^{217}Pa α decay (3.8 ms)   2002He29,2000He17,1968Va18

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	M. S. Basunia	NDS 181, 475 (2022)	1-Jan-2022

Parent: ^{217}Pa: E=0.0; J^π=9/2$^-$; T$_{1/2}$=3.8 ms 2; Q(α)=8489 4; %α decay=100.0

^{217}Pa-J^π: Based on favored α-decay chain from ^{217}Pa g.s. to g.s. of ^{213}Ac, J^π=9/2$^-$, to g.s. of ^{209}Fr, J^π=9/2$^-$ (firm J^π=9/2–(^{209}Fr) in 2015Ch30).

^{217}Pa-T$_{1/2}$: From 2018Ko01 (A=217 evaluation).

^{217}Pa-Q(α): From 2021Wa16.

Others: 1998Ik01, 1996An21, 1979Sc09, and 2005YeZZ.

2002He29: ^{217}Pa produced through ^{181}Ta(^{40}Ar,4n)^{217}Pa, Target: 99.988% natural tantalum; E=182 MeV; Detector: 16-strip PIPS-detector, Ge-Clover detector of 4 crystals; Measured: Eα, Iα, α-α coincidences.

2000He17: ^{217}Pa produced through ^{170}Er(^{51}V,4n)^{217}Pa; E=214-286 MeV; Detector: 16-strip PIPS-detector, a HPGe detector; Measured: Eα, Iα.

1968Va18: ^{217}Pa produced through ^{206}Pb(^{20}Ne,p8n)^{217}Pa and ^{208}Tl(^{20}Ne,11n)^{217}Pa; Detector: Semi; Measured: Eα.

1998Ik01: ^{217}Pa produced through ^{194}Pt(^{28}Si,p4n)^{217}Pa; E=163−MeV and 175-MeV; Detector: double sided position sensitive strip detector; Measured: Eα, T$_{1/2}$.

1996An21: ^{217}Pa from ^{170}Er(^{51}V,4n)^{217}Pa; E=28-87 MeV; Detector: ER are separated in flight, 16-strip PIPS detector, a HPGe detector; Measured: Eα, T$_{1/2}$.

1979Sc09: ^{181}Ta(^{40}Ar,4n)^{217}Pa; E=165-202 MeV; Measured: Eα, T$_{1/2}$.

2005YeZZ: ^{217}Pa from ^{181}Ta(^{40}Ar,4n)^{217}Pa; Detector: array of silicon strip, 7 HPGe, time-of-flight detectors; Measured Eα.

^{213}Ac Levels

E(level)[†]	J^π	T$_{1/2}$	Comments
0	9/2$^-$	738 ms 16	J^π,T$_{1/2}$: From Adopted Levels.
466.1 20			E(level): Other: 468 6 from Eα and Qα.
612.5 8			E(level): Other: 616 6 from Eα and Qα.
634.3 11			E(level): Other: 634 6 from Eα and Qα.
			J^π: In 2002He29, J^π=(13/2$^-$) is presented for this level in the tentative partial decay scheme of ^{213}Ac.

[†] From Eγ. Values from the Eα and Q(α) are listed in comments.

α radiations

Eα	E(level)	Iα[‡#]	HF[†]	Comments
7710 5	634.3	0.3 2	7 5	Eα: From 2002He29.
7728 5	612.5	0.3 2	8 6	Eα: From 2002He29.
7873 5	466.1	0.4 2	18 9	Eα: From 2002He29.
8336 4	0	99 1	1.72 15	Eα: Weighted average of 8337 5 (2002He29), 8334 15 (2000He17), 8330 50 (1998Ik01), 8330 10 (1996An21), 8334 15 (1979Sc09), and 8340 10 (1968Va18).

[†] Using r$_0$(^{213}Ac)=1.491 21, unweighted average of r$_0$(^{212}Ra)=1.4695 14 and r$_0$(^{214}Th)=1.512 14 (2020Si16).

[‡] From 2002He29.

[#] Absolute intensity per 100 decays.

<u>^{217}Pa α decay (3.8 ms)</u>   **2002He29,2000He17,1968Va18 (continued)**

<u>$\gamma(^{213}$Ac)</u>

E$_\gamma$[†]	E$_i$(level)	E$_f$	J$^\pi_f$
466.1[‡] _20_	466.1	0	9/2$^-$
612.5[‡] _8_	612.5	0	9/2$^-$
634.3[‡] _11_	634.3	0	9/2$^-$

[†] From 2002He29.
[‡] Placement of transition in the level scheme is uncertain.

<u>^{217}Pa α decay (3.8 ms)</u>   **2002He29,2000He17,1968Va18**

Legend   <u>Decay Scheme</u>

- - - - - ► γ Decay (Uncertain)

$^{213}_{89}$Ac$_{124}$