^{214}Po α decay 1976Ku08,1971Gr17,1961Ry02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 121, 561 (2014)	31-Mar-2014

Parent: ^{214}Po: E=0.0; $J^\pi=0^+$; $T_{1/2}$=163.6 μs *3*; Q(α)=7833.46 *6*; %α decay=100.0

$T_{1/2}(^{214}Po)$=163.6 μs *3* from 2013Be31. Other: 164.3 μs *20* (2009Wu02).

1976Ku08: ^{214}Po was produced from the decay chain of ^{230}U. Measured γ-ray energies using two Ge(Li) detectors. Deduced level scheme from γ-γ coin measurements.

1971Gr17: Measured Eα=7686.73 keV *6*.

1961Ry02: Measured Eα=7686.0 keV *8*.

^{210}Pb Levels

E(level)	J^π
0.0	0^+
799.7 *2*	2^+
1097.7 *10*	4^+

α radiations

Eα	E(level)	Iα[†#]	HF[‡]	Comments
(6609.8 *11*)	1097.7	6×10^{-5} *2*	4.0×10^{2} *14*	Eα: this α transition has not been observed; its energy has been calculated from E(level)=1097.7 *10* and Q(α)=7833.46 *6*. Iα: deduced from γ intensity deexciting the 1097.7 level.
6902.2 *3*	799.7	0.0104 *6*	27.0 *16*	Eα: calculated from E(level)=799.7 *2* and Q(α)=7833.46 *6*. Iα: deduced from intensity balance at the 799.7-keV level.
7686.82 *7*	0.0	99.9895 *6*	1.0	Eα: recommended in 1991Ry01 from the measured energies of 7686.0 *8* (1961Ry02) and 7686.73 *6* (1971Gr17). The original energies have been readjusted as recommended in 1991Ry01. Iα: adopted in 1992Br01 from intensity balance at the g.s.

† α intensity per 100 α decays.

‡ $r_0(^{210}Pb)$=1.5396 *1* has been computed from Hf(7686.82α)=1.0. Other: 1.5394 *6* (1998Ak04) computed using $T_{1/2}(^{214}Po)$=164.3 μs *20*.

Absolute intensity per 100 decays.

γ(^{210}Pb)

Iγ normalization: Iγ(324.22γ in ^{218}Rn)=3200 *100* in relative units given here; its absolute intensity was measured by 1969Pe17 to be 2.77% 8. The normalization factor used here is (2.77 *8*)/(3200 *100*)=0.00087 *4*.

E_γ[†]	I_γ[‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[@]	Comments
298 *1*	0.06 *2*	1097.7	4^+	799.7	2^+	E2	0.1194	Observed only in γγ-coin spectra (1976Ku08). Mult.: From Adopted Gammas.
799.7 *1*	11.9 *5*	799.7	2^+	0.0	0^+	E2	0.01052	Mult.: From α(K)exp=0.017 *5* (1963Le17).

† From 1976Ku08. Other measurements: 1963Le17.

‡ Relative photon intensity (1976Ku08).

For absolute intensity per 100 decays, multiply by 0.00087 *4*.

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$\gamma(^{210}Pb)$ (continued)

[@] 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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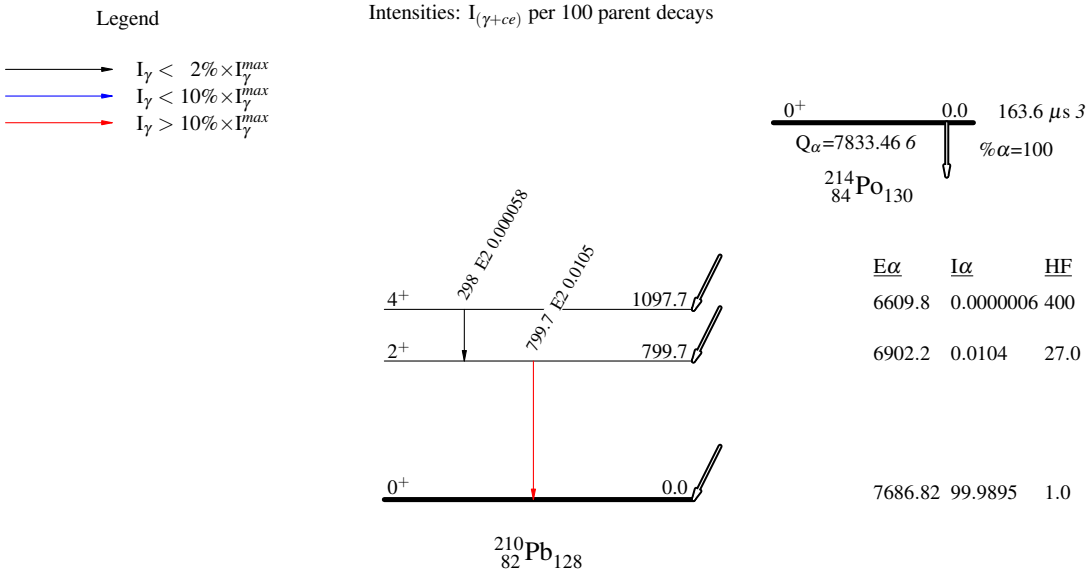
Decay Scheme

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



Eα	Iα	HF
6609.8	0.0000006	400
6902.2	0.0104	27.0
7686.82	99.9895	1.0