### <sup>186</sup>Pb α decay (4.82 s) 1980Sc09,1994Wa23,1999An22

		History	
Туре	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 130, 21 (2015)	15-Jul-2015

Parent: <sup>186</sup>Pb: E=0.0;  $J^{\pi}=0^+$ ;  $T_{1/2}=4.82$  s 3;  $Q(\alpha)=6470$  6; % $\alpha$  decay=40 8

<sup>186</sup>Pb-T<sub>1/2</sub>: From <sup>186</sup>Pb Adopted Levels in ENSDF database.

<sup>186</sup>Pb-Q(*α*): From 2012Wa38.

<sup>186</sup>Pb-% $\alpha$  decay: % $\alpha$  from 2003Ba44 deduced from % $\alpha$ =38 9 (1999An22), 45 20 (1997Ba25), 50 25 (1997An09). 1972Ga27 and 1974Le02 report % $\alpha$ =5 and 2.4, respectively, but T<sub>1/2 1/2</sub> in each of these studies differs from the adopted value. Only the  $\alpha$  decay of <sup>186</sup>Pb has been observed and the % $\alpha$  branch has been measured from  $\alpha$ - $\alpha$  correlations. The  $\beta$  decay of <sup>186</sup>Pb has not been studied, and  $\alpha/\beta$  branchings have not been determined experimentally.

<sup>186</sup>Pb-%α decay: theoretical estimates of %α: 52-84% from partial half-life of ≈10-30 s for ε decay, estimated from gross β-decay calculations of 1973Ta30; 52 from calculated  $T_{1/2}(β^+)=10.03$  s (1997Mo25); 54 20 from calculations of radius parameters as a function of α branching, for r<sub>0</sub>=1.50 2.

Measured  $E\alpha$ , ce, half-lives.

Additional information 1.

<sup>182</sup>Hg Levels

E(level)	$J^{\pi}$
0.0	$0^{+}$
328 12	$(0^{+})$
351.8 <i>3</i>	2+

<sup>†</sup> From Adopted Levels.

#### $\alpha$ radiations

Eα	E(level)	$\mathrm{I}\alpha^{\dagger \#}$	$\mathrm{HF}^{\ddagger}$	Comments
(5988 8)	351.8	<0.16	>23	E $\alpha$ : this $\alpha$ transition has not been observed; its energy is calculated from E(level)=351.8 <i>3</i> and Q( $\alpha$ )=6470 <i>6</i> .
				I $\alpha$ : 1994Wa23 calculate HF for this $\alpha$ branch (the $\alpha$ hindrance factors were calculated by using the Rasmussen formalism from their experimental upper limit for I $\alpha$ ). Their hindrance factor corresponds to I $\alpha$ (5988 $\alpha$ )<0.16 per 100 $\alpha$ decays.
				An upper limit of 3.6 per 100 $\alpha$ decays is deduced for an $\alpha$ transition to the 2 <sup>+</sup> state by requiring its hindrance factor to be greater than 1.
6014 <i>13</i>	328	0.20 5	23 5	$E\alpha$ : from 1994Wa23.
				I $\alpha$ : obtained by 1994Wa13; the authors list the absolute I $\alpha$ values as: I $\alpha$ (6332 $\alpha$ )<100 and I $\alpha$ (6014 $\alpha$ )<0.20%. The uncertainty is deduced from the uncertainty in HF calculated by 1994Wa13.
6331 6	0.0	99.6 2	1.0	Eα: measured energies are 6337 15 (1997Ba25), 6320 15 (1997An09), 6331 (1980Sc09), 6319 20 (1974Le02), 6335 10 (1984To09) and 6320 10 (1972Ga27). The Eα values given by 1974Le02 and 1980Sc09 are adjusted for calibration as recommended by 1991Ry01. Q(α)( <sup>186</sup> Pb)=6470 6 (2012Wa38) yields Eα=6331 6. Eα=6328 6 is recommended in 1991Ry01. Iα: intensity of 6332-keV α is from Iα(5988α) and Iα(6014α).

<sup>†</sup>  $\alpha$  intensity per 100  $\alpha$  decays.

 $\ddagger r_0(^{182}\text{Hg})=1.50 \text{ 2}$  is obtained from the systematics of  $r_0$  parameters.

<sup>#</sup> For absolute intensity per 100 decays, multiply by 0.40 8.

From ENSDF

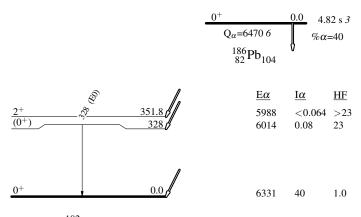
## <sup>186</sup>Pb α decay (4.82 s) **1980Sc09,1994Wa23,1999An22** (continued)

# $\gamma(^{182}\text{Hg})$

$E_{\gamma}$	$E_i$ (level)	$\mathbf{J}_i^{\pi}$	$\mathbf{E}_f \ \mathbf{J}_f^{\pi}$	Mult.	Comments
328	328	$(0^{+})$	$0.0 \ 0^+$	(E0)	$E_{\gamma}$ ,Mult.: very weak electron line seen in 1994Wa23.

### <sup>186</sup>Pb α decay (4.82 s) 1980Sc09,1994Wa23,1999An22

### Decay Scheme



 $^{182}_{80} \rm Hg_{102}$