

Adopted Levels, Gammas

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	J. K. Tuli	ENSDF	23-Dec-2009

$Q(\beta^-) = -9.68 \times 10^3$ 8; $S(n) = 1.161 \times 10^4$ 6; $S(p) = -163$ 14; $Q(\alpha) = 6321$ 6 [2012Wa38](#)

Note: Current evaluation has used the following Q record -9660 90 11470 syst -155 16 6324 9 [2003Au03,2009AuZZ](#).

$\Delta S(n) = 120$ ([2003Au03](#)).

All data above 835 isomer are preliminary and are from unpublished work of [2005CaZU](#).

 ^{181}Tl LevelsCross Reference (XREF) Flags

A ^{185}Bi α decay
B ^{181}Tl IT decay (1.40 ms)
C (HL,xn γ)

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	(1/2 ⁺)	3.2 s 3	ABC	$\% \alpha \leq 10$ (2004An07,2009An14) J^π : From the systematics of the $^{183-197}\text{Tl}$ isotopes, a 1/2 ⁺ and 9/2 ⁻ isomer pair is expected. $T_{1/2}$: from ^{181}Tl α -decay (1998To14). Other: 3.4 s 6 from ^{181}Tl α -decay (1984ScZQ). $E\alpha = 6578$ 10 from 1998To14 ; $E\alpha = 6566$ 20 from 1984ScZQ . $Q(\alpha) = 6724$ 9 calculated from $E(\alpha)$, disagrees with $Q(\alpha) = 6324$ 9 from 2003Au03 .
258.0 3	(3/2 ⁺)	1.40 ms 3	BC	$E(\text{level})$: From 2009An14 .
835.9 5	(9/2 ⁻)		BC	$\% \alpha = 0.40$ 6; $\% \text{IT} = 99.60$ 4 (2009An14) $E(\text{level})$: From 2009An14 . $T_{1/2}$: from 2009An14 . Others: 1.4 ms 5 (1998To14), 2.7 ms 10 (1984ScZQ). $E\alpha = 6186$ 10 from 1998To14 ; $E\alpha = 6180$ from 1993BoZK . $E(\text{level})$: The 9/2 ⁻ to 9/2 ⁻ α -decay energy systematics of odd Bi isotopes predicts a 7280 keV peak, but it could not be identified in 2004An07 , due to other signals of similar energies. J^π : From the systematics of the $^{183-197}\text{Tl}$ isotopes, a 1/2 ⁺ and 9/2 ⁻ isomer pair is expected.
1031 @	(1/2 ⁺)		C	
1223 ‡	(13/2 ⁻)		C	
1251 @	(5/2 ⁺)		C	
1265 †	(11/2 ⁻)		C	
1296 #	(11/2 ⁻)		C	
1531 ‡	(17/2 ⁻)		C	
1548 @	(9/2 ⁺)		C	
1620 †	(15/2 ⁻)		C	
1646 #	(15/2 ⁻)		C	
1911 ‡	(21/2 ⁻)		C	
1924 @	(13/2 ⁺)		C	
2028 †	(19/2 ⁻)		C	
2058 #	(19/2 ⁻)		C	
2362 ‡	(25/2 ⁻)		C	
2367 @	(17/2 ⁺)		C	
2503 †	(23/2 ⁻)		C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{181}Tl Levels (continued)

E(level)	J ^π	XREF	E(level)	J ^π	XREF	E(level)	J ^π	XREF
2536 [#]	(23/2 ⁻)	C	x	(11/2 ⁻)	C	1284+x	(23/2 ⁺)	C
2863 [‡]	(29/2 ⁻)	C	237+x ^{&}	(13/2 ⁺)	C	1419+x ^{&}	(29/2 ⁺)	C
3028 [†]	(27/2 ⁻)	C	392+x ^{&}	(17/2 ⁺)	C	1674+x	(27/2 ⁺)	C
3074 [#]	(27/2 ⁻)	C	645+x ^{&}	(21/2 ⁺)	C	1924+x ^{&}	(33/2 ⁺)	C
3657 [#]	(27/2 ⁻)	C	990+x ^{&}	(25/2 ⁺)	C	2501+x ^{&}	(37/2 ⁺)	C

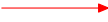
[†] Band(A): Cascade-1.[‡] Band(B): Cascade-2.[#] Band(C): Cascade-3.[@] Band(D): Cascade-4.[&] Band(E): Cascade-5. $\gamma(^{181}\text{Tl})$

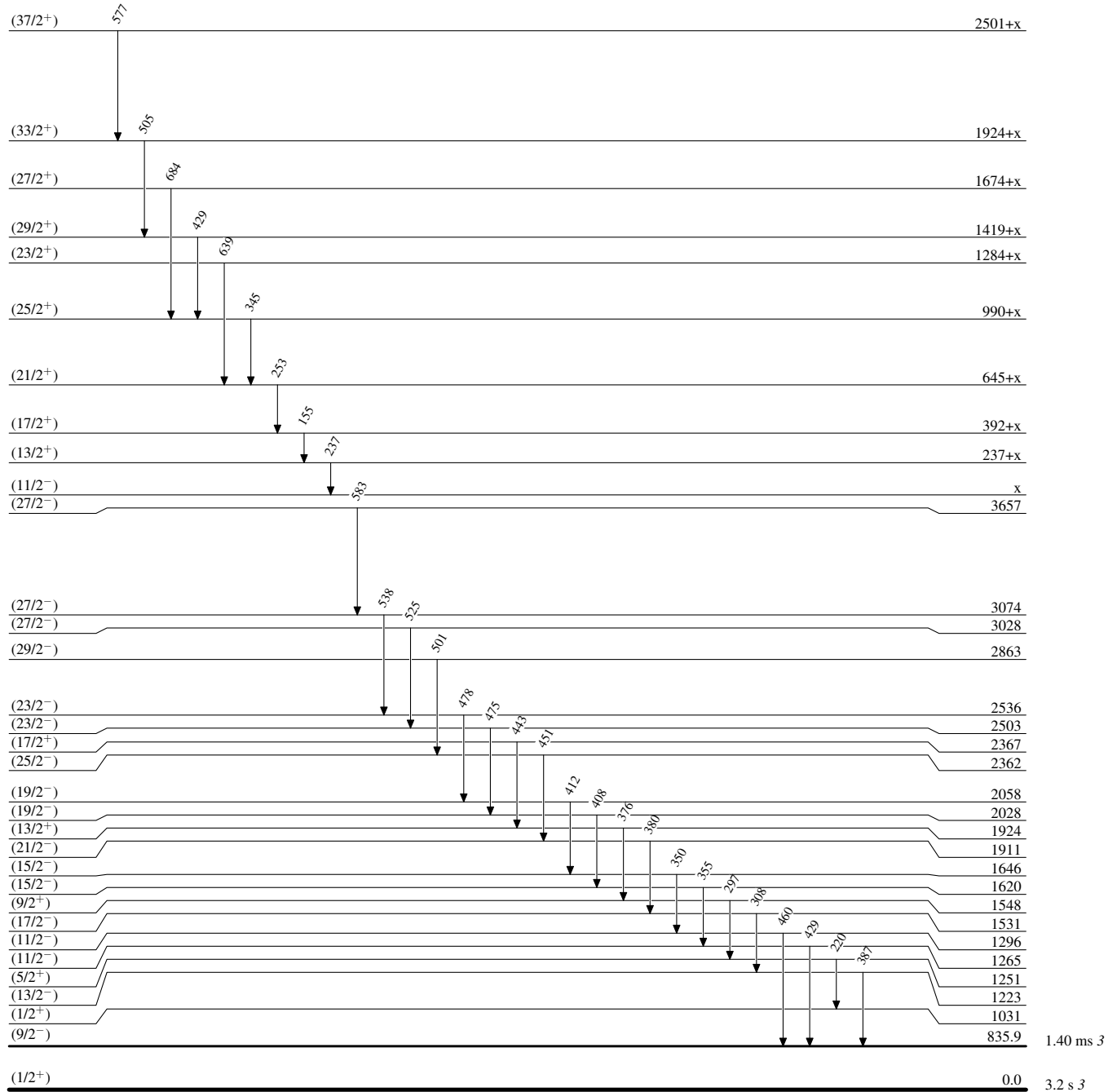
E _i (level)	J _i ^π	E _γ	I _γ	E _f	J _f ^π	Mult.
258.0	(3/2 ⁺)	258.0 3	100	0.0	(1/2 ⁺)	M1
835.9	(9/2 ⁻)	577.9 3	100	258.0	(3/2 ⁺)	(E3)
1031	(1/2 ⁺)	773		258.0	(3/2 ⁺)	
		1030		0.0	(1/2 ⁺)	
1223	(13/2 ⁻)	387		835.9	(9/2 ⁻)	
1251	(5/2 ⁺)	220		1031	(1/2 ⁺)	
1265	(11/2 ⁻)	429		835.9	(9/2 ⁻)	
1296	(11/2 ⁻)	460		835.9	(9/2 ⁻)	
1531	(17/2 ⁻)	308		1223	(13/2 ⁻)	
1548	(9/2 ⁺)	297		1251	(5/2 ⁺)	
1620	(15/2 ⁻)	355		1265	(11/2 ⁻)	
1646	(15/2 ⁻)	350		1296	(11/2 ⁻)	
1911	(21/2 ⁻)	380		1531	(17/2 ⁻)	
1924	(13/2 ⁺)	376		1548	(9/2 ⁺)	
2028	(19/2 ⁻)	408		1620	(15/2 ⁻)	
2058	(19/2 ⁻)	412		1646	(15/2 ⁻)	
2362	(25/2 ⁻)	451		1911	(21/2 ⁻)	
2367	(17/2 ⁺)	443		1924	(13/2 ⁺)	
2503	(23/2 ⁻)	475		2028	(19/2 ⁻)	
2536	(23/2 ⁻)	478		2058	(19/2 ⁻)	
2863	(29/2 ⁻)	501		2362	(25/2 ⁻)	
3028	(27/2 ⁻)	525		2503	(23/2 ⁻)	
3074	(27/2 ⁻)	538		2536	(23/2 ⁻)	
3657	(27/2 ⁻)	583		3074	(27/2 ⁻)	
237+x	(13/2 ⁺)	237		x	(11/2 ⁻)	
392+x	(17/2 ⁺)	155		237+x	(13/2 ⁺)	
645+x	(21/2 ⁺)	253		392+x	(17/2 ⁺)	
990+x	(25/2 ⁺)	345		645+x	(21/2 ⁺)	
1284+x	(23/2 ⁺)	639		645+x	(21/2 ⁺)	
1419+x	(29/2 ⁺)	429		990+x	(25/2 ⁺)	
1674+x	(27/2 ⁺)	684		990+x	(25/2 ⁺)	
1924+x	(33/2 ⁺)	505		1419+x	(29/2 ⁺)	
2501+x	(37/2 ⁺)	577		1924+x	(33/2 ⁺)	

Adopted Levels, Gammas**Level Scheme**

Intensities: Type not specified

Legend

-  $I_\gamma < 2\% \times I_\gamma^{\max}$
 $I_\gamma < 10\% \times I_\gamma^{\max}$
 $I_\gamma > 10\% \times I_\gamma^{\max}$



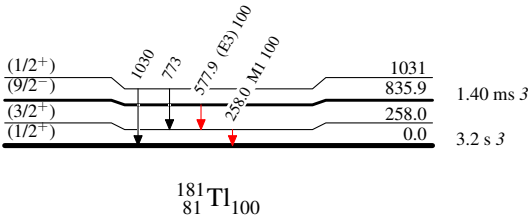
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

-  $I_\gamma < 2\% \times I_\gamma^{max}$
-  $I_\gamma < 10\% \times I_\gamma^{max}$
-  $I_\gamma > 10\% \times I_\gamma^{max}$



$^{181}_{81}\text{Tl}_{100}$

Adopted Levels, Gammas