^{201}Po ε decay (8.96 min) 1986Br28,1976Ko13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 187,355 (2023)	20-Sep-2022

Parent: ^{201}Po: E=423.41 *22*; $J^\pi=13/2^+$; $T_{1/2}$=8.96 min *12*; Q(ε)=4908 *13*; %ε+%$β^+$ decay≈55.0

1986Br28: ^{193}Ir(^{14}N,6n), E=116 MeV; Detectors: Ge(Li) and cooled Si(Li); Measured: γ, γγ coin, γγ(t), γ(x-ray)(t), ce, and $T_{1/2}$.

1976Ko13: ^{197}Au(^{10}B,6n), E(^{10}B)≈90 MeV; Ge(Li) and Si(Li); Measured γ, γγ, I(ce), $T_{1/2}$.

Other: 1971Jo19.

^{201}Bi Levels

E(level)†	J^π‡	$T_{1/2}$‡	E(level)†	J^π‡	$T_{1/2}$‡
0	$9/2^-$	103 min *3*	1504.40 *23*		
964.40 *15*	$11/2^-$		1665.1 *3*		
967.49 *18*	$13/2^-$		1719.15 *22*	$(11/2,13/2)^+$	
1379.4 *3*	$15/2^-$		1746.5 *9*	$17/2^+$	5.1 ns *13*
1474.6 *9*	$17/2^-$		1762.9 *3*		
1501.89 *17*	$(13/2^+)$		2034.3 *7*		

† From a least-squares fit to Eγ.

‡ From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(3297 *13*)	2034.3	≈0.1	≈0.8	≈7.4	≈0.9	av Eβ=1028.2 *58*; εK=0.7114 *14*; εL=0.1309 *3*; εM+=0.04308 *10*
(3569 *13*)	1762.9	≈0.26	≈1.4	≈7.2	≈1.7	av Eβ=1148.6 *58*; εK=0.6803 *16*; εL=0.1247 *3*; εM+=0.04103 *11*
(3585‡ *13*)	1746.5	≈0.31	≈1.7	≈7.2	≈2.0	av Eβ=1155.8 *58*; εK=0.6783 *16*; εL=0.1244 *4*; εM+=0.04090 *11* I(ε+β+): The existence of this decay branch is unlikely. Imbalance is probably due to a missing de-exciting γ-ray transitions.
(3612 *13*)	1719.15	≈0.39	≈2.0	≈7.1	≈2.4	av Eβ=1168.0 *58*; εK=0.6750 *16*; εL=0.1237 *4*; εM+=0.04069 *11*
(3666 *13*)	1665.1	≈0.22	≈1.1	≈7.4	≈1.3	av Eβ=1192.0 *58*; εK=0.6682 *17*; εL=0.1224 *4*; εM+=0.04025 *11*
(3827 *13*)	1504.40	≈0.53	≈2.2	≈7.1	≈2.7	av Eβ=1263.7 *58*; εK=0.6475 *18*; εL=0.1184 *4*; εM+=0.03892 *11*
(3830 *13*)	1501.89	≈1.8	≈7.3	≈6.6	≈9.1	av Eβ=1264.8 *58*; εK=0.6472 *18*; εL=0.1183 *4*; εM+=0.03890 *11*
(3857 *13*)	1474.6	<0.07	<0.8	>9.3*1u*	<0.9	av Eβ=1248.7 *56*; εK=0.7348 *9*; εL=0.13985 *20*; εM+=0.04629 *7*
(3952 *13*)	1379.4	≈2.0	≈7.3	≈6.6	≈9.3	av Eβ=1319.6 *59*; εK=0.6308 *18*; εL=0.1152 *4*; εM+=0.03786 *12*
(4364 *13*)	967.49	≈3.78	≈9.32	≈6.6	≈13.1	av Eβ=1504.4 *59*; εK=0.5732 *19*; εL=0.1043 *4*; εM+=0.03426 *12*
(4367 *13*)	964.40	≈3.58	≈8.82	≈6.6	≈12.4	av Eβ=1505.8 *59*; εK=0.5728 *19*; εL=0.1042 *4*; εM+=0.03424 *12*
(5331 *13*)	0	≈11.2	≈33.8	≈8.2*1u*	≈45.0	av Eβ=1883.6 *57*; εK=0.6029 *14*; εL=0.1122 *3*; εM+=0.03700 *10* I(ε+β+): From log *ft*^{1u}=8.2 in ^{197}Pb ε decay ($J^\pi=13/2^+$) to the $J^\pi=9/2^-$ level in ^{197}Tl.

† For absolute intensity per 100 decays, multiply by ≈0.55.

‡ Existence of this branch is questionable.

^{201}Po ε decay (8.96 min) 1986Br28,1976Ko13 (continued)

γ(^{201}Bi)

Iγ normalization: Using ΣI(γ+ce)(to g.s.)=100 − Iβ(g.s.) where Iβ(g.s.) ≈ 45% was deduced by the evaluator from log ft^{1u}=8.2 in ^{197}Pb ε decay (J^{π}=13/2$^+$) to the J^{π}=9/2$^-$ level in ^{197}Tl.

E_γ[†]	I_γ[‡&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	α[@]	Comments
95.26 *15*	0.6 *3*	1474.6	17/2$^-$	1379.4	15/2$^-$	M1(+E2)		10.0 *17*	%Iγ≈0.10 α(K)=5 *5*; α(L)=3.8 *21*; α(M)=1.0 *6* α(N)=0.25 *15*; α(O)=0.047 *26*; α(P)=0.0040 *16* I_γ: Estimated from cascade intensity (1986Br28).
217.6 *3*	0.61 *10*	1719.15	(11/2,13/2)$^+$	1501.89	(13/2$^+$)	M1(+E2)	<1.7	0.83 *29*	%Iγ≈0.1 α(K)=0.63 *29*; α(L)=0.155 *5*; α(M)=0.0379 *7* α(N)=0.00967 *16*; α(O)=0.00191 *5*; α(P)=0.000203 *30* Mult.,δ: From α(K)exp=0.75 *41* (1986Br28).
271.91 *20*	6.9 *3*	1746.5	17/2$^+$	1474.6	17/2$^-$	E1		0.0383 *5*	%Iγ≈1.1 α(K)=0.0312 *4*; α(L)=0.00540 *8*; α(M)=0.001267 *18* α(N)=0.000321 *5*; α(O)=6.39×10^{-5} *9*; α(P)=7.01×10^{-6} *10* Mult.: From α(K)exp<0.066 (1986Br28). Note, that α(K)exp=0.42 *30* and K/L=5.7 in 1976Ko13 are consistent with Mult=M1.
411.86 *20*	32.0 *11*	1379.4	15/2$^-$	967.49	13/2$^-$	M1+E2	−0.023 *17*	0.1966 *28*	%Iγ≈5.2 α(K)=0.1606 *23*; α(L)=0.0275 *4*; α(M)=0.00646 *9* α(N)=0.001652 *23*; α(O)=0.000338 *5*; α(P)=4.02×10^{-5} *6* Mult.: Other: α(K)exp=0.22 *10* and K/L=5.3 in 1976Ko13.
532.4 *6*	3.12 *18*	2034.3		1501.89	(13/2$^+$)				%Iγ≈0.5
534.2 *3*	10.2 *4*	1501.89	(13/2$^+$)	967.49	13/2$^-$	[E1]		0.00865 *12*	%Iγ≈1.7 α(K)=0.00714 *10*; α(L)=0.001153 *16*; α(M)=0.000269 *4* α(N)=6.83×10^{-5} *10*; α(O)=1.376×10^{-5} *19*; α(P)=1.576×10^{-6} *22*
537.5 *2*	24.0[#] *15*	1501.89	(13/2$^+$)	964.40	11/2$^-$	[E1]		0.00854 *12*	%Iγ≈3.9 α(K)=0.00705 *10*; α(L)=0.001138 *16*; α(M)=0.000265 *4* α(N)=6.74×10^{-5} *9*; α(O)=1.359×10^{-5} *19*; α(P)=1.556×10^{-6} *22*
540.1 *3*	8.4 *4*	1504.40		964.40	11/2$^-$				%Iγ≈1.4
697.6 *2*	4.5 *3*	1665.1		967.49	13/2$^-$				%Iγ≈0.7
754.6 *2*	7.0 *4*	1719.15	(11/2,13/2)$^+$	964.40	11/2$^-$	E1		0.00438 *6*	%Iγ≈1.1

$^{201}_{83}Bi_{118}$-2

^{201}Po ε decay (8.96 min) 1986Br28,1976Ko13 (continued)

γ(^{201}Bi) (continued)

E_γ †	I_γ ‡&	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	δ †	α @	Comments
									α(K)=0.00364 *5*; α(L)=0.000571 *8*; α(M)=0.0001324 *19* α(N)=3.37×10^{-5} *5*; α(O)=6.82×10^{-6} *10*; α(P)=7.94×10^{-7} *11* Mult.: α(K)exp<0.007 (1986Br28).
798.5 *3*	2.02 *20*	1762.9		964.40	11/2$^-$				%Iγ≈0.3
964.3 *2*	82 *3*	964.40	11/2$^-$	0	9/2$^-$	M1(+E2)	−0.04 *7*	0.02109 *33*	%Iγ≈13.3 α(K)=0.01730 *27*; α(L)=0.00289 *4*; α(M)=0.000677 *10* α(N)=0.0001730 *26*; α(O)=3.54×10^{-5} *5*; α(P)=4.23×10^{-6} *7* Mult.: Other: α(K)exp=0.0231 *33* (1986Br28).
967.4 *2*	96.9 *15*	967.49	13/2$^-$	0	9/2$^-$	E2		0.00746 *10*	%Iγ≈15.7 α(K)=0.00590 *8*; α(L)=0.001190 *17*; α(M)=0.000285 *4* α(N)=7.27×10^{-5} *10*; α(O)=1.456×10^{-5} *20*; α(P)=1.616×10^{-6} *23* Mult.: Other: α(K)exp=0.0058 *11* (1986Br28). Note that α(K)exp=0.011 *5* in 1976Ko13 is consistent with M1+E2.
1502.4 *3*	0.74 *11*	1501.89	(13/2$^+$)	0	9/2$^-$	(E3)		0.00677 *9*	%Iγ≈0.12 α(K)=0.00528 *7*; α(L)=0.001108 *16*; α(M)=0.000267 *4* α(N)=6.82×10^{-5} *10*; α(O)=1.371×10^{-5} *19*; α(P)=1.539×10^{-6} *22*; α(IPF)=2.92×10^{-5} *4* Mult.: α(K)exp=0.005 *2* (1986Br28).
1504.3 *3*	0.78 *18*	1504.40		0	9/2$^-$				%Iγ≈0.13
1762.9 *6*	3.7 *3*	1762.9		0	9/2$^-$				%Iγ≈0.6

† From adopted gammas, unless otherwise stated.
‡ From 1986Br28.
# Estimated from coincidence intensities in 1986Br28.
@ Additional information 1.
& For absolute intensity per 100 decays, multiply by ≈0.162.

$^{201}_{83}Bi_{118}$-3

^{201}Po ε decay (8.96 min) 1986Br28,1976Ko13

Decay Scheme

Intensities: I_γ per 100 parent decays