^{173}Ir α decay (2.16 s) 1996Pa01,1992Sc16,1986Ke03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	ENSDF	15-Mar-2015

Parent: ^{173}Ir: E=0.0+x; J^{π}=(11/2$^-$); $T_{1/2}$=2.16 s *4*; Q(α)=5716 *10*; %α decay=11.0 *21*

^{173}Ir-E: X=226 *9* from 2012Au07.

^{173}Ir-%α decay: Four measurements of branching exist: 0.0202 *8* from I(5665α)(^{173}Ir) relative to I(6150α+6110α)(^{177}Au) (1986Ke03), which the evaluator revises to 0.031 *1* because 1996Pa01 report that only the lower energy α from ^{177}Au (Iα=65% in 1986Ke03) is correlated with the α from ^{173}Ir(2.20 s); 0.12 *1* from I(5674α)(^{173}Ir)/I(92γ)(^{173}Os) (1992Sc16) in a study in which ^{173}Os is fed simultaneously by ε decay from both ^{173}Ir isomers; 0.07 *2* from 6118α(^{177}Au)−5681α(^{173}Ir) correlation (1996Pa01); 0.14 *3* (2004GoZZ). The evaluator adopts the unweighted average (0.110 *21*) of the latter three measurements; the weighted average of all data, by contrast, is 0.032 *6* and the unweighted average is 0.090 *25*.

Others: 1967Si02, 1982De11, 2012Po01 (calculation of ^{173}Ir α decay half-life).

1967Si02: sources from ^{162}Er(^{19}F,8n) E=185 MeV with 14.1% ^{162}Er target, ^{164}Er(^{19}F,10n) E=145-175 MeV with 35.1% ^{164}Er target; helium-jet transport, Au-Si surface barrier detectors; measured Eα, Iα, parent $T_{1/2}$.

1982De11: sources from ^{63}Cu bombardments of indium and tin (E(^{63}Cu)=245-300 MeV, helium-jet transport); enriched targets; measured Eα, Iα (surface-barrier detector).

1986Ke03: sources from ^{90}Zr bombardments of yttrium, zirconium and molybdenum (E(^{90}Zr)=321-390 MeV; velocity-filter, evaporation-residue separation); enriched targets; measured Eα, Iα, %α(^{173}Ir) (silicon surface-barrier detectors, FWHM=25, 50 keV).

1992Sc16: source from ^{141}Pr(^{36}Ar,xn), E=175-204 MeV; measured α excit, Eα, Iα, Eγ, Iγ, I(K x ray), α-(K x ray) coin, $\alpha\gamma$ coin, α(t); deduced α branching; Si and Ge detectors.

1996Pa01: sources from heavy-ion fusion-evaporation reactions; recoil mass separator, double-sided Si strip detector (FWHM≤20 keV); measured Eα, parent $T_{1/2}$ and %α.

Parent $T_{1/2}$=2.16 s *4* from weighted average of 2.20 s *5* (1992Sc16), 2.4 s *9* (1996Pa01) and 2.11 s *5* (2004GoZZ).

^{169}Re Levels

E(level)†	J^{π}‡
0.0	(9/2$^-$)
136.2 *2*	(11/2$^-$)

† From Eγ.
‡ From Adopted Levels.

α radiations

Eα	E(level)	Iα‡	HF†	Comments
5672 *3*	136.2	100	1.3 *3*	Eα: weighted average of 5666 *5* (5665 datum of 1967Si02 after adjustment by 1991Ry01), 5676 *4* (1982De11), 5681 *13* (1996Pa01), 5672 *5* (2004GoZZ); Q(α)=5942−x 3, based on Eα, where x is the excitation of the ^{173}Ir parent state; Q(α)=5716 *10* in 2012Wa38 assumes E=226 *9* (2012Au07) for the ^{173}Ir parent state. Coincident with 136γ (1992Sc16). HF: if parent excitation energy is 226 *9* (2012Au07).

† r_0=1.556 *20* (based on r_0 for ^{168}W (1.56 *2*) and ^{170}Os (1.553 *14*) in 1998Ak04), assuming E(parent)=226 *9* (2012Au07).
‡ For absolute intensity per 100 decays, multiply by 0.110 *21*.

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γ(^{169}Re)

Iγ normalization: from Ti(136γ)=100.

E_γ	I_γ[#@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ[‡]	α[†]	Comments
136.2 *2*	31 *2*	136.2	(11/2⁻)	0.0	(9/2⁻)	M1+E2	0.71 *7*	1.84 *5*	α(K)=1.33 *7*; α(L)=0.391 *16*; α(M)=0.094 *5* α(N)=0.0227 *10*; α(O)=0.00351 *13*; α(P)=0.000141 *8* Mult.,δ: from α(K)exp=1.37 *6* in 1992Sc16. E_γ: from 1992Sc16. other Eγ: 136.4 *5* (2004GoZZ).

† Additional information 1.
‡ If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for any other mixed multipolarities.
# Photon intensity (1992Sc16), relative to I(Re K x ray)=41 *3*.
@ For absolute intensity per 100 decays, multiply by 0.13 *3*.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays