Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh et al. ,	NDS 175, 1 (2021)	19-May-2021

Q(β^-)=−4710 *70*; S(n)=8140 *70*; S(p)=1070 *70*; Q(α)=10130 *70* 2021Wa16
S(2n)=14610 *70*, S(2p)=4700 *70*, Q(εp)=440 *90* (2021Wa16).

Additional information 1.

^{219}Pa activity was produced by ^{204}Pb(^{19}F,4n), E=100 MeV. 1987FaZS: assignment to ^{219}Pa based on excitation functions, and on the systematics of α-particle energies and half-lives for other Pa isotopes.

2001Ni06: ^{219}Pa formed in Ce(^{82}Se,X),E(c.m.)=215-253 MeV at JAERI accelerator facility.

2005Li17: ^{219}Pa formed in ^{9}Be(^{238}U,X),E=1 GeV/nucleon at GSI facility.

2017Su18: ^{219}Pa obtained from ^{223}Np α decay, the latter produced in ^{187}Re(^{40}Ar,4n),E=188 MeV, beam from the Sector-focusing cyclotron (SFC) of HIRFL-Lanzhou facility. Target=460 μg/cm^2 thick sputtered on 80 μg/cm^2 thick carbon foils. Evaporation residues were separated using the recoil separator SHANS, and implanted into a 300−μm double-sided silicon strip detector (DSSSD). Measured Eα, and half-life of ^{219}Pa decay. FWHM=22-30 keV for Eα=7 MeV.

Theoretical calculations: 22 primary references in the NSR database (www.nndc.bnl.gov/nsr), one related to structure calculations, and 21 to radioactivity.

^{219}Pa Levels

Cross Reference (XREF) Flags

A ^{223}Np α decay (2.2 μs)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0	9/2$^-$	54 ns *10*	A	%α=100 E(level): detected activity is assumed to correspond to the g.s. of ^{219}Pa. %ε+%β^+≈5×10^{-9} (1973Ta30, theory); 5.4×10^{-8} (2019Mo01, theory). T$_{1/2}$: weighted average of 60 ns *+28−15* (2017Su18) and 53 ns *10* (1987FaZS). J$^\pi$: favored α decay (HF=1.0) to ^{215}Ac (J^π=9/2$^-$). Eα=9976 keV *37* (2017Su18) from the decay of ^{219}Pa. This can be compared with 9900 keV *50* in ^{219}Pa α decay dataset in the ENSDF database (Sep 2013 update).