^{167}Os α decay (839 ms) 2010Sc02,1996Pa01,1982En03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich, Balraj Singh	NDS 111, 1211 (2010)	12-Apr-2010

Parent: ^{167}Os: E=0.0; $J^\pi=7/2^-$; $T_{1/2}$=839 ms *5*; Q(α)=5980 *50*; %α decay=50 *5*

^{167}Os-J^π: Proposed in 2010Sc02, based on L=0 α decays in ^{171}Pt –> ^{167}Os –> ^{163}W α decay chain, and persistent observation of $13/2^+$ –> $9/2^-$ –> $7/2^-$ cascades in these nuclei and systematics of lowest-lying $7/2^-$ and $9/2^-$ states in even-Z, odd-N nuclei in the vicinity. Same J^π proposed in 2009Od02 based on systematics and comparisons with theoretical predictions.

^{167}Os-Q(α): From 2003Au03, 2009AuZZ. ΔQ(α)=50 (2003Au03,2009AuZZ) presumably accounts for the possibility that the α transition feeds an excited state rather than the ^{163}W g.s.. From the adopted Eα value, Q(α) is computed to Be 5982 *3*, assuming the transition feeds the ^{163}W g.s..

^{167}Os-$T_{1/2}$: From α decay (2010Sc02). Others: 0.84 s *7* (1996Pa01), 0.8 s *2* (1982En03); 1.05 s *35* (1981Ho10); 0.65 s *15* (1977Ca23,1978Ca11) Note: weighted average gives the same result with $\chi^2<1$.

^{167}Os-$T_{1/2}$: Additional information 1.

^{167}Os-%α decay: From weighted average of %α=51 *5* (2010Sc02) and 49 *7* (1996Pa01). Others: %α=76 *10* (1982En03); 58 *12* (1981Ho10). Note: weighted average of all values gives %α=54 *5* and unweighted average gives %α=58 *6*.

Additional information 2.

Other main references: 1981Ho10, 1978Ca11, 1977Ca23.

2010Sc02: ^{167}Os isotope produced in ^{92}Mo(^{78}Kr,2pn) E=365, 367 MeV reaction. It was also obtained from α decay of ^{171}Pt produced in ^{96}Ru(^{78}Kr,2pn) E=348 MeV. Measured Eα, Iα, half-life of ^{167}Os by α timing. Also measured decay of an isomer in ^{167}Os by α-tagged γ-rays and ce using JUROGAM array of 43 escape suppressed EUROGAM phase-I and GASP type HPGe detectors, RITU separator for recoiling nuclei, and GREAT spectrometer.

1996Pa01: ^{167}Os produced in heavy-ion fusion reactions followed by separation of fragments by a recoil-mass separator. Decay branching determined by detecting time correlated events of recoil nuclei and α particles in double-sided silicon strip detectors.

1982De11: see ^{163}W α decay for details.

1982En03: daughter of ^{171}Pt from ^{144}Sm(^{32}S,5n) E=139-201 MeV. Measured α′s and $T_{1/2}$′s; recoil-mass selector, telescope. Decay branching measured by intensity comparison of parent-daughter α groups.

1981Ho10: decay branching measured by parent-daughter intensity correlations.

1978Ca11,1977Ca23: 260- to 320-MeV ^{63}Cu on ^{106,108}Cd and ^{107,109}Ag. Measured α′s and α(t); He-jet, surface barrier detector. Assignment by excitation functions.

^{163}W Levels

E(level)	J^π	Comments
0.0	$7/2^-$	J^π: from Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
5839 *3*	0.0	100	1.4 *4*	Eα: weighted average of: 5853 *5* (1996Pa01); 5843 *10* (1982En03); 5835 *2* (1982De11); 5836 *5* (1981Ho10); 5840 *10* (1978Ca11). In computing this average, the evaluators have increased the uncertainty In the Eα value of 1982De11 from 2 to 3 so that the associated weight will not Be more that half the total weight. HF: deduced by the evaluators using ALPHAD code with $r_0(^{163}W)$=1.561 fm *11*. Other: 1.1 *1* (2010Sc02, using Rasmussen formalism). These values are consistent with L=0 g.s. to g.s. transition. Iα: it is assumed that this transition feeds the ^{163}W g.s. and that it is the only α transition. Search for fine structure of α decay from ^{167}Os proved negative (2010Sc02).

[†] For $r_0(^{163}W)$=1.561 *11* (deduced by the evaluators from weighted average of 1.563 fm *11* for ^{164}W and 1.556 fm *16* for ^{162}W (1998Ak04)).

[‡] For absolute intensity per 100 decays, multiply by 0.50 *5*.