

$^{205}\text{Tl}(\text{p,p}') \quad 1974\text{GI03}, 1982\text{GI11}$

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

[1974GI03](#): E(p)=19.64 MeV, FWHM=25 keV.

[1982GI11](#): E(p)=3 MeV; Target: ^{205}Tl , enriched to 99.44%; Detectors: Si(Li) and Ge(Li); Measured: $E\gamma$, $I\gamma$, E(ce), Ice; Deduced: $\alpha(\text{K})\text{exp}$, $\alpha(\text{L})\text{exp}$, $\alpha(\text{M}+\dots)\text{exp}$, δ , penetration parameter.

Others: [1969So01](#), [1970GI01](#).

 ^{205}Tl Levels

E(level) [†]	J ^π [‡]	L [‡]	$\gamma(\text{L})$ [#]	Comments
0	1/2 ⁺			J ^π : From Adopted Levels.
203.7	3/2 ⁺	2	8.5	E(level): From 203.7 γ to g.s..
622	5/2 ⁺	2	8.6	
924	7/2 ⁺ , 9/2 ⁺	4	2.7	
1140	3/2 ⁺ , 5/2 ⁺	2	0.96	
1340	3/2 ⁺ , 5/2 ⁺	2	0.8	
1431	7/2 ⁺ , 9/2 ⁺	4	4.2	
1480	11/2 ⁻	≥5	2.5	
1860 [‡]				
1920 [‡]				
2040 [‡]				
2120 [‡]				
2180 [‡]				
2300 [‡]				
2400 [‡]				
2487	5/2 ⁻ , 7/2 ⁻	3	5.7	
2550 [‡]				
2625	5/2 ⁻ , 7/2 ⁻	3	14.7	
2716	5/2 ⁻ , 7/2 ⁻	3	13.0	
2900 [‡]				
2970	(5/2 ⁻ , 7/2 ⁻)	(3)	0.75	
3180	(5/2 ⁻ , 7/2 ⁻)	(3)	1.5	
3213	5/2 ⁻ , 7/2 ⁻	3	3.3	
3256	5/2 ⁻ , 7/2 ⁻	3	5.2	
3414	(9/2 ⁻ , 11/2 ⁻)	≥5	2.2	
3480 [‡]				
3540	(9/2 ⁻ , 11/2 ⁻)	≥5	6.9	
3660 [‡]				

[†] From [1974GI03](#), unless otherwise stated. Level energy values are accurate within ± 10 keV.

[‡] Observed in $^{208}\text{Pb}(\text{p},\alpha)$ in [1974GI03](#).

[#] Reduced transition probability is defined as $\gamma(\text{L}) = (2J_i + 1) \times (L + 3)^2 \times Z^2 \times \beta_L^2 / (4\pi \times (2J_f + 1))$, where β_L is the deformation parameter. See [1974GI03](#) for details.

$^{205}\text{Tl}(\text{p,p}') \quad \text{1974Gi03,1982Gi11 (continued)}$ $\gamma(^{205}\text{Tl})$

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	δ [†]	α [‡]	Comments
203.7	203.7	3/2 ⁺	0	1/2 ⁺	M1+E2	1.18 19	0.46 4	Mult.: From $\alpha(\text{K})_{\text{exp}}=0.29 \ 4$, $\alpha(\text{L})_{\text{exp}}=0.132 \ 6$ and $\alpha(\text{M}+\dots)_{\text{exp}}=0.0397 \ 34$ (1982Gi11). Values determined relative to $\alpha(\text{K})_{\text{exp}}(279\gamma)=0.1639 \ 10$ in ^{203}Tl . α : From the measured $\alpha(\text{K})_{\text{exp}}$, $\alpha(\text{L})_{\text{exp}}$ and $\alpha(\text{M}+\dots)_{\text{exp}}$ values in 1982Gi11. This is an anomalous value, due to penetration effect, with a penetration parameter $\lambda=13.1 \ 27$.

[†] From 1982Gi11.[‡] 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. $^{205}\text{Tl}(\text{p,p}') \quad \text{1974Gi03,1982Gi11}$ Level Scheme