^{172}Ir α decay (2.19 s) 2004GoZZ,1996Pa01,1992Sc16

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111, 1807 (2010)	15-Jun-2010

Parent: ^{172}Ir: E=133 *8*; $J^{\pi}=(8^+)$; $T_{1/2}$=2.19 s *7*; Q(α)=5996 *7*; %α decay=23 *3*

^{172}Ir-E: Because 1992Me10 report No evidence for an isomeric excited state In ^{168}Re, 1992Sc16 conclude that both this 5828α-162γ cascade and the 5515α-90γ-123γ-136γ cascade from low-J ^{172}Ir terminate At the ^{168}Re g.s., implying E=133 *8* for the high-J ^{172}Ir parent. note, however, that 2004GoZZ observe neither the 90γ nor the 136γ from the latter cascade, possibly due to statistically-limited data.

^{172}Ir-%α decay: From 1992Sc16. Others: 0.22 *6* (2004GoZZ), <32 (1984ScZQ).

2004GoZZ: ^{172}Ir sources from α-decay of ^{176}Au produced In ^{84}Sr bombardment of Mo; fragment mass analyzer and double-sided Si strip detector (for recoils and decay α particles) surrounded by 4 Ge detectors and a low-energy photon spectrometer; recoil decay tagging technique; measured Eα, Iα, recoil-α-γ coin, α(t), parent-daughter α correlations.

1992Sc16: sources from ^{141}Pr(^{36}Ar,5n), E(^{36}Ar)=234 MeV primary beam, helium-jet transport; monoisotopic targets; measured excitation functions (175 MeV to 204 MeV At target face), Eα, Eγ, Iα, Iγ, $\alpha\gamma$ coin, α-(K x ray) coin.

Parent $T_{1/2}$: from α(t); weighted average of 2.26 s *5* (2004GoZZ), 2.0 s *1* (1992Sc16) and 2.1 s *1* (1978Sc26). others: 1.7 s *5* (1967Si02), 2.1 s *5* (1984ScZQ).

^{168}Re Levels

E(level)[†]	J^{π}[‡]
0.0	(7^+)
162.1 *2*	(8^+)

[†] From Eγ.
[‡] From Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
5828 *3*	162.1	100	3.0 *4*	Eα: 5828 *3* from 1982De11 (used for calibration by 1992Sc16). Other data: 5810 *5* (1967Si02 and 1984ScZQ)), 5815 *10* (1978Sc26), 5822 *12* (1996Pa01), 5830 *5* (2004GoZZ). correlated with 6080α, 6117α and 6287α from ^{176}Au(high J) (2004GoZZ).

[†] If r_0=1.5580 *12*, unweighted average of $r_0(^{166}W)$=1.560 *6* (2008Ba14), $r_0(^{168}W)$=1.56 *2* and $r_0(^{168}Os)$=1.557 *4* (this evaluation), and $r_0(^{170}Os)$=1.555 *3* (2002Ba93) (weighted average is 1.5564 *22*). Q(α)=5996 *7* (from measured Eα for g.s. to 349 level decay) has been used for the calculation of HF; 2003Au03 and 2009AuZZ give Q(α)=5850 *110* from systematics.
[‡] For absolute intensity per 100 decays, multiply by 0.23 *3*.

$\gamma(^{168}Re)$

Iγ(Re K x ray)=29 *2* on same scale as Iγ (1992Sc16).

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J_i^{π}	E$_f$	J_f^{π}	Mult.	δ	α[‡]	Comments
162.1 *2*	44 *4*	162.1	(8^+)	0.0	(7^+)	M1+E2	0.99 *16*	0.99 *6*	α(K)=0.69 *7*; α(L)=0.226 *10*; α(M)=0.055 *3*; α(N+..)=0.0152 *8* α(N)=0.0132 *7*; α(O)=0.00202 *8*; α(P)=7.2×10^{-5} *9* Eγ: a 162γ deexciting the level fed by the 5830α is shown In fig. 6.4, it appears In coincidence

Continued on next page (footnotes at end of table)

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$\gamma(^{168}Re)$ (continued)

E_γ [†]	E_i(level)	Comments
		with the 5830α In fig. 6.12, and is mentioned In text (section 6.4.1) of 2004GoZZ. however, In table 5.1, the γ coincident with the 5830α has Eγ=136.3 *5*; the evaluator assumes that the latter Eγ entry is erroneous. Mult.,δ: from α(K)exp=0.69 *6*, as deduced from Iγ and I(Re K x ray) (1992Sc16). δ=1.08 *16* was deduced by 1992Sc16 from both α(K)exp and from the relative intensities of the 5828α and the (5828α+ce(L)(162)) sum peak.

† From 1992Sc16.
‡ 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.

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Decay Scheme

Legend

Intensities: Relative Iγ. α's: per 100 α decays

• Coincidence