^{190}Po α decay 2000An14,1997Ba25,1996Ba35

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Parent: ^{190}Po: E=0.0; $J^\pi=0^+$; $T_{1/2}$=2.45 ms *5*; Q(α)=7693 *7*; %α decay=100.0

^{190}Po-%α decay: based on calculated partial $\varepsilon+\beta^+$ half-life of 6.67 s (2019Mo01), %α=99.99; therefore, %$\alpha\approx$100 has been assumed.

Others: 2001An07, 1999An22, 1997An09, 1988QuZZ.

2001An07, 2000An14; ^{190}Po source from ^{142}Nd(^{52}Cr,4n), E=255 MeV; measured Eα, Iα, (α)(ce) coin, α-x coin, $\alpha\gamma$ coin, $T_{1/2}$(^{190}Po); deduced triplet structure of 0^+ states with spherical, oblate and prolate shapes. These two papers present data from the same experimental measurement.

$T_{1/2}$(^{190}Po)=2.45 ms *5* weighted average of 2.45 ms *5* 2000An14 and 2001An07, 2.5 ms *3* (1999An22), and 2.5 ms *1* (2003Va05), 2.0 ms *+5−10* (1997Ba25), 1.9 ms *+6−4* (1997An09), 2.0 ms *+5−10* (1996Ba35). Other: 10 ms *+47−4* (1988QuZZ) may not belong to ^{190}Po.

^{186}Pb Levels

E(level)[†]	J^π	$T_{1/2}$	Comments
0.0	0^+	4.81 s *3*	$T_{1/2}$: From Adopted Levels. Assigned as a 0p-0h spherical state (2000An14).
530 *21*	(0^+)		Assigned as a 2p-2h oblate structure (2000An14).
649 *21*	(0^+)		Assigned as a 4p-4h prolate structure (2000An14).

[†] Deduced by evaluators using Q(α)(^{190}Pb) and adopted Eα values.

α radiations

Eα	E(level)	Iα[†#]	HF[‡]	Comments
6896 *20*	649	0.3 *1*	2.4 *9*	Eα: from (2000An14,2001An07).
7012 *20*	530	3.3 *4*	0.57 *8*	Eα: from (2000An14,2001An07).
7531 *7*	0.0	96.4 *4*	1.000	Eα: Weighted average of 7533 *10* (2000An14,2001An07) and 7529 *10* (1997Ba25) – assuming both supersede their earlier values – 7545 *15* (1999An22), 7550 *15* (1997An09), 7490 *40* (1996Ba35). Other: 7482 *20* (1988QuZZ – report two events).

[†] from (2000An14,2001An07).

[‡] r_0(^{186}Pb)=1.512 *3* for HF(to g.s.)=1.0.

[#] Absolute intensity per 100 decays.

γ(^{186}Pb)

E$_\gamma$[†]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[†]
530	530	(0^+)	0.0	0^+	(E0)
649	649	(0^+)	0.0	0^+	(E0)

[†] Transition inferred from α-ce coin data. Authors do not show spectrum or give measured ce energy, but show transitions feeding g.s. E0 multipolarity inferred by authors from observation of ce only.

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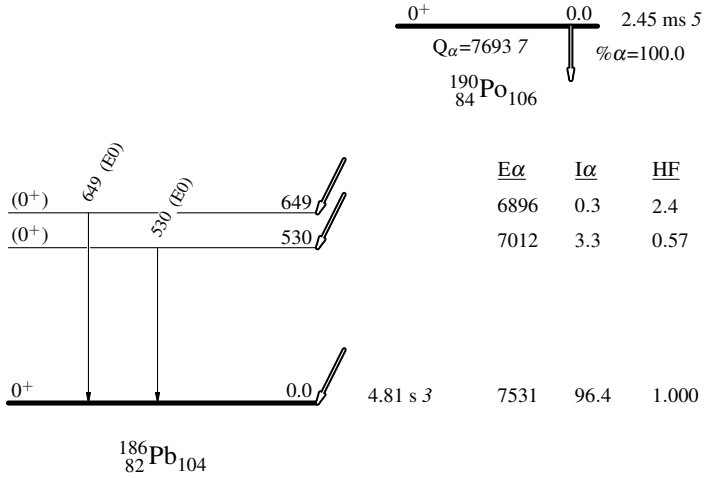
Decay Scheme



Eα	Iα	HF
6896	0.3	2.4
7012	3.3	0.57
7531	96.4	1.000