^{186}Pb α decay (4.82 s) 1980Sc09,1994Wa23,1999An22

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

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

^{186}Pb-$T_{1/2}$: From ^{186}Pb Adopted Levels in ENSDF database.

^{186}Pb-Q(α): From 2012Wa38.

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

^{186}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 $T_{1/2}(\beta^+)$=10.03 s (1997Mo25); 54 *20* from calculations of radius parameters as a function of α branching, for r_0=1.50 *2*.

Measured Eα, ce, half-lives.

Additional information 1.

^{182}Hg Levels

E(level)	J^{π} †
0.0	0^+
328 *12*	(0^+)
351.8 *3*	2^+

† From Adopted Levels.

α radiations

Eα	E(level)	Iα †#	HF‡	Comments
(5988 *8*)	351.8	<0.16	>23	Eα: this α transition has not been observed; its energy is calculated from E(level)=351.8 *3* and Q(α)=6470 *6*. Iα: 1994Wa23 calculate HF for this α branch (the α hindrance factors were calculated by using the Rasmussen formalism from their experimental upper limit for Iα). Their hindrance factor corresponds to Iα(5988α)<0.16 per 100 α decays. An upper limit of 3.6 per 100 α decays is deduced for an α transition to the 2^+ state by requiring its hindrance factor to be greater than 1.
6014 *13*	328	0.20 *5*	23 *5*	Eα: from 1994Wa23. Iα: obtained by 1994Wa13; the authors list the absolute Iα values as: Iα(6332α)<100 and Iα(6014α)<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)(^{186}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).

† α intensity per 100 α decays.

‡ r_0(^{182}Hg)=1.50 *2* is obtained from the systematics of r_0 parameters.

For absolute intensity per 100 decays, multiply by 0.40 *8*.

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$\gamma(^{182}Hg)$

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
328	328	(0^+)	0.0	0^+	(E0)	E_γ,Mult.: very weak electron line seen in 1994Wa23.

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Decay Scheme