^{181}Au α decay 1995Bi01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

Parent: ^{181}Au: E=0.0; J^π=(3/2$^-$); $T_{1/2}$=13.7 s *14*; Q(α)=5751 *3*; %α decay=2.7 *5*

^{181}Au-Q(α): from 2017Wa10.

1995Bi01: Activity produced by the bombardment of Yb (diffused into a C felt) with a 165-MeV ^{19}F beam. Mass separated sources. Detectors: two counting stations: station 1 with a cooled Si(Li) detector and a Ge(Li) γ-ray detector; station 2 with a Si(Au) surface barrier detector and two Ge(Li) γ-ray detectors. Measured Eα, Iα, $T_{1/2}$, %α, %ε+%β^+, $\alpha\gamma$ coin, Eα-$\gamma\gamma$ coin. The coincidence time window was 50 ns.

Others: 1992Sa03, 1979Ha10, 1968De01, 1968Si01, 1970Ha18, 1978Fa16.

^{177}Ir Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[‡]	Comments
0.0[&]	5/2$^-$	29.8 s *17*	Eα= 5011 keV *10* (1967Si02). Others: Eα= 5011 keV (1986Ke03, 1990Bo19).
44.6[&] *4*	9/2$^-$		Additional information 1. E(level): From Adopted Levels. 46 keV *7* from α-decay energy differences.
51.4[#] *4*			
85.6[&] *4*	(1/2$^-$)		
105.8[#] *5*			
148.1[&] *3*	(3/2$^-$)		
223.0[&] *3*	7/2$^-$		
265.9 *4*	(3/2$^-$,5/2$^-$)		
332[@] *7*			
393[@] *11*			
440[@&] *11*	11/2$^-$		

[†] From a least-squares fit to Eγ, unless otherwise stated. ΔEγ assigned by the evaluator.
[‡] From Adopted Levels.
[#] Not populated directly in ^{181}Au α-decay.
[@] From the measured Eα (1995Bi01).
[&] π1/2[541] Nilsson configuration.

α radiations

Eα[†]	E(level)	Iα[†#]	HF[‡]	Comments
5196 *10*	440	0.09 *5*	16 *10*	
5242 *10*	393	0.04 *4*	≈63	
5301 *5*	332	0.26 *4*	19 *6*	
5364 *5*	265.9	4.0 *4*	2.6 *7*	Eα,Iα: Other values: Eα= 5348 *6*, Iα= 4.8 *2* (1992Sa03); Eα= 5365 *10*, Iα= 5.8 *10* (1979Ha10).
5407 *5*	223.0	2.6 *4*	6.6 *18*	Eα,Iα: Other values: Eα= 5393 *8*, Iα= 1.5 *2* (1992Sa03).
5479 *5*	148.1	43.9 *5*	0.88 *19*	Eα,Iα: Other values: Eα= 5462 *4*, Iα= 46.5 *11* (1992Sa03); Eα= 5480 *8*, Iα= 44 *11* (1979Ha10); Eα= 5482 *8*, Iα=45 (1968Si01).
5545 *5*	85.6	3.1 *4*	24 *6*	Eα,Iα: Other values: Eα= 5527 *8*, Iα= 1.5 *2* (1992Sa03).
5581 *5*	44.6	3.1 *4*	37 *10*	Eα,Iα: Other values: Eα= 5567 *12*, Iα= 1.3 *2* (1992Sa03).
5626 *5*	0.0	43.0 *5*	4.3 *9*	Eα,Iα: Other values: Eα= 5609 *8*, Iα= 44.4 *11* (1992Sa03); Eα= 5625 *5*, Iα= 50 *9* (1979Ha10); Eα= 5623 *5*, Iα=55 (1968Si01); Eα= 5632 *20* (1970Ha18); Eα= 5589 *17* (1968De01); Eα= 5610 *10* (1978Fa16).

Continued on next page (footnotes at end of table)

^{181}Au α decay 1995Bi01 (continued)

α radiations (continued)

† From 1995Bi01.
‡ Calculated using $r_0(^{177}Ir)$= 1.526 *4*, unweighted average of 1.53 *4* (^{176}Os) and 1.522 *5* (^{178}Pt) using HF_α=1.
# For absolute intensity per 100 decays, multiply by 0.027 *5*.

$\gamma(^{177}Ir)$

E_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
(42.9‡ *5*)	265.9	(3/2$^-$,5/2$^-$)	223.0	7/2$^-$		E_γ: From level energy differences.
(44.1‡ *6*)	44.6	9/2$^-$	0.0	5/2$^-$		E_γ: From level energy differences.
52.1 *5*	51.4		0.0	5/2$^-$		
54.9 *5*	105.8		51.4			
62.4# *5*	148.1	(3/2$^-$)	85.6	(1/2$^-$)		
75.1# *5*	223.0	7/2$^-$	148.1	(3/2$^-$)		
85.6 *5*	85.6	(1/2$^-$)	0.0	5/2$^-$		
96.8 *5*	148.1	(3/2$^-$)	51.4			
117.8 *5*	223.0	7/2$^-$	105.8			
148.0 *5*	148.1	(3/2$^-$)	0.0	5/2$^-$	M1+E2	Mult.: From α(L)exp= 0.43 *15* (1992Sa03).
177.8 *5*	223.0	7/2$^-$	44.6	9/2$^-$		
180.2 *5*	265.9	(3/2$^-$,5/2$^-$)	85.6	(1/2$^-$)		
223.1 *5*	223.0	7/2$^-$	0.0	5/2$^-$		
265.9 *5*	265.9	(3/2$^-$,5/2$^-$)	0.0	5/2$^-$		

† From 1995Bi01, unless otherwise specified.
‡ Not observed directly, but required by coincidence relationships.
# Not resolved from the stronger Ir K x ray.

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Legend

Decay Scheme