

²⁰⁹Po α decay 1996Sc24,1966Ha29,1989Ma05

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

Parent: ²⁰⁹Po: E=0.0; J π =1/2⁻; T_{1/2}=122.9 y 23; Q(α)=4979.2 14; % α decay=99.546 7

²⁰⁹Po-% α : From 2015Ch30.

²⁰⁹Po-T_{1/2}: From 2016Po07.

²⁰⁵Pb Levels

E(level) [†]	J π [#]	T _{1/2}	Comments
0.0	5/2 ⁻	1.70×10 ⁷ y 9	T _{1/2} : From Adopted Levels.
2.30 15	1/2 ⁻	24.2 μ s 4	T _{1/2} : From α -e ⁻ (Δ t) in 1994Kr11.
262.80 10	3/2 ⁻		
585? [‡] 15	3/2 ⁻		E(level): From Q(α) and E α .
789? [‡] 15	5/2 ⁻		E(level): From Q(α) and E α .

[†] From the measured E γ , unless otherwise specified.

[‡] From the reported E α .

[#] From Adopted Levels.

α radiations

E α [‡]	E(level)	I α [@]	HF [†]	Comments
4110 ^{#&} 15	789?	0.00056 [#] 4	0.80 13	HF: Value is inconsistent with α -decay HF systematics.
4310 ^{#&} 15	585?	0.00015 [#] 4	104 31	
4622 5	262.80	0.553 6	4.78 13	E α : Others: 4617 keV 5 (1966Ha29). I α : Others: I α =0.92 5 (1989Ma05) and 0.48 2 (1966Ha29).
4883 2	2.30	85 SY	1.3 SY	E α : Others: 4883 keV 8 (1964Wa19), 4877 keV 5 (1966Ha29), and 4883 keV 3 (1969Go23).
4885 2	0.0	14.4 SY	8.2 SY	E α : Value assigned by the evaluator by assuming that the favored decay goes to the 2.30-keV level.

[†] Using r₀=1.409 3, weighted average value deduced from values for neighboring even-even ²⁰⁴Pb (r₀=1.4296 8) and ²⁰⁶Pb (r₀=1.40882 10) nuclei (1998Ak04).

[‡] From 1989Ma05, unless otherwise stated.

[#] From 1966Ha29.

[@] For absolute intensity per 100 decays, multiply by 0.99546 7.

[&] Existence of this branch is questionable.

γ (²⁰⁵Pb)

E γ [†]	I γ ^{‡@}	E _i (level)	J _i π	E _f	J _f π	Mult.	δ	α [#]	Comments
260.5 1	0.254 3	262.80	3/2 ⁻	2.30	1/2 ⁻	M1(+E2)	≤0.14	0.624 10	α (K)=0.509 8; α (L)=0.0877 13; α (M)=0.02055 29 α (N)=0.00522 7; α (O)=0.001041 15; α (P)=0.0001109 17 Mult., δ : From adopted gammas;

Continued on next page (footnotes at end of table)

^{209}Po α decay [1996Sc24](#),[1966Ha29](#),[1989Ma05](#) (continued) $\gamma(^{205}\text{Pb})$ (continued)

E_γ †	I_γ ‡@	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	α #	Comments
262.8 1	0.085 2	262.80	3/2 ⁻	0.0	5/2 ⁻	M1(+E2)	≤0.14	0.609 10	$\alpha(\text{K})_{\text{exp}}=0.538$ 20 (1996Sc24); $\alpha(\text{K})_{\text{exp}}(260.5\gamma+262.8\gamma)=0.495$ 1; $\text{K}/(\text{L}+\text{M})_{\text{exp}}(260.5\gamma+262.8\gamma)=4.44$ 10. $\alpha(\text{K})=0.497$ 8; $\alpha(\text{L})=0.0856$ 12; $\alpha(\text{M})=0.02006$ 28 $\alpha(\text{N})=0.00510$ 7; $\alpha(\text{O})=0.001016$ 14; $\alpha(\text{P})=0.0001082$ 16 Mult., δ : From adopted gammas; $\alpha(\text{K})_{\text{exp}}=0.524$ 20 (1996Sc24).

† From [1989Ma05](#).‡ From [1996Sc24](#).# [Additional information 1](#).

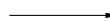


@ Absolute intensity per 100 decays.

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Decay Scheme

Intensities: Relative $I_{(\gamma+ce)}$

Legend

-  $I_\gamma < 2\% \times I_\gamma^{max}$
 $I_\gamma < 10\% \times I_\gamma^{max}$
 $I_\gamma > 10\% \times I_\gamma^{max}$

