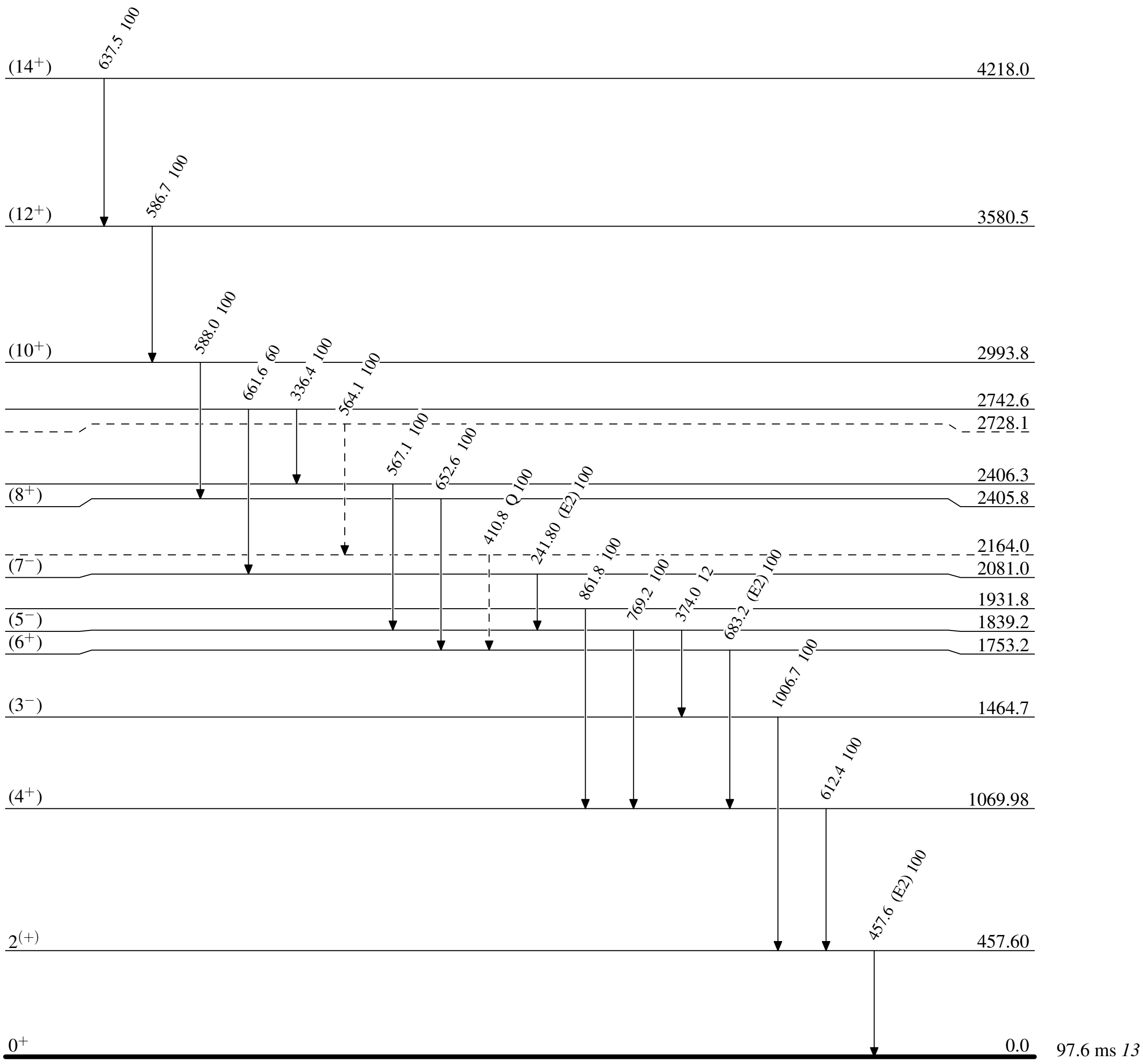
Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

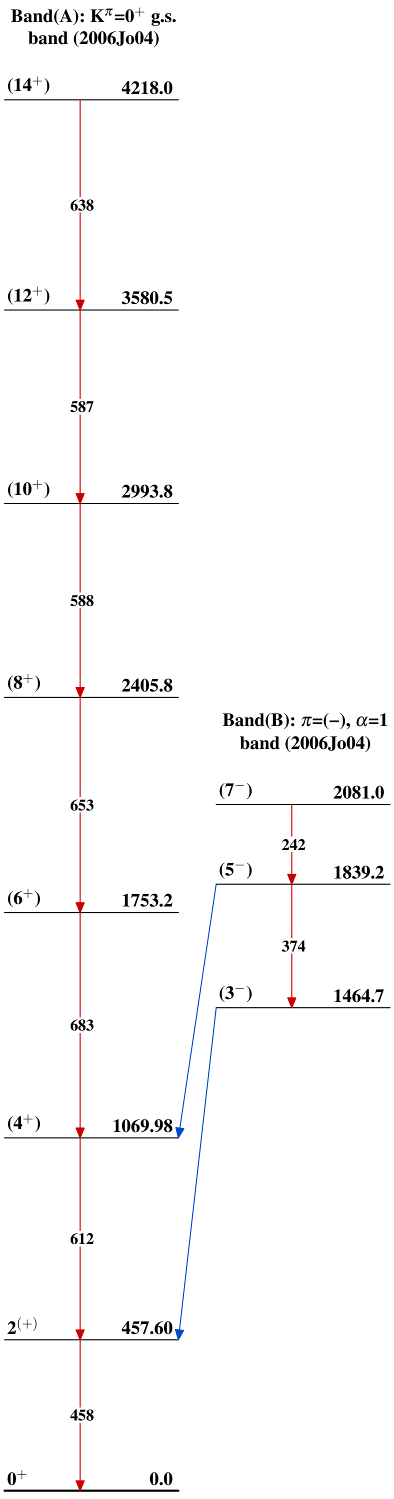
Legend

- - - - - -► γ Decay (Uncertain)



$^{172}_{78}$Pt$_{94}$

Adopted Levels, Gammas



$^{172}_{78}$Pt$_{94}$