^{187}**Pb** ε **decay (18.3 s)**   **1981Mi12**

Parent: ^{187}Pb: E=33 *13*; J$^{\pi}$=(13/2$^+$); T$_{1/2}$=18.3 s *3*; Q(ε)=7464 *12*; %ε+%β^+ decay=90.5 *20*

^{187}Tl Levels

E(level)†	J$^{\pi\ddagger}$	T$_{1/2}$‡	Comments
0.0	(1/2$^+$)		
299.5 *3*	(3/2$^+$)		
334 *4*	(9/2$^-$)	15.60 s *12*	Additional information 1.
			E(level),T$_{1/2}$: from Adopted Levels.
677.5? *3*	($\geq$5/2)		
727.4 *3*	(11/2$^-$)		
871.8? *4*			
1058.8 *5*	(13/2$^+$)	0.69 ns *14*	
1072.6? *4*	($\geq$7/2)		

† From least-squares adjustment of Eγ holding 334-keV level energy fixed. For absolute level uncertainty, a ΔE=4 keV for the
  334-keV level should be considered in propagation.
‡ From Adopted Levels.

From ENSDF

$^{187}\text{Pb}\ \varepsilon$ decay (18.3 s)   **1981Mi12** (continued)

$\gamma(^{187}\text{Tl})$

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[&]	Comments
(35 4)		334	(9/2⁻)	299.5	(3/2⁺)	[E3]		6.58×10⁴	α(L)≈4.58×10⁴; α(M)≈1.532×10⁴; α(N+..)≈4.65×10³ α(N)≈3.97×10³; α(O)≈661; α(P)≈17.46 E_γ: From Adopted Levels. ≈35 keV (1981Mi12).
193.0[b] 3	15.0 8	871.8?		677.5?	(≥5/2)				Coincident with K x ray and 344γ (1981Mi12).
299.5 3		299.5	(3/2⁺)	0.0	(1/2⁺)	M1+E2	2.0 +5−3	0.168 18	α(K)=0.116 17; α(L)=0.0392 14; α(M)=0.0098 3; α(N+..)=0.00293 9 α(N)=0.00245 7; α(O)=0.000447 16; α(P)=2.85×10⁻⁵ 24
ˣ309.4[@] 3	20 1								
331.4 3	60 3	1058.8	(13/2⁺)	727.4	(11/2⁻)	(E1)		0.0228	α(K)=0.0187 3; α(L)=0.00310 5; α(M)=0.000719 11; α(N+..)=0.000217 3 α(N)=0.000180 3; α(O)=3.42×10⁻⁵ 5; α(P)=2.84×10⁻⁶ 4 Coincident with K x ray and 393γ (1981Mi12).
343.5[ab] 3	75[a] 4	677.5?	(≥5/2)	334	(9/2⁻)				
343.5[ab] 3	75[a] 4	1072.6?	(≥7/2)	727.4	(11/2⁻)				Coincident with K x ray, 193γ and 344γ? (1981Mi12).
393.4 3	100 5	727.4	(11/2⁻)	334	(9/2⁻)	(M1+E2)	≈−0.4	≈0.1695	α(K)≈0.1379; α(L)≈0.0242; α(M)≈0.00566; α(N+..)≈0.001731 α(N)≈0.001429; α(O)≈0.000276; α(P)≈2.54×10⁻⁵
ˣ493.6[@] 3	40 2								
ˣ617.2[@] 3	40 2								
ˣ645.4[@] 3	15.0 8								
ˣ865.8[@] 3	<10								

[†] Measurement of 1981Mi12 (semi).
[‡] Relative photon intensity measured by 1981Mi12.
[#] From adopted gammas.
[@] Half-lives were not determined for these unplaced gammas; therefore, they could not be assigned to a specific isomer's decay.
[&] 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.
[a] Multiply placed with undivided intensity.
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{187}Pb ε decay (18.3 s)   1981Mi12

Decay Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend

$\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{max}$
$\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{max}$
$\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{max}$
$\dashrightarrow$ γ Decay (Uncertain)
• Coincidence

$(13/2^+)$ 33   18.3 s 3

$\%\varepsilon + \%\beta^+ = 90.5$ $Q_\varepsilon = 7464\ 12$

$^{187}_{82}Pb_{105}$

343.5 75&
331.4 (E1) 60
193.0 15.0
393.4 (M1+E2) 100
343.5 75&
35 [E3]
299.5 M1+E2

$(\geq 7/2)$ 1072.6
$(13/2^+)$ 1058.8   0.69 ns 14

871.8

$(11/2^-)$ 727.4
$(\geq 5/2)$ 677.5

$(9/2^-)$ 334   15.60 s 12
$(3/2^+)$ 299.5

$(1/2^+)$ 0.0

$^{187}_{81}Tl_{106}$