^{196}Bi α decay: low spin 1991Va04

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113, 1871 (2012)	15-Jun-2012

Parent: ^{196}Bi: E=0.0; J^π=(3$^+$); $T_{1/2}$=5.13 min *20*; Q(α)=5438 *40*; %α decay=0.0012 *3*

^{196}Bi-%α decay: From 1991Va04, %α(^{196}Bi, 3$^+$)=1.2×10^{-3} *3*.

Additional information 1.

1991Va04: mass separated sources (LISOL facility) from Re(^{16}O,xn) (E<180 MeV), ^{181}Ta(^{20}Ne,xn) (E<240 MeV) and ^{182}W(^{20}Ne,xn) (E<240 MeV); measured singles spectra for α, x, γ; HP Ge (FWHM=2 keV at 1332) and low energy Ge (FWHM=0.58 keV at 122 keV) detectors, PIPS-type α detectors (FWHM=11-17 keV at 5486 keV); determined Eα, Iα, Eγ, $T_{1/2}$ and parent $T_{1/2}$ and %α.

Calculations using Coulomb and proximity potential model: $T_{1/2}$, and HF for α decay from (3$^+$) ^{196}Bi (2011Sa10).

^{192}Tl Levels

E(level)	J^π†	$T_{1/2}$†	Comments
0.0	(2$^-$)	9.6 min *4*	
178 *40*	(3$^+$)		E(level): from E(5153α) and Q(α). E=180 *40* proposed In evaluation by 2003Au02. J^π: from 1991Va04, based on low HF for α decay from (3$^+$) ^{196}Bi.

† From Adopted Levels.

α radiations

Eα	E(level)	Iα‡	HF†
5153 *5*	178	100	2.1 *9*

† If r_0=1.468 *21*, unweighted average of r_0(^{192}Pb)=1.513 *3* (this evaluation), r_0(^{192}Hg)=1.43 *3* (extrapolated from r_0 in 1998Ak04 for lower-mass even-A Hg isotopes), and r_0(^{190}Hg)=1.432 *23* and r_0(^{194}Pb)=1.496 *3* (1998Ak04).

‡ For absolute intensity per 100 decays, multiply by 1.2×10^{-5} *3*.

γ(^{192}Tl)

Eγ	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α†	Comments
(178 *40*)	178	(3$^+$)	0.0	(2$^-$)	[E1]	0.10 *9*	α(K)=0.08 *8*; α(L)=0.015 *14*; α(M)=0.003 *4*; α(N+..)=0.0010 *10* α(N)=0.0009 *9*; α(O)=0.00016 *15*; α(P)=1.2×10^{-5} *11* Eγ: from level-energy difference. 1991Va04 predict Eγ=200 *50* based on systematics of Eγ for the low-lying 3$^+$ level to 2$^-$ g.s. transition in lower-mass Tl isotopes (1991Va04).

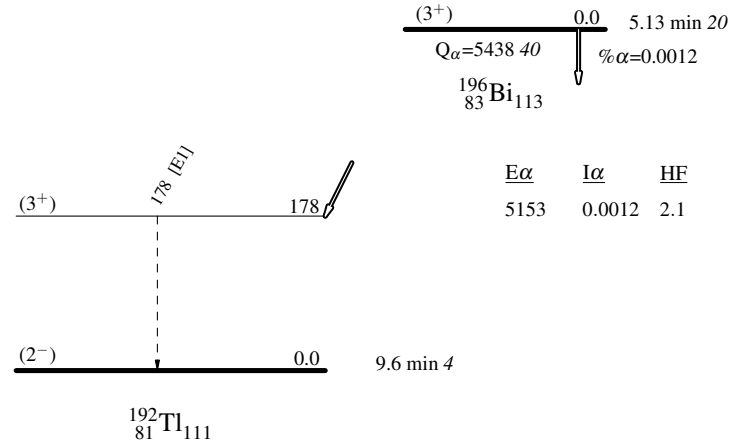
† Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^{196}Bi α decay: low spin 1991Va04

Legend

- - - - - - ► γ Decay (Uncertain)

Decay Scheme



Eα	Iα	HF
5153	0.0012	2.1