^{179}Pt ε decay 1993Me13,2000Ro41

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 110, 265 (2009)	15-Nov-2008

Parent: ^{179}Pt: E=0.0; $J^\pi=1/2^-$; $T_{1/2}$=21.2 s *4*; Q(ε)=5814 *14*; %ε+%$β^+$ decay=99.76 *3*

2000Ro41: measured E(ce), I(ce) using high-resolution magnetic spectrograph. source: descendant of ^{183}Hg source.

1993Me13: measured Eγ, Iγ, γγ coin, K x ray-γ coin, γ(t).

^{179}Ir Levels

E(level)	J^π †	Comments
0.0‡	$(5/2)^-$	
99.8‡	$(1/2)^-$	
193.1‡	$(3/2)^-$	
271.5	$(1/2,3/2)^+$	Possible configuration=(π 3/2[402]) (1993Me13).
343.0	$(1/2,3/2,5/2^-)$	
377.8		
493.1	$(1/2,3/2,5/2^-)$	
502.2	$(1/2,3/2,5/2^-)$	

† From Adopted Levels.

‡ Band(A): possible 1/2[541] band member.

ε,$β^+$ radiations

Since Q(ε) is large (=5814), and decay is only observed to populate levels with E≤502 keV, the decay scheme is probably incomplete, and the deduced ε+$β^+$ feeding and log *ft* values may be unreliable. Also, significant Iγ remains unplaced.

E(decay)	E(level)	I$β^+$ ‡	Iε‡	Log *ft*†	I(ε+$β^+$)‡	Comments
(5312 *14*)	502.2	4.9 *8*	3.7 *6*	5.58 *8*	8.6 *14*	av Eβ=1943.0 *65*; εK=0.3531 *19*; εL=0.0593 *4*; εM+=0.01866 *10*
(5321 *14*)	493.1	6.8 *11*	5.2 *8*	5.44 *7*	12.0 *19*	av Eβ=1947.2 *65*; εK=0.3519 *19*; εL=0.0591 *4*; εM+=0.01860 *10*
(5436 *14*)	377.8	1.5 *2*	1.0 *2*	6.16 *7*	2.5 *4*	av Eβ=2000.4 *65*; εK=0.3368 *18*; εL=0.0565 *3*; εM+=0.01779 *10*
(5471 *14*)	343.0	4.0 *8*	2.7 *5*	5.75 *9*	6.7 *13*	av Eβ=2016.4 *65*; εK=0.3324 *18*; εL=0.0558 *3*; εM+=0.01755 *10*
(5543 *14*)	271.5	9.4 *13*	6.2 *9*	5.40 *7*	15.6 *22*	av Eβ=2049.5 *65*; εK=0.3234 *18*; εL=0.0543 *3*; εM+=0.01707 *10* Log *ft*: far too low for a first-forbidden transition. If the unplaced 1565.4γ fed this level (consistent with γγ coin data), log *ft* would increase to a more acceptable value of 5.94 *12*.
(5621 *14*)	193.1	23 *5*	15 *3*	5.04 *10*	38 *8*	av Eβ=2085.8 *65*; εK=0.3139 *17*; εL=0.0526 *3*; εM+=0.01656 *9*
(5714 *14*)	99.8	11 *9*	6 *5*	5.4 *4*	17 *14*	av Eβ=2129.0 *65*; εK=0.3029 *17*; εL=0.0508 *3*; εM+=0.01598 *9*

† These values probably do not constitute a reliable argument for level J^π because the three unplaced transitions have significant intensity. note that log *ft*=5.0 and 5.4, respectively, to the 193 and 272 levels which have opposite parity; this inconsistency could Be removed, however, if the 1565.4γ fed the 272 level. placement of the 203.3γ and 915.3γ May significantly change log *ft* values to other levels, also.

‡ Absolute intensity per 100 decays.

^{179}Pt ε decay 1993Me13,2000Ro41 (continued)

γ(^{179}Ir)

E_γ [†]	I_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α [#]	Comments
93.3	16 *1*	193.1	(3/2)$^-$	99.8	(1/2)$^-$	M1(+E2)	≤0.52	7.33 *18*	α(K)=5.6 *6*; α(L)=1.3 *4*; α(M)=0.32 *9*; α(N+..)=0.092 *24* α(N)=0.078 *21*; α(O)=0.013 *3*; α(P)=0.00070 *7* Mult.,δ: from α(K)exp=7 *2* (2000Ro41).
99.8	81 *14*	99.8	(1/2)$^-$	0.0	(5/2)$^-$	E2		4.65	α(K)=0.757 *11*; α(L)=2.93 *5*; α(M)=0.754 *11*; α(N+..)=0.210 *3* α(N)=0.182 *3*; α(O)=0.0278 *4*; α(P)=9.15×10^{-5} *13* Mult.,δ: from L2:L3=170 *40*:150 *30* (2000Ro41). δ(M1,E2)>3 (2000Ro41). Iγ=13.3% 9 assuming recommended Iγ normalization. I_γ: corrected for contribution from ^{179}Ir.
106.3	15 *1*	377.8		271.5	(1/2,3/2)$^+$				Placed by evaluator; level, but no γ, shown in decay scheme (1993Me13).
171.7	100	271.5	(1/2,3/2)$^+$	99.8	(1/2)$^-$	E1		0.1003	α(K)=0.0823 *12*; α(L)=0.01387 *20*; α(M)=0.00319 *5*; α(N+..)=0.000913 *13* α(N)=0.000775 *11*; α(O)=0.0001311 *19*; α(P)=7.62×10^{-6} *11* Mult.: based on α(K)exp≈0.1 (1993Me13).
193.1	87 *5*	193.1	(3/2)$^-$	0.0	(5/2)$^-$	[M1,E2]		0.7 *3*	α(K)=0.5 *3*; α(L)=0.140 *14*; α(M)=0.034 *5*; α(N+..)=0.0098 *12* α(N)=0.0083 *12*; α(O)=0.00137 *10*; α(P)=6.E−5 *4*
[x]203.3	15 *1*								Coin with 93γ, 193γ.
243.2	41 *5*	343.0	(1/2,3/2,5/2$^-$)	99.8	(1/2)$^-$				I_γ: from coin spectrum.
300.0	32 *3*	493.1	(1/2,3/2,5/2$^-$)	193.1	(3/2)$^-$				
309.0	20 *3*	502.2	(1/2,3/2,5/2$^-$)	193.1	(3/2)$^-$				
393.3	41 *3*	493.1	(1/2,3/2,5/2$^-$)	99.8	(1/2)$^-$				
402.4	32 *3*	502.2	(1/2,3/2,5/2$^-$)	99.8	(1/2)$^-$				
[x]915.3	48 *7*								Coin with 300γ, 393γ.
[x]1565.4	68 *6*								Coin with 100γ, 172γ.

[†] From 1993Me13.
[‡] For absolute intensity per 100 decays, multiply by 0.165 *23*.
[#] 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.
[x] γ ray not placed in level scheme.

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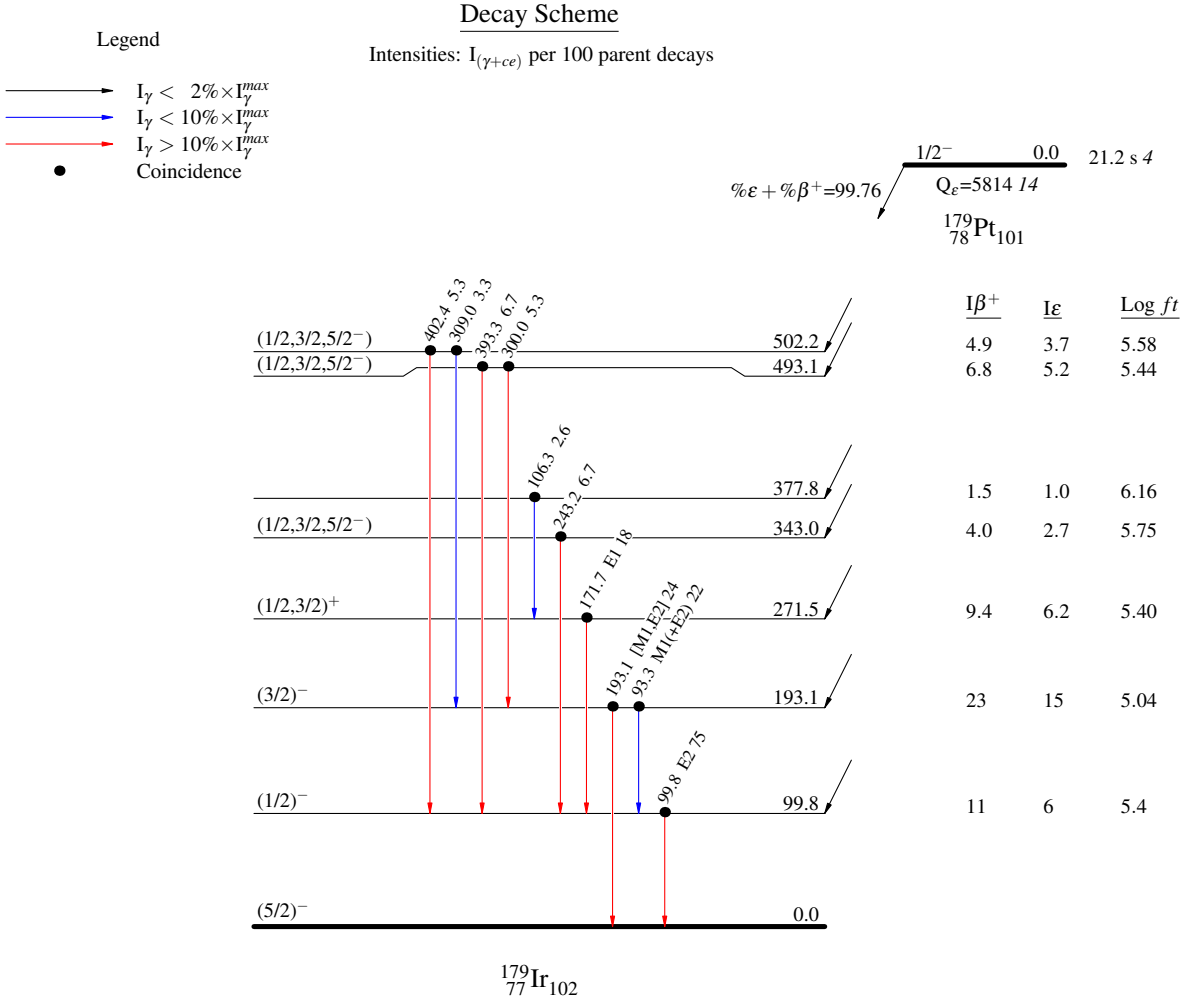
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



	Iβ+	Iε	Log *ft*
502.2	4.9	3.7	5.58
493.1	6.8	5.2	5.44
377.8	1.5	1.0	6.16
343.0	4.0	2.7	5.75
271.5	9.4	6.2	5.40
193.1	23	15	5.04
99.8	11	6	5.4

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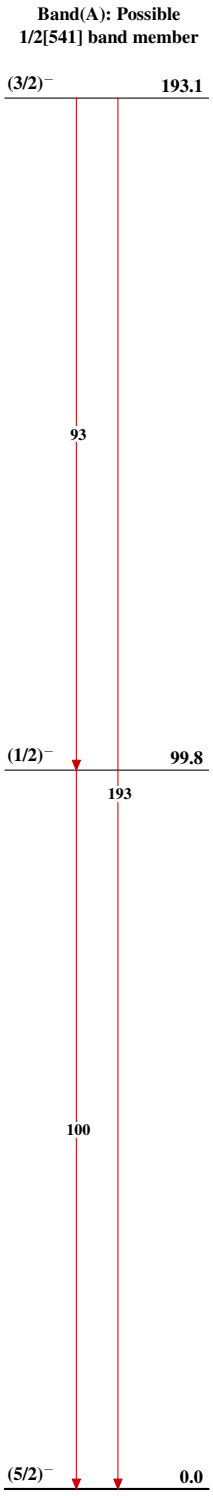

$^{179}_{77}Ir_{102}$