

¹⁸³Pb α decay (535 ms) 2002Je09,1989To01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 110, 265 (2009)	15-Nov-2008

Parent: ¹⁸³Pb: E=0.0; J ^{π} =(3/2⁻); T_{1/2}=535 ms 30; Q(α)=6928 7; % α decay \approx 90.0

¹⁸³Pb-% α decay: % α \approx 90 if %(ϵ + β^+) \approx 10 (as estimated from gross β -decay theory (partial β T_{1/2} \approx 5 s, 1973Ta30)); only α decay has been observed.

Others: 1980Sc09, 1986Ke03, 1987To09.

2002Je09: source from ¹⁴⁴Sm(⁴²Ca,3n), E=200 MeV; RITU gas-filled separator with Si strip detector surrounded by 3 NORDBALL- and 2 TESSA-type Ge detectors At focal plane; JUROSPHERE II array (7 TESSA-type, 5 NORDBALL, 15 EUROGAM-II Ge detectors) for γ detection At target position; measured E α , I α , α (t), E γ , I γ , prompt and delayed γ - α coin, parent-daughter α correlations, I(K x ray).

FWHM for α spectra: \approx 60 keV (1989To01), \approx 40 keV (1987To09), 25 keV (1986Ke03).

T_{1/2}(¹⁸³Pb)=535 ms 30 from 2002Je09.

Parent J ^{π} =(3/2⁻) by analogy with ¹⁸⁵Pb and ¹⁸⁷Pb.

¹⁷⁹Hg Levels

E(level)	J ^{π}	Comments
0.0	(7/2 ⁻)	
217	(3/2 ⁻)	E(level): from measured E γ . E(level)=205 8 from measured E α energy difference.

† From Adopted Levels.

α radiations

E α	E(level)	I α ^{†#}	HF [‡]	Comments
6576 6	217	27 3	\approx 2.0	E α : weighted average of 6580 10 (1986Ke03), 6579 15 (1989To01), 6570 10 (2002Je09). I α : based on weighted average of I α /I α (total)=0.22 7 (1989To01) and 0.28 3 (2002Je09). other: 0.17 (1986Ke03).
6777 6	0.0	73 3	\approx 4.0	E α : weighted average of 6798 25 (1980Sc09), 6781 15 (1989To01), 6775 7 (2002Je09). other E α : 6792 (1986Ke03). E α =6777 6 implies Q(α)=6928 6, assuming this is a g.s. to g.s. transition (cf. Q(α)=6928 7 In 2003Au03). I α : based on weighted average of I α /I α (total)=0.78 7 (1989To01) and 0.72 3 (2002Je09). other: 0.83 (1986Ke03).

† Relative I α normalized so I α (total)=100 for this decay.

‡ If r₀=1.507, the average of r₀(¹⁷⁸Hg)=1.51 5 and r₀(¹⁸⁰Hg)=1.505 13 In 1998Ak04, assuming Q(α)=6928 6.

For absolute intensity per 100 decays, multiply by \approx 0.90.

γ (¹⁷⁹Hg)

E γ [†]	E _i (level)	J _i ^{π}	E _f	J _f ^{π}	Mult.	α [‡]	Comments
217	217	(3/2 ⁻)	0.0	(7/2 ⁻)	E2	0.296	α (K)=0.1390 20; α (L)=0.1180 17; α (M)=0.0304 5; α (N+...)=0.00885 13 α (N)=0.00755 11; α (O)=0.001281 18; α (P)=1.743 \times 10 ⁻⁵ 25 α (K) _{exp} =0.16 5 (2002Je09) Mult.: E2(+M1) from α (K) _{exp} , deduced from observed I(K x ray) In 2002Je09; value is consistent with pure E2, but small M1 component cannot Be ruled out. M1 component inconsistent with level scheme.

Continued on next page (footnotes at end of table)

^{183}Pb α decay (535 ms) [2002Je09,1989To01](#) (continued)

$\gamma(^{179}\text{Hg})$ (continued)

† From [2002Je09](#).

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

^{183}Pb α decay (535 ms) 2002Je09,1989To01Decay Scheme