^{205}Au β^- decay 1994We02,2009Po01,2010FaZX

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 166, 1 (2020)	20-Apr-2020

Parent: ^{205}Au: E=0.0; J^π=(3/2$^+$); $T_{1/2}$=32.0 s *14*; Q(β^-)=3520 *SY*; %β^- decay=100.0

Parent: ^{205}Au: E=907 *5*; J^π=(11/2$^-$); $T_{1/2}$=6 s *2*; Q(β^-)=3520 *SY*; %β^- decay<100.0

1994We02: Produced in the bombardment of natural tungsten target with a ^{208}Pb beam at E=11.4 MeV/A. The reaction products were extracted from an ion source. The cross section of 0.052 mb is reported using an ion-source efficiency of 35%. Detectors: on-line mass separator; two Ge(Li) detectors and a ΔE β^- detector. The counting time cycle was 64 s. Measured: mass gated $\beta\gamma\gamma$(t) coin, Eγ and Iγ.

2009Po01,2010FaZX: Produced in the bombardment of a 2.5 g/cm^2-thick ^{9}Be target with a 1 GeV/nucleon ^{208}Pb beam at GSI. The reaction products were separated using the Fragment Separator (FRS). Mass to Charge (A/q) ratio was determined from the tof and magnetic rigidity measurements. The ions were implanted in a catcher consisting of three, 1 mm-thick, DSSD (5 by 5 cm^2) with FWHM of 20 keV and a minimum detection threshold of 150 keV. The catcher was surrounded by an array of 15 HPGe detectors (RISING array). Measured: Eγ, Iγ, γ(t), β(t), ce(t). Other (same collaboration): 2009PoZZ.

The decay scheme is incomplete, so no %Iγ and log *ft* values are reported. %Iγ reported in 1994We02 should be treated with caution.

^{205}Hg Levels

E(level)[†]	J^π[#]	$T_{1/2}$[#]	Comments
0.0	1/2$^-$	5.14 min *9*	
379.16 *21*	5/2$^-$		
467.45 *24*	3/2$^-$		
1280.61 *21*	1/2$^-$,3/2,5/2$^-$		
1325.08 *24*	1/2$^-$,3/2,5/2$^-$		
1346.1[‡] *5*	7/2$^-$		configuration: $\nu(f_{5/2}^{-1})\otimes\pi(s_{1/2}^{-1},d_{3/2}^{-1})_{1^+}$.
1395.0[‡] *6*	9/2$^-$		configuration: $\nu(f_{5/2}^{-1})\otimes\pi(s_{1/2}^{-1},d_{3/2}^{-1})_{2^+}$.
1447.2 *4*	1/2$^-$,3/2,5/2		

[†] From a least-squares fit to Eγ.

[‡] Populated in the β^- decay of the J^π=11/2$^-$ isomer (6 s) in ^{205}Au (2010FaZX). However, the daughter levels have a dominant $\nu(f_{5/2}^{-1})$ component in their configurations, and hence, no direct population from the isomer ($\pi(h_{11/2}^{-1})$) should be expected.

[#] From Adopted Levels.

γ(^{205}Hg)

Eγ[†]	Iγ[†]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α[@]	Comments
379.4 *5*	94.8 *19*	379.16	5/2$^-$	0.0	1/2$^-$	(E2)	0.0546 *8*	α(K)=0.0362 *5*; α(L)=0.01395 *21*; α(M)=0.00349 *5* α(N)=0.000870 *13*; α(O)=0.0001522 *22*; α(P)=4.74×10^{-6} *7* Iγ: From I(γ+ce)=100 *2* (1994We02) and α. Other: 100 *7* (2010FaZX). Mult.: α(K)exp≤0.05 (1994We02). This is an upper limit based on non observation of Hg K x ray when gating on the 946.0γ.
467.4 *5*	56.8 *18*	467.45	3/2$^-$	0.0	1/2$^-$	(M1)	0.1096 *16*	α(K)=0.0902 *13*; α(L)=0.01488 *21*; α(M)=0.00345 *5* α(N)=0.000866 *12*; α(O)=0.0001640 *23*; α(P)=1.262×10^{-5} *18* Iγ: From I(γ+ce)=63 *2* (1994We02) and α. Other: 51 *5* (2010FaZX). Mult.: α(K)exp=0.08 *2* (1994We02) from the observed Hg K x ray yield when gating on the 813.1γ.

Continued on next page (footnotes at end of table)

^{205}Au β^- decay 1994We02,2009Po01,2010FaZX (continued)

$\gamma(^{205}Hg)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
813.1 *5*	34 *2*	1280.61	$1/2^-$,3/2,$5/2^-$	467.45	$3/2^-$	I_γ: Other: 32 *4* (2010FaZX).
858 *1*	≤3	1325.08	$1/2^-$,3/2,$5/2^-$	467.45	$3/2^-$	I_γ: Other: 4.4 *15* in 2009PoZZ.
878.6 *5*	0.92 *23*	1346.1	$7/2^-$	467.45	$3/2^-$	E_γ: From adopted gammas. I_γ: From Iγ(879γ)/Iγ(966γ)=0.1317 from adopted gammas and Iγ(966γ)=7.0 *18* in 1994We02.
901.6 *5*	10 *2*	1280.61	$1/2^-$,3/2,$5/2^-$	379.16	$5/2^-$	I_γ: Other: 11 *3* (2010FaZX).
946.0 *5*	44 *2*	1325.08	$1/2^-$,3/2,$5/2^-$	379.16	$5/2^-$	I_γ: Other: 41 *5* (2010FaZX).
966[‡] *1*	7.0[‡#] *18*	1346.1	$7/2^-$	379.16	$5/2^-$	I_γ: From Iγ(966γ)/Iγ(946γ)=0.16 *4* using a 5 s implant-decay time correlated spectrum in 2010FaZX and Iγ(946γ)=44 *2* in 1994We02.
[x]977[‡] *1*	3[‡] *1*					
1015[‡] *1*	3.1[‡#] *13*	1395.0	$9/2^-$	379.16	$5/2^-$	I_γ: From Iγ(966γ)/Iγ(946γ)=0.07 *3* using a 5 s implant-decay time correlated spectrum in 2010FaZX and Iγ(946γ)=44 *2* in 1994We02.
1068.0 *5*	8 *2*	1447.2	$1/2^-$,3/2,5/2	379.16	$5/2^-$	
1280.5 *5*	21 *1*	1280.61	$1/2^-$,3/2,$5/2^-$	0.0	$1/2^-$	I_γ: Other: 10 *3* (2010FaZX).
1325.0 *3*	14 *1*	1325.08	$1/2^-$,3/2,$5/2^-$	0.0	$1/2^-$	I_γ: Other: 4 *2* (2010FaZX).

[†] From 1994We02, unless otherwise stated. $\Delta E\gamma$ were estimated by the evaluator.
[‡] From 2010FaZX using 5 s implant-decay time correlation data, unless otherwise stated.
[#] Enhanced intensity in the 5 s implant-decay time correlation data compared to the 120 s implant-decay time correlation data, implies feeding from the sorter-lived isomer (6 s) in ^{205}Au (2010FaZX).
[@] Additional information 1.
[x] γ ray not placed in level scheme.

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Decay Scheme

Intensities: Relative I_γ