^{218}Pa α decay (107 μs) 2020Zh01

History

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

Parent: ^{218}Pa: E=0.0; J^π=(8$^-$); $T_{1/2}$=107 μs *5*; Q(α)=9791 *12*; %α decay=100.0

^{218}Pa-Q(α): from 2021Wa16.

^{218}Pa-$T_{1/2}$: from 2020Zh01. Other: 120 μs *+40−20* (1979Sc09), 113 μs *10* (2000He17).

^{218}Pa-J^π: based on systematics (2020Zh01).

2020Zh01: ^{218g}Pa was produced in ^{182}W(^{40}Ar,1p3n) reaction with a beam at 190 MeV at HIRFL, China; evaporation residues (ER) were separated in-flight by the SHANS gas-filled separator and implanted into PSSD silicon detectors at the focal plane. γ rays from the decay were detected by a clover detector with four HPGe crystals and two single crystal HPGe detectors. Eα, Iα and $T_{1/2}$ were measured by ER-α- and ER-α-γ time and position correlations. Measured Eα and Iα were assessed in comparison with those in 1979Sc09 and 2000He17.

Others: 1979Sc09 and 2000He17.

^{214}Ac Levels

E(level)	J^π†	$T_{1/2}$	Comments
0.0	5$^{(+)}$	8.2 s *2*	$T_{1/2}$: from the Adopted Levels.
91.8 *4*	(4$^+$)		E(level): from Eγ.

† From the Adopted Levels.

α radiations

Eα	E(level)	Iα‡	HF†	Comments
9524 *16*	91.8	26 *5*	334 *40*	Eα: from 2020Zh01. Others: 9535 *15* (1979Sc09) and 9544 *15* (2000He17), possibly summed with L-converted electrons. Iα: from 2020Zh01. Others: 35 *10* (1979Sc09) and 35 *5* (2000He17).
9613 *9*	0.0	74 *5*	189 *21*	Eα: weighted average of 9610 *14* (2020Zh01), 9615 *15* (2000He17) and 9614 *20* (1979Sc09). Iα: from 2020Zh01, Others: 65 *7* (2000He17), 69 *4* (1996An21) and 65 *10* (1979Sc09).

† Using r_0(^{214}Ac)=1.510 *23* from unweighted average of r_0(^{212}Ra)=1.4695 *14*, r_0(^{214}Ra)=1.5487 *30* and r_0(^{214}Th)=1.512 *14* (2020Si16). No data on r_0(^{216}Th) available.

‡ Absolute intensity per 100 decays.

γ(^{214}Ac)

Eγ	E$_i$(level)	J_i^π	E$_f$	J_f^π	I$_{(\gamma+ce)}$†	Comments
91.8 *4*	91.8	(4$^+$)	0.0	5$^{(+)}$	26 *2*	Eγ: weighted average of 91.8 *4* (2000He17) and 91.8 *8* (2020Zh01). I$_{(\gamma+ce)}$: from I(9524α)=26 *2* to this level.

† Absolute intensity per 100 decays.

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Decay Scheme