^{202}Hg(d,3nγ) 1977Sl01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 187,355 (2023)	20-Sep-2022

E(d)=18-25 MeV; Target: metal oxide powder, 76.8% enriched in ^{202}Hg; Detectors: Ge(Li), liquid scintillator; Measured: excitation functions, Eγ, Iγ, $\gamma\gamma$ coin, nγ coin, γ(t), $\gamma(\theta)$; Deduced: J^π, $T_{1/2}$, δ.

^{201}Tl Levels

E(level)†	J$^\pi$‡	$T_{1/2}$	Comments
0.0	1/2$^+$	3.0420 d *16*	J$^\pi$,$T_{1/2}$: From Adopted Levels.
331.2 *2*	3/2$^+$		
692.5 *2*	5/2$^+$		
919.5 *2*	(9/2$^-$)	2.11 ms *11*	J$^\pi$,$T_{1/2}$: From Adopted Levels.
1134.8 *2*	7/2$^+$		
1238.5 *3*	(11/2$^-$)		
1290.2 *3*	(9/2$^+$)		
1413.5 *3*	(11/2$^+$)		
1571.7 *3*	(13/2$^-$)		
1962.2 *3*	(15/2$^-$)		
1987.8?			
2014.9 *3*	(13/2$^-$,15/2$^-$)	2.9 ns *+19−5*	$T_{1/2}$: From 443.2γ(t) in 1977Sl01.
2040.0?			
2181.7?			
2441.7?			
2747.4?			

† From a least-squares fit to Eγ.

‡ From the deduced γ-ray transition multipolarities using $\gamma(\theta)$ in 1977Sl01 and the apparent band structures, unless otherwise stated.

^{202}Hg(d,3nγ) 1977Sl01 (continued)

$\gamma(^{201}Tl)$

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
123.3 *1*	6.3 *9*	1413.5	(11/2$^+$)	1290.2	(9/2$^+$)			
155.4 *1*	4.6 *7*	1290.2	(9/2$^+$)	1134.8	7/2$^+$			
166.9[@] *1*	9.1 *14*	2181.7?		2014.9	(13/2$^-$,15/2$^-$)			
319.0 *1*	100	1238.5	(11/2$^-$)	919.5	(9/2$^-$)	M1+E2	−0.34 *+11−8*	I_γ: Delayed Iγ=22; $T_{1/2}$=2.4 ns *+38−8* from 319.0γ(t). Mult.,δ: A_2=−0.451 *13*, A_4=−0.045 *18*.
331.2 *2*	257 *26*	331.2	3/2$^+$	0.0	1/2$^+$	M1+E2		I_γ: Delayed Iγ=184; $T_{1/2}\geq$60 ns from 331.2γ(t). Mult.: A_2=0.012 *15*, A_4=−0.008 *18*.
333.0 *2*	77 *8*	1571.7	(13/2$^-$)	1238.5	(11/2$^-$)	M1+E2	−0.21 *+14−9*	Mult.,δ: A_2=−0.383 *29*, A_4=0.052 *46*. Alternative solution of δ=−2.9 *−7+9* is also possible.
361.3 *1*	21.3 *19*	692.5	5/2$^+$	331.2	3/2$^+$	M1+E2		I_γ: Delayed Iγ=0. Mult.: A_2=−0.099 *26*, A_4=0.026 *38*.
390.5 *1*	31 *3*	1962.2	(15/2$^-$)	1571.7	(13/2$^-$)	M1+E2	−0.20 *+8−7*	I_γ: Delayed Iγ=0. Mult.,δ: A_2=−0.407 *26*, A_4=0.010 *37*.
426.9[‡@] *3*	9.1 *19*	2441.7?		2014.9	(13/2$^-$,15/2$^-$)			
443.2 *1*	27 *3*	2014.9	(13/2$^-$,15/2$^-$)	1571.7	(13/2$^-$)	(M1+E2)	≈0.3	I_γ: Delayed Iγ=23. Mult.,δ: A_2=0.162 *10*, A_4=0.002 *15*.
468.4[@] *3*	6.2 *14*	2040.0?		1571.7	(13/2$^-$)			
493.9[‡@] *1*	31 *4*	1413.5	(11/2$^+$)	919.5	(9/2$^-$)	D		I_γ: Delayed Iγ=0. E_γ: 493.9γ is not found to be in $\gamma\gamma$ coin with any transition in ^{201}Tl. Mult.: A_2=−0.203 *18*, A_4=0.055 *26*.
588.3 *1*	191 *9*	919.5	(9/2$^-$)	331.2	3/2$^+$	[E3]		I_γ: Delayed Iγ=191; $T_{1/2}\geq$60 ns from 588.3 γ(t). Mult.: From adopted gammas; A_2=0, A_4=0 used for normalization since the $\gamma(\theta)$ is isotropic due to the large $T_{1/2}$ involved.
598.0 *5*	12 *3*	1290.2	(9/2$^+$)	692.5	5/2$^+$			
652.0 *4*	22.4 *25*	1571.7	(13/2$^-$)	919.5	(9/2$^-$)	E2		Mult.: A_2=0.204 *50*, A_4=−0.062 *77*.
723.9 *2*	11.7 *23*	1962.2	(15/2$^-$)	1238.5	(11/2$^-$)	E2		Mult.: A_2=0.33 *15* with A_4 set to zero.
749.2[@] *3*	9.1 *18*	1987.8?		1238.5	(11/2$^-$)			
785.3[@] *3*	9.2 *19*	2747.4?		1962.2	(15/2$^-$)			
803.6 *1*	53 *3*	1134.8	7/2$^+$	331.2	3/2$^+$	(E2)		I_γ: Delayed Iγ=0. Mult.: A_2=0.136 *19*, A_4=−0.050 *44*.

[†] From 1977Sl01. Iγ are from the E(d)=24 MeV data and were corrected for angular distribution effect.
[‡] Assignment to ^{201}Tl is tentative.
[#] From $\gamma(\theta)$ in 1977Sl01 and the apparent band structures.
[@] Placement of transition in the level scheme is uncertain.

$^{201}_{81}Tl_{120}$-2

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Level Scheme

Intensities: Relative I_γ

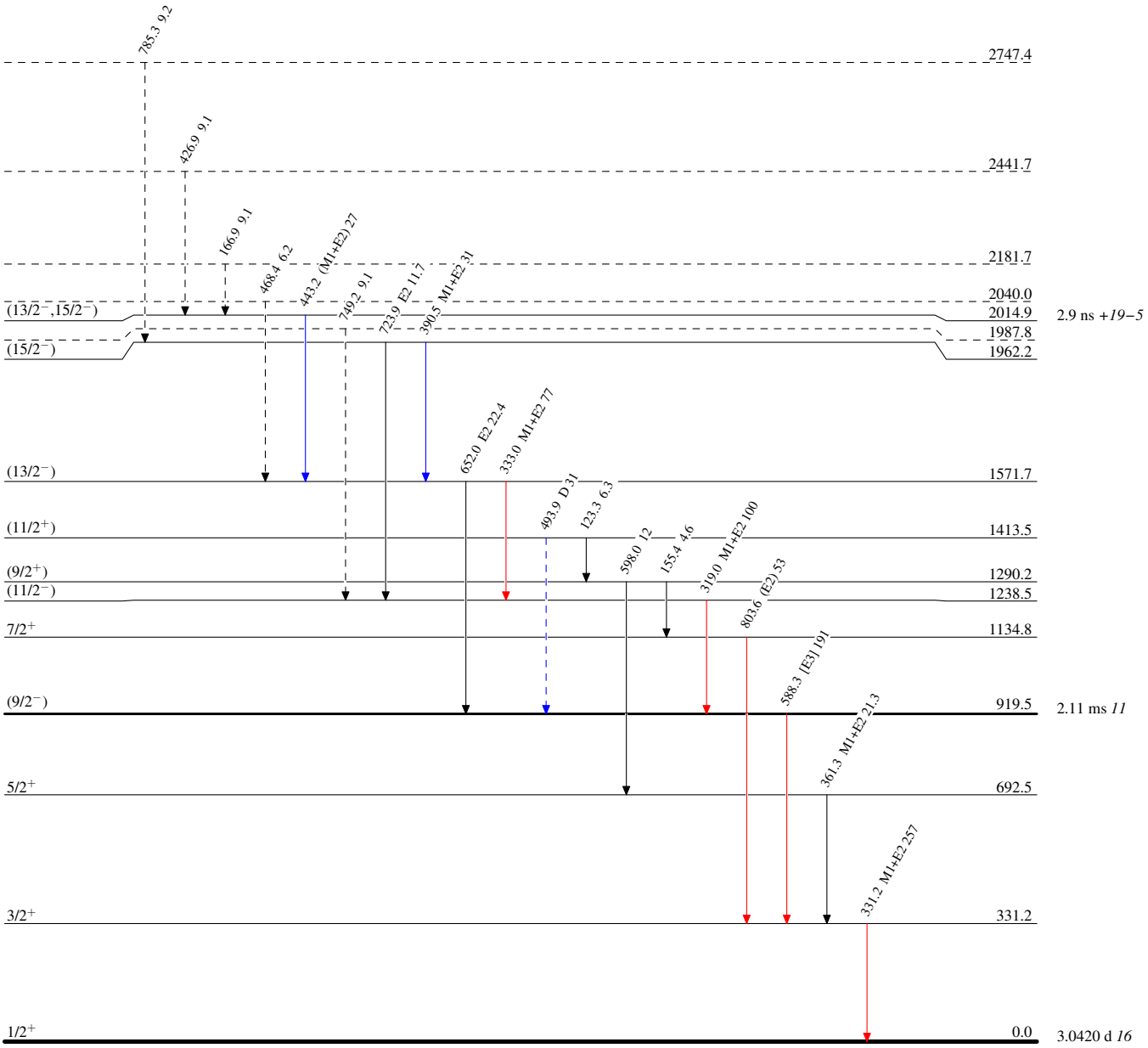
Legend

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

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

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

γ Decay (Uncertain)



$^{201}_{81}Tl_{120}$