^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 166, 1 (2020)	20-Apr-2020

Parent: ^{205}At: E=0.0; $J^\pi=9/2^-$; $T_{1/2}$=26.9 min *8*; Q(ε)=4549 *18*; %ε+%$β^+$ decay=90 *2*

1982Ku20, 1982Ku21: mass-separated source produced using spallation of ^{232}Th with 660-MeV protons; Detectors:Ge(Li) with energy resolution of 0.6 keV (154γ), 1.9 keV (719γ) and 2.8 keV (719γ), magnetic spectrograph and Si(Li) detector with energy resolution of 2.5 keV for E(ce)≈1 MeV; Measured: Eγ, Iγ, Ice, ceγ coin, γγ coin.

1971Jo19: source produced as a decay product of mass-separated ^{205}Rn produced using spallation of ^{232}Th with 600-MeV protons; Detectors:Ge(Li) and Si(Li); Measured: Eγ, Iγ, γγ coin, Ice.

Others: 1970DaZM and 1970Ho15.

^{205}Po Levels

E(level)†	J^π‡	$T_{1/2}$‡	E(level)†	J^π‡
0.0#	$5/2^-$	1.74 h *8*	1553.17 *6*	$(11/2)^+$
143.165@ *14*	$1/2^-$	310 ns *60*	1633.30 *9*	$5/2^+$
154.196& *11*	$3/2^-$		1651.35 *13*	$7/2^-$
384.34 *6*	$(3/2)^-$		1761.32 *17*	$(7/2,9/2)^-$
669.43 *4*	$9/2^-$		1856.20 *11*	$11/2^+$
719.28[b] *4*	$9/2^-$		1908.38 *24*	$(5/2^+)$
783.00 *5*	$7/2^-$		1912.00 *9*	$9/2^+$
799.02 *15*	$(5/2)^-$		1954.05 *10*	$(11/2)^-$
806.45 *8*	$(5/2)^-$		2149.35 *15*	$(7/2)^+$
872.10 *7*	$7/2^-$		2187.88 *9*	$(11/2)^+$
880.31[a] *4*	$13/2^+$	0.645 ms *20*	2355.56 *6*	$9/2^+$
902.26 *10*	$(7/2)^-$		2483.49 *7*	$(7/2,9/2,11/2)^+$
1030.38[c] *4*	$(11/2)^-$		2799.20 *15*	$(9/2)^+$
1167.81 *7*	$7/2^-$		2930.82 *19*	$(9/2)^+$
1394.94 *9*	$(9/2)^-$		3033.0 *5*	(7/2,9/2)
1400.80 *5*	$9/2^+$		3046.72 *20*	$7/2^+$
1426.05 *7*	$9/2^-$		3052.2 *4*	$(7/2)^+$
1539.94 *7*	$9/2^+$		3170.9 *4*	$(7/2)^+$

† From a least squares fit to Eγ.
‡ From Adopted Levels.
# configuration=$\nu(f^{-1}_{5/2})$.
@ configuration=$\nu(p^{-1}_{1/2})$.
& configuration=$\nu(p^{-1}_{3/2})$.
[a] configuration=$\nu(i^{-1}_{13/2})$.
[b] configuration=$\nu(f^{-1}_{5/2})\otimes\pi(h^{+2}_{9/2})_{2^+}$.
[c] configuration=$\nu(f^{-1}_{5/2})\otimes\pi(h^{+2}_{9/2})_{4^+}$.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
(1378 *18*)	3170.9		1.60 *9*	6.90 *4*	1.60 *9*	εK=0.7896 *3*; εL=0.15749 *20*; εM+=0.05279 *8*
(1497 *18*)	3052.2		1.34 *16*	7.05 *6*	1.34 *16*	εK=0.7910 *2*; εL=0.15627 *18*; εM+=0.05231 *7*
(1502 *18*)	3046.72		1.21 *9*	7.10 *4*	1.21 *9*	εK=0.7910 *2*; εL=0.15622 *18*; εM+=0.05229 *7*
(1516 *18*)	3033.0		0.56 *5*	7.44 *5*	0.56 *5*	εK=0.7911 *2*; εL=0.15609 *18*; εM+=0.05224 *7*
(1618 *18*)	2930.82	0.0023 *3*	2.03 *10*	6.94 *3*	2.03 *10*	av Eβ=291.5 *81*; εK=0.79183 *9*; εL=0.15516 *16*;

Continued on next page (footnotes at end of table)

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
						εM+=0.05187 *7*
(1750 *18*)	2799.20	0.0076 *8*	3.02 *15*	6.84 *3*	3.03 *15*	av Eβ=349.8 *80*; εK=0.7920; εL=0.1540 *2*; εM+=0.05143 *6*
(2066 *18*)	2483.49	0.0150 *23*	1.60 *22*	7.27 *7*	1.61 *22*	av Eβ=488.4 *79*; εK=0.7890 *4*; εL=0.15129 *17*; εM+=0.05040 *7*
(2193 *18*)	2355.56	0.056 *5*	3.9 *3*	6.93 *4*	4.0 *3*	av Eβ=544.3 *79*; εK=0.7861 *5*; εL=0.15005 *19*; εM+=0.04995 *7*
(2361 *18*)	2187.88	0.054 *4*	2.43 *16*	7.21 *4*	2.48 *16*	av Eβ=617.6 *79*; εK=0.7807 *7*; εL=0.14826 *21*; εM+=0.04931 *8*
(2400 *18*)	2149.35	0.046 *5*	1.87 *19*	7.33 *5*	1.92 *19*	av Eβ=634.4 *79*; εK=0.7792 *8*; εL=0.14781 *22*; εM+=0.04916 *8*
(2595 *18*)	1954.05	0.040 *3*	1.05 *7*	7.65 *4*	1.09 *7*	av Eβ=719.8 *79*; εK=0.7700 *10*; εL=0.14534 *25*; εM+=0.04830 *9*
(2637 *18*)	1912.00	0.17 *2*	4.0 *4*	7.08 *5*	4.2 *4*	av Eβ=738.2 *79*; εK=0.7677 *11*; εL=0.1448 *3*; εM+=0.04810 *9*
(2693 *18*)	1856.20	0.118 *7*	2.58 *11*	7.30 *3*	2.70 *12*	av Eβ=762.6 *79*; εK=0.7644 *11*; εL=0.1440 *3*; εM+=0.04782 *9*
(2788 *18*)	1761.32	0.056 *6*	1.02 *11*	7.73 *6*	1.08 *12*	av Eβ=804.1 *80*; εK=0.7584 *13*; εL=0.1425 *3*; εM+=0.04733 *10*
(2898 *18*)	1651.35	0.134 *8*	2.03 *11*	7.47 *3*	2.16 *12*	av Eβ=852.5 *79*; εK=0.7505 *14*; εL=0.1408 *3*; εM+=0.04672 *11*
(2996 *18*)	1553.17	0.35 *3*	4.5 *4*	7.15 *4*	4.9 *4*	av Eβ=895.6 *80*; εK=0.7429 *15*; εL=0.1391 *4*; εM+=0.04615 *11*
(3009 *18*)	1539.94	0.232 *15*	2.94 *18*	7.34 *4*	3.17 *19*	av Eβ=901.4 *80*; εK=0.7418 *15*; εL=0.1388 *4*; εM+=0.04607 *11*
(3123 *18*)	1426.05	0.153 *14*	1.63 *15*	7.63 *5*	1.78 *16*	av Eβ=951.5 *80*; εK=0.7320 *17*; εL=0.1367 *4*; εM+=0.04536 *12*
(3148 *18*)	1400.80	0.65 *5*	6.7 *5*	7.03 *4*	7.3 *5*	av Eβ=962.6 *80*; εK=0.7297 *17*; εL=0.1362 *4*; εM+=0.04520 *12*
(3154 *18*)	1394.94	0.096 *16*	0.97 *16*	7.86 *8*	1.07 *18*	av Eβ=965.2 *80*; εK=0.7291 *17*; εL=0.1361 *4*; εM+=0.04516 *12*
(3381 *18*)	1167.81	0.311 *25*	2.32 *18*	7.55 *4*	2.63 *20*	av Eβ=1065.4 *80*; εK=0.7067 *19*; εL=0.1315 *4*; εM+=0.04360 *13*
(3519 *18*)	1030.38	0.85 *10*	5.3 *6*	7.22 *6*	6.2 *7*	av Eβ=1126.3 *80*; εK=0.6918 *21*; εL=0.1285 *4*; εM+=0.04259 *14*
(3647 *18*)	902.26	0.087 *19*	0.47 *10*	8.30 *10*	0.56 *12*	av Eβ=1183.1 *80*; εK=0.6770 *22*; εL=0.1256 *5*; εM+=0.04160 *15*
(3669 *18*)	880.31	0.16 *11*	2.5 *18*	9.3[1u] *3*	2.7 *19*	av Eβ=1167.5 *76*; εK=0.7475 *10*; εL=0.14481 *25*; εM+=0.04833 *9*
(3677 *18*)	872.10	0.66 *13*	3.4 *7*	7.45 *9*	4.1 *8*	av Eβ=1196.5 *80*; εK=0.6735 *22*; εL=0.1248 *5*; εM+=0.04137 *15*
(3766 *18*)	783.00	1.3 *1*	6.0 *6*	7.23 *5*	7.3 *7*	av Eβ=1236.2 *81*; εK=0.6627 *23*; εL=0.1227 *5*; εM+=0.04066 *15*
(3830 *18*)	719.28	1.5 *4*	6.8 *16*	7.19 *10*	8.3 *19*	av Eβ=1264.5 *81*; εK=0.6548 *23*; εL=0.1212 *5*; εM+=0.04014 *15*
(3880 *18*)	669.43	1.3 *1*	5.3 *6*	7.31 *5*	6.6 *7*	av Eβ=1286.8 *81*; εK=0.6485 *23*; εL=0.1199 *5*; εM+=0.03973 *15*

† From the decay scheme and intensity balance considerations.
‡ For absolute intensity per 100 decays, multiply by 0.90 *2*.

γ(^{205}Po)

Iγ normalization: From the decay scheme by assuming ΣI$_i$(γ+ce)(g.s.)=100%. The ε+β$^+$ feeding to the g.s. is not expected, since it involves a second forbidden (ΔJ=2, π=No) transition. Note, that normalization factors of 0.31 *5* in 1971Jo19 and 0.31 *4* in 1982Ku21 imply a significant feeding to the g.s..

x-ray	measured intensity (1982Ku20) a)
Po-Kα$_2$ x ray	86 6
Po-Kα$_1$ x ray	146 8
Po-Kβ$_1$ x ray	52 3
Po-Kβ$_2$ x ray	16.5 10

a) For absolute intensities multiply by 0.530 8

E$_\gamma$[†]	I$_\gamma$[†&]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	δ[#]	α[@]	Comments
(11.032 *19*)	0.0212 *15*	154.196	3/2$^-$	143.165	1/2$^-$	[M1,E2]		334	%Iγ=0.0101 *8* α(M)=253 *4* α(N)=65.3 *10*; α(O)=13.66 *21*; α(P)=1.76 *3* E$_\gamma$: From Adopted Levels. Not observed directly, but required by the coincidence relationship (1982Ku21). I$_\gamma$: From intensity balance at the 154-keV level, by assuming that there is no direct β-decay feeding to this level.
[x]105.15 *10*	0.21 *3*					(M1,E1)		5 *5*	%Iγ=0.100 *15* α(K)=4 *4*; α(L)=0.7 *7*; α(M)=0.17 *16* α(N)=0.04 *4*; α(O)=0.009 *9*; α(P)=0.0012 *11* Mult.: α(L)exp≤1.21 (1982Ku20).
113.3 *5*	≈0.1	783.00	7/2$^-$	669.43	9/2$^-$	[M1+E2]		7.77 *15*	%Iγ≈0.0477 α(K)=6.30 *12*; α(L)=1.122 *22*; α(M)=0.265 *5* α(N)=0.0682 *13*; α(O)=0.0143 *3*; α(P)=0.00184 *4*
[x]123.35 *4*	0.281 *25*					M1		6.10	%Iγ=0.134 *12* α(K)=4.95 *7*; α(L)=0.879 *13*; α(M)=0.207 *3* α(N)=0.0534 *8*; α(O)=0.01118 *16*; α(P)=0.001444 *21* Mult.: α(K)exp=5.6 *8* (1982Ku20).
127.93 *4*	0.54 *4*	2483.49	(7/2,9/2,11/2)$^+$	2355.56	9/2$^+$	M1(+E2)	≤0.5	5.2 *3*	%Iγ=0.258 *20* α(K)=4.1 *5*; α(L)=0.87 *9*; α(M)=0.211 *25* α(N)=0.054 *7*; α(O)=0.0112 *12*; α(P)=0.00136 *7* Mult.: α(K)exp=4.3 *6* and (α(L1)exp+α(L2)exp)=0.56 *25* (1982Ku20).
143.166 *17*	2.69 *19*	143.165	1/2$^-$	0.0	5/2$^-$	E2		1.641	%Iγ=1.28 *10* α(K)=0.324 *5*; α(L)=0.977 *14*; α(M)=0.260 *4* α(N)=0.0667 *10*; α(O)=0.01274 *18*; α(P)=0.001163 *17* Mult.: α(K)exp=0.34 *5*, (α(L1)exp+α(L2)exp)=0.60 *8*

$^{205}_{84}$Po$_{121}$-3

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
									and α(L3)exp=0.39 *5* (1982Ku20); α(L)exp=0.9 *7* (1971Jo19).
152.38 *7*	0.48 *6*	1553.17	$(11/2)^+$	1400.80	$9/2^+$	[M1]		3.35	%Iγ=0.229 *29* α(K)=2.72 *4*; α(L)=0.480 *7*; α(M)=0.1133 *16* α(N)=0.0292 *5*; α(O)=0.00610 *9*; α(P)=0.000789 *11*
154.198 *12*	5.0 *4*	154.196	$3/2^-$	0.0	$5/2^-$	M1(+E2)	≤0.22	3.19 *7*	%Iγ=2.38 *19* α(K)=2.57 *7*; α(L)=0.470 *9*; α(M)=0.1113 *24* α(N)=0.0287 *6*; α(O)=0.00598 *12*; α(P)=0.000764 *11* I_γ: From intensity balance and by assuming that there is no direct β-decay feeding to the 154-keV level. I(154γ)=8.4 *6* in 1982Ku20. Mult.: α(K)exp=2.69 *13* and α(M)exp=0.101 *15* (1982Ku20); α(K)exp=3.0 *6* (1971Jo19).
161.030 *17*	3.39 *21*	880.31	$13/2^+$	719.28	$9/2^-$	M2		15.79	%Iγ=1.62 *11* α(K)=10.91 *16*; α(L)=3.65 *6*; α(M)=0.933 *13* α(N)=0.244 *4*; α(O)=0.0503 *7*; α(P)=0.00619 *9* Mult.: α(K)exp=11.4 *12*,(α(L1)exp+α(L2)exp)=3.6 *4*, α(L3)exp=0.50 *6*, α(M)exp=1.09 *14* and α(N)exp=0.30 *4* (1982Ku20); α(K)exp=11.0 *10* (1971Jo19).
[x]165.7 *1*	0.9 *2*								%Iγ=0.43 *10* E_γ,I_γ: From 1971Jo19.
[x]178.6 *1*	0.4 *1*								%Iγ=0.19 *5* E_γ,I_γ: From 1971Jo19.
202.60 *20*	1.07 *13*	872.10	$7/2^-$	669.43	$9/2^-$	M1(+E2)	≤0.4	1.43 *8*	%Iγ=0.51 *6* α(K)=1.15 *8*; α(L)=0.214 *3*; α(M)=0.0510 *9* α(N)=0.01312 *22*; α(O)=0.00273 *4*; α(P)=0.000346 *8* Mult.: α(K)exp=1.35 *22* and (α(L1)exp+α(L2)exp)=0.24 *4* (1982Ku20).
230.12 *7*	1.01 *9*	384.34	$(3/2)^-$	154.196	$3/2^-$	(M1)		1.051	%Iγ=0.48 *4* α(K)=0.854 *12*; α(L)=0.1500 *21*; α(M)=0.0354 *5* α(N)=0.00911 *13*; α(O)=0.00191 *3*; α(P)=0.000246 *4* Mult.: α(K)exp≈1 (1982Ku20).
232.54 *20*	0.53 *15*	1633.30	$5/2^+$	1400.80	$9/2^+$	[E2]		0.282	%Iγ=0.25 *7* α(K)=0.1192 *17*; α(L)=0.1207 *18*; α(M)=0.0317 *5* α(N)=0.00814 *12*; α(O)=0.001573 *23*; α(P)=0.0001512 *22*
[x]275.6 *2*	0.5 *2*								%Iγ=0.24 *10* E_γ,I_γ: From 1971Jo19.
311.090 *25*	13.5 *7*	1030.38	$(11/2)^-$	719.28	$9/2^-$	M1+E2	0.30 *23*	0.43 *5*	%Iγ=6.4 *4* α(K)=0.35 *5*; α(L)=0.063 *4*; α(M)=0.0149 *8* α(N)=0.00383 *20*; α(O)=0.00080 *5*; α(P)=0.000102 *8* Mult.: α(K)exp=0.36 *4*, (α(L1)exp+α(L2)exp)=0.061 *9* and 0.0168 *21* (1982Ku20); α(K)exp=0.33 *5* (1971Jo19).
[x]312.5 *2*	2.10 *14*					M1		0.452	%Iγ=1.00 *7* α(K)=0.368 *6*; α(L)=0.0642 *9*; α(M)=0.01514 *22* α(N)=0.00390 *6*; α(O)=0.000815 *12*; α(P)=0.0001054 *15* Mult.: α(K)exp=0.37 *5* (1982Ku20).

$^{205}_{84}Po_{121}$-4

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
317.0 *10*	0.60 *7*	1856.20	11/2$^+$	1539.94	9/2$^+$	M1(+E2)	≤0.6	0.39 *5*	%Iγ=0.286 *34* α(K)=0.31 *4*; α(L)=0.058 *4*; α(M)=0.0139 *8* α(N)=0.00356 *19*; α(O)=0.00074 *5*; α(P)=9.4×10^{-5} *8* Mult.: α(K)exp=0.35 *6* (1982Ku20).
[x]336.9 *2*	0.7 *2*								%Iγ=0.33 *10* E_γ,I_γ: From 1971Jo19.
360.91 *7*	3.80 *25*	1030.38	(11/2)$^-$	669.43	9/2$^-$	M1+E2	1.00 *+26−21*	0.19 *3*	%Iγ=1.81 *13* α(K)=0.147 *24*; α(L)=0.0328 *25*; α(M)=0.0080 *6* α(N)=0.00205 *14*; α(O)=0.00042 *3*; α(P)=5.0×10^{-5} *5* Mult.: α(K)exp=0.15 *2* and α(L)exp=0.030 *3* (1982Ku20); α(K)exp=0.29 *8* (1971Jo19).
364.60 *9*	2.75 *22*	1394.94	(9/2)$^-$	1030.38	(11/2)$^-$	M1(+E2)	≤0.6	0.27 *3*	%Iγ=1.31 *11* α(K)=0.22 *3*; α(L)=0.039 *3*; α(M)=0.0093 *6* α(N)=0.00240 *16*; α(O)=0.00050 *4*; α(P)=6.4×10^{-5} *6* Mult.: α(K)exp=0.25 *3*, α(L)exp=0.036 *5* and α(M)exp=0.015 *4* (1982Ku20).
369 *1*	0.60 *7*	1167.81	7/2$^-$	799.02	(5/2)$^-$	M1+E2	1.5 *+5−4*	0.14 *4*	%Iγ=0.286 *34* α(K)=0.10 *3*; α(L)=0.027 *3*; α(M)=0.0066 *7* α(N)=0.00170 *17*; α(O)=0.00034 *4*; α(P)=4.0×10^{-5} *6* Mult.: α(K)exp=0.105 *23* (1982Ku20).
384.61 *14*	3.98 *20*	384.34	(3/2)$^-$	0.0	5/2$^-$	M1+E2	0.87 *13*	0.173 *16*	%Iγ=1.90 *11* α(K)=0.136 *14*; α(L)=0.0284 *15*; α(M)=0.0068 *4* α(N)=0.00176 *9*; α(O)=0.000362 *19*; α(P)=4.4×10^{-5} *3* Mult.: α(K)exp=0.136 *12* (1982Ku20).
384.61[a]		1167.81	7/2$^-$	783.00	7/2$^-$				%Iγ=0.286 *34* E_γ: Overlaps with much stronger 384.61γ, depopulating the 384 keV level.
395.70 *8*	1.40 *16*	1426.05	9/2$^-$	1030.38	(11/2)$^-$	M1(+E2)	≤0.6	0.214 *24*	%Iγ=0.67 *8* α(K)=0.173 *21*; α(L)=0.0314 *24*; α(M)=0.0074 *6* α(N)=0.00191 *14*; α(O)=0.00040 *3*; α(P)=5.1×10^{-5} *5* Mult.: α(K)exp=0.173 *24* and α(L)exp=0.033 *6* (1982Ku20).
414.65 *20*	0.96 *11*	799.02	(5/2)$^-$	384.34	(3/2)$^-$	M1(+E2)	≤0.6	0.189 *22*	%Iγ=0.46 *5* α(K)=0.153 *19*; α(L)=0.0276 *22*; α(M)=0.0065 *5* α(N)=0.00168 *13*; α(O)=0.00035 *3*; α(P)=4.5×10^{-5} *4* E_γ,I_γ: Possibly a doublet. Mult.: α(K)exp=0.160 *23* (1982Ku20).
448.61 *7*	5.51 *29*	1167.81	7/2$^-$	719.28	9/2$^-$	M1+E2	0.60 *21*	0.136 *18*	%Iγ=2.63 *15* α(K)=0.109 *15*; α(L)=0.0204 *18*; α(M)=0.0049 *4* α(N)=0.00125 *11*; α(O)=0.000260 *23*; α(P)=3.3×10^{-5} *4* Mult.: α(K)exp=0.116 *12* and α(L)exp=0.0196 *30* (1982Ku20); α(K)exp=0.08 *3* (1971Jo19).
455.14 *18*	1.58 *8*	1856.20	11/2$^+$	1400.80	9/2$^+$	M1+E2	0.38 *+20−33*	0.148 *16*	%Iγ=0.75 *4* α(K)=0.120 *14*; α(L)=0.0214 *17*; α(M)=0.0051 *4*

$^{205}_{84}Po_{121}$-5

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
									α(N)=0.00130 *10*; α(O)=0.000272 *21*; α(P)=3.5×10^{-5} *3* Mult.: α(K)exp=0.120 *13* (1982Ku20).
[x]462.5 *1*	1.8 *4*								%Iγ=0.86 *19* E_γ,I_γ: From 1971Jo19.
484.00 *26*	0.65 *9*	1651.35	7/2$^-$	1167.81	7/2$^-$	M1+E2	1.5 *4*	0.067 *16*	%Iγ=0.31 *4* α(K)=0.051 *13*; α(L)=0.0118 *17*; α(M)=0.0029 *4* α(N)=0.00074 *10*; α(O)=0.000150 *21*; α(P)=1.8×10^{-5} *3* Mult.: α(K)exp=0.051 *8* (1982Ku20).
487.86 *11*	1.80 *9*	872.10	7/2$^-$	384.34	(3/2)$^-$	E2		0.0341	%Iγ=0.86 *5* α(K)=0.0233 *4*; α(L)=0.00808 *12*; α(M)=0.00203 *3* α(N)=0.000522 *8*; α(O)=0.0001041 *15*; α(P)=1.138×10^{-5} *16* Mult.: α(K)exp=0.019 *4* (1982Ku20).
[x]506.2 *3*	0.5 *4*								%Iγ=0.24 *19* E_γ,I_γ: From 1971Jo19.
[x]511	14.3 *9*								%Iγ=6.8 *5*
516.04 *12*	4.24 *30*	2149.35	(7/2)$^+$	1633.30	5/2$^+$	M1		0.1172	%Iγ=2.02 *15* α(K)=0.0956 *14*; α(L)=0.01648 *23*; α(M)=0.00388 *6* α(N)=0.000998 *14*; α(O)=0.000209 *3*; α(P)=2.70×10^{-5} *4* Mult.: α(K)exp=0.0185 *21* and α(L)exp≈0.006 (1982Ku20); α(K)exp=0.10 *4* (1971Jo19).
520.44 *6*	14.4 *6*	1400.80	9/2$^+$	880.31	13/2$^+$	E2		0.0292	%Iγ=6.87 *34* α(K)=0.0204 *3*; α(L)=0.00661 *10*; α(M)=0.001657 *24* α(N)=0.000426 *6*; α(O)=8.51×10^{-5} *12*; α(P)=9.41×10^{-6} *14* Mult.: α(K)exp=0.0186 *17* and α(L)exp=0.0061 *6* (1982Ku20); α(K)exp=0.015 *8* (1971Jo19).
528.90 *13*	2.33 *14*	1400.80	9/2$^+$	872.10	7/2$^-$	E1+M2	0.18 *6*	0.019 *7*	%Iγ=1.11 *7* α(K)=0.015 *6*; α(L)=0.0028 *12*; α(M)=0.0007 *3* α(N)=0.00017 *8*; α(O)=3.6×10^{-5} *16*; α(P)=4.6×10^{-6} *20* Mult.: α(K)exp=0.015 *4* (1982Ku20).
553.94 *7*	2.01 *14*	1426.05	9/2$^-$	872.10	7/2$^-$	M1+E2	0.70 *22*	0.073 *11*	%Iγ=0.96 *7* α(K)=0.059 *9*; α(L)=0.0110 *12*; α(M)=0.0026 *3* α(N)=0.00067 *7*; α(O)=0.000139 *15*; α(P)=1.76×10^{-5} *21* Mult.: α(K)exp=0.059 *8* (1982Ku20).
[x]566.2 *7*	1.39 *25*					M1		0.0917	%Iγ=0.66 *12* α(K)=0.0748 *11*; α(L)=0.01286 *19*; α(M)=0.00303 *5* α(N)=0.000778 *12*; α(O)=0.0001630 *24*; α(P)=2.11×10^{-5} *3* Mult.: α(K)exp=0.094 *20* (1982Ku20).
568.5 *7*	1.76 *30*	3052.2	(7/2)$^+$	2483.49	(7/2,9/2,11/2)$^+$	M1+E2	1.3 *+6−4*	0.049 *13*	%Iγ=0.84 *14* α(K)=0.038 *11*; α(L)=0.0079 *14*; α(M)=0.0019 *4* α(N)=0.00049 *8*; α(O)=0.000101 *18*; α(P)=1.24×10^{-5} *25* Mult.: α(K)exp=0.039 *9* (1982Ku20).

$^{205}_{84}Po_{121}$-6

γ(^{205}Po) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
[x]577.10 *9*	1.80 *13*					M1+E2		0.0872	%Iγ=0.86 *7* α(K)=0.0712 *10*; α(L)=0.01223 *18*; α(M)=0.00288 *4* α(N)=0.000740 *11*; α(O)=0.0001549 *22*; α(P)=2.01×10^{-5} *3* Mult.: α(K)exp=0.043 *5* (1982Ku20).
[x]583.7 *2*	0.9 *4*								%Iγ=0.43 *19* E_γ,I_γ: From 1971Jo19.
[x]587.04 *8*	1.61 *17*					E2		0.0221	%Iγ=0.77 *8* α(K)=0.01601 *23*; α(L)=0.00462 *7*; α(M)=0.001149 *16* α(N)=0.000295 *5*; α(O)=5.93×10^{-5} *9*; α(P)=6.70×10^{-6} *10* Mult.: α(K)exp=0.016 *2* (1982Ku20).
[x]595.43 *10*	1.72 *11*					M1+E2		0.0803	%Iγ=0.82 *6* α(K)=0.0655 *10*; α(L)=0.01125 *16*; α(M)=0.00265 *4* α(N)=0.000681 *10*; α(O)=0.0001425 *20*; α(P)=1.85×10^{-5} *3* Mult.: α(K)exp=0.041 *5* (1982Ku20).
617.80 *7*	7.16 *32*	1400.80	9/2$^+$	783.00	7/2$^-$	E1+M2	0.14 *3*	0.0103 *17*	%Iγ=3.41 *18* α(K)=0.0084 *14*; α(L)=0.0015 *3*; α(M)=0.00035 *7* α(N)=9.1×10^{-5} *18*; α(O)=1.9×10^{-5} *4*; α(P)=2.4×10^{-6} *5* Mult.: α(K)exp=0.0082 *9* (1982Ku20); α(K)exp≤0.009 (1971Jo19).
628.88 *7*	18.3 *13*	783.00	7/2$^-$	154.196	3/2$^-$	E2		0.0190	%Iγ=8.7 *7* α(K)=0.01397 *20*; α(L)=0.00380 *6*; α(M)=0.000940 *14* α(N)=0.000241 *4*; α(O)=4.87×10^{-5} *7*; α(P)=5.57×10^{-6} *8* Mult.: α(K)exp=0.0175 *18* (1982Ku20); α(K)exp=0.025 *8* (1971Jo19).
[x]636.85 *15*	0.82 *10*								%Iγ=0.39 *5*
644.86 *20*	1.08 *8*	799.02	(5/2)$^-$	154.196	3/2$^-$	M1+E2	0.59 *25*	0.053 *8*	%Iγ=0.52 *4* α(K)=0.043 *7*; α(L)=0.0077 *9*; α(M)=0.00181 *20* α(N)=0.00047 *6*; α(O)=9.7×10^{-5} *11*; α(P)=1.24×10^{-5} *16* Mult.: α(K)exp=0.043 *6* (1982Ku20).
649.5 *7*	1.10 *15*	2799.20	(9/2)$^+$	2149.35	(7/2)$^+$	M1+E2	0.84 *+31−25*	0.045 *8*	%Iγ=0.52 *7* α(K)=0.036 *7*; α(L)=0.0067 *9*; α(M)=0.00159 *20* α(N)=0.00041 *5*; α(O)=8.5×10^{-5} *11*; α(P)=1.07×10^{-5} *15* Mult.: α(K)exp=0.036 *6* (1982Ku20).
652.5 *7*	1.50 *38*	806.45	(5/2)$^-$	154.196	3/2$^-$	M1+E2	1.3 *+9−5*	0.034 *11*	%Iγ=0.72 *18* α(K)=0.027 *10*; α(L)=0.0054 *13*; α(M)=0.0013 *3* α(N)=0.00034 *8*; α(O)=6.9×10^{-5} *17*; α(P)=8.6×10^{-6} *23* Mult.: α(K)exp=0.028 *8* (1982Ku20).
659.63 *6*	7.36 *32*	1539.94	9/2$^+$	880.31	13/2$^+$	E2		0.01714	%Iγ=3.51 *18* α(K)=0.01273 *18*; α(L)=0.00333 *5*; α(M)=0.000821 *12* α(N)=0.000211 *3*; α(O)=4.26×10^{-5} *6*; α(P)=4.91×10^{-6} *7* E_γ: Not in coin with any γ (1982Ku21), suggesting decay either to g.s. or to isomer. Mult.: α(K)exp=0.0137 *15* (1982Ku20).

γ(^{205}Po) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
669.41 *4*	28.1 *12*	669.43	9/2$^-$	0.0	5/2$^-$	E2		0.01661	%Iγ=13.4 *6* α(K)=0.01237 *18*; α(L)=0.00320 *5*; α(M)=0.000788 *11* α(N)=0.000202 *3*; α(O)=4.10×10^{-5} *6*; α(P)=4.73×10^{-6} *7* Mult.: α(K)exp=0.0117 *10* and α(M)exp=0.00084 *8* (1982Ku20); α(K)exp=0.015 *6* (1971Jo19).
672.85 *5*	10.5 *5*	1553.17	(11/2)$^+$	880.31	13/2$^+$	M1+E2	1.79 *+33−24*	0.0264 *24*	%Iγ=5.01 *27* α(K)=0.0207 *20*; α(L)=0.0043 *3*; α(M)=0.00105 *7* α(N)=0.000269 *17*; α(O)=5.5×10^{-5} *4*; α(P)=6.7×10^{-6} *5* Mult.: α(K)exp=0.0208 *20* (1982Ku20); α(K)exp=0.018 *9* (1971Jo19).
691.4 *6*	1.15 *14*	3046.72	7/2$^+$	2355.56	9/2$^+$	M1(+E2)	≤0.5	0.050 *4*	%Iγ=0.55 *7* α(K)=0.041 *4*; α(L)=0.0071 *5*; α(M)=0.00167 *11* α(N)=0.00043 *3*; α(O)=9.0×10^{-5} *6*; α(P)=1.16×10^{-5} *9* Mult.: α(K)exp=0.046 *8* (1982Ku20).
[x]693.5 *7*	0.71 *11*					M1		0.0538	%Iγ=0.34 *5* α(K)=0.0440 *7*; α(L)=0.00751 *11*; α(M)=0.00177 *3* α(N)=0.000454 *7*; α(O)=9.51×10^{-5} *14*; α(P)=1.232×10^{-5} *18* Mult.: α(K)exp=0.056 *10* (1982Ku20).
719.30 *4*	100	719.28	9/2$^-$	0.0	5/2$^-$	E2		0.01426	%Iγ=47.7 *8* α(K)=0.01077 *15*; α(L)=0.00264 *4*; α(M)=0.000647 *9* α(N)=0.0001662 *24*; α(O)=3.37×10^{-5} *5*; α(P)=3.94×10^{-6} *6* Mult.: α(K)exp=0.0109, α(L)exp=0.00270 *20*, α(M)exp=0.00066 *7* and α(N)exp=0.00022 *3* (1982Ku20); α(K)exp=0.011 *3* (1971Jo19); K/(L+M)=3.67 *53* (1970Ho15).
725.51 *30*	1.92 *10*	1394.94	(9/2)$^-$	669.43	9/2$^-$	M1+E2	1.9 *+5−4*	0.021 *3*	%Iγ=0.92 *5* α(K)=0.017 *3*; α(L)=0.0035 *4*; α(M)=0.00084 *9* α(N)=0.000215 *22*; α(O)=4.4×10^{-5} *5*; α(P)=5.4×10^{-6} *7* Mult.: α(K)exp=0.017 *2* (1982Ku20).
744.26 *30*	0.94 *8*	1912.00	9/2$^+$	1167.81	7/2$^-$	[E1]		0.00468	%Iγ=0.45 *4* α(K)=0.00387 *6*; α(L)=0.000615 *9*; α(M)=0.0001430 *20* α(N)=3.66×10^{-5} *6*; α(O)=7.60×10^{-6} *11*; α(P)=9.60×10^{-7} *14*
748.45 *30*	0.95 *12*	902.26	(7/2)$^-$	154.196	3/2$^-$	(E2)		0.01313	%Iγ=0.45 *6* α(K)=0.00998 *14*; α(L)=0.00238 *4*; α(M)=0.000582 *9* α(N)=0.0001495 *21*; α(O)=3.04×10^{-5} *5*; α(P)=3.57×10^{-6} *5* Mult.: α(K)exp≤0.011 (1982Ku20).
756.82 *18*	2.06 *13*	1426.05	9/2$^-$	669.43	9/2$^-$	E2(+M1)		0.0428	%Iγ=0.98 *7* α(K)=0.0350 *5*; α(L)=0.00597 *9*; α(M)=0.001402 *20* α(N)=0.000361 *5*; α(O)=7.56×10^{-5} *11*; α(P)=9.79×10^{-6}

$^{205}_{84}$Po$_{121}$-8

γ(^{205}Po) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
									14 Mult.: α(K)exp=0.0078 *25* (1982Ku20).
760.5 *5*	0.49 *7*	1633.30	5/2$^+$	872.10	7/2$^-$	[E1]		0.00449	%Iγ=0.234 *34* α(K)=0.00372 *6*; α(L)=0.000589 *9*; α(M)=0.0001371 *20* α(N)=3.51×10^{-5} *5*; α(O)=7.29×10^{-6} *11*; α(P)=9.22×10^{-7} *13*
782.80 *12*	6.41 *28*	783.00	7/2$^-$	0.0	5/2$^-$	M1+E2	2.8 *+12−6*	0.0151 *16*	%Iγ=3.06 *15* α(K)=0.0118 *14*; α(L)=0.00250 *20*; α(M)=0.00060 *5* α(N)=0.000155 *12*; α(O)=3.18×10^{-5} *25*; α(P)=3.9×10^{-6} *4*
									Mult.: α(K)exp=0.0117 *12* (1982Ku20).
[x]789.20 *16*	4.16 *22*					(E2)		0.01177	%Iγ=1.98 *12* α(K)=0.00902 *13*; α(L)=0.00208 *3*; α(M)=0.000507 *7* α(N)=0.0001301 *19*; α(O)=2.65×10^{-5} *4*; α(P)=3.14×10^{-6} *5*
									Mult.: α(K)exp≈0.010 (1982Ku20).
792.5 *3*	1.69 *18*	2187.88	(11/2)$^+$	1394.94	(9/2)$^-$	(E1)		0.00416	%Iγ=0.81 *9* α(K)=0.00345 *5*; α(L)=0.000544 *8*; α(M)=0.0001265 *18* α(N)=3.24×10^{-5} *5*; α(O)=6.73×10^{-6} *10*; α(P)=8.52×10^{-7} *12*
									Mult.: α(K)exp=0.0207 (1982Ku20).
802.0 *8*	0.78 *11*	2355.56	9/2$^+$	1553.17	(11/2)$^+$	(M1)		0.0368	%Iγ=0.37 *5* α(K)=0.0301 *5*; α(L)=0.00513 *8*; α(M)=0.001204 *18* α(N)=0.000310 *5*; α(O)=6.49×10^{-5} *10*; α(P)=8.41×10^{-6} *12*
									Mult.: α(K)exp≈0.019 (1982Ku20).
806.44 *8*	1.72 *12*	806.45	(5/2)$^-$	0.0	5/2$^-$	M1+E2	0.4 *3*	0.033 *5*	%Iγ=0.82 *6* α(K)=0.027 *4*; α(L)=0.0046 *6*; α(M)=0.00109 *14* α(N)=0.00028 *4*; α(O)=5.9×10^{-5} *8*; α(P)=7.6×10^{-6} *11*
									Mult.: α(K)exp=0.027 *4* (1982Ku20).
[x]819.49 *10*	2.14 *17*					M1+E2		0.0348	%Iγ=1.02 *9* α(K)=0.0285 *4*; α(L)=0.00484 *7*; α(M)=0.001138 *16* α(N)=0.000293 *4*; α(O)=6.13×10^{-5} *9*; α(P)=7.94×10^{-6} *12*
									Mult.: α(K)exp=0.013 *2* (1982Ku20).
845.2 *8*	1.13 *10*	1651.35	7/2$^-$	806.45	(5/2)$^-$	M1(+E2)	≤0.4	0.0306 *16*	%Iγ=0.54 *5* α(K)=0.0250 *14*; α(L)=0.00428 *20*; α(M)=0.00101 *5* α(N)=0.000259 *12*; α(O)=5.42×10^{-5} *25*; α(P)=7.0×10^{-6} *4*
									Mult.: α(K)exp=0.032 *5* (1982Ku20).
859.2 *4*	0.95 *20*	1761.32	(7/2,9/2)$^-$	902.26	(7/2)$^-$	M1+E2	2.1 *9*	0.014 *5*	%Iγ=0.45 *10* α(K)=0.011 *4*; α(L)=0.0022 *6*; α(M)=0.00052 *14*

$^{205}_{84}Po_{121}$-9

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
									α(N)=0.00013 *4*; α(O)=2.7×10^{-5} *8*; α(P)=3.4×10^{-6} *10* Mult.: α(K)exp=0.011 *4* (1982Ku20).
872.4 *5*	10.2 *15*	872.10	7/2$^-$	0.0	5/2$^-$	M1+E2	0.6 *5*	0.024 *6*	%Iγ=4.9 *8* α(K)=0.020 *5*; α(L)=0.0035 *7*; α(M)=0.00081 *17* α(N)=0.00021 *5*; α(O)=4.4×10^{-5} *9*; α(P)=5.6×10^{-6} *12* Mult.: α(K)exp=0.020 *4* (1982Ku20).
890.0 *10*	0.50 *9*	2799.20	(9/2)$^+$	1908.38	(5/2$^+$)				%Iγ=0.24 *4* α(K)=0.0230 *4*; α(L)=0.00390 *6*; α(M)=0.000916 *14* α(N)=0.000236 *4*; α(O)=4.94×10^{-5} *7*; α(P)=6.40×10^{-6} *10* α(K)exp≈0.026 (1982Ku20).
902.22 *10*	1.42 *7*	902.26	(7/2)$^-$	0.0	5/2$^-$	M1+E2	2.4 *9*	0.012 *3*	%Iγ=0.68 *4* α(K)=0.0093 *25*; α(L)=0.0018 *4*; α(M)=0.00044 *9* α(N)=0.000113 *22*; α(O)=2.3×10^{-5} *5*; α(P)=2.9×10^{-6} *7* Mult.: α(K)exp=0.0093 *25* (1982Ku20).
[x]≈913.5	0.44 *6*								%Iγ=0.210 *29*
929.61 *14*	1.75 *14*	2355.56	9/2$^+$	1426.05	9/2$^-$	(E1)		0.00310	%Iγ=0.83 *7* α(K)=0.00257 *4*; α(L)=0.000402 *6*; α(M)=9.33×10^{-5} *13* α(N)=2.39×10^{-5} *4*; α(O)=4.97×10^{-6} *7*; α(P)=6.33×10^{-7} *9* Mult.: α(K)exp≈0.0046 (1982Ku20).
932.0 *10*	0.57 *8*	1651.35	7/2$^-$	719.28	9/2$^-$	(M1)		0.0250	%Iγ=0.27 *4* α(K)=0.0204 *3*; α(L)=0.00346 *5*; α(M)=0.000812 *12* α(N)=0.000209 *3*; α(O)=4.38×10^{-5} *7*; α(P)=5.67×10^{-6} *9* Mult.: α(K)exp≈0.021 (1982Ku20). Value overlaps with that for 936.03γ.
[x]936.03 *15*	1.26 *17*					(E2)		0.00837	%Iγ=0.60 *8* α(K)=0.00656 *10*; α(L)=0.001373 *20*; α(M)=0.000331 *5* α(N)=8.50×10^{-5} *12*; α(O)=1.743×10^{-5} *25*; α(P)=2.11×10^{-6} *3* Mult.: α(K)exp=0.009 (1982Ku20). Ice value overlaps with that for 932.0γ.
[x]941.94 *20*	1.37 *15*								%Iγ=0.65 *7* E_γ: Possibly a doublet.
[x]947.45 *20*	0.66 *12*					M1		0.0239	%Iγ=0.31 *6* α(K)=0.0196 *3*; α(L)=0.00331 *5*; α(M)=0.000778 *11* α(N)=0.000200 *3*; α(O)=4.19×10^{-5} *6*; α(P)=5.44×10^{-6} *8* Mult.: α(K)exp=0.026 *9* (1982Ku20).
955.3 *5*	0.69 *18*	2355.56	9/2$^+$	1400.80	9/2$^+$	M1+E2	1.1 *+31−7*	0.015 *7*	%Iγ=0.33 *9* α(K)=0.012 *6*; α(L)=0.0022 *8*; α(M)=0.00052 *19* α(N)=0.00013 *5*; α(O)=2.8×10^{-5} *10*; α(P)=3.5×10^{-6} *14* Mult.: α(K)exp=0.012 *5* (1982Ku20).
961.05 *20*	1.06 *9*	2355.56	9/2$^+$	1394.94	(9/2)$^-$	(E1)		0.00292	%Iγ=0.51 *4* α(K)=0.00242 *4*; α(L)=0.000378 *6*; α(M)=8.77×10^{-5} *13* α(N)=2.25×10^{-5} *4*; α(O)=4.67×10^{-6} *7*; α(P)=5.96×10^{-7} *9* Mult.: α(K)exp≈0.0033 (1982Ku20).

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [#]	α [@]	Comments
[x]971.87 *35*	0.78 *6*					(M1)		0.0224	%Iγ=0.372 *30* α(K)=0.0183 *3*; α(L)=0.00310 *5*; α(M)=0.000728 *11* α(N)=0.000187 *3*; α(O)=3.92×10^{-5} *6*; α(P)=5.09×10^{-6} *8* Mult.: α(K)exp≈0.009 (1982Ku20).
976.00 *12*	2.97 *12*	1856.20	11/2$^+$	880.31	13/2$^+$	M1+E2	0.94 *+27−22*	0.0154 *19*	%Iγ=1.42 *7* α(K)=0.0125 *16*; α(L)=0.00221 *24*; α(M)=0.00052 *6* α(N)=0.000134 *14*; α(O)=2.8×10^{-5} *3*; α(P)=3.6×10^{-6} *4* E_γ: Not in coin with any γ (1982Ku21), suggesting decay either to g.s. or to isomer. Mult.: α(K)exp=0.0125 *15* (1982Ku20).
[x]993.3 *3*	1.10 *20*					(M1)		0.0212	%Iγ=0.52 *10* α(K)=0.01733 *25*; α(L)=0.00293 *5*; α(M)=0.000688 *10* α(N)=0.0001769 *25*; α(O)=3.71×10^{-5} *6*; α(P)=4.81×10^{-6} *7* Mult.: α(K)exp=0.009 *3* (1982Ku20).
[x]1013.70 *14*	2.05 *9*					(E1)		0.00265	%Iγ=0.98 *5* α(K)=0.00220 *3*; α(L)=0.000342 *5*; α(M)=7.94×10^{-5} *12* α(N)=2.03×10^{-5} *3*; α(O)=4.23×10^{-6} *6*; α(P)=5.41×10^{-7} *8* Mult.: α(K)exp=0.0035 *12* (1982Ku20).
[x]1026.2 *3*	3.0 *6*								%Iγ=1.43 *29* E_γ,I_γ: From 1971Jo19.
1031.69 *8*	6.5 *6*	1912.00	9/2$^+$	880.31	13/2$^+$	E2		0.00693	%Iγ=3.10 *30* α(K)=0.00548 *8*; α(L)=0.001097 *16*; α(M)=0.000263 *4* α(N)=6.75×10^{-5} *10*; α(O)=1.389×10^{-5} *20*; α(P)=1.698×10^{-6} *24* E_γ: Not in coin with any γ (1982Ku21), suggesting decay either to g.s. or to isomer. Mult.: α(K)exp=0.0066 *10* (1982Ku20); α(K)exp=0.008 *4* (1971Jo19).
[x]1038.0 *10*	0.50 *10*					M1		0.0189	%Iγ=0.24 *5* α(K)=0.01547 *22*; α(L)=0.00261 *4*; α(M)=0.000613 *9* α(N)=0.0001577 *23*; α(O)=3.30×10^{-5} *5*; α(P)=4.29×10^{-6} *6* Mult.: α(K)exp=0.014 *3* (1982Ku20).
[x]1064.0 *10*	0.47 *5*					M1		0.0177	%Iγ=0.224 *25* α(K)=0.01452 *21*; α(L)=0.00245 *4*; α(M)=0.000575 *9* α(N)=0.0001479 *21*; α(O)=3.10×10^{-5} *5*; α(P)=4.02×10^{-6} *6* Mult.: α(K)exp=0.014 *3* (1982Ku20).
[x]1071.82 *32*	0.52 *5*					(M1)		0.01740	%Iγ=0.248 *25* α(K)=0.01425 *20*; α(L)=0.00240 *4*; α(M)=0.000564 *8* α(N)=0.0001451 *21*; α(O)=3.04×10^{-5} *5*; α(P)=3.94×10^{-6} *6* Mult.: α(K)exp≈0.014 (1982Ku20).

$^{205}_{84}Po_{121}$-11

γ(^{205}Po) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
1082.72 *22*	1.85 *12*	2483.49	(7/2,9/2,11/2)$^+$	1400.80	9/2$^+$	(M1)	0.01695	%Iγ=0.88 *6* α(K)=0.01388 *20*; α(L)=0.00234 *4*; α(M)=0.000549 *8* α(N)=0.0001413 *20*; α(O)=2.96×10^{-5} *5*; α(P)=3.84×10^{-6} *6* Mult.: α(K)exp≈0.0032 (1982Ku20).
1091.84 *25*	0.66 *7*	1761.32	(7/2,9/2)$^-$	669.43	9/2$^-$			%Iγ=0.315 *34*
1101.84 *25*	0.62 *10*	1908.38	(5/2$^+$)	806.45	(5/2)$^-$			%Iγ=0.30 *5*
[x]1160.5 *10*	0.42 *6*							%Iγ=0.200 *29*
1167.40 *22*	0.69 *7*	1167.81	7/2$^-$	0.0	5/2$^-$			%Iγ=0.33 *4*
1171.04 *8*	2.28 *12*	1954.05	(11/2)$^-$	783.00	7/2$^-$	E2	0.00544	%Iγ=1.09 *6* α(K)=0.00435 *6*; α(L)=0.000827 *12*; α(M)=0.000197 *3* α(N)=5.06×10^{-5} *7*; α(O)=1.045×10^{-5} *15*; α(P)=1.293×10^{-6} *19*; α(IPF)=1.80×10^{-6} *3* Mult.: α(K)exp=0.0040 *6* (1982Ku20).
[x]≈1174.5	≈0.35							%Iγ≈0.167
1187.6 *5*	0.460 *23*	2355.56	9/2$^+$	1167.81	7/2$^-$	[E1]	0.00202	%Iγ=0.219 *12* α(K)=0.001669 *24*; α(L)=0.000257 *4*; α(M)=5.95×10^{-5} *9* α(N)=1.525×10^{-5} *22*; α(O)=3.18×10^{-6} *5*; α(P)=4.08×10^{-7} *6*; α(IPF)=1.129×10^{-5} *21*
1194.0 *10*	0.43 *8*	1912.00	9/2$^+$	719.28	9/2$^-$	[E1]	0.00200	%Iγ=0.21 *4* α(K)=0.001654 *24*; α(L)=0.000254 *4*; α(M)=5.89×10^{-5} *9* α(N)=1.510×10^{-5} *22*; α(O)=3.15×10^{-6} *5*; α(P)=4.04×10^{-7} *6*; α(IPF)=1.30×10^{-5} *4*
1242.2 *5*	0.98 *13*	1912.00	9/2$^+$	669.43	9/2$^-$	[E1]	0.00188	%Iγ=0.47 *6* α(K)=0.001544 *22*; α(L)=0.000237 *4*; α(M)=5.49×10^{-5} *8* α(N)=1.407×10^{-5} *20*; α(O)=2.93×10^{-6} *5*; α(P)=3.77×10^{-7} *6*; α(IPF)=2.84×10^{-5} *5*
1246.2 *5*	1.18 *8*	2799.20	(9/2)$^+$	1553.17	(11/2)$^+$	M1	0.01182	%Iγ=0.56 *4* α(K)=0.00967 *14*; α(L)=0.001625 *23*; α(M)=0.000381 *6* α(N)=9.81×10^{-5} *14*; α(O)=2.05×10^{-5} *3*; α(P)=2.67×10^{-6} *4*; α(IPF)=1.559×10^{-5} *25* Mult.: α(K)exp=0.0113 *19* (1982Ku20).
[x]1252.02 *11*	1.80 *10*					M1+E2	0.01168	%Iγ=0.86 *5* α(K)=0.00956 *14*; α(L)=0.001606 *23*; α(M)=0.000377 *6* α(N)=9.69×10^{-5} *14*; α(O)=2.03×10^{-5} *3*; α(P)=2.63×10^{-6} *4*; α(IPF)=1.683×10^{-5} *24* Mult.: α(K)exp=0.0069 *14* (1982Ku20).
1262.5 *10*	0.53 *8*	3170.9	(7/2)$^+$	1908.38	(5/2$^+$)	(M1)	0.01143 *17*	%Iγ=0.25 *4* α(K)=0.00936 *14*; α(L)=0.001571 *23*; α(M)=0.000369 *6* α(N)=9.48×10^{-5} *14*; α(O)=1.99×10^{-5} *3*; α(P)=2.58×10^{-6} *4*; α(IPF)=1.92×10^{-5} *4* Mult.: α(K)exp≈0.0075 (1982Ku20).

$^{205}_{84}Po_{121}$-12

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [#]	α [@]	Comments
1307.60 *8*	3.48 *22*	2187.88	(11/2)$^+$	880.31	13/2$^+$	M1(+E2)	≤0.7	0.0095 *10*	%Iγ=1.66 *11* α(K)=0.0077 *9*; α(L)=0.00131 *13*; α(M)=0.00031 *3* α(N)=7.9×10^{-5} *8*; α(O)=1.65×10^{-5} *17*; α(P)=2.14×10^{-6} *22*; α(IPF)=2.83×10^{-5} *24* E_γ: Not in coin with any γ (1982Ku21), suggesting decay either to g.s. or to isomer. Mult.: α(K)exp=0.0080 *8* (1982Ku20).
1324.95 *8*	4.14 *24*	2355.56	9/2$^+$	1030.38	(11/2)$^-$	E1+M2	0.32 *5*	0.0038 *6*	%Iγ=1.97 *13* α(K)=0.0030 *5*; α(L)=0.00052 *9*; α(M)=0.000122 *22* α(N)=3.1×10^{-5} *6*; α(O)=6.5×10^{-6} *12*; α(P)=8.4×10^{-7} *15*; α(IPF)=5.71×10^{-5} *17* Mult.: α(K)exp=0.0030 *4* (1982Ku20).
[x]1325.4 *3*	4.2 *5*								%Iγ=2.00 *24* E_γ,I_γ: From 1971Jo19.
1342.3 *10*	0.44 *4*	2149.35	(7/2)$^+$	806.45	(5/2)$^-$				%Iγ=0.210 *20*
[x]1358.2 *5*	0.66 *6*								%Iγ=0.315 *30*
1374.0 *10*	0.45 *5*	2799.20	(9/2)$^+$	1426.05	9/2$^-$				%Iγ=0.215 *25*
1377.5 *10*	0.64 *8*	2930.82	(9/2)$^+$	1553.17	(11/2)$^+$	M1(+E2)	≤0.4	0.0088 *4*	%Iγ=0.31 *4* α(K)=0.0072 *3*; α(L)=0.00121 *5*; α(M)=0.000283 *12* α(N)=7.3×10^{-5} *3*; α(O)=1.53×10^{-5} *7*; α(P)=1.98×10^{-6} *9*; α(IPF)=5.36×10^{-5} *20* Mult.: α(K)exp=0.011 *2* (1982Ku20).
[x]1389.0 *10*	0.73 *7*					(M1+E2)		0.00899	%Iγ=0.348 *35* α(K)=0.00732 *11*; α(L)=0.001227 *18*; α(M)=0.000288 *4* α(N)=7.40×10^{-5} *11*; α(O)=1.550×10^{-5} *22*; α(P)=2.01×10^{-6} *3*; α(IPF)=6.02×10^{-5} *10* Mult.: α(K)exp≈0.0048 (1982Ku20).
1398.3 *3*	1.23 *9*	2799.20	(9/2)$^+$	1400.80	9/2$^+$	M1(+E2)	≤0.3	0.00864 *24*	%Iγ=0.59 *5* α(K)=0.00703 *20*; α(L)=0.00118 *4*; α(M)=0.000277 *8* α(N)=7.11×10^{-5} *19*; α(O)=1.49×10^{-5} *4*; α(P)=1.93×10^{-6} *6*; α(IPF)=6.30×10^{-5} *16* Mult.: α(K)exp=0.0091 *10* (1982Ku20).
1410.0 *10*	0.36 *6*	3170.9	(7/2)$^+$	1761.32	(7/2,9/2)$^-$				%Iγ=0.172 *29*
1413.43 *20*	1.17 *9*	3046.72	7/2$^+$	1633.30	5/2$^+$	M1(+E2)	≤0.4	0.0083 *4*	%Iγ=0.56 *5* α(K)=0.0067 *3*; α(L)=0.00113 *5*; α(M)=0.000265 *11* α(N)=6.8×10^{-5} *3*; α(O)=1.43×10^{-5} *6*; α(P)=1.85×10^{-6} *8*; α(IPF)=6.87×10^{-5} *25* Mult.: α(K)exp=0.0082 *11* (1982Ku20).
[x]1429.24 *36*	0.48 *5*					(M1)		0.00838	%Iγ=0.229 *25* α(K)=0.00681 *10*; α(L)=0.001140 *16*; α(M)=0.000267 *4* α(N)=6.87×10^{-5} *10*; α(O)=1.440×10^{-5} *21*; α(P)=1.87×10^{-6} *3*; α(IPF)=7.82×10^{-5} *11* Mult.: α(K)exp≈0.008 (1982Ku20).

$^{205}_{84}Po_{121}$-13

γ(^{205}Po) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
[x]1437.0 *5*	0.56 *8*								%Iγ=0.27 *4*
[x]1442.89 *20*	1.11 *8*					E2		0.00373	%Iγ=0.53 *4* α(K)=0.00298 *5*; α(L)=0.000532 *8*; α(M)=0.0001257 *18* α(N)=3.23×10^{-5} *5*; α(O)=6.69×10^{-6} *10*; α(P)=8.41×10^{-7} *12*; α(IPF)=4.60×10^{-5} *7* Mult.: α(K)exp=0.0036 *6* (1982Ku20).
[x]1455.8 *4*	0.72 *8*								%Iγ=0.34 *4*
1475.36 *9*	2.75 *13*	2355.56	9/2$^+$	880.31	13/2$^+$	E2		0.00359	%Iγ=1.31 *7* α(K)=0.00287 *4*; α(L)=0.000508 *8*; α(M)=0.0001200 *17* α(N)=3.08×10^{-5} *5*; α(O)=6.39×10^{-6} *9*; α(P)=8.05×10^{-7} *12*; α(IPF)=5.51×10^{-5} *8* Mult.: α(K)exp=0.0030 *5* (1982Ku20).
1479.16 *10*	2.89 *19*	1633.30	5/2$^+$	154.196	3/2$^-$	E1+M2	0.29 *9*	0.0028 *8*	%Iγ=1.38 *10* α(K)=0.0022 *7*; α(L)=0.00036 *12*; α(M)=9.E−5 *3* α(N)=2.2×10^{-5} *8*; α(O)=4.6×10^{-6} *16*; α(P)=5.9×10^{-7} *20*; α(IPF)=0.000144 *7* Mult.: α(K)exp=0.0022 *5* (1982Ku20).
[x]1484.43 *37*	0.78 *5*					M1+E2		0.00764	%Iγ=0.372 *26* α(K)=0.00618 *9*; α(L)=0.001033 *15*; α(M)=0.000242 *4* α(N)=6.23×10^{-5} *9*; α(O)=1.306×10^{-5} *19*; α(P)=1.696×10^{-6} *24*; α(IPF)=0.0001054 *15* Mult.: α(K)exp=0.0055 *10* (1982Ku20).
[x]1488.5 *10*	≈0.45								%Iγ≈0.215
1495.4 *10*	0.50 *7*	1651.35	7/2$^-$	154.196	3/2$^-$	[E2]		0.00351	%Iγ=0.238 *34* α(K)=0.00280 *4*; α(L)=0.000494 *7*; α(M)=0.0001167 *17* α(N)=3.00×10^{-5} *5*; α(O)=6.22×10^{-6} *9*; α(P)=7.83×10^{-7} *11*; α(IPF)=6.10×10^{-5} *9*
1531.3 *8*	0.64 *5*	2930.82	(9/2)$^+$	1400.80	9/2$^+$				%Iγ=0.305 *25*
1537.2 *4*	1.55 *8*	3170.9	(7/2)$^+$	1633.30	5/2$^+$	M1(+E2)	≤0.5	0.0067 *4*	%Iγ=0.74 *4* α(K)=0.0054 *3*; α(L)=0.00090 *5*; α(M)=0.000210 *12* α(N)=5.4×10^{-5} *3*; α(O)=1.13×10^{-5} *7*; α(P)=1.47×10^{-6} *9*; α(IPF)=0.000128 *7* Mult.: α(K)exp=0.0061 *8* (1982Ku20).
[x]1561.5 *10*	0.46 *6*								%Iγ=0.219 *29*
[x]1600.0 *10*	0.56 *12*								%Iγ=0.27 *6*
1632.8 *3*	1.66 *12*	1633.30	5/2$^+$	0.0	5/2$^-$	[E1]		1.42×10^{-3}	%Iγ=0.79 *6* α(K)=0.000973 *14*; α(L)=0.0001475 *21*; α(M)=3.41×10^{-5} *5* α(N)=8.74×10^{-6} *13*; α(O)=1.83×10^{-6} *3*; α(P)=2.36×10^{-7} *4*; α(IPF)=0.000259 *4*
1637.0 *5*	0.56 *11*	2355.56	9/2$^+$	719.28	9/2$^-$	[E1]		1.42×10^{-3}	%Iγ=0.27 *5* α(K)=0.000969 *14*; α(L)=0.0001468 *21*; α(M)=3.40×10^{-5} *5*

$^{205}_{84}$Po$_{121}$-14

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21 (continued)

γ(^{205}Po) (continued)

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α@	Comments
								α(N)=8.70×10^{-6} *13*; α(O)=1.82×10^{-6} *3*; α(P)=2.35×10^{-7} *4*; α(IPF)=0.000262 *4*
1651.22 *15*	1.58 *13*	1651.35	7/2$^-$	0.0	5/2$^-$	(M1)	0.00594	%Iγ=0.75 *7* α(K)=0.00471 *7*; α(L)=0.000785 *11*; α(M)=0.000184 *3* α(N)=4.73×10^{-5} *7*; α(O)=9.92×10^{-6} *14*; α(P)=1.289×10^{-6} *18*; α(IPF)=0.000204 *3* Mult.: α(K)exp≈0.0021 (1982Ku20).
1685.5 *10*	0.77 *6*	2355.56	9/2$^+$	669.43	9/2$^-$	[E1]	1.40×10^{-3}	%Iγ=0.367 *30* α(K)=0.000923 *13*; α(L)=0.0001397 *20*; α(M)=3.23×10^{-5} *5* α(N)=8.28×10^{-6} *12*; α(O)=1.731×10^{-6} *25*; α(P)=2.24×10^{-7} *4*; α(IPF)=0.000297 *5*
x1688.6 *8*	0.88 *8*							%Iγ=0.42 *4*
x1749.8 *5*	0.66 *7*							%Iγ=0.315 *34* E_γ: Possibly a doublet.
1754.7 *10*	0.42 *6*	1908.38	(5/2$^+$)	154.196	3/2$^-$			%Iγ=0.200 *29*
1761.34 *25*	1.01 *6*	1761.32	(7/2,9/2)$^-$	0.0	5/2$^-$			%Iγ=0.482 *33*
1768.79 *20*	1.09 *6*	2799.20	(9/2)$^+$	1030.38	(11/2)$^-$	(E1)	1.38×10^{-3}	%Iγ=0.520 *32* α(K)=0.000852 *12*; α(L)=0.0001287 *18*; α(M)=2.98×10^{-5} *5* α(N)=7.63×10^{-6} *11*; α(O)=1.595×10^{-6} *23*; α(P)=2.06×10^{-7} *3*; α(IPF)=0.000357 *5* Mult.: α(K)exp≤0.0018 (1982Ku20).
1775.5 *10*	0.44 *5*	3170.9	(7/2)$^+$	1394.94	(9/2)$^-$			%Iγ=0.210 *24*
x1788.5 *10*	0.46 *5*							%Iγ=0.219 *25*
x1803.5 *10*	0.47 *5*							%Iγ=0.224 *25*
x1851.5 *10*	0.37 *4*							%Iγ=0.176 *20*
x1875.0 *10*	0.48 *5*							%Iγ=0.229 *25*
x1906.70 *25*	0.92 *6*							%Iγ=0.439 *31*
1928.5 *10*	0.40 *4*	2799.20	(9/2)$^+$	872.10	7/2$^-$			%Iγ=0.191 *20*
x2006.0 *6*	0.39 *4*							%Iγ=0.186 *20*
2016.5 *10*	0.33 *6*	2799.20	(9/2)$^+$	783.00	7/2$^-$			%Iγ=0.157 *29*
2028.5 *10*	0.25 *4*	2930.82	(9/2)$^+$	902.26	(7/2)$^-$			%Iγ=0.119 *19*
x2031.9 *5*	0.93 *5*							%Iγ=0.444 *27*
2050.46 *20*	2.38 *11*	2930.82	(9/2)$^+$	880.31	13/2$^+$			%Iγ=1.14 *6*
x≈2069.5	0.23 *4*							%Iγ=0.110 *19*
x2119.4 *5*	0.36 *6*							%Iγ=0.172 *29*
2142.0 *10*	0.29 *6*	3170.9	(7/2)$^+$	1030.38	(11/2)$^-$			%Iγ=0.138 *29*
2147.0 *10*	0.35 *6*	2930.82	(9/2)$^+$	783.00	7/2$^-$			%Iγ=0.167 *29*
2160.8 *6*	0.53 *6*	3033.0	(7/2,9/2)	872.10	7/2$^-$			%Iγ=0.253 *29*
2180.7 *6*	0.36 *5*	3052.2	(7/2)$^+$	872.10	7/2$^-$			%Iγ=0.172 *24*
2268.0 *10*	≈0.4	3052.2	(7/2)$^+$	783.00	7/2$^-$			%Iγ≈0.191
2363.3 *7*	0.31 *6*	3033.0	(7/2,9/2)	669.43	9/2$^-$			%Iγ=0.148 *29*
x2709.0 *15*	≈0.3							%Iγ≈0.143
x2865.0 *15*	≈0.17							%Iγ≈0.0811

$^{205}_{84}Po_{121}$-15

γ(^{205}Po) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Comments
3033.5 *10*	0.33 *4*	3033.0	(7/2,9/2)	0.0	5/2$^-$	%Iγ=0.157 *21*
3045.5 *10*	≈0.16	3046.72	7/2$^+$	0.0	5/2$^-$	%Iγ≈0.0763
3052.0 *10*	≈0.20	3052.2	(7/2)$^+$	0.0	5/2$^-$	%Iγ≈0.0954
3172.0 *15*	≈0.18	3170.9	(7/2)$^+$	0.0	5/2$^-$	%Iγ≈0.0858

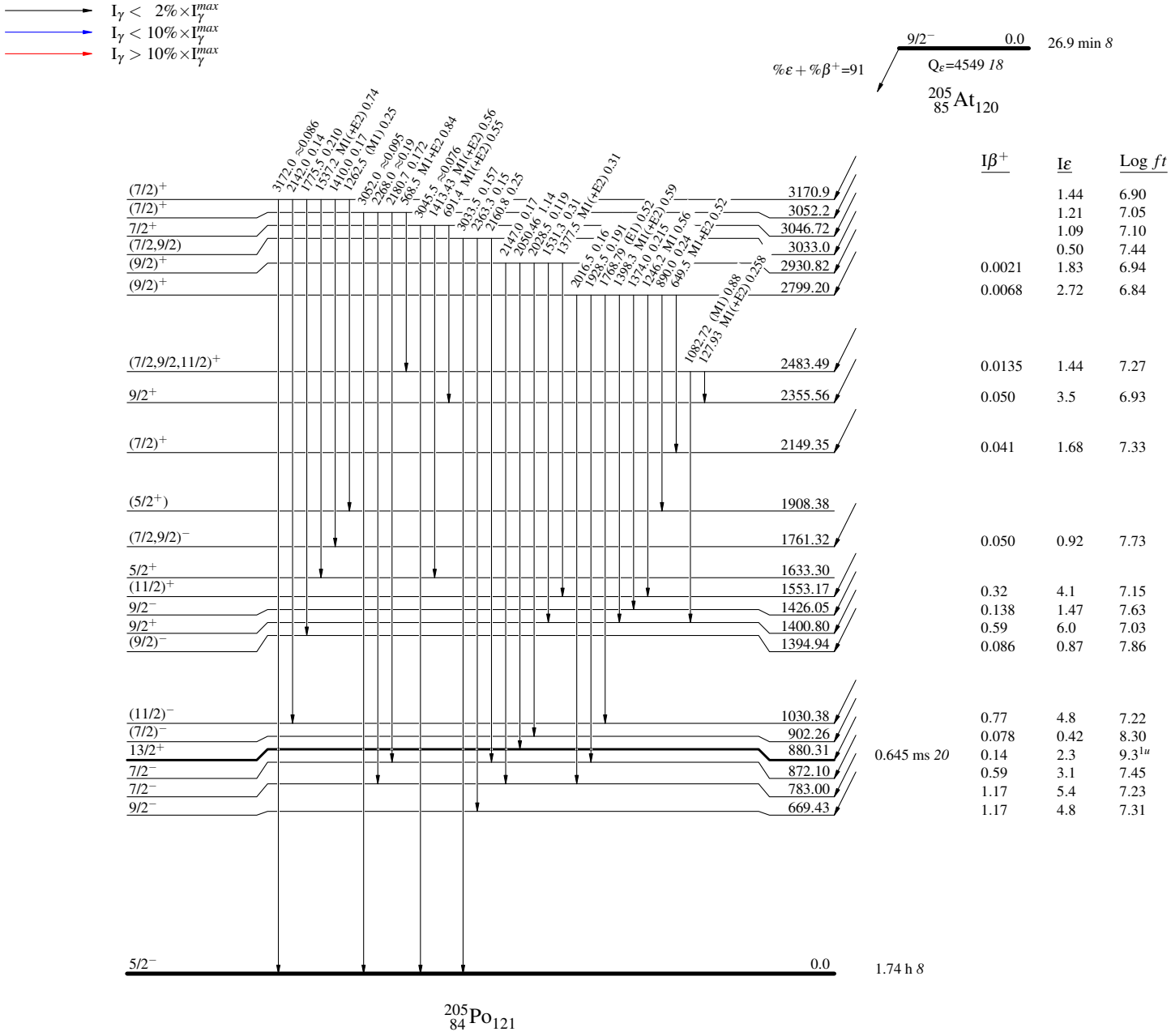
† From 1982Ku20, unless otherwise stated.
‡ From adopted gammas.
# Using the briccmixing program and the α(K)exp, α(L)exp, α(M)exp, α(L12)exp data (1982Ku20,1971Jo19).
@ Additional information 1.
& For absolute intensity per 100 decays, multiply by 0.477 *13*.
a Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

$^{205}_{84}Po_{121}$-16

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21

Decay Scheme

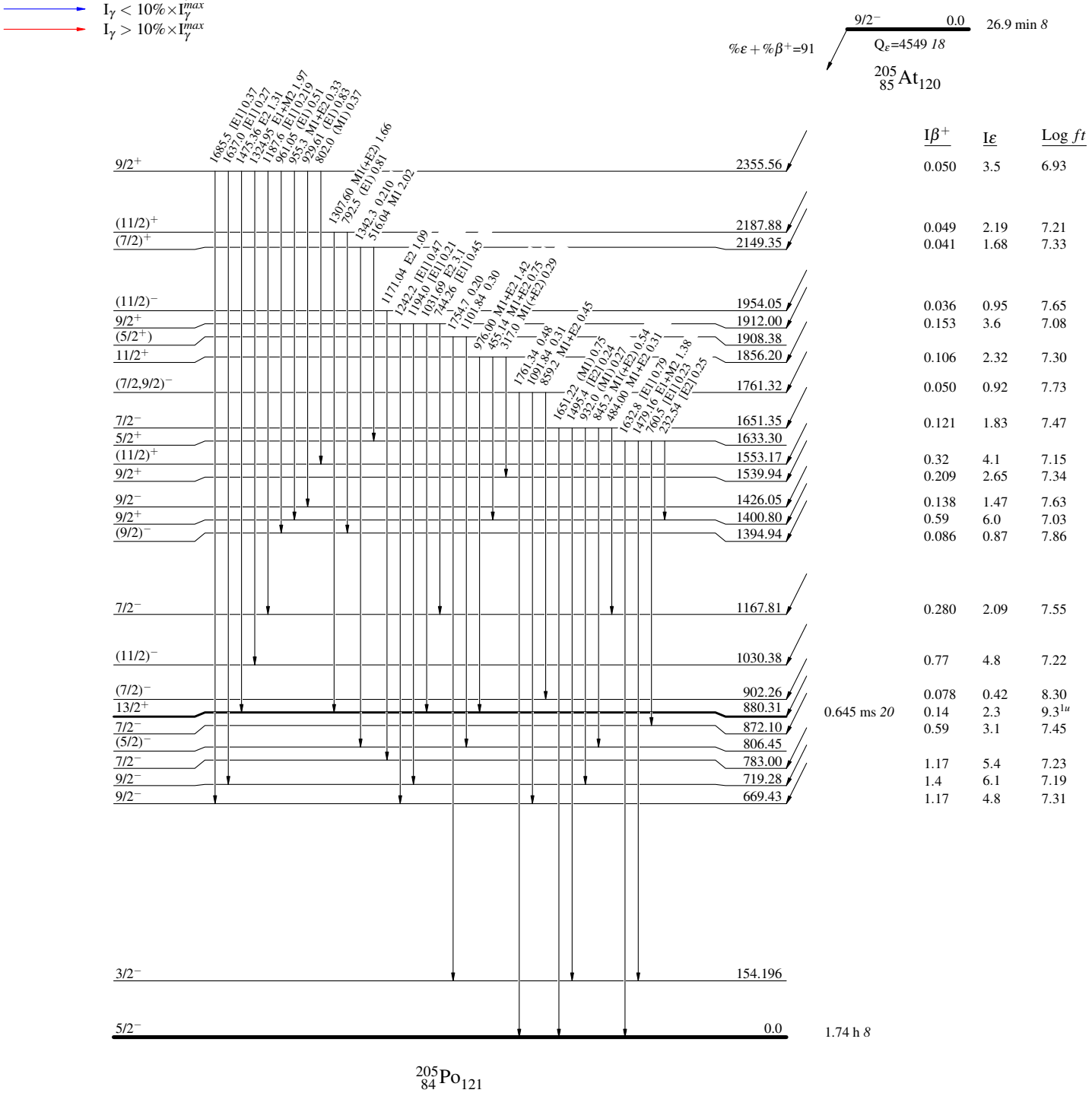
Intensities: I_γ per 100 parent decays



^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays



$^{205}_{84}Po_{121}$

^{205}At ε decay 1971Jo19,1982Ku20,1982Ku21

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays