^{191}Pb $\varepsilon+\beta^+$ decay (2.18 min) 1981Mi11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

Parent: ^{191}Pb: E=0.0+x; J^π=(13/2$^+$); $T_{1/2}$=2.18 min *8*; Q(ε)=5992 *10*; %ε+%β^+ decay=100
^{191}Pb-E: 58 keV *10* (2021Ko07 − NUBASE).
^{191}Pb-E,$T_{1/2}$: From 1981Mi11.

Activity produced from ^{48}Ti (E=235 MeV) on targets of ^{150}Sm. Activity assigned to ^{191}Pb on the basis of γ rays observed in coincidence with Tl X-rays between known levels of ^{191}Tl. Mass-separated source.

^{191}Tl Levels

E(level)‡	J^π†	$T_{1/2}$	Comments
0.0	1/2$^+$		$T_{1/2}$: unobserved activity.
297# *7*	9/2$^{(-)}$	5.22 min *16*	Additional information 1. $T_{1/2}$: from 1974Va19. E(level): from ^{195}Bi (183 s) α decay.
341.20[a] *20*	(3/2$^+$)		
684.25# *15*	(11/2$^-$)		
745.3?[a] *3*	(5/2$^+$)		
857.70& *17*	(7/2$^-$)		
1009.23# *16*	(13/2$^-$)		
1170.80& *17*	(9/2$^-$)		
1216.6[a] *3*	(7/2$^+$)		
1297.75@ *25*	(13/2$^+$)		
1390.13 *16*	(13/2$^-$)		
1701.8?@ *4*	(15/2$^+$)		

† From Adopted Levels.
‡ From least-squares adjustment to Eγ, holding 297 keV *7* level energy fixed. ΔE for levels above 297 keV *7* does not include ΔE=7 keV. Only 341.20 keV level directly feeding the g.s.
# Possible member of 9/2[505] rotational band.
@ Possible member of 13/2[606] rotational band.
& Possible member of K^π=(7/2$^-$) rotational band. This band not confirmed in later work.
[a] Possible member of K^π=(3/2$^+$) rotational band.

$\gamma(^{191}Tl)$

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Comments
313.0 *2*	8 *1*	1170.80	(9/2$^-$)	857.70	(7/2$^-$)	
325.0 *2*	27 *1*	1009.23	(13/2$^-$)	684.25	(11/2$^-$)	
341.2 *2*	20 *1*	341.20	(3/2$^+$)	0.0	1/2$^+$	
387.1 *2*	100	684.25	(11/2$^-$)	297	9/2$^{(-)}$	
404.0#@ *2*	11# *1*	745.3?	(5/2$^+$)	341.20	(3/2$^+$)	Unresolved doublet.
404.0#@ *2*	11# *1*	1701.8?	(15/2$^+$)	1297.75	(13/2$^+$)	Unresolved doublet.
x414.8 *2*	8 *1*					
471.3 *2*	2 *1*	1216.6	(7/2$^+$)	745.3?	(5/2$^+$)	
560.6 *2*	27 *2*	857.70	(7/2$^-$)	297	9/2$^{(-)}$	
613.5 *2*	40 *2*	1297.75	(13/2$^+$)	684.25	(11/2$^-$)	
705.7 *2*	16 *2*	1390.13	(13/2$^-$)	684.25	(11/2$^-$)	

Continued on next page (footnotes at end of table)

^{191}Pb $\varepsilon+\beta^+$ decay (2.18 min) 1981Mi11 (continued)

$\gamma(^{191}Tl)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Comments
712.2 *2*	46 *3*	1009.23	$(13/2^-)$	297	$9/2^{(-)}$	
873.9 *2*	23‡ *1*	1170.80	$(9/2^-)$	297	$9/2^{(-)}$	Resolved doublet of 873.9γ and 875.5γ.
875.5 *2*	3.0‡ *2*	1216.6	$(7/2^+)$	341.20	$(3/2^+)$	Doublet.
[x]936.8 *2*	37 *3*					γ ray decays with $T_{1/2}$=1.4 min *1*, possibly from ^{191}Pb ε decay (1.33 min).
1093.3 *2*	15 *2*	1390.13	$(13/2^-)$	297	$9/2^{(-)}$	

† From 1981Mi11. $\Delta E\gamma$ noted to be <0.2 keV, the evaluator assigned 0.2 keV for all $E\gamma$.
‡ Not resolved in singles spectrum. $I\gamma$ is from $\gamma\gamma$ coin.
# Multiply placed with undivided intensity.
@ Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{191}Pb ε decay (2.18 min) 1981Mi11

Decay Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)
- Coincidence