

^{217}Ac α decay (69 ns)

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

Parent: ^{217}Ac : $E=0.0$; $J^\pi=9/2^-$; $T_{1/2}=69$ ns 4; $Q(\alpha)=9832$ 10; $\% \alpha$ decay=100.0

^{217}Ac - J^π : From [2018Ko01](#) (A=217 evaluation).

^{217}Ac - $T_{1/2}$: from [1985De14](#) $\alpha(t)$ (earlier value 72 ns 5 in [1981MaYW](#)). Others: 75 ns 3 ([1982GoZU](#)); 111 ns 7 ([1973No09](#), from $\alpha(t)$, previous value was 0.10 μs 1 in [1972No06](#) – due to pulsed beam of ~ 100 ns, possibly missed the long-lived component of g.s. decay – noted in [1985De14](#)), 150 ns +370–60 ([2019Mi08](#)). Adopted $T_{1/2}$ in [2018Ko01](#) (A=217 evaluation) is also 69 ns 4.

^{217}Ac - $Q(\alpha)$: From [2021Wa16](#).

 ^{213}Fr Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	$9/2^-$	34.17 s 6	$J^\pi, T_{1/2}$: From Adopted Levels.

 α radiations

No strong γ transitions belonging to ^{213}Fr were observed by [1973No09](#). The observed 9650-keV α has been assigned as the transition to the ^{213}Fr g.s. by considering the $Q(\alpha)$ systematics and the known levels in ^{213}Fr .

α angular distribution was measured by [1973No09](#) following production of ^{217}Ac in the $^{207}\text{Pb}(^{14}\text{N},4n)$ reaction where nuclear alignment is expected to be preserved during its short (69 ns) half-life. The angular distribution was found to be isotropic within 2%, indicating that the 9650 α has mainly L=0 component.

$E\alpha$	E(level)	$I\alpha^\ddagger$	HF †	Comments
9650 10	0.0	100	1.0 1	$E\alpha$: from 1973No09 (semi). Others: 9870 keV (1982SaZO), 9300 keV 200 (2019Mi08 – 9.3 MeV 2).

† Using $r_0(^{213}\text{Fr})=1.5460$ 27, unweighted average of $r_0(^{212}\text{Rn})=1.5433$ 36 and $r_0(^{214}\text{Ra})=1.5487$ 30 ([2020Si16](#)).

‡ Absolute intensity per 100 decays.