^{162}Re α decay (77 ms) 2016Ca15,1997Da07,1996Pa01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017

Parent: ^{162}Re: E=173 *13*; J^π=(9^+); $T_{1/2}$=77 ms *9*; Q(α)=6240 *5*; %α decay=91 *5*

^{162}Re-E,$T_{1/2}$,J^π: From ^{162}Re Adopted Levels.

^{162}Re-Q(α): From 2012Wa38.

^{162}Re-%α decay: %α=91 *5* (from ^{162}Re Adopted Levels, weighted average of 0.94 *6* (1997Da07) and 0.85 *9* (1996Pa01)).

2016Ca15 compiled for the XUNDL database by B. Singh (McMaster).

2016Ca15: ^{162}Re obtained as daughter of ^{166}Ir α decay, which was produced in ^{92}Mo(^{78}Kr,pn),E=380 MeV from JYFL accelerator facility. Evaporation residues from the target were sent into the RITU separator and analyzed using GREAT spectrometer. The recoils and α particles were detected by DSSSDs, x rays and γ rays by a planar double-sided Ge strip detector and a Clover Ge detector. Measured (recoils)α correlated events, $\alpha\gamma$-coin, Eα. Deduced fine structure in α decay of ^{162}Re.

1997Da07: Produced by ^{92}Mo(^{78}Kr,pxn) at 357 and 384 MeV with separation in Fragment Mass Analyzer and implanted in silicon strip detector. Particles emitted were time and position correlated.

The assignment of both α branches to this decayl is from 1997Da07. The energy of the 37 ms isomer was deduced (1997Da07) from the α energies from the decay of isomers of ^{166}Ir.

1996Pa01: Produced by ^{112}Sn(^{58}Ni,x) or other reactions and separated in recoil mass separator. α's measured in silicon strip detector with parent-daughter correlation.

1979Ho10, 1981HoZM: Produced by ^{107}Ag(^{58}Ni,3n) reaction with α's measured with Si detector following a velocity selector.

^{158}Ta Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
141 *9*	(9^+)	36.7 ms *15*	%ε+%β^+=5 *5*; %α=95 *5* Energy, half-life and decay modes from Adopted Levels. Proton decay mode is also possible since S(p)(^{158}Ta g.s.)=−450 *50* (2012Wa38). Measured Eα=6048 *5* (1997Da07). Possible configuration=$\pi h_{11/2}\otimes\nu f_{7/2}$ based on that for 9^+ isomers in neighboring nuclei (from 1997Da07 as cited by 2016Ca15).
207 *9*	(10^+)		E(level): from 2016Ca15.

[†] From 2016Ca15; (9^+) for the isomer was assigned by 1997Da07.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
6037 *16*	207			Eα: from 2016Ca15.
6119 *3*	141	100	2.0 *3*	Eα: Weighted average of 6119 *6* (1979Ho10), 6123 *6* (1996Pa01), and 6116 *5* (1997Da07).

[†] r_0=1.560 5, weighted average of r_0 values for ^{160,162}W and ^{162,164}Os in 1998AK04.

[‡] For absolute intensity per 100 decays, multiply by 0.91 *5*.

γ(^{158}Ta)

E$_\gamma$	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α[†]	Comments
66.1 *2*	207	(10^+)	141	(9^+)	(M1)	2.46	E$_\gamma$,Mult.: from ^{158}Ta IT decay (2016Ca15). The 66γ was seen in coincidence with 6037α (2016Ca15, Fig. 2c).

[†] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^{162}Re α decay (77 ms) 2016Ca15,1997Da07,1996Pa01

Legend

- Coincidence

Decay Scheme