

^{188}Bi α decay (60 ms) 2003An26,1997Wa05,1980Sc09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111,275 (2010)	1-Oct-2009

Parent: ^{188}Bi : $E=0.0+y$; $J^\pi=(3^+)$; $T_{1/2}=60$ ms 3; $Q(\alpha)=7255$ 7; $\% \alpha$ decay=100.0

Other: 2006An04.

2003An26: sources from $^{142}\text{Nd}(^{52}\text{Cr,p5n})$ and $^{142}\text{Nd}(^{50}\text{Cr,p3N})$, $E=380-480$ MeV; 99.8% ^{142}Nd target; separated evaporation residues implanted into 16-strip position sensitive Si detector (FWHM ≈ 18 keV); four-fold segmented Clover Ge detector; measured $E\alpha$, $I\alpha$, $E\gamma$, prompt and delayed (0-5 μs) α - γ and α -x coin, recoil- α coin. See also 2006An04 (sources from α decay of ^{192}At produced in the $^{144}\text{Sm}(^{51}\text{V},3n)$ reaction At 230 MeV).

1997Wa05: sources from $^{96}\text{Mo}(^{95}\text{Mo},X)$, $E=418$ MeV; isotopically enriched target; fragment mass analyzer, parallel grid avalanche counter, double-sided Si strip detector; measured $E\alpha$, $\alpha(t)$.

Parent $T_{1/2}$: value adopted by 2003An26 based on their $\alpha(t)$ measurements: 60 ms 3 (6992 α , strongest group), 80 ms 20 (6889 α) and 64 ms 5 (7106 α).

 ^{184}Tl Levels

<u>E(level)[†]</u>	<u>J^π[‡]</u>
0.0+y	(2 ⁻)
117.5+y 5	(3 ⁺)
216.5+y 7	(2 ⁻ , 3 ⁻ , 4 ⁻)

[†] From $E\gamma$.

[‡] From Adopted Levels.

 α radiations

<u>$E\alpha$[‡]</u>	<u>E(level)</u>	<u>$I\alpha$^{#@}</u>	<u>HF[†]</u>	Comments
6889 10	216.5+y	0.33 10	96 30	other $E\alpha$: 6897 18 (1997Wa05). $T_{1/2}(6897\alpha)=48$ ms +28-14 (1997Wa05).
6992 5	117.5+y	97.7 2	0.74 4	other $E\alpha$: 7005 25 with $I\alpha=15$ 9 if (3820 α , 265 ms)=85 9 (1980Sc09); E quoted as 7010 10 (1984ScZQ, from same laboratory). E=6987 6 (1997Wa05). note that $T_{1/2}(7005\alpha)=44$ ms 3 (1984ScZQ), 46 ms 7 (1997Wa05). however. $E\alpha=7050$ (1984ScZQ, $T_{1/2}=43$ ms 29) and 7029 7 (1997Wa05, $T_{1/2}=63$ ms +50-21) presumably arise from 6992 α -ce summing; 2003An26 report a sum peak At 7028 10.
7106 5	0.0+y	2.05 19	86 10	

[†] If $r_0=1.498$ 5, unweighted average of $r_0(^{182}\text{Hg})=1.50$ 2 (1998Ak04), $r_0(^{184}\text{Hg})=1.494$ 4 and $r_0(^{184}\text{Pb})=1.486$ 10 (this evaluation) and $r_0(^{186}\text{Pb})=1.510$ 2 (2003Ba44).

[‡] From 2003An26.

[#] Relative intensity (2003An26) normalized so $\Sigma I\alpha = 100$.

[@] Absolute intensity per 100 decays.

 $\gamma(^{184}\text{Tl})$

<u>E_γ[†]</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.</u>	<u>α[‡]</u>	Comments
99.0 5	216.5+y	(2 ⁻ , 3 ⁻ , 4 ⁻)	117.5+y	(3 ⁺)	(E1)	0.441 9	$\alpha(K)=0.350$ 7; $\alpha(L)=0.0694$ 14; $\alpha(M)=0.0163$ 4; $\alpha(N+..)=0.00483$ 10 $\alpha(N)=0.00404$ 8; $\alpha(O)=0.000737$ 15; $\alpha(P)=4.97\times 10^{-5}$ 10 Mult.: from $\alpha(K)\text{exp}\leq 0.20$ 14 (2003An26).
117.5 5	117.5+y	(3 ⁺)	0.0+y	(2 ⁻)	E1	0.287 5	$\alpha(K)=0.230$ 4; $\alpha(L)=0.0438$ 8; $\alpha(M)=0.01027$ 19;

Continued on next page (footnotes at end of table)

^{188}Bi α decay (60 ms) [2003An26](#),[1997Wa05](#),[1980Sc09](#) (continued)

$\gamma(^{184}\text{Tl})$ (continued)

<u>E_γ</u> [†]	<u>$E_i(\text{level})$</u>	Comments
		$\alpha(\text{N}+..)=0.00305\ 6$ $\alpha(\text{N})=0.00255\ 5$; $\alpha(\text{O})=0.000469\ 9$; $\alpha(\text{P})=3.29\times 10^{-5}\ 6$ Mult.: from $\alpha(\text{K})_{\text{exp}}=0.27\ 5$ (2003An26).

[†] From [2003An26](#).

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Decay Scheme

