^{218}Rn α decay

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Shaofei Zhu and E. A. Mccutchan	NDS 175, 1 (2021)	1-May-2021

Parent: ^{218}Rn: E=0.0; $J^\pi=0^+$; $T_{1/2}$=33.75 ms *15*; Q(α)=7262.5 *19*; %α decay=100.0
^{218}Rn-Q(α): from 2021Wa16.
^{218}Rn-$T_{1/2}$: from Adopted Levels of ^{218}Rn (2019Si39).
α: Additional information 1.

^{214}Po Levels

E(level)†	J^π‡
0.0	0^+
609.31 *1*	2^+
1274.61 *20*	3^-

† From Eγ.
‡ From the Adopted Levels.

α radiations

Eα	E(level)	Iα‡	HF†	Comments
(5878.02 *19*)	1274.61	0.00009 *3*	10 *4*	Eα: from α-γ coincidence and Q(α)=7262.5 keV *19* and E(level)=1274.61 keV *20*. Iα: derived from Iγ=0.00009 *3* by 1995Ko54.
(6531.1 *19*)	609.31	0.130 *4*	4.69 *15*	Eα: from α-γ coincidence and Q(α)=7262.5 keV *19* and E(level)=609.311 keV *10*. Iα: derived from Iγ=0.127 *4* by evaluators.
7129.1 *19*	0.0	99.870 *4*	1.000	Eα: weighted average of 7128.9 *20* (1982Bo04,1973BoXL), 7131.4 *100* (1956As38) and 7131 *10* (1964Wa19); others: 7.12 MeV *4* (1958To25), 7.2 MeV *2* (1948St42). Suggested adjustments to the original measured values (1991Ry01): −0.3 keV (1982Bo04) and +4.4 keV (1956As38). Iα: derived from level scheme by evaluators; others: 99.87% (1995Ko54) and 99.8% *1* (1956As38).

† $r_0(^{214}Po)$=1.5606 *7* is deduced from HF(7129.1α)=1.
‡ Absolute intensity per 100 decays.

$\gamma(^{214}Po)$

Eγ	Iγ†	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α	Comments
609.31 *1*	0.127 *4*	609.31	2^+	0.0	0^+	E2	0.02038 *29*	α(K)=0.01487 *21*; α(L)=0.00416 *6*; α(M)=0.001030 *14*; α(N)=0.000265 *4*; α(O)=5.33×10^{-5} *7* α(P)=6.06×10^{-6} *8* Eγ: weighted average of 609.31 keV *1* (1995Ko54) and 609.31 keV *6* (1976Ku08); others: 609 keV *6* (1956As38) and 606 *15* (1963Le17). Iγ: weighted average of 0.127 *4* (1995Ko54) and 0.126 *8* (1976Ku08) relative to 100 α decay. Other: 0.16 *5* (1963Le17) and 0.20 *5* (1956As38). Mult.: $\alpha(exp)_{tot}$=0.022 *6* deduced from (α)(ce)/(α)(γ) (1963Le17).

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^{218}Rn α decay (continued)

$\gamma(^{214}Po)$ (continued)

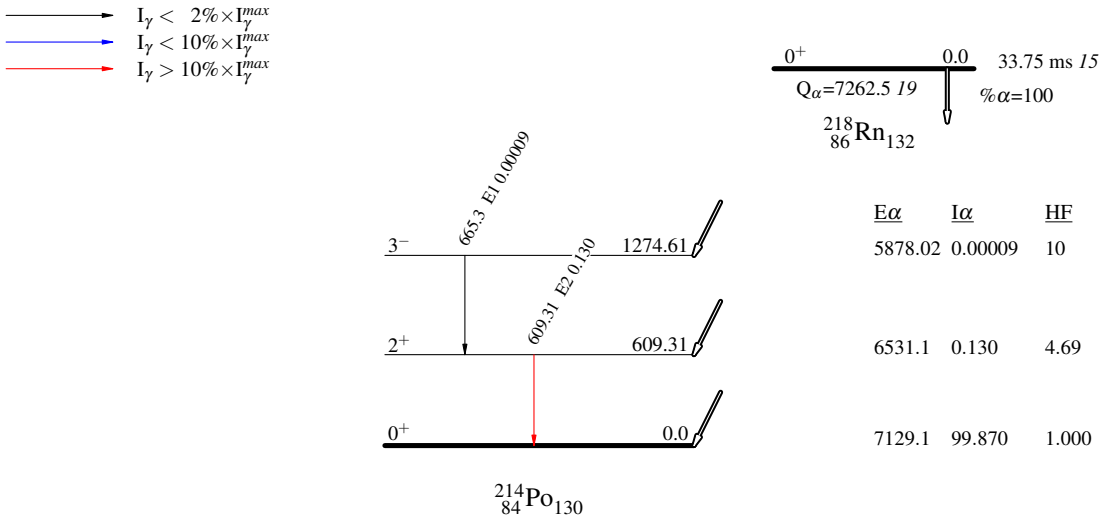
E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α	Comments
								I_γ: weighted average of 0.127 *4* (1995Ko54) and 0.126 *8* (1976Ku08) relative to 100 α decay. Other: 0.16 *5* (1963Le17) and 0.20 *5* (1956As38). Mult.: $\alpha(\text{exp})_{\text{tot}}$=0.022 *6* deduced from $(\alpha)(\text{ce})/(\alpha)(\gamma)$ (1963Le17).
665.3 *2*	0.00009 *3*	1274.61	3^-	609.31	2^+	E1	0.00580 *8*	α(K)=0.00479 *7*; α(L)=0.000768 *11*; α(M)=0.0001789 *25*; α(N)=4.58×10^{-5} *6* α(O)=9.49×10^{-6} *13*; α(P)=1.194×10^{-6} *17* E_γ: from 1995Ko54. I_γ: per 100 α decay (1995Ko54).

[†] Absolute intensity per 100 decays.

^{218}Rn α decay

Decay Scheme

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



Eα	Iα	HF
5878.02	0.00009	10
6531.1	0.130	4.69
7129.1	99.870	1.000