

^{218}Ra α decay 2019Pa45

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

Parent: ^{218}Ra : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=25.91 \mu\text{s}$ 14; $Q(\alpha)=8540$ 3; $\% \alpha$ decay=100.0

^{218}Ra - $Q(\alpha)$: from 2021Wa16.

^{218}Ra - $T_{1/2}$: from Adopted Levels of ^{218}Ra (2019Si39).

2019Pa45: ^{218}Ra was the decay product of ^{222}Th produced in reaction $^{208}\text{Pb}(^{18}\text{O},4n)$ with a beam at 95 MeV; evaporation residues (ER) were separated in-flight by the RITU gas-filled separator and implanted into one of the two double-sided silicon-strip detectors (DSSD) at the focal plane; charged particles emitted from the implants were detected by an array of p-i-n-diode detectors; x- and γ -rays from the implants were detected by three clover HPGe detectors surrounding the DSSDs. $E\alpha$ and $T_{1/2}$ were measured by ER- α - α time and position correlations.

Other measurements: 1970Va13, 1970To07 and 1986Ki13.

α : Additional information 1.

 ^{214}Rn Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	0^+	259 ns 3	$T_{1/2}$: from 2019Pa45 by $\alpha\alpha(t)$.
695.0 2	2^+	<1.4 ns	E(level): from $E\gamma$. $J^\pi, T_{1/2}$: from Adopted Levels.

 α radiations

$E\alpha$	E(level)	$I\alpha^\ddagger$	HF †	Comments
7715 40	695.0	0.123 11	8.3 8	$E\alpha, I\alpha$: from 2019Pa45.
8383 4	0.0	99.88 6	1.000	$E\alpha$: weighted average of 8381 4 (2019Pa45), 8385 10 (1970Va13) and 8392 8 (1970To07). Other: 8480 20 (1986Ki13). $I\alpha$: from 2019Pa45; only one α group was observed before 2019Pa45.

$^\dagger r_0(^{214}\text{Rn})=1.5631$ 19 is calculated from $\text{HF}(8383\alpha)=1.0$.

‡ Absolute intensity per 100 decays.

 $\gamma(^{214}\text{Rn})$

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	α	$I_{(\gamma+ce)}^\dagger$	Comments
695.0 2	0.121 11	695.0	2^+	0.0	0^+	E2	0.01687 24	0.123 11	$\alpha(K)=0.01245$ 17; $\alpha(L)=0.00332$ 5; $\alpha(M)=0.000824$ 12; $\alpha(N)=0.0002145$ 30 $\alpha(O)=4.56 \times 10^{-5}$ 6; $\alpha(P)=6.12 \times 10^{-6}$ 9 E_γ : from 2019Pa45. $I_{(\gamma+ce)}$: from $I(7715\alpha)=0.123$ 11. Mult.: from the Adopted Gammas. I_γ : deduced by evaluators from $I(\gamma+ce)$ and α .

† Absolute intensity per 100 decays.

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Decay Scheme

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