$^{205}\text{Tl}(\mu^-,\gamma)$ 1972Ch07,1972Ba53

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

1972Ch07:Target: ^{205}Tl enriched to 99.8%; Detectors:Ge(Li).
1972Ba53:Target: metallic ^{205}Tl, natural abundance; Detectors: three Ge(Li).
Other: 1969An26 (^{206}Pb(μ-,nγ)).

$^{205}\text{Tl Levels}$

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	Comments
0.0	1/2$^+$		
203.40 10	3/2$^+$	1.41 ns 10	T$_{1/2}$: From 203.4γ(t) in 1972Ba53 and the slope method. Both, statistical (0.03) and systematics uncertainties are included. A consistent value of 1.42 ns 11 is obtained using the centroid-shift analysis (1972Ba53). μ=0.41 5; Q=0.74 15 (1972Ch07).
619.24 17	5/2$^+$		
1139.0 3	3/2$^+$		
1339.46 13	3/2$^+$,5/2$^+$		
2630.56 18	5/2$^-$		μ=0.71 15; Q=$-$0.54 20 (1972Ch07).

[†] From a least-squares fit to Eγ.
[‡] From 1972Ba53.

$\gamma(^{205}\text{Tl})$

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$	Mult.[†]	δ[†]
[x]186.16[‡] 10	0.46 9						
203.4 1	14.6 3	203.40	3/2$^+$	0.0	1/2$^+$	M1+E2	1.000 25
415.84 15	3.3 7	619.24	5/2$^+$	203.40	3/2$^+$		
519.6[#]		1139.0	3/2$^+$	619.24	5/2$^+$		
619.5[#]		619.24	5/2$^+$	0.0	1/2$^+$		
935.1 5	2.1 8	1139.0	3/2$^+$	203.40	3/2$^+$		
1136.07 7	4.0 7	1339.46	3/2$^+$,5/2$^+$	203.40	3/2$^+$		
1139.1[#]		1139.0	3/2$^+$	0.0	1/2$^+$		
[x]1274.9[‡] 6	0.4 2						
1291.14 16	4.4 6	2630.56	5/2$^-$	1339.46	3/2$^+$,5/2$^+$		
1491.50 22	2.1 4	2630.56	5/2$^-$	1139.0	3/2$^+$		
2011.3 3	2.3 4	2630.56	5/2$^-$	619.24	5/2$^+$		
[x]2758.9[‡] 8	0.75 4						
[x]2984.1[‡] 8	1.1 3						

[†] From 1972Ba53.
[‡] Assignment to ^{205}Tl is uncertain.
[#] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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Legend

Level Scheme

Intensities: Percent γ-ray yield

I$_\gamma <$ 2%$\times$I$_\gamma^{max}$
I$_\gamma <$ 10%$\times$I$_\gamma^{max}$
I$_\gamma >$ 10%$\times$I$_\gamma^{max}$
γ Decay (Uncertain)

$^{205}_{81}Tl_{124}$