^{183}Hg α decay 1979Ha10,1980Sc09,1992BoZO

History

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

Parent: ^{183}Hg: E=0.0; J^π=1/2$^-$; $T_{1/2}$=9.4 s *7*; Q(α)=6039 *4*; %α decay=11.7 *20*

^{183}Hg-%α decay: from %I(5904α)=10.6 *20* (1970Ha18) and %α=1.07 *14* for all other α branches (1979Ha10); from Iα/I(K x ray). Evaluator adopts this value in preference to %I(5904α)=23.2 *14* (1980Sc09, from parent-daughter Iα comparison) because it leads to a more reasonable hindrance factor for the 5904α transition (see comment on HF).

Others: 1970Ha18.

$T_{1/2}$(183HG)=9.4 s *7* is the weighted average of 8.8 s *5* (1970Ha18), 12 s *2* (1984Ma41) and 10.7 s *8* (1992BoZO) (unweighted average is 10.5 s *9*).

^{179}Pt Levels

E(level)[†]	J^π[‡]	Comments
0.0[#]	1/2$^-$	
71.4[#] *10*	3/2$^-$	
87.4[#] *10*	5/2$^-$	
241.2[#] *14*	7/2$^-$	E(level): uncertainty assumes 1 keV uncertainty In 154γ energy.

[†] From Eγ.
[‡] From Adopted Levels.
[#] Band(A): 1/2[521] g.s. band.

α radiations

Eα[†]	E(level)	Iα[‡&]	HF[#]	Comments
5669 *10*	241.2	0.3	48 *9*	
5819[@] *10*	87.4	3.7 *7*	18 *5*	
5834[@] *10*	71.4	5.2 *10*	15 *5*	
5904 *5*	0.0	91 *17*	1.8 *5*	other Eα: 5900 (1992BoZO), 5905 *15* (1970Ha18).

[†] Measured value from 1979Ha10 minus 1.0 keV (the correction recommended by 1991Ry01 for Eα from 1979Ha10), except as noted.
[‡] Relative Iα from 1979Ha10, normalized so Iα(total)=100.
[#] Calculated by evaluator using r_0=1.517 *5* (the unweighted average of r_0(^{178}Pt)=1.522 *5* and r_0(^{180}Pt)=1.512 *11* from 1998Ak04), and assuming $T_{1/2}$(^{183}Hg)=9.4 s *7* and %α(^{183}Hg)=0.117 *20* (1979Ha10). If, instead, %α=0.255 *15* (1980Sc09) were assumed, HF would be 0.8, 7.1, 8.5, 22 to the 0, 71, 87, 241 levels, respectively, whereas HF≈2 is expected for the g.s. transition. It should be noted that %α from 1980Sc09 is based on parent-daughter relationships, a method which might be expected to be more reliable than the comparison of Iα and I(K x ray) used by 1970Ha18 and 1979Ha10; however, 1980Sc09 had to apply a significant correction to the daughter Iα data because the range of the recoils exceeded their implantation depth.
[@] 1979Ha10 report a 5835α+5820α doublet based on $\alpha\gamma$ coin spectra, consistent with Eα=5830 *15* and Iα=9.4 *17* reported by 1970Ha18 for unresolved doublet. Eα=5832 *8*, recommended by 1991Ry01 for the α group feeding the 71-keV level of ^{179}Pt, is not adopted because it apparently overlooks the fact that data from 1970Ha18 are for the doublet.
[&] For absolute intensity per 100 decays, multiply by 0.117 *20*.

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γ(^{179}Pt)

E_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α[@]	$I_{(\gamma+ce)}$[‡#]	Comments
71.4 *10*	71.4	3/2⁻	0.0	1/2⁻	[M1]	3.15 *14*	5.2	ce(L)/(γ+ce)=0.584 *17*; ce(M)/(γ+ce)=0.135 *7*; ce(N+)/(γ+ce)=0.0399 *22* ce(N)/(γ+ce)=0.0334 *19*; ce(O)/(γ+ce)=0.0060 *4*; ce(P)/(γ+ce)=0.000405 *23*
87.4 *10*	87.4	5/2⁻	0.0	1/2⁻	[E2]	8.6 *5*	4.0	ce(K)/(γ+ce)=0.078 *4*; ce(L)/(γ+ce)=0.614 *24*; ce(M)/(γ+ce)=0.159 *11*; ce(N+)/(γ+ce)=0.045 *4* ce(N)/(γ+ce)=0.039 *3*; ce(O)/(γ+ce)=0.0060 *5*; ce(P)/(γ+ce)=1.28×10^{-5} *8*
153.8	241.2	7/2⁻	87.4	5/2⁻	[M1]	1.95	0.3	ce(K)/(γ+ce)=0.544 *5*; ce(L)/(γ+ce)=0.0900 *15*; ce(M)/(γ+ce)=0.0208 *4*; ce(N+)/(γ+ce)=0.00614 *11* ce(N)/(γ+ce)=0.00515 *9*; ce(O)/(γ+ce)=0.000926 *16*; ce(P)/(γ+ce)=6.24×10^{-5} *11* E_γ: uncertainty unstated by authors but probably 1 keV, the same As for other Eγ data from this study.

[†] From 1979Ha10.
[‡] Intensity per 100 parent α decays (from Iα).
[#] For absolute intensity per 100 decays, multiply by 0.117 *20*.
[@] 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.

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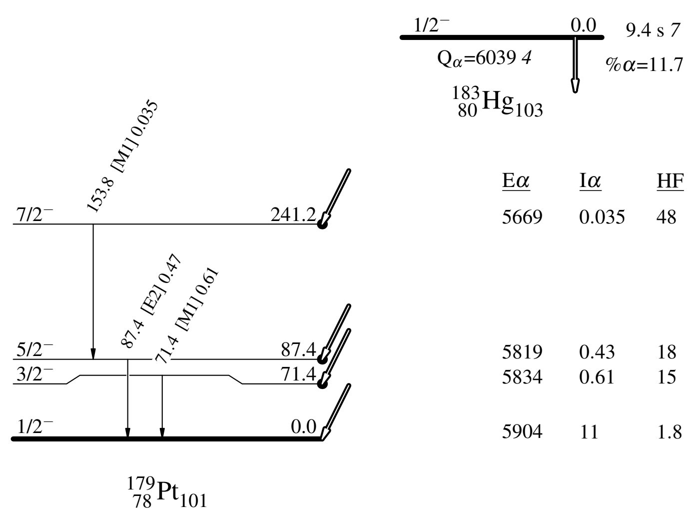
Decay Scheme



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