

Adopted Levels, Gammas

Type	Author	Citation	Literature Cutoff Date
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Q(β^-)= -8.26×10^3 14; S(n)= 9.87×10^3 8; S(p)=- 8.1×10^2 11; Q(α)=6923 11 2012Wa38
 Note: Current evaluation has used the following Q record -8200 syst 9790 syst -900 syst 6923 10 2009Ha42,2009AuZZ.
 Uncertainties: 240 (Q(β^-)), 160 (S(n)), 180 (S(p)) (2003Au03, 2009AuZZ).
 Q(α): From E α =6762 10 (2009Ha42) for g.s. to g.s. α decay (cf. 7034 50 from 2003Au03 and 2009AuZZ).
 Q(ϵ p)=9860 160 (syst; 2003Au03,2009AuZZ).
 Identification: 1993Se09 from ¹⁰⁶Cd(⁷⁰Ge,p3n) reaction and mass separation of fragments. α decay peak observed at 6860 keV but no proton decay was observed.
 α decay from ¹⁷⁶Tl(5.2 ms) to ¹⁷²Au was searched for, but not observed, by 2004Ke06.

¹⁷²Au Levels

The adopted level scheme is taken from the ⁹⁶Ru(⁷⁸Kr,pn γ) reaction study by 2009Ha42 and is tentative only. The level structure is irregular and no low-lying collective behavior is observed (2009Ha42).

Cross Reference (XREF) Flags

A ⁹⁶Ru(⁷⁸Kr,pn γ)

E(level) [†]	T _{1/2}	XREF	Comments
0.0	22 ms +6-4	A	% α ≈100; %p=?; % ϵ +% β^+ =? % α : α decay only has been observed but proton and ϵ + β^+ decay are possible. Calculated T _{1/2} (ϵ + β^+)≈0.9 s (1973Ta30) from gross β decay theory and 0.27 s (1997Mo25) imply % ϵ +% β^+ ≈2.4 and 8.1, respectively. T _{1/2} : from 6762 α (t) (2009Ha42). J ^{π} : possible configurations: π (s _{1/2} ,d _{3/2}) ⊗ ν (f _{7/2} ,h _{9/2}) or π (s _{1/2} ,d _{3/2}) ⊗ ν i _{13/2} (2009Ha42). Possibly J ^{π} =(3 ⁻), analogous to that suggested by 2004GoZZ for ¹⁷⁴ Au and ¹⁷⁶ Au.
0.0+x	7.7 ms 14	A	% α ≈100; %p<0.02 (2009Ha42); % ϵ +% β^+ =? J ^{π} : possibly (9 ⁺), analogous to that suggested by 2004GoZZ for ¹⁷⁴ Au and ¹⁷⁶ Au; very tentative value (2009Ha42). Possible configurations: π h _{11/2} ⊗ ν i _{13/2} or π h _{11/2} ⊗ ν (f _{7/2} ,h _{9/2}) (2009Ha42). T _{1/2} : unweighted average of 9 ms +2-1 from 6870 α (t) (2009Ha42) and 6.3 ms 15 from 6878 α (t) (1996Pa01). Others: 4 ms 1 (1993Se09, from time difference of implanted fragments and decay events); 8 ms +5-2 from 6800 α (t) (2009Ha42). % α ,%p: α decay only has been observed. Proton decay is possible, but 2009Ha42 and 1993Se09 set upper limits on %p of 0.02 (from correlation between 6453 α from ¹⁷¹ Pt and any preceding ¹⁷² Au decay) and 2, respectively. No experimental information about ϵ + β^+ decay of ¹⁷² Au is available, but gross β decay theory (1973Ta30) predicts T _{1/2} (ϵ + β^+)≈0.9 s which implies %(ϵ + β^+)≈0.9.
459.7+x 6		A	
748.42+x 10		A	E(level): an alternative value of 896.2+x is possible because the order of 289 γ and 437 γ has not been established.
822.3+x? 5		A	
870.70+x? 20		A	
1184.98+x? 22		A	
1367.7+x? 6		A	E(level): an alternative value of 1282.0+x is possible because the order of 460 γ and 545 γ has not been established.
1827.4+x? 9		A	

[†] From least-squares fit to E γ .

Adopted Levels, Gammas (continued) $\gamma(^{172}\text{Au})$

<u>$E_i(\text{level})$</u>	<u>E_γ</u> [†]	<u>I_γ</u> [†]	<u>E_f</u>	<u>Mult.</u> [†]
459.7+x	459.7 [‡] 6	100 [‡]	0.0+x	
748.42+x	288.7 1	100	459.7+x	D
822.3+x?	363.4 [‡] # 7	100 [‡]	459.7+x	
870.70+x?	411.0 [#] 2	100	459.7+x	D
1184.98+x?	363.4 [‡] # 7	100 [‡] 4	822.3+x?	
	436.5 [#] 2	55 4	748.42+x	
1367.7+x?	545.4 [#] 3	100	822.3+x?	
1827.4+x?	459.7 [‡] # 6	100 [‡]	1367.7+x?	

[†] From $^{96}\text{Ru}(^{78}\text{Kr},\text{pn}\gamma)$. Multipolarity is based on measured γ asymmetry.

[‡] Multiply placed with undivided intensity.

Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

-----▶ γ Decay (Uncertain)

