^{203}Tl(α,6nγ) 1982Br21

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

1982Br21: E(α)=66, 70 and 77 MeV; Detectors: Ge(Li); Measured: $\gamma\gamma$ coin, γ(t), $\gamma(\theta)$; Deduced: level scheme, J^π, $T_{1/2}$.
Other: ^{204}Pb(p,4nγ),^{206}Pb(p,6nγ) in 1975OHZZ (E(p)=33-52 MeV; Detectors: Ge(Li)), where no delayed γ rays with $T_{1/2}\geq 1$ μs were observed.

^{201}Bi Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	Comments
0	9/2$^-$	103 min *3*	J$^\pi$,$T_{1/2}$: From Adopted Levels.
967.50 *10*	13/2$^-$		
1379.40 *15*	15/2$^-$		
1474.60 *18*	17/2$^-$		
1746.50 *20*	17/2$^+$	9.6 ns *6*	$T_{1/2}$: From $\gamma\gamma$(t) in 1982Br21 using gates on 272γ, 412γ and 967γ below the isomer (stop) and 186γ above the isomer (start). The result is compared to the $\gamma\gamma$(t) value deduced using 412γ and 967γ (start) and 272γ (stop), but one should note that there is a difference between the time walk for the 186γ and 272γ, and hence, the value quoted for the half-life may be somewhat higher than it should be.
1932.20 *23*	21/2$^+$		
1932.20+x *23*	(25/2$^+$)	210 ns *20*	Additional information 1. $T_{1/2}$: From $\gamma\gamma$(t) in 1982Br21 using gates on 617γ above the isomer (start) and 186γ, 272γ, 412γ and 967γ below the isomer (stop).
2298.98+x *9*	(27/2)		
2549.43+x *9*	(27/2)		
2611.90+x *10*	(27/2)		
2739.95+x *10*	(29/2$^-$)	160 ns *30*	$T_{1/2}$: From $\gamma\gamma$(t) in 1982Br21 using gates on 617γ above the isomer (start) and 186γ, 272γ, 412γ and 967γ below the isomer (stop).
3238.89+x *13*	(31/2$^-$)		
3526.22+x *13*			
3727.55+x *15*	(33/2$^-$)		
3810.42+x *17*			

† From a least-squares fit to Eγ.
‡ Based on $\gamma(\theta)$ and α(exp) in 1982Br21.
# $T_{1/2}$>10 ns is reported in 1982Br21 for a level above 3810+X keV.

$\gamma(^{201}Bi)$

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Iγ (delayed) [@]	Comments
95.2 *1*	6.4 *6*	1474.60	17/2$^-$	1379.40	15/2$^-$	M1(+E2)		Mult.: A_2=−0.11 *5*, A_4=−0.07 *6*; α(exp)=11 *2* from intensity balance considerations in 1982Br21.
128 [&] *1*		2739.95+x	(29/2$^-$)	2611.90+x	(27/2)			
185.7 *1*	58 *6*	1932.20	21/2$^+$	1746.50	17/2$^+$	E2	65 *7*	Mult.: A_2=+0.31 *1*, A_4=−0.09 *1*; α(exp)=0.58 *6* deduced from the out-of-beam intensity balance in 1982Br21.
190.5 *1*	7.0 *7*	2739.95+x	(29/2$^-$)	2549.43+x	(27/2)	D	5.8 *6*	Mult.: A_2=−0.27 *4*, A_4=−0.09 *5*.
[x]250.0 *1*	1.0 *1*							E_γ: Suggested to populates the 17/2$^+$ leve in 1982Br21, but not placed in the level scheme by the authors.
271.9 *1*	85 *9*	1746.50	17/2$^+$	1474.60	17/2$^-$	E1	97 *10*	Mult.: A_2=+0.37 *1*, A_4=−0.01 *1*; α(exp)=0.03 *4* deduced from the out-of-beam intensity balance in 1982Br21.
[x]275.3 *1*	2.0 *2*					D		E_γ: Suggested to populate the 17/2$^+$ level in 1982Br21, but not placed in the level scheme by the authors. Mult.: A_2=−0.21 *12*, A_4=+0.12 *15*.
284.2 *1*	9.1 *9*	3810.42+x		3526.22+x			1.1 *1*	Mult.: A_2=+0.25 *3*, A_4=−0.07 *4*.
287.3 *1*	8.1 *8*	3526.22+x		3238.89+x	(31/2$^-$)	D	1.2 *1*	Mult.: A_2=−0.28 *3*, A_4=+0.01 *4*.
366.8 *1*	12 *1*	2298.98+x	(27/2)	1932.20+x	(25/2$^+$)	D	12 *1*	Mult.: A_2=−0.14 *3*, A_4=−0.01 *4*.
411.9 *1*	83 *8*	1379.40	15/2$^-$	967.50	13/2$^-$	M1+E2	88 *9*	Mult.: A_2=−0.34 *1*, A_4=−0.01 *1*; α(exp)=0.15 *8* from the out-of-beam intensity balance in 1982Br21. δ: ≈0.03 or ≈4.4 from 1982Br21.
441.0 *1*	2.5 *3*	2739.95+x	(29/2$^-$)	2298.98+x	(27/2)	D	2.5 *3*	Mult.: A_2=−0.64 *12*, A_4=−0.19 *16*.
498.9 *1*	22 *2*	3238.89+x	(31/2$^-$)	2739.95+x	(29/2$^-$)	D	2.4 *2*	Mult.: A_2=−0.39 *2*, A_4=−0.05 *3*.
617.2 *1*	34 *3*	2549.43+x	(27/2)	1932.20+x	(25/2$^+$)	D	32 *3*	Mult.: A_2=−0.19 *2*, A_4=−0.02 *3*.
679.7 *1*	16.0 *16*	2611.90+x	(27/2)	1932.20+x	(25/2$^+$)	D	11 *1*	Mult.: A_2=−0.47 *3*, A_4=−0.06 *4*.
786.3 *1*	14.0 *14*	3526.22+x		2739.95+x	(29/2$^-$)	D		Mult.: A_2=−0.22 *4*, A_4=−0.08 *5*.
967.5 *1*	100 *10*	967.50	13/2$^-$	0	9/2$^-$	E2	100 *10*	Mult.: A_2=+0.30 *1*, A_4=−0.05 *1*.
987.6 *1*	12 *1*	3727.55+x	(33/2$^-$)	2739.95+x	(29/2$^-$)	E2	3.8 *4*	Mult.: A_2=+0.31 *5*, A_4=−0.01 *5*.

[†] From 1982Br21.
[‡] From E(α)=77 MeV in 1982Br21.
[#] Based on $\gamma(\theta)$ in 1982Br21, unless otherwise stated.
[@] From 1982Br21. Measured in the out-of-beam time region of 50 to 130 ns.
[&] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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Level Scheme

Intensities: Relative I_γ

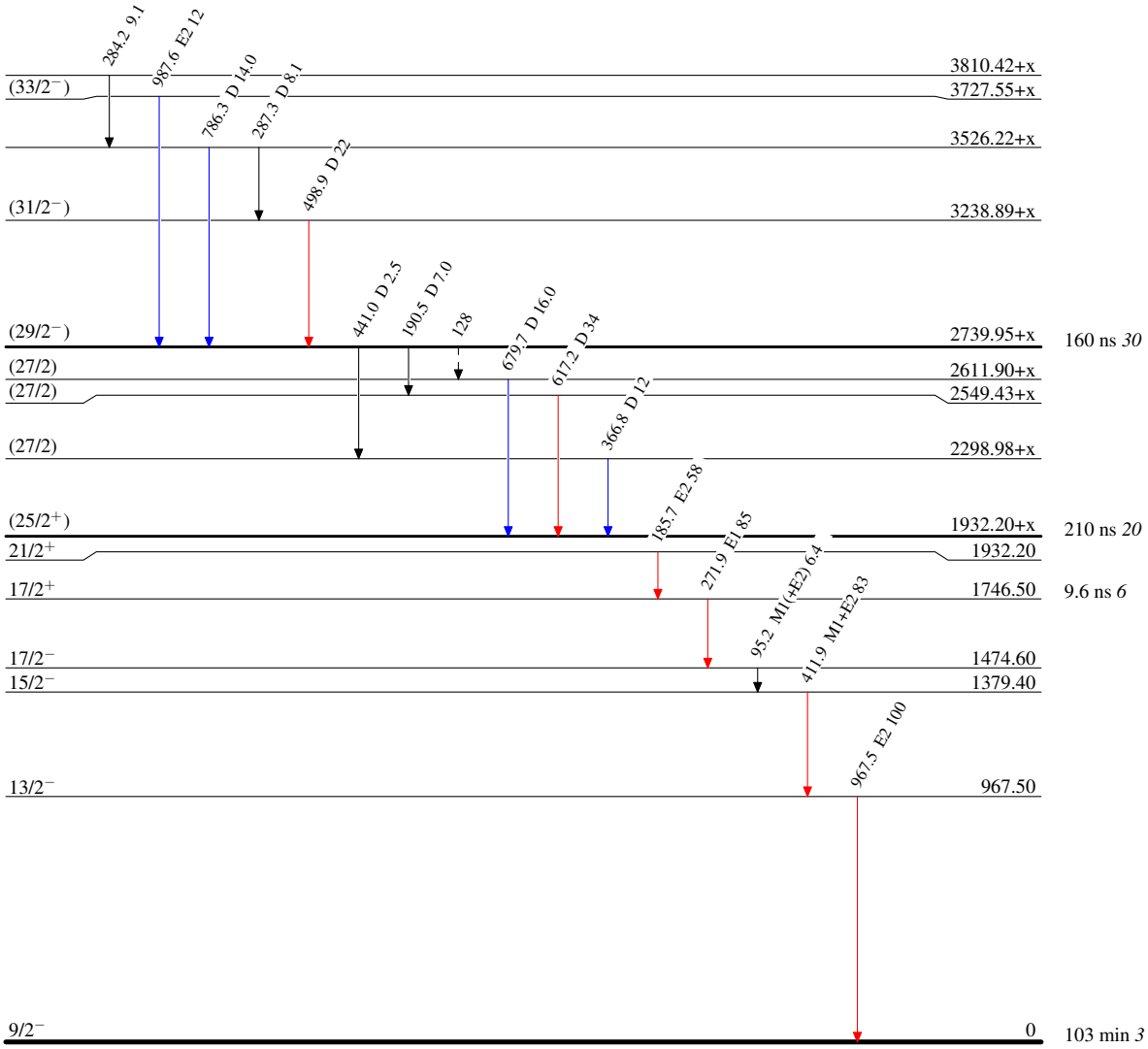
Legend

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

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

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

γ Decay (Uncertain)



$^{201}_{83}Bi_{118}$