^{96}Ru(^{78}Kr,pnγ) 2009Ha42

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Tibor Kibedi and Coral M. Baglin	ENSDF	15-Mar-2010

2009Ha42: E(^{78}Kr)=342, 348 MeV; 96% enriched ^{96}Ru target followed by C charge reset foil; In-flight mass separation using RITU gas-filled separator; fusion-evaporation residues implanted In 2 double-sided Si strip detectors In the GREAT spectrometer (which also includes a multiwire proportional counter, 28 Si PIN diode detectors, a segmented planar Ge detector and a HPGe clover detector) At the RITU focal plane; JUROGAM γ-detector array (43 EUROGAM type escape-suppressed HPGe detectors distributed over 6 angles); recoil-decay tagging technique; measured Eα, α(t), α branching, α-correlated prompt Iγ, Eγ, angular distribution ratios; total routhian surface calculations.

^{172}Au Levels

The level scheme is tentative; No $\gamma\gamma$ coincidence data are available.

E(level)†	J$^\pi$	T$_{1/2}$	Comments
0.0	(3$^-$)	22 ms *+6−4*	T$_{1/2}$: from 6762α(t), As stated In table I from 2009Ha42; value In abstract is 22 ms *+6−5* and that In fig. 3 is 22 ms *6*. J$^\pi$: possible π (s$_{1/2}$,d$_{3/2}$) $\otimes$ ν (f$_{7/2}$,h$_{9/2}$) or π (s$_{1/2}$,d$_{3/2}$) $\otimes$ ν i$_{13/2}$ state (2009Ha42). Possibly J$^\pi$=(3$^-$) analogous to ^{174}Au and ^{176}Au (2009Ha42).
0.0+x	(9$^+$)	9 ms *+2−1*	J$^\pi$: Possible π h$_{11/2}$ $\otimes$ ν (f$_{7/2}$,h$_{9/2}$) state. Possibly (9$^+$), analogous to ^{174}Au and ^{176}Au; very tentative value (2009Ha42). T$_{1/2}$: from 6870α(t). other: 8 ms *+5−2* from 6800α(t) (2009Ha42). ADOPTED value is 7.7 ms *15*.
459.7+x *6*			
748.42+x *10*			E(level): an alternative value of 896.2+x is possible because the order of 289γ and 437γ has not been established.
822.3+x? *5*			
870.70+x? *20*			
1184.98+x? *22*			
1367.7+x? *6*			E(level): an alternative value of 1282.0+x is possible because the order of 460γ and 545γ has not been established.
1827.4+x? *9*			

† From least-squares fit to Eγ.

γ(^{172}Au)

E$_\gamma$	I$_\gamma$†	E$_i$(level)	E$_f$	Mult.‡	Comments
x115.6# *3*	#				
x143.2 *8*	26 *2*				
x156.6 *2*	9 *1*				
x164.1 *2*	9 *1*				E$_\gamma$,I$_\gamma$: for unresolved doublet.
x207.8 *2*	6 *1*				
x214.7# *3*	#				
x240.4 *2*	7 *1*				
x268.1 *3*	≤5				
288.7 *1*	14 *2*	748.42+x	459.7+x	D	Mult.: R=0.62 *12*.
x335.4 *5*	≤5				
x345.4 *3*	7 *2*				
x351.9# *3*	#				
363.4@& *7*	47@ *2*	822.3+x?	459.7+x		Mult.: R=1.02 *8* for doublet.
363.4@& *7*	47@ *2*	1184.98+x?	822.3+x?		Mult.: R=1.02 *8* for doublet.

Continued on next page (footnotes at end of table)

^{96}Ru(^{78}Kr,pnγ) 2009Ha42 (continued)

$\gamma(^{172}Au)$ (continued)

E_γ	I_γ[†]	E_i(level)	E_f	J^π_f	Mult.[‡]	Comments
[x]377.9 *4*	≤5					
[x]406.2 *4*	7 *2*					
411.0[&] *2*	22 *2*	870.70+x?	459.7+x		D	Mult.: R=0.63 *15*.
436.5[&] *2*	26 *2*	1184.98+x?	748.42+x			
459.7[@] *6*	100[@] *4*	459.7+x	0.0+x	(9^+)		Mult.: R=1.09 *6* for doublet.
459.7[@&] *6*	100[@] *4*	1827.4+x?	1367.7+x?			Mult.: R=1.09 *6* for doublet.
[x]469.5 *2*	25 *9*					
[x]480.4 *1*	45 *2*					
[x]509.0 *4*	10 *2*					
[x]518.6 *1*	63 *3*				D	Mult.: R=0.69 *7*.
545.4[&] *3*	21 *2*	1367.7+x?	822.3+x?			
[x]549.9 *2*	22 *2*					
[x]575.0 *3*	18 *2*					
[x]578.9 *8*	≤6					
[x]606.6 *7*	≤5					
[x]626.9 *1*	61 *3*				Q	Mult.: R=1.30 *12*.
[x]644.8 *4*	13 *2*					
[x]678.2 *3*	28 *2*					
[x]696.0 *3*	21 *2*					
[x]708.9 *3*	21 *3*				D	Mult.: R=0.72 *22*.
[x]818.3 *6*	7 *2*					
[x]913.1 *10*	7 *2*					
[x]943.6 *10*	7 *2*					
[x]991.6 *5*	11 *2*					

[†] Relative to I(460γ)=100; from prompt γ spectrum correlated with α decay from the 7.7-ms high-spin isomer of ^{172}Au, unless noted to the contrary.
[‡] Based on measured angular distribution ratio, R=Iγ(157°)/(Iγ(94°)+Iγ(86°)).
[#] Observed only In γ spectrum correlated with α decay from ^{172}Au g.s.. if I(352γ)=^{100,}I(116γ):I(215γ):I(352γ)=36 *18*:80 *35*:100 *34*.
[@] Multiply placed with undivided intensity.
[&] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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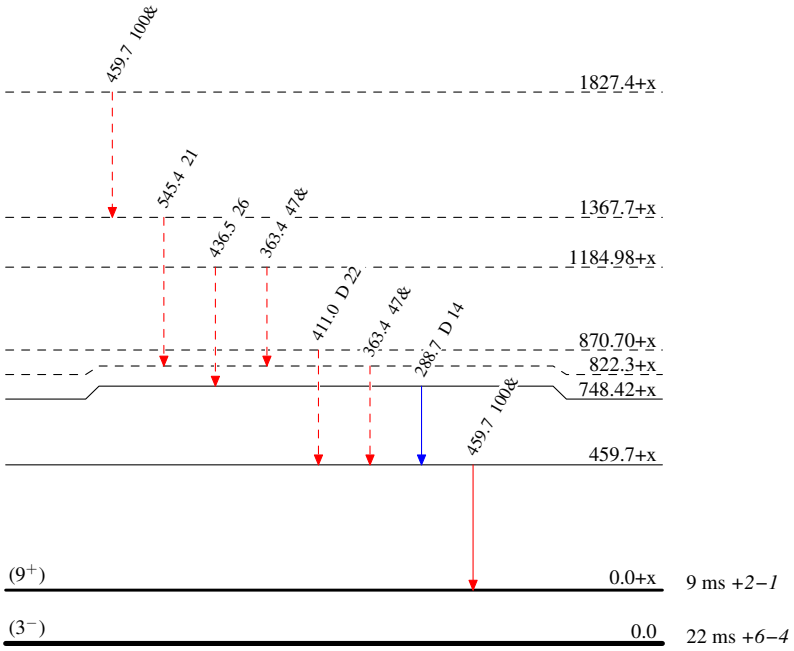
Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



$^{172}_{79}Au_{93}$