^{9}Be(^{208}Pb,Xγ) 2009Po14,2009Po01

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

2009Po01, 2009Po14: ^{9}Be target, 2.5 g/cm^2 thick, was bombarded with a 1 GeV/nucleon ^{208}Pb beam at GSI. E=1 GeV/nucleon; fragments were selected and identified using FRS separator at GSI, magnetic rigidity, energy loss and time-of-flight used to identify fragments. Measured Eγ, Iγ, $\gamma\gamma$, delayed γ, half-life using RISING γ-ray detector spectrometer array at GSI. Comparison with shell model calculations. Others: 2009PoZZ, 2010FaZX, 2011St21, 2016Ca25, 2017Ca12.

^{205}Au Levels

E(level)†	J$^\pi$‡	T$_{1/2}$	Comments
0	(3/2$^+$)		
907 *5*	(11/2$^-$)	6 s *2*	%β^->0; %IT<100 Additional information 1. E(level): From 2009Po01, based on the observed K- and L-conversion electron lines of 825 keV and 896 keV, respectively. %β^-: The β^- decay branch is postulated from the observed in 2009Po01 967- and 1016-keV γ rays of the ^{205}Hg daughter, depopulating the known 1346-keV (J^π=7/2$^-$) and 1395-keV (J^π=9/2$^-$) levels, that are not directly fed in the β^- decay of the ^{205}Au ground state (J^π=(3/2$^+$)). T$_{1/2}$: From 825ce(t) and 896ce(t) in 2009Po01. configuration: $\pi(h^{-1}_{11/2})$ and spherical shape.
1643.93 *24*	(11/2$^-$)		
1853.06 *25*	(15/2$^-$)		
1887.22 *24*	(13/2$^-$)		
2815.51 *25*	(15/2$^+$)		configuration: $\pi((h^{-2}_{11/2})_{8^+}(s^{-1}_{1/2}))$.
2849.7 *4*	(19/2$^+$)	163 ns *5*	T$_{1/2}$: From γ(t) in 2009Po14 using all γ rays below the isomer (except the 243.4 keV one). configuration: $\pi((h^{-2}_{11/2})_{10^+}(s^{-1}_{1/2}))$.

† From a least-squares fit to Eγ.
‡ From 2009Po14, based on comparison with shell-model calculations.

γ(^{205}Au)

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	α‡	Comments
(34.2 *5*)	0.192 *18*	2849.7	(19/2$^+$)	2815.51	(15/2$^+$)	[E2]	8.1×10^2 *7*	α(L)=6.1×10^2 *5*; α(M)=157 *12* α(N)=38 *3*; α(O)=6.1 *5*; α(P)=0.0052 *4* E$_\gamma$: From level energy differences. I$_\gamma$: From intensity balances and α.
243.4 *5*	4 *2*	1887.22	(13/2$^-$)	1643.93	(11/2$^-$)			
736.9 *3*	39 *2*	1643.93	(11/2$^-$)	907	(11/2$^-$)			
(907 *5*)		907	(11/2$^-$)	0	(3/2$^+$)	(M4)	0.177 *5*	α(K)=0.132 *3*; α(L)=0.0338 *9*; α(M)=0.00834 *22* α(N)=0.00209 *6*; α(O)=0.000377 *10*; α(P)=2.15×10^{-5} *6* E$_\gamma$: From 2009Po01, based on the observed K- and L-conversion electron lines of 825 keV and 896 keV, respectively. The Eγ was not directly observed. Mult.: From the measured K/L(exp)=3.4 *9* (2009PoZZ), but E3 assignment

Continued on next page (footnotes at end of table)

^{9}Be(^{208}Pb,Xγ) 2009Po14,2009Po01 (continued)

γ(^{205}Au) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α ‡	Comments
								(K/L(theory)=3.7) cannot be unambiguously excluded.
928.3 *3*	23 *2*	2815.51	(15/2$^+$)	1887.22	(13/2$^-$)	[E1]	0.00253	α(K)=0.00212 *3*; α(L)=0.000316 *5*; α(M)=7.22×10^{-5} *11* α(N)=1.79×10^{-5} *3*; α(O)=3.27×10^{-6} *5*; α(P)=2.16×10^{-7} *3*
946.1 *3*	94 *4*	1853.06	(15/2$^-$)	907	(11/2$^-$)			
962.5 *3*	100 *5*	2815.51	(15/2$^+$)	1853.06	(15/2$^-$)	[E1]	0.00237	α(K)=0.00199 *3*; α(L)=0.000295 *5*; α(M)=6.74×10^{-5} *10* α(N)=1.672×10^{-5} *24*; α(O)=3.06×10^{-6} *5*; α(P)=2.03×10^{-7} *3*
962.5 *3*	11 *4*	2849.7	(19/2$^+$)	1887.22	(13/2$^-$)	[E3]	0.01435	α(K)=0.01075 *15*; α(L)=0.00273 *4*; α(M)=0.000664 *10* α(N)=0.0001651 *24*; α(O)=2.92×10^{-5} *4*; α(P)=1.352×10^{-6} *19*
980.2 *3*	24 *2*	1887.22	(13/2$^-$)	907	(11/2$^-$)			
1171.5 *3*	32 *2*	2815.51	(15/2$^+$)	1643.93	(11/2$^-$)	[M2]	0.0228	α(K)=0.0186 *3*; α(L)=0.00321 *5*; α(M)=0.000750 *11* α(N)=0.000187 *3*; α(O)=3.44×10^{-5} *5*; α(P)=2.31×10^{-6} *4*; α(IPF)=7.17×10^{-7} *12*

† From 2009Po14.
‡ Additional information 2.

^{9}Be(^{208}Pb,Xγ) 2009Po14,2009Po01

Level Scheme

Intensities: Relative I_γ

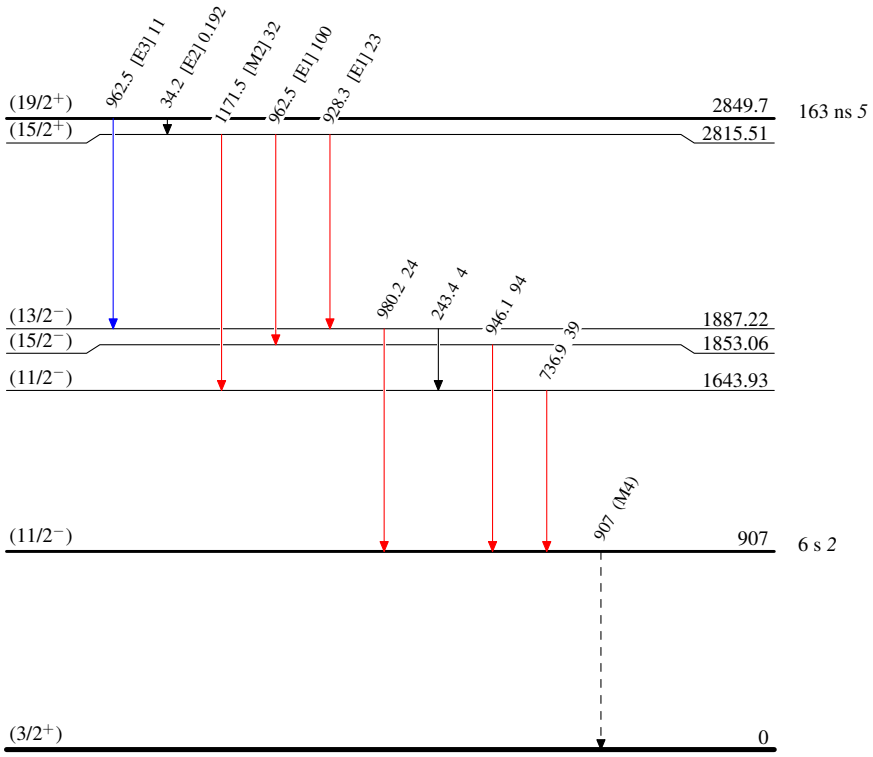
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



$^{205}_{79}Au_{126}$