^{208}Po ε decay 1993Sa14

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

Parent: ^{208}Po: E=0.0; $J^\pi=0^+$; $T_{1/2}$=2.898 y *2*; Q(ε)=1400.5 *24*; %ε+%β^+ decay=0.0040 *4*

^{208}Po-%ε+%β^+ decay: %ε+%β^+=0.0040 *4* from Ti(γ's from 925 level In ^{208}Bi)/Iα(5115α) (1993Sa14). The authors' value of 0.0042 *4* has been recalculated by the evaluator using α(291γ)=0.41 *6*. The authors used 0.522. Other: 0.00223 *23* from Iγ(539γ+571γ+603γ)=0.001675 *17* (1966Ha29).

^{208}Bi Levels

E(level)	J^π
0.0	5^+
63.16 *7*	4^+
601.52 *6*	4^+
633.27 *7*	3^+
925.06 *7*	2^+

ε,β^+ radiations

E(decay)	E(level)	Iε †	Log *ft*	I($\varepsilon+\beta^+$) †	Comments
(475.4 *24*)	925.06	100	13.13 *6*	100	εK=0.7484; εL=0.1871 *3*; εM+=0.06446 *12*

† For absolute intensity per 100 decays, multiply by 4.0×10^{-5} *4*.

γ(^{208}Bi)

Iγ normalization, I(γ+ce) normalization: from Σ Ti(γ's to g.s.+63, excluding 63γ)=100.
$\gamma\gamma$: see 1969Ha33.
$\gamma\gamma\gamma$: see 1966Ha29.

E_γ †	I_γ †#	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α @	$I_{(\gamma+ce)}$ #	Comments
31.8 *1*	1.19 *12*	633.27	3^+	601.52	4^+	M1(+E2)	<0.10	63 *8*	75 *4*	ce(L)/(γ+ce)=0.75 *7*; ce(M)/(γ+ce)=0.18 *3*; ce(N+)/(γ+ce)=0.056 *10* ce(N)/(γ+ce)=0.046 *8*; ce(O)/(γ+ce)=0.0092 *16*; ce(P)/(γ+ce)=0.00105 *15* I$_\gamma$: from I(γ+ce) and α. Mult.,δ: from Adopted Gammas. $I_{(\gamma+ce)}$: from an intensity balance At the 601 level.
63.13 *10*	15.1 *15*	63.16	4^+	0.0	5^+	M1(+E2)	<0.14	7.8 *5*		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* Mult.,δ: from the requirement of an intensity balance At the 63 level, I(γ+ce)=124 *5*. With the adopted Iγ this yields δ<0.14 and α=7.8 *5*.

Continued on next page (footnotes at end of table)

^{208}Po ε decay 1993Sa14 (continued)

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

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α [@]	Comments
291.81 *5*	100	925.06	2^+	633.27	3^+	M1+E2	0.57 *26*	0.41 *6*	α(K)=0.33 *6*; α(L)=0.064 *5*; α(M)=0.0154 *9*; α(N+..)=0.0048 *3* α(N)=0.00393 *21*; α(O)=0.00079 *5*; α(P)=9.0×10^{-5} *9* Mult.,δ: from the requirement that Ti(291γ)=Ti(539γ+570γ+601γ) one gets α(291γ)=0.41 *6* and thus mult=M1+E2 with δ=0.57 *26*. 1966Ha29 report K/LM=6.5 *9*; however, that value does not agree with either M1 (4.68) or E2 (1.23).
538.39 *8*	22.2 *17*	601.52	4^+	63.16	4^+	M1 [‡]		0.0964	α(K)=0.0788 *11*; α(L)=0.01341 *19*; α(M)=0.00314 *5*; α(N+..)=0.000988 *14* α(N)=0.000804 *12*; α(O)=0.0001644 *23*; α(P)=1.96×10^{-5} *3*
570.13 *7*	61 *4*	633.27	3^+	63.16	4^+	M1 [‡]		0.0829	α(K)=0.0678 *10*; α(L)=0.01151 *17*; α(M)=0.00270 *4*; α(N+..)=0.000848 *12* α(N)=0.000690 *10*; α(O)=0.0001411 *20*; α(P)=1.684×10^{-5} *24*
601.52 *7*	47 *3*	601.52	4^+	0.0	5^+	M1 [‡]		0.0720	α(K)=0.0589 *9*; α(L)=0.00999 *14*; α(M)=0.00234 *4*; α(N+..)=0.000736 *11* α(N)=0.000599 *9*; α(O)=0.0001224 *18*; α(P)=1.460×10^{-5} *21*
861.82 *8*	32.7 *24*	925.06	2^+	63.16	4^+	[E2]		0.00938	α(K)=0.00732 *11*; α(L)=0.001565 *22*; α(M)=0.000377 *6*; α(N+..)=0.0001175 *17* α(N)=9.62×10^{-5} *14*; α(O)=1.92×10^{-5} *3*; α(P)=2.10×10^{-6} *3*
925.11 *13*	2.3 *11*	925.06	2^+	0.0	5^+	[M3]		0.113	α(K)=0.0868 *13*; α(L)=0.0196 *3*; α(M)=0.00480 *7*; α(N+..)=0.001515 *22* α(N)=0.001236 *18*; α(O)=0.000250 *4*; α(P)=2.89×10^{-5} *4*

[†] Other: 1969Ha33.

[‡] 1966Ha29 report α(K)exp=0.067 *1* for the triplet 538γ+570γ+601γ. K/LM=5.5 *15* for the 570γ and 5.0 *9* for the 601γ yield δ<1.3 for both transitions. The measured α(K)exp is consistent with mult=M1 for all three transitions although small E2 admixtures cannot Be ruled out. In particular, the data allow δ(570γ)<0.4, δ(601γ)<0.5, and δ(538γ)<0.7, with the limits In each case deduced with the other two transitions taken As pure M1.

[#] For absolute intensity per 100 decays, multiply by 2.27×10^{-5} *23*.

[@] 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