^{219}At α decay (56 s) 1953Hy83,1989Bu09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation		NDS 114, 2023 (2013)	23-Sep-2013

Parent: ^{219}At: E=0.0; J^π=(9/2$^-$); $T_{1/2}$=56 s *3*; Q(α)=6324 *15*; %α decay≈97.0

^{219}At-Q(α): From 2012Wa38.

^{219}At-J^π: From 2001Li44, based on experimental level scheme study and proposed configuration=[$\pi h^3_{9/2}\otimes\nu g^{-2}_{9/2}$]$_{9/2-}$. HF=1.1 implying a favored α decay supports (9/2$^-$) for the ground states of ^{219}At and ^{215}Bi.

^{219}At-$T_{1/2}$: From ^{219}At Adopted Levels in ENSDF database.

^{219}At-%α decay: %α≈97 from quoted α/β^- ratio of ≈30, as determined from measurements of the ^{219}At/^{219}Rn peak ratio (1953Hy83).

1953Hy83: ^{227}Ac source. Chemical/physical separation of radioactive target. Detector: ionization chamber. Measured $T_{1/2}$, Eα, α and β^- decay, α/β^- ratio.

1989Bu09: ^{219}At activity was produced by spallation of 600-MeV protons on targets of ^{232}Th. Assignment to ^{219}At is based on mass separation and on identification of the daughter nucleus ^{215}Bi in the source. The disintegration rate was determined by measuring the β^- activity with a 4 π plastic scintillator detector. Measured $T_{1/2}$.

^{215}Bi Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	(9/2$^-$)	7.6 min *2*	J^π,$T_{1/2}$: from Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
6208 *15*	0.0	100	1.1	Eα: deduced by evaluators from Qα=6324 *15* (2012Wa38). Measured value of Eα=6270 keV *50* (1953Hy83), further adjusted upward by 5 keV (1991Ry01) due to a change in the calibration energy of Eα values from ^{211}Bi decay, is higher than the value deduced from Q(α) value, although, it is within the experimental uncertainty.

[†] Using r_0(^{215}Bi)=1.5467 *4*, interpolated value deduced from r_0(^{216}Po)=1.5555 *2* and r_0(^{214}Pb)=1.5379 *7* (1998Ak04).

[‡] For absolute intensity per 100 decays, multiply by ≈0.97.