^{191}Po α decay (22 ms) 2002An19,1999An10,1997Ba25

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 110, 999 (2009)	1-Nov-2008

Parent: ^{191}Po: E=0.0; J^π=(3/2$^-$); $T_{1/2}$=22 ms *1*; Q(α)=7501 *11*; %α decay=99 *10*

^{191}Po-%α decay: From 2007Va21.

Others: 1999An36, 1993Qu03, 2001Hu21, 2001Uu01.

2002An19: ^{191}Po from ^{142}Nd(^{52}Cr,3n) (99.8% ^{142}Nd), E=236 *1* MeV; RITU separator for fusion-evaporation residue, position sensitive silicon strip detector, gas detector, HPGe detectors of Jurosphere array; Measured: Eα, Iα, α-γ coin, α-α coin, Eγ.

1999An10, 1999An36: ^{191}Po from ^{36}Ar bombardment of 67.1% enriched ^{160}Dy target, E=175-193 MeV (5 energies); pulsed beam, gas-filled recoil separator (RITU), position sensitive Si detector, HPGe detector; measured excit, Eα, Iα, Eγ, Iγ, $\alpha\alpha$ correlations, $\alpha\gamma$ coin, α-x coin.

1997Ba25: ^{191}Po from ^{96}Mo(^{96}Mo,N), E=404 MeV; 94.5% enriched ^{96}Mo target; recoil nuclei implanted In double-sided Si strip detector after identification using fragment mass analyzer and gas-filled parallel-grid avalanche counter; measured Eα, α(t), recoil-α(t).

Parent $T_{1/2}$=22 ms *1* from 7334α(t) (1999An36): others: 22 ms *6* (7245α(t),1999An36), 27 ms *+22−8* (1997Ba25), 15.5 ms *+60−25* (1993Qu03, In abstract; uncertainty given As +60-35 In body of text).

^{187}Pb Levels

E(level)[†]	J^π	$T_{1/2}$	Comments
0.0	(13/2$^+$)	18.3 s *3*	
2 *15*	(3/2$^-$)	15.2 s *3*	E(level): Established in 2002An19 from the observations of the crossover 7336α 15 decay from ^{191}Po (3/2$^-$) g.s. to ^{187}Pb (13/2$^+$) g.s. state and 7334α 5 decay from ^{191}Po (3/2$^-$) g.s. to ^{187}Pb (3/2$^-$) metastable state. J^π: (ν p$_{3/2}$)$\otimes\pi$(0p−0h) configuration suggested in 1999An10.
377 *15*	(3/2$^-$)	<10 ns	J^π: 375γ (E0+M1+E2) to (3/2$^-$) g.s., (ν p$_{3/2}$)$\otimes\pi$(2p−2h) configuration suggested in 1999An10. $T_{1/2}$: based on observation of 6960α and 375γ In prompt coincidence (1999An10).

[†] From 2002An19. In Adopted Levels, level energies are higher by 31 keV. Please see the comments for 33-keV level in the Adopted Levels levels.

α radiations

Eα[†]	E(level)	Iα[†#]	HF[‡]	Comments
6966 *10*	377	8.0 *23*	2.3 *7*	Eα: Other: 6960 *15* (1999An10).
7334 *5*	2	77.0 *25*	4.0 *4*	Eα: Others: 7334 *10* (1999An36), 7314 *20* (1993Qu03). 7334α emission correlated with emission of 6000-6260 keV α's from daughter (^{183}Hg) (1999An36).
7336 *15*	0.0	15 *2*	21 *4*	Eα: Crossover 7336α decay (almost identical to 7334α) was identified by 2002An19 distinctly from an α_1-α_2 correlation and comparison with the ^{192}Po α decay. The correlation spectra of α_1 of parent (^{191}Po, J^π=3/2$^-$ and $T_{1/2}$=22 ms) with ΔT(recoil-α_1)=0-80 ms and α_2 of daughter (^{187}Po, J^π=13/2$^+$ and $T_{1/2}$=18.3 s) with ΔT(α_1-α_2)=0-25 s, E_{α_2}=6060-6090−keV were normalized to the same number of random recoil α_1(192PO)- α_2 correlation spectra for the ^{192}Po nucleus (7167α).

[†] From 2002An19, except otherwise noted. The reported 7254α in 1999An10 was identified as 6966α-e- summing in 2002An19.

[‡] r_0=1.526 *22*, average of r_0(^{186}Pb)=1.54 *2* and r_0(^{188}Pb)= 1.511 *8* (1998Ak04). The calculated hindrance factor here is larger by a factor of ~1.4 than that reported in 2002An19, which is probably arises due to the difference of r_0 value used in this calculation.

[#] For absolute intensity per 100 decays, multiply by 0.99 *10*.

^{191}Po α decay (22 ms) 2002An19,1999An10,1997Ba25 (continued)

$\gamma(^{187}Pb)$

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
375 *1*	377	(3/2$^-$)	2	(3/2$^-$)	(E0+M1+E2)	Mult.: From α(K)exp=0.88 *30* (2002An19).

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Decay Scheme