^{196}At α decay 1996En01,2000Sm06,2005De01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113, 1871 (2012)	15-Jun-2012

Parent: ^{196}At: E=0.0; J^π=(3$^+$); $T_{1/2}$=387 ms *14*; Q(α)=7198 *50*; %α decay=94 *5*

^{196}At-J^π: Probable configuration is (π $h_{9/2}$)(ν $3p_{3/2}$) coupled to give J=3, analogous to neighboring odd-odd nuclides, e.g., ^{198}At and ^{196}Bi (2000Sm06).

^{196}At-$T_{1/2}$: Weighted average of 389 ms *54* (2005De01), 388 ms *7* (2000Sm06) and 300 ms *100* (1967Tr06). others: 390 ms *+270−120* (1996En01), 320 ms *+220−90* (1995Mo14), 253 ms *9* (1997Pu01). the latter datum is inconsistent with data from 2005De01, 2000Sm06 and 1996En01; the reason for this discrepancy is not known.

^{196}At-%α decay: From ^{200}Fr mother/daughter α intensities (2005De01). Consistent with calculated partial $T_{1/2}$ for β decay of≈5 s from gross β decay theory (1973Ta30) or 5.2 s (1997Mo25); the latter implies %ε+β^+≈7.4 assuming $T_{1/2}$=387 ms *14* for ^{196}At.

Others: 1967Tr06, 1995Mo14, 1997Pu01.

2005De01: ^{196}At from α decay of ^{200}Fr; Si detector (FWHM=30 keV); measured Eα, parent $T_{1/2}$, branching. see also 2004DeZV.

2000Sm06: ^{196}At from ^{165}Ho(^{36}Ar,5n) At E=178 MeV; RITU gas-filled separator; 16-strip position-sensitive Si detector; measured Eα, parent $T_{1/2}$.

1997Pu01: ^{196}At from ^{166}Er(^{36}Ar,P5N) using 208 MeV pulsed beam; 96.3% enriched ^{166}Er target; GARIS gas-filled recoil separator with position-sensitive detector At focal plane; measured Eα, (evaporation residue)-α1−α2 correlations.

1967Tr06: sources from ^{185}Re(^{20}Ne,9n), ^{187}Re(^{20}Ne,11n) (E(^{20}Ne)=100-200 MeV, helium-jet transport); 96.66% ^{185}Re and 96.7% ^{187}Re targets; measured Eα, parent $T_{1/2}$ (silicon surface-barrier detectors).

^{192}Bi Levels

E(level)	J^π[†]
0.0	(3$^+$)

[†] From Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
7049 *3*	0.0	100	4.0 *7*	Decay to low-spin isomer assumed. Eα: weighted average of 7055 *7* (1967Tr06), 7044 *7* (1996En01), 7048 *5* (2000Sm06) and 7055 *12* (2005De01); this Eα implies Q(α)=7196 *3* if this is a g.s. to g.s. transition, cf. Q(α)=7198 *50* from 2011AuZZ. Other Eα: 7053 *30* (1995Mo14), 7065 *30* (1997Pu01).

[†] For r_0=1.540 *18* (unweighted average of r_0(^{192}Pb)=1.513 *3* and r_0(^{192}Po)=1.585 *16* (this evaluation), and r_0(^{190}Pb)=1.511 *6* and r_0(^{194}Po)=1.551 *10* (1998Ak04).

[‡] For absolute intensity per 100 decays, multiply by 0.94 *5*.