^{208}Bi IT decay

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

Parent: ^{208}Bi: E=1571.1 *8*; J$^{\pi}$=10^{-}; $T_{1/2}$=2.58 ms *4*; %IT decay=100.0
K x ray: I(K x ray)/I(921γ)=0.50 *8* (1968Bo23), 0.44 *9* (1968Ga17).

1958Du80	^{209}Bi(γ,n) E≤22 MeV
1961Gl16	^{209}Bi(n,2n) E=14.7 MeV
1962Mo19	^{208}Pb(p,n), ^{209}Bi(p,pn) E=9 MeV
1966Me02	^{209}Bi(n,2n) E=14.7 MeV
1967Hi08	^{209}Bi(γ,n)
1968Bo23	^{208}Pb(d,2n) E=13 MeV
1968Ga17	^{209}Bi(γ,n)
1973Sa22	^{209}Bi(n,2n) E=14.7 MeV
1974Hu11	^{208}Pb(d,2n) E=18 MeV
1975WhZY,1974WhZT	^{204}Hg(^{7}Li,3n) E=34 MeV
1976Ga33	^{209}Bi(n,2n) E=14.7 MeV
1986Ar12	Pb(p,xn) E=20 MeV
1995An36	^{209}Bi(n,2n) E=14 MeV

^{208}Bi Levels

E(level)[†]	J$^{\pi}$	$T_{1/2}$	Comments
0.0	5^{+}		
64.1 *8*	4^{+}		
510.3 *5*	6^{+}	<8 ns	$T_{1/2}$: from (921γ)(510γ)(t)<8 ns (1958Du80).
650.1 *6*	7^{+}		
1571.1 *8*	10^{-}	2.58 ms *4*	g=0.2674 *14* $T_{1/2}$: weighted average of 2.6 ms *1* (1961Gl16), 2.5 ms *1* and 2.6 ms *1* (1962Mo19), 2.7 ms *1* (1966Me02), 2.53 ms *5* (1967Hi08), 2.65 ms *14* (1973Sa22), 2.7 ms *1* (1976Ga33), and 2.58 ms *26* (1995An36). Others:1986Ar12, 1958Du80. g-factor: from NMR-PAD (1974Hu11). Authors′ value is corrected for diamagnetic shift and Knight shift. The Knight-shift correction is from 1985No09, and is slightly different from that applied by the authors. The uncorrected value is 0.2658 *14*.

[†] From a least-squares fit to the adopted Eγ data.

γ(^{208}Bi)

Iγ normalization, I(γ+ce) normalization: from I(γ+ce 921γ)=100.
γγ: see 1967Hi08.

E$_{\gamma}$[†]	I$_{\gamma}$[†#]	E$_{i}$(level)	J$^{\pi}_{i}$	E$_{f}$	J$^{\pi}_{f}$	Mult.[‡]	δ	α[@]	I$_{(\gamma+ce)}$[#]	Comments
≈64	0.27 *7*	64.1	4^{+}	0.0	5^{+}	M1(+E2)	<0.14	7.8 *5*	2.4 *6*	α(L)=5.9 *4*; α(M)=1.41 *10*; α(N+..)=0.44 *3* α(N)=0.359 *25*; α(O)=0.073 *5*; α(P)=0.0085 *4* I$_{\gamma}$: from I(γ+ce) and α. Mult.,δ,α: from Adopted Gammas. I$_{(\gamma+ce)}$: from an intensity balance At the 64.1 level.
139.8 *5*	14.4 *20*	650.1	7^{+}	510.3	6^{+}	M1(+E2)	<0.33	3.81 *11*		α(K)=3.05 *15*; α(L)=0.580 *25*; α(M)=0.138 *7*; α(N+..)=0.0432 *21*

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^{208}Bi IT decay (continued)

$\gamma(^{208}Bi)$ (continued)

E_γ †	I_γ †#	E_i(level)	J^π_i	E_f	J^π_f	Mult.‡	δ	α @	Comments
									α(N)=0.0352 *18*; α(O)=0.0071 *3*; α(P)=0.000825 *17* Mult.,δ: α(K)exp=3.2 *8* from K x ray/γ (1968Bo23) gives δ<0.62, α(exp)=4.1 *10* from scin Σ γ/γ (1967Hi08) gives δ<0.34, K/L=6.3 *15* (1968Bo23) gives δ<0.34, and α(exp)=4.4 *+11−7* from the requirement of an intensity balance At the 650 level gives δ<0.33.
446.0 *10*	2.3 *6*	510.3	6^+	64.1	4^+	[E2]		0.0406 *7*	α(K)=0.0273 *4*; α(L)=0.01002 *16*; α(M)=0.00253 *4*; α(N+..)=0.000780 *13* α(N)=0.000644 *11*; α(O)=0.0001244 *20*; α(P)=1.196×10^{-5} *19*
510.3 *5*	75 *5*	510.3	6^+	0.0	5^+	E2(+M1)	>1.3	0.044 *15*	α(K)=0.034 *13*; α(L)=0.0082 *17*; α(M)=0.0020 *4*; α(N+..)=0.00062 *12* α(N)=0.00051 *10*; α(O)=0.000101 *21*; α(P)=1.1×10^{-5} *3* δ: from K/L=3.2 *15* (1968Bo23).
650.1 *8*	24 *3*	650.1	7^+	0.0	5^+	E2		0.0169	α(K)=0.01260 *18*; α(L)=0.00324 *5*; α(M)=0.000794 *12*; α(N+..)=0.000247 *4* α(N)=0.000203 *3*; α(O)=3.99×10^{-5} *6*; α(P)=4.15×10^{-6} *6* Mult.: K/L=3.6 *12* (1968Bo23) gives δ(E2/M1)>1.8. Placement In the decay scheme rules out an M1 component.
921.0 *5*	100	1571.1	10^-	650.1	7^+	E3(+M4)	<0.05	0.0200 *2*	α(K)=0.0144 *3*; α(L)=0.00428 *8*; α(N)=0.001066 *20*; α(N+..)=0.000332 *7* α(N)=0.000273 *5*; α(O)=5.39×10^{-5} *10*; α(P)=5.62×10^{-6} *11* Mult.,δ: α(K)exp=0.017 *6* (1968Bo23) gives mult=E3(+M4) with δ<0.25. From the recommended upper limit of 10 for the γ-ray strength, one gets δ<0.05.

† From 1968Bo23. Other: 1968Ga17.
‡ From relative Ice(K) and Iγ data of 1968Bo23 normalized so that α(K)exp(140γ)=3.05 *14* (see 139γ below).
# For absolute intensity per 100 decays, multiply by 0.9804.
@ 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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