$^{205}\text{Tl}(d,^3\text{He})$ **1989Gr09**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. J. Chiara and F. G. Kondev	NDS 111,141 (2010)	1-Oct-2009

$J^\pi(\text{target})=1/2^+$.

1989Gr09: Enriched 99.5% ^{205}Tl; E(d)=52 MeV, polarized beam average polarization of 0.54, FWHM=110 keV for vector-polarized beam, FWHM=70 keV for unpolarized beam; E-ΔE Si detector. DWBA calculation normalized to $^{208}\text{Pb}(d,^3\text{He})$.

Other: 1983AgZY: Enriched ^{205}Tl; E(d)=45 MeV; magnetic spectrometer. Results are preliminary, no uncertainties given.

^{204}Hg Levels

E(level)[†]	J^{π}[‡]	L[†]	S[@]	Comments
0	0^+	0	0.21	
440	2^+	2	0.18	J^π: L transfer and vector analyzing power give $1^+,2^+$; the latter is taken by 1989Gr09 from earlier Nuclear Data Sheets assignment.
1130	4^+			J^π: taken by 1989Gr09 from earlier Nuclear Data Sheets assignment.
1630	$(0,1)^+$	0	0.16	L: a small L=2 contribution cannot be excluded.
1840	$1^+,2^+$	2	0.14	Additional information 1.
1950	2^+	2	0.28	J^π: $1^+,2^+$ from j=3/2 transfer in 1989Gr09. $J^\pi=2^+$ taken by 1989Gr09 based on earlier Nuclear Data Sheets assignment.
≈2060	$(1,2,3)^+$	2	0.05	
2120	$(1,2)^+$	2	0.14	Additional information 2.
2250[#]	5^-	2+5	0.04, 0.21	J^π: L=5 for stronger member of multiplet. 1989Gr09 assume $h_{11/2}$ transfer, $J^\pi=5^-$ based on 5^- state in ^{206}Hg. L=2 member indicates probable $(1,2)^+$ level nearby, assuming $d_{3/2}$ transfer.
2380	$(\leq3)^+$	0+2	0.05, 0.04	J^π: Possible multiplet; $J^\pi=1^+$ proposed by 1989Gr09 if only one state contributes.
2470	$(1,2,3)^+$	2	0.03	
2650[#]	$(\leq3)^+$	0+2	0.08, 0.03	
2770[#]		2+5	0.20, 0.16	
2890[#]		2+5	0.16, 0.10	
3050[#]		2+5	0.12, 0.05	
3190	$(2,3)^+$	2	0.41	J^π: j=5/2 from vector analyzing power in 1989Gr09.
3320[#]		2+5	0.07, 0.05	
3460	$(1,2,3)^+$	2	0.13	
3600[#]		2+5	0.03, 0.11	
3770	$(1,2,3)^+$	2	0.05	
3890	$(\leq3)^+$	0+2	0.05, 0.06	

[†] From 1989Gr09, $\Delta E\approx15$ keV, except $\Delta E\approx30$ keV for weak 2060-keV level. See also: 1987Cl01.

[‡] From 1989Gr09 based on L transfer and vector analyzing power, except as noted.

[#] Unresolved multiplet.

[@] Spectroscopic factors for L=0 are from $3s_{1/2}$, for L=2 below 2.5 MeV and for 3320-keV level are from $2d_{3/2}$, for L=2 above 2.5 MeV are from $2d_{5/2}$, for L=5 are from $1h_{11/2}$. For cases of two L values, the S factors are listed in the order $s_{1/2},d_{3/2},h_{11/2},d_{5/2}$. In cases where one of the L values is even and the other is odd, it is clear that at least two levels with opposite parities contribute.