^{203}Pb ε decay   1989Ne05

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	F. G. Kondev	NDS 105,1 (2005)	1-Mar-2005

Parent: ^{203}Pb: E=0; J^{π}=5/2$^-$; $T_{1/2}$=51.92 h 3; Q(ε)=975 6; %ε decay=100

^{203}Pb-Q(ε): From 2021Wa16.

1989Ne05: Source produced by a 50 MeV bremsstrahlung beam incident on a 48.8 mg/cm^2-thick PbO$_2$ target. Measure γ rays with a shielded, single HPGe detector.

Others: 1954Pr04, 1954Wa12.

^{203}Tl Levels

E(level)†	$J^{\pi\ddagger}$	$T_{1/2}^{\ddagger}$	Comments
0	1/2$^+$		
279.1954 10	3/2$^+$	283 ps 4	$T_{1/2}$: From Adopted Levels. Values from ^{203}Pb ε decay: 279 ps 10 (slope) (1961Sc04) and 298 ps 7 (centroid shift), and 220 ps 30 (1960Jo15). μ: +0.16 5 (liquid source) and +0.03 9 (metal source)) from g=+0.11 3 and +0.02 6, respectively, in 1965Ka02 using $T_{1/2}$=0.277 ns 21 from 1962De14.
680.5160 22	5/2$^+$	0.88 ps 8	μ: +2.6 11 (1979Ha06).

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

ε radiations

E(decay)	E(level)	I$\varepsilon^{\dagger\ddagger}$	Log ft	Comments
(295 6)	680.5160	4.70 8	6.821 25	εK=0.708 4; εL=0.2168 23; εM+=0.0756 10
(696 6)	279.1954	95.3 3	6.404 9	εK=0.7786 4; εL=0.1661 3; εM+=0.05524 11

† From the decay scheme by assuming no direct feeding to the g.s.
‡ Absolute intensity per 100 decays.

γ(^{203}Tl)

Iγ normalization: Using ΣI(γ+ce)(to g.s.)=100% and by assuming that there is no direct feeding to the g.s.

E$_{\gamma}^{\dagger}$	I$_{\gamma}^{\ddagger\#}$	E$_i$(level)	J_i^{π}	E$_f$	J_f^{π}	Mult.†	$\delta^{\dagger}$	$\alpha^{@}$	Comments
279.1952 10	100	279.1954	3/2$^+$	0	1/2$^+$	M1+E2	+1.686 6	0.2261 9	%Iγ=80.94 6 α(K)=0.1580; α(L)=0.0515; α(M)=0.01279 α(N)=0.00321; α(O)=0.000587; α(P)=3.80×10^{-5} α: From adopted gammas.
401.320 3	4.14 8	680.5160	5/2$^+$	279.1954	3/2$^+$	M1+E2	−0.030 8	0.1784	%Iγ=3.35 6 α(K)=0.1464 21; α(L)=0.0245 4; α(M)=0.00572 8 α(N)=0.001444 21; α(O)=0.000281 4; α(P)=2.66×10^{-5} 4 E$_{\gamma}$,Mult.,δ: From adopted

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^{203}Pb ε decay   1989Ne05 (continued)

$\gamma(^{203}$Tl$)$ (continued)

$E_\gamma^\dagger$	$I_\gamma^{\ddagger\#}$	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	$\alpha^@$	Comments
680.515 3	0.932 22	680.5160	$5/2^+$	0	$1/2^+$	E2	0.0139 3	gammas. I_γ: Others: 4.30 8 (1954Wa12) and 4.7 3 (1954Pr04). %$I\gamma$=0.754 18 α(K)=0.01065 15; α(L)=0.00250 4; α(M)=0.000605 9 α(N)=0.0001521 22; α(O)=2.84×10^{-5} 4; α(P)=2.17×10^{-6} 3 I_γ: Others: 0.80 1 (1954Wa12) and 0.87 10 (1954Pr04). Mult.: α(K)exp=0.011 4 in 1960De04.

† From adopted gammas
‡ From 1989Ne05.
$^\#$ For absolute intensity per 100 decays, multiply by 0.8094 6.
$^@$ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Decay Scheme

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

Legend

$I_\gamma < \ 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$

$5/2^-$ 0   51.92 h *3*

Q_ε=975 *6*

$\%\varepsilon$=100

$^{203}_{82}Pb_{121}$

Iε Log ft

680.515 E2 0.765
401.320 M1+E2 3.95
279.1952 M1+E2 99.24

$5/2^+$ 680.5160   0.88 ps *8*   4.70   6.821

$3/2^+$ 279.1954   283 ps *4*   95.3   6.404

$1/2^+$ 0

$^{203}_{81}Tl_{122}$