^{203}Tl(α,4nγ) 1983Hu15,1982Hu07,1978Hu02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 177, 509, 2021	4-Jul-2021

1983Hu15: E(α)=50 MeV; target: 87% enriched in ^{203}Tl and with thickness between 0.6 and 6.0 mg/cm^2; detectors: Ge(Li) detectors, Si(Li) electron spectrometer; measured: Eγ, Iγ, $\gamma\gamma$ coin, $\gamma(\theta)$, ce, ce-ce coin; deduced: level scheme, J^π, $T_{1/2}$, transition multipolarities and strength, electron conversion coefficients and sub-shell ratios.

1982Hu07: E(α)=64 MeV, pulsed beam with 1 ns on and 4 μs off; Target: 86% enriched in ^{203}Tl; detectors: two Ge(Li) detectors placed at +/−135° relative to the beam direction; measured: $\gamma(\theta$,H,t); deduced: $T_{1/2}$, g-factor.

1978Hu02: E=46,50,55 MeV; detectors: two Ge(Li) detectors; measured: γ, $\gamma\gamma$, $\gamma(\theta)$, γ(t), I(ce)(t), Eγ, Iγ.

^{203}Bi Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0[#]	9/2$^-$		J^π: From Adopted Levels.
883.39[@] *18*	11/2$^-$		
932.52[@] *18*	13/2$^-$		
1247.83[&] *23*	15/2$^-$		
1248.57[&] *23*	13/2$^-$		
1499.12 *24*	17/2$^-$		
1672.7 *3*	15/2$^-$		
1903.56[a] *25*	17/2$^+$		
1990.7[a] *4*	21/2$^+$	90 ns *26*	$T_{1/2}$: From 1978Hu02 using a two isomers fit to ceγ(t) spectra. g-factor=0.266 *4* using γ(t) spectra produced by gating on 315γ, 883γ and 932γ that occur in decay of both the 21/2$^+$ isomer and the 25/2$^+$ isomer at 2042 keV (1982Hu07).
2041.6[a] *11*	25/2$^+$	194 ns *30*	$T_{1/2}$: From 1978Hu02 using a two isomers fit to ceγ(t) spectra. See the comment for the 21/2$^+$ level at 1991 keV regarding the g-factor details.
2731.0[a] *11*	27/2$^+$		
2855.4 *11*	27/2$^+$		
3032.2[b] *11*	29/2$^-$	22.4 ns *8*	$T_{1/2}$: Weighted average of 19.1 ns *20* (301γ(t)), 23.3 ns *10* (689γ(t)) and 22.0 ns *20* (814γ(t)) in 1978Hu02.
3529.7[b] *11*	31/2$^-$		
3826.0[b] *11*	33/2$^-$		
4470.1 *12*	35/2$^-$		
4544.3 *15*	(37/2$^-$)	4.13 ns *7*	$T_{1/2}$: Weighted average of 4.03 ns *10* (296γ(t)), 4.21 ns *10* (498γ(t)) and 4.21 ns *20* (644γ(t)) in 1978Hu02.

[†] From a least-squares fit to Eγ.
[‡] From 1983Hu15.
[#] Configuration=$\pi(h^{+1}_{9/2})$.
[@] Configuration=$\pi(h^{+1}_{9/2})\otimes 2^+$.
[&] Dominant configuration=$\pi(h^{+1}_{9/2})\otimes 4^+$.
[a] Configuration=$\pi(h^{+1}_{9/2})\otimes \nu(f^{-1}_{5/2},i^{-1}_{13/2})$.
[b] Configuration=$\pi(h^{+1}_{9/2})\otimes\nu(i^{-2}_{13/2})$.

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$\gamma(^{203}Bi)$

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	Comments
50.9		2041.6	$25/2^+$	1990.7	$21/2^+$	E2	Mult.: L12/L3=1.1 *2* (1983Hu15).
74.2		4544.3	$(37/2^-)$	4470.1	$35/2^-$	M1‡	Mult.: L12/L3>10 (1983Hu15).
87.1 *2*		1990.7	$21/2^+$	1903.56	$17/2^+$	E2	Mult.: L12/L3=1.22 *6* (1983Hu15); L12/L3=1.4 *2* (1978Hu02).
x149.4 *2*							E_γ: Reported in 1978Hu02, but not confirmed in 1983Hu15.
176.7 *2*	16.0	3032.2	$29/2^-$	2855.4	$27/2^+$	E1	Mult.: α(K)exp=0.08, A_2=−0.23 *2*.
230.9 *2*	7.1	1903.56	$17/2^+$	1672.7	$15/2^-$	E1	Mult.: α(K)exp=0.05, A_2=−0.25 *3*.
250.5 *2*	24.6	1499.12	$17/2^-$	1248.57	$13/2^-$		I_γ: Doublet. The intensity is undivided.
251.4 *2*	24.6	1499.12	$17/2^-$	1247.83	$15/2^-$		I_γ: Doublet. The intensity is undivided.
296.3 *2*	14.0	3826.0	$33/2^-$	3529.7	$31/2^-$	M1‡	Mult.: α(K)exp=0.41, A_2=−0.38 *2*.
301.3 *2*	27.1	3032.2	$29/2^-$	2731.0	$27/2^+$	E1	Mult.: α(K)exp=0.019, A_2=−0.23 *2*.
315.3 *2*	69.8	1247.83	$15/2^-$	932.52	$13/2^-$	M1‡	Mult.: α(K)exp=0.47, A_2=−0.37 *1*.
365.2 *2*	35.1	1248.57	$13/2^-$	883.39	$11/2^-$	M1‡	Mult.: α(K)exp=0.21, A_2=−0.26 *2*.
404.5 *2*	41.0	1903.56	$17/2^+$	1499.12	$17/2^-$	E1	Mult.: α(K)exp=0.034, A_2=−0.22 *2*.
424.2 *2*	5.9	1672.7	$15/2^-$	1248.57	$13/2^-$	M1+E2	Mult.: α(K)exp=0.066.
497.5 *2*	26.8	3529.7	$31/2^-$	3032.2	$29/2^-$	M1‡	Mult.: α(K)exp=0.17, A_2=−0.46 *2*.
x502.1 *2*						M1+E2	E_γ: Reported in 1978Hu02, but not confirmed in 1983Hu15. Mult.: α(K)exp=0.04.
644.1 *2*	7.0	4470.1	$35/2^-$	3826.0	$33/2^-$	M1‡	Mult.: α(K)exp=0.05.
655.6 *2*	67.0	1903.56	$17/2^+$	1247.83	$15/2^-$	E1	Mult.: α(K)exp=0.0047, A_2=−0.23 *2*.
689.6 *2*	30.4	2731.0	$27/2^+$	2041.6	$25/2^+$	M1+E2	Mult.: α(K)exp=0.037, A_2=−0.49 *2*.
813.7 *2*	12.8	2855.4	$27/2^+$	2041.6	$25/2^+$	M1‡	Mult.: α(K)exp=0.027, A_2=−0.32 *3*.
883.4 *2*	45.9	883.39	$11/2^-$	0	$9/2^-$	M1+E2	Mult.: α(K)exp=0.018, A_2=−0.55 *2*.
932.5 *2*	100	932.52	$13/2^-$	0	$9/2^-$	E2	Mult.: A_2=+0.21 *2*.

† From 1983Hu15. $\Delta I\gamma$=3-20%. Mult. from $\gamma(\theta)$ and α(K)exp. in 1983Hu15 and 1978Hu02. $\Delta\alpha$(K)exp=20% (1978Hu02).

‡ E2 admixtures are possible.

x γ ray not placed in level scheme.

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Level Scheme

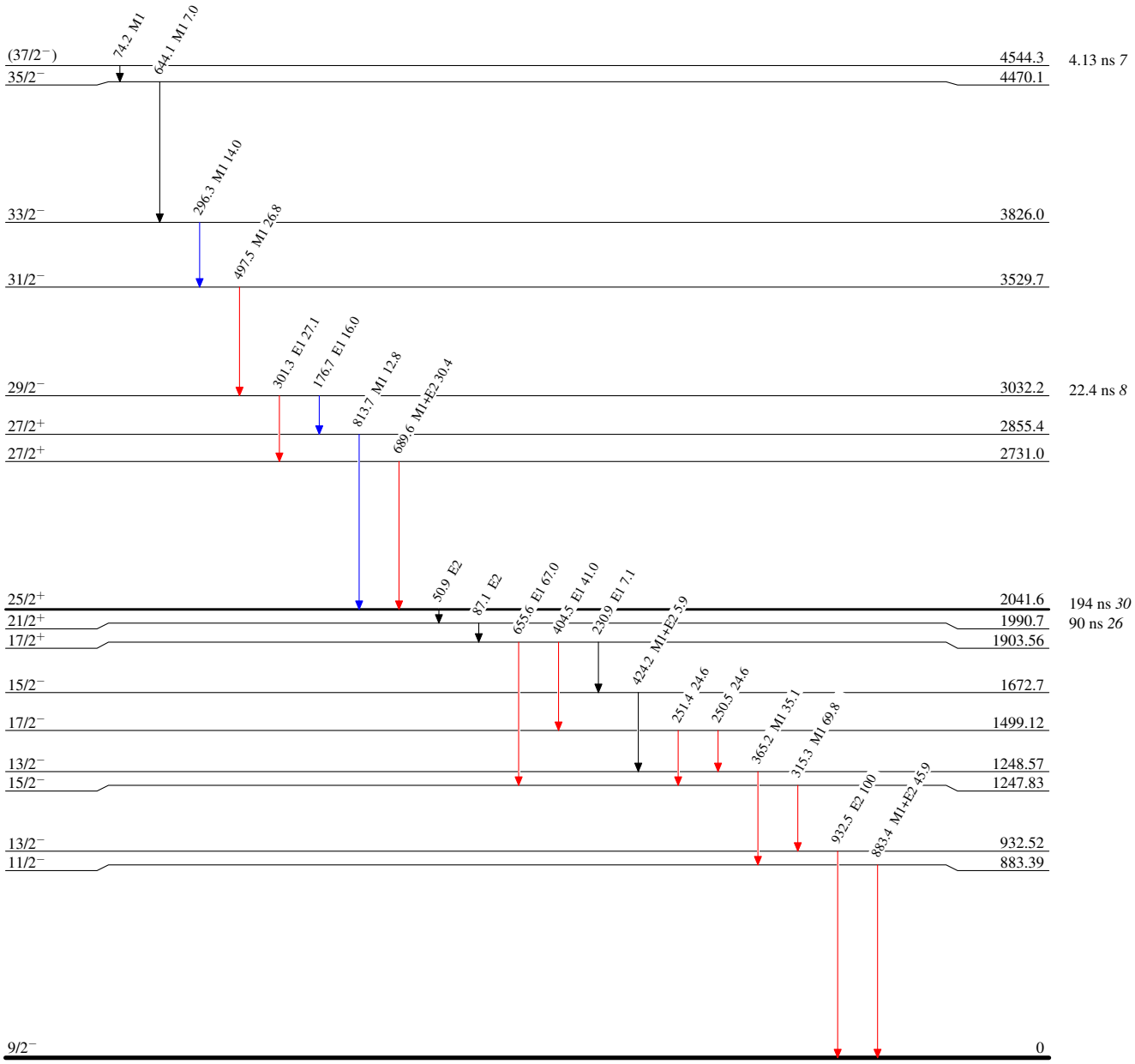
Intensities: Relative I_γ

Legend

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

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

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



$^{203}_{83}Bi_{120}$