Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 196,342 (2024)	1-Sep-2023

Q(β^-)=−4320 *30*; S(n)=7877 *29*; S(p)=1363 *28*; Q(α)=6353.8 *13* 2021Wa16
S(2n)=17750 *40*, S(2p)=4800 *40*, Q(εp)=3540 *30* (2021Wa16).

^{202}At Levels

Cross Reference (XREF) Flags

A ^{206}Fr α decay
B ^{206}Fr α decay (16 s)
C ^{206}Fr α decay (0.7 s)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0	3$^+$	184 s *1*	ABC	%α=12 *7*; %ε+%β^+=88 *7* μ=4.16 *16*; Q=−0.54 *33* %α: From 2016Ly01. Other: %α>13 in 1992Hu04. J$^\pi$: Favored α decay from ^{206}Fr (J^π=3$^+$) (J from 2013Vo10, 2015Vo05 and 2016Ly01; π from μ). μ,Q: From measured hyperfine-structure constants and isotope shifts using the in-source resonance-ionization spectroscopy method in 2018Cu02. μ deduced using a reference value of μ=4.139 *37* for ^{211}At (2018Cu02); μ from 4.16 *12*(stat)*10*(syst) with statistical and systematic uncertainties added in quadrature; Q from −0.54 *13*(stat)*30*(syst) with statistical and systematic uncertainties added in quadrature. δ<r^2>(^{202}At,^{205}At)=−0.229 fm^2 *10*(stat)*11*(syst) and $\delta\nu$(^{202}At,^{205}At)=2649 MHz *120*(stat) in 2018Cu02. T$_{1/2}$: From 1992Hu04. Others: 183 s *4* (1974Ho27), 180 s *12* (1963Ho18) and 156 s *18* (1967Tr06), 174 s *18* (1970DaZM), 180 s *30* (1969MoZW), and 186 s 18 (1975BaYJ). configuration: Dominant $\pi(h^{+1}_{9/2})\otimes\nu(p^{-1}_{3/2})$. E$\alpha$=6227 keV *3* (1963Ho18), 6226 keV *3* (1967Tr06), 6227 keV *5* (1974Ho27), 6228 keV *2* (1975BaYJ), and 6154 keV *18* (2015We16).
190 *40*	7$^+$	182 s *2*	BC	%α=8.6 *11*; %ε+%β^+=91.4 *11* %α: Weighted average of 8.7 *15* (1992Hu04) and 8.5 *15* (2016Ly01). E(level): From 2021Ko07, based on E(^{198}Bi,J^π=7$^+$)=290 keV *40* and E$_\alpha$. J$^\pi$: Favored α decay from ^{206m}Fr (J^π=7$^+$) (J from 2015Vo05 and 2016Ly01; π from μ). μ,Q: From measured hyperfine-structure constants and isotope shifts using the in-source resonance-ionization spectroscopy method in 2018Cu02. μ deduced using a reference value of μ=4.139 *37* for ^{211}At (2018Cu02); μ from 4.54 *16*(stat)*11*(syst) with statistical and systematic uncertainties added in quadrature; Q from −0.65 *13*(stat)*30*(syst) with statistical and systematic uncertainties added in quadrature. δ<r^2>(^{202}At,^{205}At)=−0.201 fm^2 *10*(stat)*10*(syst) and $\delta\nu$(^{202}At,^{205}At)=2330 MHz *120*(stat) in 2018Cu02. T$_{1/2}$: From 1992Hu04. Other: 180 s *12* (1967Tr06). configuration: Dominant $\pi(h^{+1}_{9/2})\otimes\nu(f^{-1}_{5/2})$. E$\alpha$=6133 keV *2* (1963Ho18), 6133 keV *3* (1967Tr06), 6133 keV *5* (1974Ho27) and 6135 keV *2* (1975BaYJ).
582 *40*	10$^-$	0.46 s *5*	C	%α=0.096 *11*; %IT=99.90 *1* %α: From 1992Hu04. Other: <15 % in 2016Ly01. J$^\pi$: Favored α decay from ^{206n}Fr (J^π=10$^-$) (J from 2015Vo05 and 2016Ly01; π from μ); 391.7γ E3 to 7$^+$. T$_{1/2}$: from 1992Hu04. configuration: Dominant $\pi(h^{+1}_{9/2})\otimes\nu(i^{-1}_{13/2})$. E$\alpha$=6277 keV *5* (1992Hu04).

Adopted Levels, Gammas (continued)

$\gamma(^{202}At)$

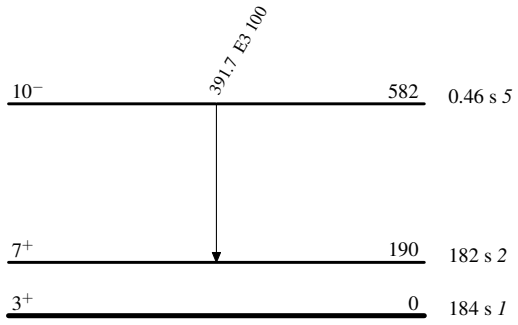
E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[†]	Comments
582	10^-	391.7 *2*	100	190	7^+	E3	0.268 *4*	α(K)=0.0987 *14*; α(L)=0.1249 *18*; α(M)=0.0336 *5* α(N)=0.00875 *12*; α(O)=0.001757 *25*; α(P)=0.0001943 *28* B(E3)(W.u.)=0.00061 *7* E_γ: From 1992Hu04; other: 391 keV (1981Ri04). Mult.: From α(K)exp=0.088 *12* and K/L=0.62 *1* (1992Hu04).

[†] Additional information 1.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{202}_{85}At_{117}$