^{187}Po α decay 2006An11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 134, 149 (2016)	15-Apr-2015

Parent: ^{187}Po: E=0.0; J^π=(1/2$^-$,5/2$^-$); $T_{1/2}$=1.40 ms *25*; Q(α)=7979 *15*; %α decay=100.0

2006An11: ^{187}Po source from ^{144}Sm(^{46}Ti,3n) at E(^{46}Ti)=224 MeV *1*; evaporation residues separated by the SHIP velocity filter at GSI and implanted into a position-sensitive silicon (PSSD) detector; six silicon BOX detectors, three time of flight detectors, a veto detector and a four-fold segmented Clover Ge detector; measured Eγ, Eα, Iα, (recoil)-γ coin, α-γ coin. Production cross section for ^{187}Po: 0.8 nb 3.

For this decay, QxBR=7979 *15* cf. Summed decay energies =7985 *484*.

^{183}Pb Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	(3/2$^-$)	535 ms *30*	J^π,$T_{1/2}$: from Adopted Levels. level decays by 6570α (28% 4) and 6775α (72% 5).
286 *1*	(1/2$^-$,5/2$^-$)		E(level): from Eγ. E=286 *15* based on energy difference for α groups feeding the g.s. and this level. J^π: structure of this state is predicted from calculations to be similar to that of ^{187}Po g.s., i.e., prolate and 5/2$^-$[512] state of mixed origin or 1/2[521] from $2f_{5/2}$ orbital.

[†] From Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
7528 *15*	286	100	0.26 *5*	Reduced α width δ^2_α=107 keV *25*. correlated with the known α decays of the ^{183}Pb daughter and ^{179}Hg grand-daughter.
7808	0.0	<2	>91	Reduced α width δ^2_α<0.3 keV.

[†] If r_0=1.483 *4*, unweighted average of r_0(^{182}Pb)=1.479 *26* (if Eα=8360 *15* and %α=100 for ^{186}Po) and r_0(^{184}Pb)=1.486 *10* (if Eα=7911 *13* and %α=100 for ^{188}Po).

[‡] Absolute intensity per 100 decays.

γ(^{183}Pb)

Eγ	Iγ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α[†]	$I_{(\gamma+ce)}$[‡]	Comments
286 *1*	67.3 *4*	286	(1/2$^-$,5/2$^-$)	0.0	(3/2$^-$)	(M1)	0.486 *9*	100	ce(K)/(γ+ce)=0.267 *4*; ce(L)/(γ+ce)=0.0457 *8*; ce(M)/(γ+ce)=0.01070 *19* ce(N)/(γ+ce)=0.00272 *5*; ce(O)/(γ+ce)=0.000542 *10*; ce(P)/(γ+ce)=5.80×10^{-5} *11* α(K)=0.397 *7*; α(L)=0.0679 *12*; α(M)=0.0159 *3*; α(N)=0.00404 *7*; α(O)=0.000806 *14* Iγ: from I(γ+ce) and α. Mult.: from α(K)exp=0.7 *4*.

[†] Additional information 1.

[‡] Absolute intensity per 100 decays.

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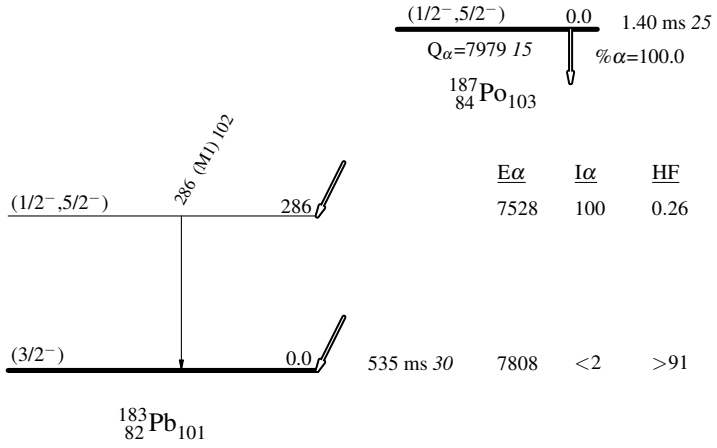
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



	Eα	Iα	HF
	7528	100	0.26
	7808	<2	>91