^{211}Po α decay (0.516 s) 1975Ja04,2001Ch66

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Lalkovski	NDS 112, 707 (2011)	1-Aug-2010

Parent: ^{211}Po: E=0.0; $J^\pi=9/2^+$; $T_{1/2}$=0.516 s *3*; Q(α)=7594.5 *5*; %α decay=100.0

1975Ja04: Facility: LBL; Source: ^{211}Po as daughter of ^{211}At, obtained from ^{209}Bi(α,2n) reaction, E(α)=27 MeV; Detectors: one planar Ge(Li) (FWHM=2.3 keV at 1332 keV), one coaxial Ge(Li) (FWHM=2.5 keV at 1332 keV), one Si(Li) (FWHM=2.2 keV for 975 keV), one Au-Si surface barrier detector (FWHM=16 keV at 4.8 MeV); Measured: α-γ coin., E(α), E(γ), conversion electrons; Deduced: level scheme.

2001Ch66: ^{211}Po source was produced by milking chemically separated ^{211}At, produced using the ^{209}Bi(α,2n) reaction, with α energies not higher than 28 MeV; Detectors: 70 cm^3 coaxial Ge(Li) (FWHM=2.7 keV at 1332 keV); Measured Eγ, Iγ; Deduced: Iα.

Others: 1985La17, 1982Bo04, 1978Ya04, 1972As11, 1970Va13, 1969Go23, 1969Ha32, 1967Da10, 1962Wa18, 1954Sp32, 1954Mi70, 1951Ne02.

^{207}Pb Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[‡]
0.0	$1/2^-$	
569.64 *10*	$5/2^-$	
897.81 *10*	$3/2^-$	
1633.31 *10*	$13/2^+$	0.806 s *5*

[†] From a least-squares fit to Eγ.
[‡] From the Adopted Levels.

α radiations

Other α groups at 5880 to 6430 keV %Iα<0.002 (1969Go23).

Eα	E(level)	Iα[†#]	HF[‡]	Comments
(5848.2 *5*)	1633.31	0.00081 *10*	12 *3*	Eα: Not observed experimentally. Eα from from Q(α)=7594.5 keV *5* and E(level)=1633.31 keV *10*. Iα: From 2001Ch66.
6568.3 *9*	897.81	0.537 *19*	19 *4*	Eα: Weighted average of 6568 *1* (1978Ya04), 6570.0 *25* (1969Go23). Iα: Other: 0.59 *2* (2001Ch66).
6891.5 *8*	569.64	0.546 *19*	300 *60*	Eα: Weighted average of 6891 *1* (1978Ya04), 6892.5 *25* (1969Go23), 6892.8 20 (1962Wa18, includes +2.0 keV calibration correction (1991Ry01)). Iα: Other: 0.57 *2* (2001Ch66).
7450.3 *5*	0.0	98.916	124	Eα: From 1991Ry01, based on data of 7448.3 keV 2 (1962Wa18), 7450 keV 3 (1969Go23), 7448 keV 2 (1982Bo04), and 7450 keV 3 (1985La17). Iα: From ΣIα(^{211}Po,0.516s)=100, by subtracting Iα for the excited levels. Other: 98.83% 2 (1991Ry01).

[†] From 1975Ja04, normalized to give ΣIα(^{211}Po,0.516s)=100, unless otherwise specified.
[‡] $r_0(^{207}Pb)$=1.47 *6*. Unweighted average of $r_0(^{208}Pb)$=1.5212 *4* and $r_0(^{206}Pb)$=1.40887 *4*.
[#] Absolute intensity per 100 decays.

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γ(^{207}Pb)

Iγ normalization: Iγ(569.65γ)=0.535 *21* photons per 100 ^{211}Po decays, from I(γ+ce)(569.65γ)=I(6891.5α) and α(569.65γ)=0.0216. Other: Iγ(569.65γ)=0.512% *36* (1985La17).

E_γ ‡	I_γ ‡@	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α†	Comments
328.2 *2*	0.6 *2*	897.81	3/2⁻	569.64	5/2⁻	[M1]		0.334	α(K)=0.273 *4*; α(L)=0.0465 *7*; α(M)=0.01089 *16*; α(N+..)=0.00338 *5* α(N)=0.00277 *4*; α(O)=0.000552 *8*; α(P)=5.90×10^{-5} *9*
569.65 *10*	100	569.64	5/2⁻	0.0	1/2⁻	E2		0.0216	α(K)=0.01583 *23*; α(L)=0.00439 *7*; α(M)=0.001081 *16*; α(N+..)=0.000330 *5* α(N)=0.000274 *4*; α(O)=5.21×10^{-5} *8*; α(P)=4.29×10^{-6} *6*
897.8 *1*	103 *2*	897.81	3/2⁻	0.0	1/2⁻	M1+E2	+0.091 *9*	0.0233	α(K)=0.0192 *3*; α(L)=0.00318 *5*; α(M)=0.000741 *11*; α(N+..)=0.000230 *4* α(N)=0.000188 *3*; α(O)=3.76×10^{-5} *6*; α(P)=4.04×10^{-6} *6* Iγ: Weighted average of 104.4 *20* (1985La17) and 97 *5* (1975Ja04). α: α(K)exp=0.016 *3* (1975Ja04).
1063.656 *3*	0.135 *13*	1633.31	13/2⁺	569.64	5/2⁻	M4+E5	+0.02 *1*	0.1257	α(K)=0.0942 *14*; α(L)=0.0238 *4*; α(M)=0.00589 *9*; α(N+..)=0.00183 *3* α(N)=0.001507 *22*; α(O)=0.000296 *5*; α(P)=2.87×10^{-5} *4* Eγ: From adopted gammas. Iγ: From I(γ+ce)(1063γ)= I(5848.2α) and α(1063γ)=0.1257.

† Additional information 1.
‡ From 1975Ya04, unless otherwise noted.
# From the adopted gammas.
@ For absolute intensity per 100 decays, multiply by 0.00535 *20*.

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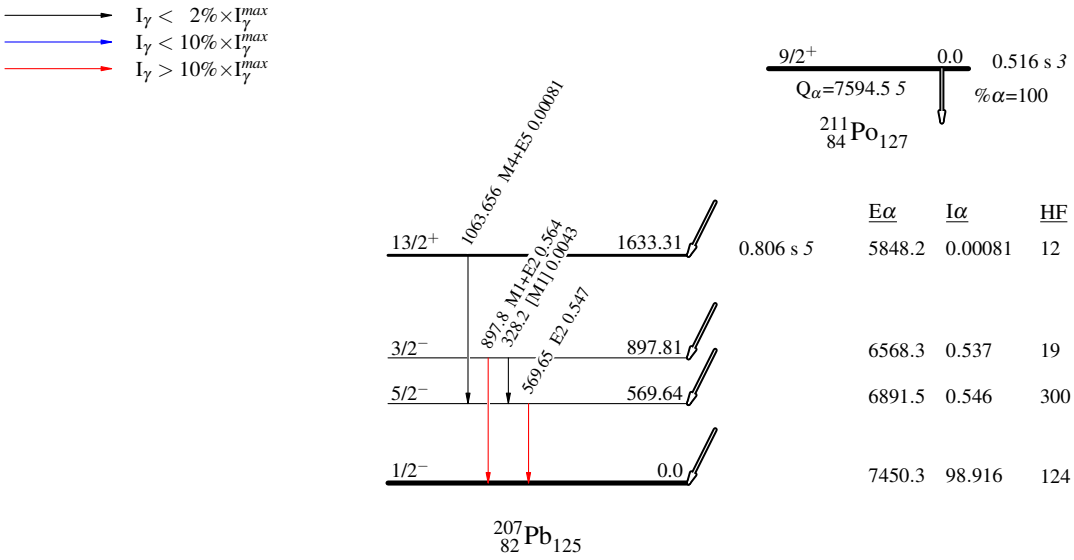
Decay Scheme

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



	Eα	Iα	HF
	5848.2	0.00081	12
	6568.3	0.537	19
	6891.5	0.546	300
	7450.3	98.916	124