Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

S(n)=8690 *90*; S(p)=−390 *70*; Q(α)=7960 *60* 2021Wa16
S(2p)=1700 *70*, Q(ε)=9920 *70*, Q(εp)=7510 *70* (2021Wa16).

2014Zh03: ^{206}Ac produced by bombarding a 400 μg/cm^2 thick ^{169}Tm target covered with a 10 μg/cm^2 carbon layer with 196 MeV ^{40}Ca beam at HIRFL in Lanzhou. Evaporation residues were separated in flight using the SHANS recoil separator, and implanted into position sensitive silicon detectors. The α particles were detected by eight non-position sensitive Si detectors with FWHM=70 keV for 6-7 MeV α′s. Three α-decay chains were observed with Eα(1)[^{206}Ac]=7817 keV *30*, Eα(2)[^{202}Fr]=7245 keV *30* and Eα(3)[^{198}At]=6775 keV *30* with half-lives of 41 ms *+56−15*, 0.29 s *+40−11* and 3.1 s *+56−12*, respectively.

1998Es02: Activity produced by bombarding a 320 μg/cm^2 thick ^{175}Lu target with 199 MeV ^{36}Ar ions. The reaction products were separated by the gas-filled separator (RITU) and implanted into a position sensitive PIPS detector (800 mm wide and 35 mm high). Separate amplified branches for energy ranges 0.5-15 MeV (α-decay) and 2-200 MeV (reaction residues) were used. Two α-decaying states were identified, one using 9 quadruple (recoil-α_1-α_2-α_3) and 2 triple (recoil-α_1-α_3) (Eα_2 missing) events: 7790 keV *30* (α_1), 7236 keV *7* (α_2), 6752 keV *6* (α_3) associated with the 3$^+$ ground state and the other using 5 quadruple and 1 triple (Eα_2 missing) events: 7750 keV *20* (α_1), 7248 keV *13* (α_2) and 6858 keV *7* (α_3) associated with the 10$^-$ isomer. The assignment to a specific state is based on the time and position correlations with known α-decays of ^{202}Fr, ^{198}At and ^{194}Bi.

1998LuZV: Activity produced by bombarding a 307 μg/cm^2 hafnium target (64.6% ^{176}Hf,21.7% ^{177}Hf, 6.8% ^{178}Hf, 2.2% ^{179}Hf and 4.7% ^{180}Hf) with 186-MeV (effective energy at half-target thickness) ^{35}Cl ions (beam intensity was about 600 enA). The reaction products were separated by a recoil mass separator at JAERI and implanted on a position-sensitive silicon detector. Two α decaying states were identified, one using 4 quadruple (recoil-α_1-α_2-α_3) and one triple (recoil-α_1-α_2) events: 7894 keV *50* (α_1), 7183 keV *50* (α_2) and 6742 keV *50* (α_3) and the other using 3 triple events (recoil-α_1-α_3) (Eα_2 missing): 7772 keV *50* (α_1) and 6760 keV (α_3).

^{206}Ac Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0	3$^+$	22 ms *+9−5*	%α≈100 T$_{1/2}$: From α(t) in 1998Es02. Others: 11 ms *+9−3* (1998LuZV) and 41 ms *+56−15* (2014Zh03). J$^\pi$: Favored α decay (E$_\alpha$=7790 keV *30*) to ^{202}Fr(J^π=3$^+$) and subsequent favored decays to ^{198}At(J^π=3$^+$), and ^{194}Bi(J^π=3$^+$). Eα=7790 keV *30* (1998Es02) and 7817 keV *30* (2014Zh03). Other: 7894 keV *50* (1998LuZV). Configuration=$\pi(h^{+1}_{9/2})\otimes\nu(f^{-1}_{5/2})_{3+}$.
200 *70*	(10$^-$)	33 ms *+22−9*	%α≈100 E(level): From 2021Ko07. T$_{1/2}$: From α(t) in 1998Es02. Other: 46 ms *+62−17* (1998LuZV). J$^\pi$: Favored α decay (E$_\alpha$=7750 keV *20*) to ^{202}Fr(J^π=10$^-$) and subsequent favored decays to ^{198}At(J^π=10$^-$), and ^{194}Bi(J^π=10$^-$). Eα=7750 keV *20* in 1998Es02 (recommended). Other: 7772 keV *50* (1998LuZV). Configuration=$\pi(h^{+1}_{9/2})\otimes\nu(i^{-1}_{13/2})_{10-}$.