# Adopted Levels, Gammas

	,	Туре	Author	History Citation Literature Cutoff Date				
	Full I	Evaluation D. A	briola(a), A. A. So	onzogni NDS 109,2501 (2008) 1-Apr-2008				
$Q(\beta^{-}) = -6393 l$ Note: Current e $\alpha$ : Additional in	0; S(n)=106 valuation ha	94 10; S(p)=7348 s used the followi	5; Q(α)=-1696.2 ng Q record -6393	9 2012Wa38 3 1010694 107344 9 –1692 9 2003Au03.				
				<sup>96</sup> Ru Levels				
			Cross R	Reference (XREF) Flags				
		A B C D E	<sup>96</sup> Rh ε decay (9 <sup>96</sup> Rh ε decay (1 (HI,xnγ) <sup>96</sup> Ru(p,p'γ) <sup>96</sup> Ru( $\alpha,\alpha'$ )	$\begin{array}{rcl} 2.90 \text{ min} & \mathbf{F} & \text{Coulomb excitation} \\ 1.51 \text{ min} & \mathbf{G} & {}^{96}\text{Ru}(\gamma,\gamma') \\ & \mathbf{H} & {}^{65}\text{Cu}({}^{36}\text{S},\text{p4n}\gamma) \\ & \mathbf{I} & {}^{95}\text{Mo}({}^{3}\text{He},2\text{n}\gamma) \end{array}$				
E(level)	$J^{\pi \dagger}$	T <sub>1/2</sub> ‡	XREF	Comments				
0.0#	0+	stable	ABCDEFGHI	T <sub>1/2</sub> : With Q(2 $\varepsilon$ )=2718 keV 8 and Q(2 $\beta^+$ )=674 keV 8 (2003Au03), <sup>96</sup> Ru could decay to <sup>96</sup> Mo by 2 $\varepsilon$ , 2 $\beta^+$ or $\varepsilon\beta^+$ . Experimentally, only upper limits were obtained, the shortest value being T <sub>1/2</sub> (2 $\beta^+$ )>3.1x10 <sup>16</sup> y with a 68% confidence level (1985No03). <r<sup>2&gt;<sup>1/2</sup>(charge)=4.393 5 (2004An14).</r<sup>				
832.56 <sup>#</sup> 5	2+	2.94 ps 6	ABCDEFGHI	Q=-0.13 9 (1980La01,1989Ra17); B(E2) $\uparrow$ =0.240 5 J <sup>π</sup> : $\gamma$ to 0 <sup>+</sup> is E2. T <sub>1/2</sub> : from B(E2) value, see Coulomb Excitation dataset.				
1518.05 <sup>#</sup> 6	4+	6.9 ps 5	ABCDEF HI	$J^{\pi}$ : stretched E2 cascade in ( $\alpha$ ,2n $\gamma$ ). T <sub>1/2</sub> : Weighted av of 6.8 ps 7 from <sup>65</sup> Cu( <sup>36</sup> S,p4n $\gamma$ ), 6.9 ps 9 from Coulomb excitation and 6.9 ps 9 from <sup>95</sup> Mo( <sup>3</sup> He 2n $\gamma$ )				
1931.07 6	2+	0.38 ps <i>3</i>	AB D FG I	$T_{1/2}$ : Weighted av of 0.38 ps +15–11 from <sup>96</sup> Ru(p,p' $\gamma$ ), 0.39 ps 6 from Coulomb excitation and 0.37 ps 6 from <sup>95</sup> Mo( <sup>3</sup> He,2n $\gamma$ ). $J^{\pi}$ : E2+M1 $\gamma$ to 2 <sup>+</sup> . J=2 from p $\gamma(\theta)$ in (p,p' $\gamma$ ) (1979La15,1986Ad04)				
2148.78 7	$0^{+}$	0.46 <sup>d</sup> ps +63-	18 BD I	$J^{\pi}$ : from $p\gamma(\theta)$ in $(p,p'\gamma)$ , E2 $\gamma$ to 2 <sup>+</sup> .				
2149.74 <sup>#</sup> 7	6+	15 ps 5	A CDE HI	J <sup><math>\pi</math></sup> : from Hauser-Feshbach analysis, E2 $\gamma$ to 4 <sup>+</sup> . T <sub>1/2</sub> : Weighted av of 12.7 ps <i>10</i> from <sup>65</sup> Cu( <sup>36</sup> S,p4n $\gamma$ ) and 26 ps 2 form <sup>95</sup> Mo( <sup>3</sup> He 2n)				
2283.88 9	2+	0.15 fs 5	ABDF I	$J^{\pi}$ : from $\sigma(\theta)$ in Coulomb Excitation. $T_{1/2}$ : from B(E2) (Coulomb Excitation).				
2462.16 9	4	$0.10^a \text{ ps } +5-3$	AB D I	$J^{\pi}$ : J from $\gamma\gamma(\theta)$ (2002K107).				
2524.85 9 2528.47 10 2576.02 0	$3^+, 4^+$ $1^+, 2^+$ $(2^+)$	<0.4 <sup><i>a</i></sup> ps	ABD I DI	$J^{\pi}$ : $p\gamma(\theta)$ in $(p,p'\gamma)$ and Hauser-Feshbach analysis. $J^{\pi}$ : from $p\gamma(\theta)$ in $(p,p'\gamma)$ .				
2579.02 9	$(2^{-})^{+}$ 1 <sup>+</sup> ,2 <sup>+</sup> ,3 <sup>+</sup>		D D	E2+M1 $\gamma$ to 2 <sup>+</sup> .				
2588.41 <sup>@</sup> 8	5-	≥2.8 ps	ABCD HI	$J^{\pi}$ : E1 $\gamma$ to 4 <sup>+</sup> and log <i>ft</i> =6.8 from 6 <sup>+</sup> .				
2649.99 9 2699 80 18	$3^{(-)}$		ABD I	J <sup><math>\pi</math></sup> : J from $\gamma\gamma(\theta)$ (2002Kl07), parity from syst.				
2739.78 12	(2 <sup>+</sup> )	<0.4 <sup><i>d</i></sup> ps	B D I	J <sup><math>\pi</math></sup> : From p $\gamma(\theta)$ in (p,p' $\gamma$ ), Hauser-Feshbach analysis in (p,p' $\gamma$ ) gives 2 <sup>+</sup> ,3 <sup>+</sup> , $\gamma$ to 0 <sup>+</sup> excludes 3 <sup>+</sup> .				
2760.20 <i>9</i> 2793.89 <i>8</i>	(4 <sup>+</sup> ,5) (5,6)	<0.12 <sup><i>d</i></sup> ps	ABD I AEI	$J^{\pi}$ : Hauser-Feshbach analysis in (p,p' $\gamma$ ). $J^{\pi}$ : From $\gamma\gamma(\theta)$ and spin and parity selection rules from 2002K107.				

Continued on next page (footnotes at end of table)

# <sup>96</sup>Ru Levels (continued)

E(level)	$J^{\pi \dagger}$	$T_{1/2}^{\ddagger}$	XRI	EF	Comments
2851.12 14	(2+,3)	0.14 <sup><i>a</i></sup> ps +10-5	DE	I	J <sup><math>\pi</math></sup> : From $\gamma\gamma(\theta)$ and spin and parity selection rules from 2002K107.
2891.64 9	6+	$< 0.20^{d}$ ps	AC	I	$J^{\pi}$ : $\gamma(\theta)$ in HI reactions.
2897.61 13	3 <sup>(+)</sup>	$<0.4^{d}$ ps	A D	I	$J^{\pi}$ : from $\gamma \gamma(\theta)$ (2002K107).
2950.39 <sup>#</sup> 8	8+	11 ps 4	A C	HI	J <sup><math>\pi</math></sup> : stretched E2 cascade in ( $\alpha$ ,2n $\gamma$ ). T <sub>1/2</sub> : Weighted av. of 9.5 ps 8 from <sup>65</sup> Cu( <sup>36</sup> S,p4n $\gamma$ ) and 20 ps 2
					from ${}^{95}$ Mo( ${}^{3}$ He,2n).
2987.8 <i>3</i>	(0,4)		D		
2996.30 16	$2^+, 3^+, 4^+$		ΒD	I	$J^{\pi}$ : log ft=5.4 from 3 <sup>+</sup> <sup>96</sup> Rh isomer gives (2,3,4) <sup>+</sup> .
3060.46 15	(1,4)		D	I	$J^{n}$ : From $\gamma\gamma(\theta)$ and spin and parity selection rules from 2002K107.
3072.21 21	$(3^{-},4)$			I	$J^{\pi}$ : $\gamma$ to 5 <sup>-</sup> ; not seen in decay of 6 <sup>+ 90</sup> Rh isomer.
30/6.28 11	3-		BD	I	
3077.1 5	(5,6)	4	AB		J <sup><math>\pi</math></sup> : log ft=7.0 from 6 <sup>+ 90</sup> Rh isomer gives (5,6,7); $\gamma$ to 4 <sup>+</sup> .
3090.20 19	2+	<0.13 <sup><i>a</i></sup> ps	B DE	I	$J^{\pi}$ : log ft=5.65 from 3 <sup>+</sup> 96Rh isomer gives 2 <sup>+</sup> ,3 <sup>+</sup> ,4 <sup>+</sup> ; $\gamma$ to 0 <sup>+</sup> .
3154.24 20	$1^{(+)}$	$3.12^{ac}$ fs 14		G	$J^{\pi}$ : D $\gamma$ to 0 <sup>+</sup> and two more $\gamma$ 's to 2 <sup>+</sup> levels.
3166.76 21	(5,6)		A D	I	log $ft$ =6.3 from 6 <sup>+ 96</sup> Rh isomer gives (5,6,7); $\gamma$ to 4 <sup>+</sup> .
3172.4 3	$(9^+)$			н	
3210.13 22	(2,0)		D D	1	
3252.2 5	(0,4) 2+		ע	т	$I^{\pi}$ : log ft-5 42 from 2 <sup>+</sup> 96Ph isomer: at to 0 <sup>+</sup>
3281 3 3	$(37)^{2}$		ЪЪ	T	<b>J</b> . $\log ji = 5.42$ from 5 Kir isomer, $\gamma$ to 0.
3282.4 3	1	49.2 <sup>c</sup> fs 35		G	$J^{\pi}$ : D $\gamma$ to $0^+$ g.s.
3291.46 <sup>@</sup> 15	7-	$7.1^{b}$ ps 9	A C	HI	$J^{\pi}$ : stretched cascade in ( $\alpha$ ,2n $\gamma$ ) and $\gamma\gamma(\theta)$ and spin and parity selection rules from 2002K107.
3291 54 18	$4^{+}$	$<0.4^{d}$ ps	AB	т	$I^{\pi}$ : from $\gamma\gamma(\theta)$ (2002K107) $\gamma$ to 2 <sup>+</sup>
3306 78 12	5	(0.1 pb	A	-	$I^{\pi}$ : log $f_{t}=6.2$ from $6^{+.96}$ Rh isomer gives (5.6.7): $\gamma$ to $3^{(-)}$
3362.54 20	(4.8)		A		5. 105 ji 0.2 from 0 - Rit isomer gross (0,0,7), 7 to 5 -
3377.55 10	5+		Α		$J^{\pi}$ : log ft=5.4 from 6 <sup>+</sup> 9 <sup>6</sup> Rh isomer gives (5.6.7) <sup>+</sup> ; $\gamma$ to 3 <sup>-</sup> .
3380.51 10	$(6,7)^+$		Α		$J^{\pi}$ : log ft=5.4 from 6 <sup>+</sup> 9 <sup>6</sup> Rh isomer gives (5.6.7) <sup>+</sup> ; $\gamma$ to 8 <sup>+</sup> .
3447.9 10	1	126 <sup>C</sup> fs 21		G	$J^{\pi}$ : D $\gamma$ to 0 <sup>+</sup> g.s.
3479.6 <i>3</i>	1	35.3 <sup>c</sup> fs 28		G	$J^{\pi}$ : D $\gamma$ to $0^+$ g.s.
3544.52 13	(6,7)		Α		J <sup><math>\pi</math></sup> : $\gamma$ to 5; log <i>ft</i> =6.6 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7); $\gamma$ to 8 <sup>+</sup> .
3706.50 18	$(5,6)^+$		Α		J <sup><math>\pi</math></sup> : log ft=5.8 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7) <sup>+</sup> ; $\gamma$ to 4 <sup>+</sup> .
3742.87 15	(5,6)		Α		$J^{\pi}$ : log <i>ft</i> =6.3 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7); $\gamma$ to 4 <sup>+</sup> .
3755.15 20	$(5,6,7)^+$		Α		$J^{\pi}$ : log ft=5.7 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7) <sup>+</sup> ; $\gamma$ to 8 <sup>+</sup> .
3805.69 20	(5,6,7)		Α		$J^{\pi}$ : log ft=6.4 from 6 <sup>+</sup> <sup>96</sup> Rh isomer.
3817.22 <sup>#</sup> <i>13</i>	$10^{+}$	3.5 <sup>b</sup> ps 4	С	Н	J <sup><math>\pi</math></sup> : stretched E2 cascade in ( $\alpha$ ,2n $\gamma$ ).
3887.23 11	$(5,6,7)^+$		Α		$J^{\pi}$ : log ft=5.4 from 6 <sup>+</sup> <sup>96</sup> Rh isomer.
3928.6 <sup>&amp;</sup> 4	$(10^{+})$			Н	
3951.08 <sup>@</sup> 17	9-	8.3 <sup>b</sup> ps 8	С	Н	$J^{\pi}$ : E2 $\gamma$ to 7 <sup>-</sup> .
4057.52 20	(5,6)	1	Α		$J^{\pi}$ : log <i>ft</i> =6.0 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7); $\gamma$ to 4 <sup>+</sup> .
4080.28 15	(5,6,7)+		A		J <sup><math>\pi</math></sup> : log <i>ft</i> =5.9 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7) <sup>+</sup> ; $\gamma$ to 2 <sup>+</sup> would be an unlikely [M3] and select 5 <sup>+</sup> .
4112.99 12	$(6,7)^+$		Α		J <sup><math>\pi</math></sup> : log ft=5.7 from 6 <sup>+96</sup> Rh isomer gives (5,6,7) <sup>+</sup> ; $\gamma$ to 8 <sup>+</sup> 5.69.
4148.2 5	(5,6,7)		Α		$J^{\pi}$ : log ft=7.5 from 6 <sup>+</sup> 9 <sup>6</sup> Rh isomer gives (5,6,7); $\gamma$ to 6 <sup>+</sup> .
4210.8 4	(5,6,7)		Α		$J^{\pi}$ : log ft=6.7 from 6 <sup>+</sup> 9 <sup>6</sup> Rh isomer.
4262.1 4	(8,12)		С		
4265.0 <sup>&amp;</sup> 4	$(11^{+})$			Н	

Continued on next page (footnotes at end of table)

# <sup>96</sup>Ru Levels (continued)

E(level)	$J^{\pi \dagger}$	$T_{1/2}^{\ddagger}$	XRI	EF	Comments
4418 27 <sup>#</sup> 16	12+	$21^{b}$ ns 3	C	н	$I^{\pi}$ stretched F2 to $10^+$
4521 08 20	$(5.6)^+$	21 ps 5	A		$I^{\pi}$ : log $f_{t=5.5}$ from $6^{+.96}$ Rh isomer gives $(5.6.7)^{+}$ : $\gamma$ to 4 rules out 7
4534.03 21	10-		° c	Н	
4560.93 19	$(5,6)^+$		Α		$J^{\pi}$ : log ft=5.6 from 6 <sup>+</sup> 9 <sup>6</sup> Rh isomer gives (5.6.7) <sup>+</sup> ; $\gamma$ to 4 <sup>+</sup> .
4592.5 5	(5,6,7)		Α		$J^{\pi}$ : log ft=6.0 from 6 <sup>+</sup> 9 <sup>6</sup> Rh isomer gives (5,6,7); $\gamma$ to 2 <sup>+</sup> .
4598.9 7			С		
4710.9 <mark>&amp;</mark> 3	$(12^{+})$			Н	
4777.42 12	5+		A		J <sup><math>\pi</math></sup> : log <i>ft</i> =5.1 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7) <sup>+</sup> ; $\gamma$ to 3 <sup>-</sup> rules out 6 and 7.
4798.7 <sup>@</sup> 3	$11^{(-)}$	2.6 <sup>b</sup> ps 5	С	Н	
4866.0? 4	(10, 14)		С		
4949.64 17	5+		Α		$J^{\pi}$ : log <i>ft</i> =5.3 from 6 <sup>+</sup> <sup>96</sup> Rh isomer gives (5,6,7) <sup>+</sup> ; $\gamma$ to 3 <sup>+</sup> rules out 6 and 7.
5274.3? 4	(9,13)		C		
5531.9 <sup>&amp;</sup> 3	$(13^{+})$			Н	
5533.9? 5	(11 <sup>-</sup> )		C	Н	
5541.47 22	$(5,6,7)^+$	1	Α		$J^{\pi}$ : log ft=4.96 from 6 <sup>+ 96</sup> Rh isomer.
5680.69 <sup>#</sup> 19	14+	2.43 <sup>b</sup> ps 21	С	Н	$J^{\pi}$ : E2 $\gamma$ to 12 <sup>+</sup> .
5750.2 <sup>@</sup> 3	$13^{(-)}$	2.1 <sup>b</sup> ps 4	С	Н	
5978.5 <sup>&amp;</sup> 4	$(14^{+})$			Н	
5994.5? 4	(9,13)		С		
6278.3 <i>3</i>	$14^{(-)}$		С	Н	
6441.61 <sup>#</sup> 24	16+	≤7.4 <mark>¢</mark> ps	С	Н	$J^{\pi}$ : E2 from 14 <sup>+</sup> .
6678.9 5	(14,18)			Н	
6754.1 <sup>@</sup> 4	$15^{(-)}$			Н	
6769.8 5	(14,18)			Н	
6777.1 4	$16^{(-)}$			H	
7415.0 5	(1/') $(16^+)$			Н	
7423.2 5	$(10^{-})$ $(17^{+})$			п	
7558 3 5	$17^{(-)}$			н	
$7951.2^{\circ}$ 5	17(-)	$< 1.2^{b}$ ps		и	
8187.6 10	$(17^{+})$	≤4.2 ps		н	
8205 7 <sup>#</sup> 5	18+		C	н	$I^{\pi}$ . F2 v to 16 <sup>+</sup>
8236.0.5	$18^{(-)}$		C	н	
8499.6 10	$(17^{+})$			Н	
8644.1 <i>6</i>	(18+)			Н	
8736.2 6	$(18^{+})$			Η	
8968.8 11	$(18^+)$			H	
9101.0 11	$(18^+)$			H	
9249.1 /	$(20^{-})$			H U	
9250.50	$(10^{-})$			11	
9591.4 - J 9586.4 7	(19) $(20^{+})$			н Н	
9665.3 6	$(19^{-})$			H	
9713.4 7	(19 <sup>+</sup> )			Н	
9852.2 12	(20 <sup>+</sup> )			Н	
9892.3 7	$(21^{-})$			Н	
9992.4 <sup>@</sup> 6	(21 <sup>-</sup> )			Н	
9997.4 8	$(21^{+})$			Н	
10592.8 9	$(22^{+})$			Н	

# <sup>96</sup>Ru Levels (continued)

E(level)	$J^{\pi \dagger}$	XREF
10631.5 8	$(22^{+})$	Н
10720.4 8	$(22^{+})$	Н
11066.1 12	$(22^{+})$	Н
11360.1 12	$(22^{+})$	Н
11601.4 <sup>@</sup> 12	(23 <sup>-</sup> )	Н

 $^{\dagger}$  From  $\sigma(\theta)$  and  $\gamma$  decay patterns, except as noted.

<sup>‡</sup> From (p,p' $\gamma$ ), except where noted.

<sup>#</sup> Band(A): g.s. cascade.

<sup>a</sup> Band(A): g.s. cascade. <sup>a</sup> Band(B): 5<sup>-</sup> cascade. <sup>b</sup> Band(C): (10<sup>+</sup>) cascade. <sup>a</sup> From <sup>96</sup>Ru(p,p' $\gamma$ ). <sup>b</sup> From RDDS in <sup>65</sup>Cu(<sup>36</sup>S,p4n $\gamma$ ). <sup>c</sup> From <sup>96</sup>Ru( $\gamma$ , $\gamma'$ ). <sup>d</sup> From DSAM in <sup>95</sup>Mo(<sup>3</sup>He,2n $\gamma$ ).

	Adopted Levels, Gammas (continued)											
							$\gamma(^{96}\text{Ru})$					
E <sub>i</sub> (level)	$\mathbf{J}_i^{\pi}$	$E_{\gamma}$	$I_{\gamma}$	$\mathbf{E}_f = \mathbf{J}_f^{\pi}$	Mult. <sup>&amp;</sup>	δ	α	Comments				
832.56	2+	832.55 5	100	0.0 0+	E2		0.001360 19	$\alpha(K)=0.001190\ 17;\ \alpha(L)=0.0001395\ 20;\ \alpha(M)=2.56\times10^{-5}\ 4$ $\alpha(O)=2.11\times10^{-7}\ 3;\ \alpha(N+)=4.33\times10^{-6}$ B(E2)(W.u.)=18.4 4				
1510.05			100		50		0.00000 (	E <sub>γ</sub> : weighted average of 832.52 <i>10</i> ( <sup>96</sup> Rh ε decay (9.90 min)), 832.51 9 ((HI,xnγ)), 832.57 5 ( <sup>96</sup> Ru(p,p'γ)), 831.6 4 ( <sup>65</sup> Cu( <sup>36</sup> S,p4nγ)), 832.6 <i>1</i> ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).				
1518.05	4+	685.47 4	100	832.56 2*	E2		0.00222 4	$\alpha(K)=0.00194 \ 3; \ \alpha(L)=0.000231 \ 4; \ \alpha(M)=4.24\times10^{-5} \ 6; \\ \alpha(N)=6.82\times10^{-6} \ 10; \ \alpha(O)=3.42\times10^{-7} \ 5 \\ \alpha(N+)=7.16\times10^{-6} \ 10 \\ B(E2)(Wu)=20.7 \ 15 $				
								E <sub>γ</sub> : weighted average of 685.47 <i>10</i> ( <sup>96</sup> Rh ε decay (9.90 min)), 685.34 <i>12</i> ((HI,xnγ)), 685.49 <i>5</i> ( <sup>96</sup> Ru(p,p'γ)), 685.1 <i>4</i> ( <sup>65</sup> Cu( <sup>36</sup> S,p4nγ)), 685.5 <i>1</i> ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).				
1931.07	2+	1098.49 5	100 4	832.56 2+	E2+M1	-1.1 1	0.000745 11	$\begin{aligned} &\alpha(\text{K}) = 0.000654 \ 10; \ \alpha(\text{L}) = 7.46 \times 10^{-5} \ 11; \ \alpha(\text{M}) = 1.366 \times 10^{-5} \ 20 \\ &\alpha(\text{O}) = 1.174 \times 10^{-7} \ 18; \ \alpha(\text{N}+) = 2.33 \times 10^{-6} \\ &\text{B}(\text{E2})(\text{W.u.}) = 18.4 \ 24; \ \text{B}(\text{M1})(\text{W.u.}) = 0.019 \ 3 \end{aligned}$				
		1030.0.2	6.0.10	0.0 0+				E <sub>γ</sub> : weighted average of 1098.2 2 ( <sup>96</sup> Rh ε decay (9.90 min)), 1098.51 5 ( <sup>96</sup> Ru(p,p'γ)), 1098.5 1 ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)). Mult.,δ: from <sup>95</sup> Mo( <sup>3</sup> He,2nγ). $B(E_2)(W_R) = 35.6$ ; $B(M1)(W_R) = 0.0016.7$				
	o.+	1930.9 2	0.0 10	0.0 0				$E_{\gamma,I_{\gamma}}$ : from <sup>95</sup> Mo( <sup>3</sup> He,2n\gamma).				
2148.78	0+	1316.22 6	100	832.56 2+	E2		0.000517 8	$\alpha(K)=0.000429\ 6;\ \alpha(L)=4.88\times10^{-3}\ 7;\ \alpha(M)=8.93\times10^{-6}\ 13;$ $\alpha(N)=1.445\times10^{-6}\ 21$				
								$\alpha(O) = 7.65 \times 10^{-6} II; \ \alpha(N+) = 3.05 \times 10^{-5} 5$ B(E2)(W.u.) = 12 + 5-12				
								$E_{\gamma}$ : weighted average of 1316.23 7 ( <sup>90</sup> Ru(p,p' $\gamma$ )), 1316.2 1 ( <sup>95</sup> Mo( <sup>3</sup> He,2n $\gamma$ )).				
2149.74	6+	631.70 4	100	1518.05 4+	E2		0.00276 4	$\alpha$ (K)=0.00241 4; $\alpha$ (L)=0.000289 4; $\alpha$ (M)=5.31×10 <sup>-5</sup> 8; $\alpha$ (N)=8.52×10 <sup>-6</sup> 12; $\alpha$ (O)=4.24×10 <sup>-7</sup> 6				
								$\alpha$ (N+)=8.95×10 <sup>-6</sup> <i>13</i> B(E2)(W.u.)=14 <i>5</i>				
								E <sub>γ</sub> : weighted average of 631.73 <i>10</i> ( <sup>96</sup> Rh ε decay (9.90 min)), 631.64 <i>10</i> ((HI,xnγ)), 631.71 <i>7</i> ( <sup>96</sup> Ru(p,p'γ)), 632.1 <i>4</i> ( $^{65}$ Cu( $^{36}$ S,p4nγ)), 631.7 <i>1</i> ( $^{95}$ Mo( $^{3}$ He,2nγ)).				
2283.88	2+	1451.31 <i>12</i>	100 3	832.56 2+	(M1+E2)	+0.12 3	0.000489 7	$\alpha(\mathbf{K}) = 0.000381 \ 6; \ \alpha(\mathbf{L}) = 4.28 \times 10^{-5} \ 6; \ \alpha(\mathbf{M}) = 7.83 \times 10^{-6} \ 11; \\ \alpha(\mathbf{N}) = 1.272 \times 10^{-6} \ 18 $				
								$\alpha(O) = 6.87 \times 10^{-6} \ I0; \ \alpha(N+) = 5.78 \times 10^{-5} \ 9$ B(E2)(W.u.)=(3.0×10 <sup>2</sup> \ I8); B(M1)(W.u.)=(44 \ I5)				

S

From ENSDF

 $^{96}_{44}$ Ru<sub>52</sub>-5

<sup>96</sup><sub>44</sub>Ru<sub>52</sub>-5

I.

						Adopted	Levels, Gam	nas (continued	<u>1)</u>
							$\gamma$ ( <sup>96</sup> Ru) (cont	inued)	
E <sub>i</sub> (level)	$\mathbf{J}_i^\pi$	$E_{\gamma}$	$I_{\gamma}$	$E_f$	$\mathbf{J}_f^{\pi}$	Mult. <sup>&amp;</sup>	δ	α	Comments
2283.88	2+	2283.78 22	7.5 10	0.0	0+	E2		0.000612 9	E <sub>γ</sub> : weighted average of 1451.2 2 ( <sup>96</sup> Rh ε decay (9.90 min)), 1451.9 5 ( <sup>96</sup> Rh ε decay (1.51 min)), 1451.6 3 ( <sup>96</sup> Ru(p,p'γ)), 1451.2 2 ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)). I <sub>γ</sub> : from <sup>95</sup> Mo( <sup>3</sup> He,2nγ). $\alpha$ (K)=0.0001500 21; $\alpha$ (L)=1.675×10 <sup>-5</sup> 24; $\alpha$ (M)=3.06×10 <sup>-6</sup> 5
									$\alpha$ (O)=2.68×10 <sup>-8</sup> 4; $\alpha$ (N+)=0.000442 B(E2)(W.u.)=1.6×10 <sup>2</sup> 6
									E <sub>γ</sub> : weighted average of 2283.6 4 ( <sup>96</sup> Rh ε decay (9.90 min)), 2283.9 5 ( <sup>96</sup> Rh ε decay (1.51 min)), 2284.2 5 ( <sup>96</sup> Ru(p,p'γ)), 2283.6 4 ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)). I <sub>γ</sub> : from <sup>95</sup> Mo( <sup>3</sup> He,2nγ), other: 9 5 ( <sup>96</sup> Rh ε decay (1.51
2462.16	4	944.18 8	100	1518.05	4+	D+Q			min)), 7.5 22 ( $^{96}$ Ru(p,p' $\gamma$ )). E <sub><math>\gamma</math></sub> : weighted average of 944.07 10 ( $^{96}$ Rh $\varepsilon$ decay (9.90
2524.85	3+,4+	593.95 15	7.1 24	1931.07	2+				min)), 944.53 9 (* Ru(p,p γ)), 944.1 $T$ (* Mo(* He,2nγ)). E <sub>γ</sub> : weighted average of 594.1 2 ( <sup>96</sup> Rh ε decay (9.90 min)), 593.8 2 ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).
		1006.67 <i>19</i>	10.6 24	1518.05	4+				I <sub><math>\gamma</math></sub> : from <sup>96</sup> Ru(p,p' $\gamma$ ). E <sub><math>\gamma</math></sub> : weighted average of 1006.5 5 ( <sup>96</sup> Rh $\varepsilon$ decay (9.90 min)), 1006.7 2 ( <sup>96</sup> Ru(p,p' $\gamma$ )).
		1692.25 <i>14</i>	100.0 20	832.56	2+				I <sub>γ</sub> : from <sup>50</sup> Ru(p,p'γ). E <sub>γ</sub> : weighted average of 1692.3 2 ( <sup>96</sup> Rh ε decay (9.90 min)), 1692.2 2 ( <sup>96</sup> Ru(p,p'γ)). L : from <sup>96</sup> Ru(p, p'γ)
2528.47	1+,2+	1695.9 <i>1</i>	100 4	832.56	2+	(M1+E2)		0.000459 7	$\alpha(K) = 0.00269 \ lo^{-7} \ a(L) = 3.02 \times 10^{-5} \ l1; \ \alpha(M) = 5.52 \times 10^{-6} \ 20; \ \alpha(N) = 9.0 \times 10^{-7} \ 4 \ \alpha(O) = 4.82 \times 10^{-8} \ 21; \ \alpha(N+) = 0.000154 \ l$
		2528.4.3	30.4	0.0	$0^{+}$				$E_{\gamma}, F_{\gamma}$ . Observed only in (p,p $\gamma$ ). $E_{\gamma}, L_{\gamma}$ : from in (p,p' $\gamma$ ).
2576.02	(2+)	1743.39 10	100 4	832.56	2+	D+Q			E <sub><math>\gamma</math></sub> : weighted average of 1743.1 5 ( <sup>96</sup> Rh $\varepsilon$ decay (9.90 min)), 1743.4 <i>I</i> ( <sup>96</sup> Ru(p,p' $\gamma$ )).
		2576.13 17	43 4	0.0	$0^+$				$E_{\gamma}$ : weighted average of 2576.1 2 ( <sup>96</sup> Rh ε decay (1.51 min)), 2576.2 3 ( <sup>96</sup> Ru(p,p'γ)).
2579.02	1+,2+,3+	647.9 2	59 6	1931.07	2+	E2+M1	+2.0 +6-5	0.00257 4	

From ENSDF

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					Adopted L	evels, Gam	mas (continue	ed)
					<u> </u>	( <sup>96</sup> Ru) (cor	tinued)	
E <sub>i</sub> (level)	$\mathbf{J}_i^\pi$	Eγ	Iγ	$E_f  J_f^{\pi}$	Mult. <sup>&amp;</sup>	δ	α	Comments
2579.02	1+,2+,3+	1746.5 <sup>a</sup> 2	100 8	832.56 2+				
2588.41	5-	1070.36 5	100	1518.05 4+	E1+M2	-0.01 4	0.000333 6	$\begin{split} &\alpha(\mathrm{K}) {=} 0.000293 \ 6; \ \alpha(\mathrm{L}) {=} 3.28 {\times} 10^{-5} \ 6; \ \alpha(\mathrm{M}) {=} 5.99 {\times} 10^{-6} \ 11; \\ &\alpha(\mathrm{N}) {=} 9.70 {\times} 10^{-7} \ 18 \\ &\alpha(\mathrm{O}) {=} 5.18 {\times} 10^{-8} \ 10; \ \alpha(\mathrm{N} {+} {.}) {=} 1.022 {\times} 10^{-6} \ 19 \\ &\mathrm{B}(\mathrm{E1})(\mathrm{W.u.}) {<} 9.4 {\times} 10^{-5}; \ \mathrm{B}(\mathrm{M2})(\mathrm{W.u.}) {<} 0.34 \\ &\mathrm{E}_{\gamma}: \ \text{weighted average of } 1070.35 \ 10 \ (^{96}\mathrm{Rh} \ \varepsilon \ \mathrm{decay} \ (9.90 \\ \mathrm{min})), \ 1070.26 \ 12 \ ((\mathrm{HI},\mathrm{xn}\gamma)), \ 1070.36 \ 8 \ (^{96}\mathrm{Ru}(\mathrm{p,p'}\gamma)), \\ &1071.1 \ 4 \ (^{65}\mathrm{Cu}(^{36}\mathrm{S},\mathrm{p4n}\gamma)), \ 1070.4 \ 1 \ (^{95}\mathrm{Mo}(^{3}\mathrm{He,2n}\gamma)). \end{split}$
2649.99	3(-)	366.3 <sup>#</sup> 4	5.5 <sup>@</sup> 5	2283.88 2+				
		718.5 <sup>#</sup> 2	4.0 <sup>@</sup> 10	1931.07 2+				
		1131.9 <sup>#</sup> 2	$20.0^{\textcircled{0}}20$	1518.05 4+				
		1817.5 <sup>#</sup> 1	100 <sup>@</sup> 10	832.56 2+				
2699.80	4+,5	237.7 <mark>#</mark> 2		2462.16 4				
		1181.6 <sup>#a</sup> 3	_	1518.05 4+				
2739.78	$(2^{+})$	455.9 <sup>#</sup> 2	$3.50^{\textcircled{0}}{20}$	2283.88 2+				
		591.1 <sup>#</sup> 2	$0.25^{@}5$	2148.78 0+				
		808.6 <sup>#</sup> 2	$100^{@} 8$	1931.07 2+				
		1907.5 <sup>#</sup> 3	$40.0^{\textcircled{0}{0}}20$	832.56 2+				
2760.20	(4+,5)	1242.13 7	100	1518.05 4+				$E_{\gamma}$ : weighted average of 1242.14 <i>10</i> ( <sup>96</sup> Rh ε decay (9.90 min)), 1242.4 <i>3</i> ( <sup>96</sup> Ru(p,p'γ)), 1242.1 <i>1</i> ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).
2793.89	(5,6)	644.18 7	100 <sup>@</sup> 3	2149.74 6+				$E_{\gamma}$ : weighted average of 644.16 <i>10</i> ( <sup>96</sup> Rh ε decay (9.90 min)), 644.2 <i>1</i> ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).
		1275.78 7	67.0 <sup>@</sup> 20	1518.05 4+				E <sub>γ</sub> : weighted average of 1275.76 <i>10</i> ( <sup>96</sup> Rh $\varepsilon$ decay (9.90 min)), 1275.8 <i>1</i> ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).
2851.12	$(2^+,3)$	567.0 <sup>#</sup> 2	8.0 <sup>@</sup> 20	2283.88 2+				
		920.6 <sup>#</sup> 5	9 <sup>@</sup> 3	1931.07 2+				
		1332.8 <sup>#</sup> 3	13.3 <sup>@</sup> 5	1518.05 4+				
		2018.8 <sup>#</sup> 2	100 <sup>@</sup> 15	832.56 2+				
2891.64	6+	741.88 7	100	2149.74 6+	D+Q			$E_{\gamma}$ : weighted average of 741.87 <i>10</i> ( <sup>96</sup> Rh ε decay (9.90 min)), 741.8 <i>3</i> ((HI,xnγ)), 741.9 <i>I</i> ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).
2897.61	3 <sup>(+)</sup>	435.3 <sup>#</sup> 3	3.0 <sup>@</sup> 10	2462.16 4				
		613.8 <sup>#</sup> 3	20.0 <sup>@</sup> 20	2283.88 2+				
		966.8 <sup>#</sup> 2	100 <sup>@</sup> 12	1931.07 2+				
		1379.5 <sup>#</sup> 3	63 <sup>@</sup> 12	1518.05 4+				
		2064.7 <sup>#</sup> 3	20.0 <sup>@</sup> 20	832.56 2+				

<sup>96</sup><sub>44</sub>Ru<sub>52</sub>-7

				Ado	pted Level	s, Gammas (con	tinued)
					$\gamma$ ( <sup>96</sup> R	u) (continued)	
E <sub>i</sub> (level)	${ m J}^{\pi}_i$	Eγ	$I_{\gamma}$	$\mathbf{E}_f \qquad \mathbf{J}_f^{\pi}$	Mult. <sup>&amp;</sup>	α	Comments
2950.39	8+	800.68 6	100	2149.74 6+	E2	0.001496 21	$\begin{aligned} \alpha(K) &= 0.001309 \ 19; \ \alpha(L) = 0.0001539 \ 22; \ \alpha(M) = 2.82 \times 10^{-5} \ 4 \\ \alpha(O) &= 2.32 \times 10^{-7} \ 4; \ \alpha(N+) = 4.77 \times 10^{-6} \\ B(E2)(W.u.) &= 6.0 \ 22 \\ E_{\gamma}: \ weighted \ average \ of \ 800.70 \ 10 \ (^{96} Rh \ \varepsilon \ decay \ (9.90 \ min)), \\ 800.55 \ 13 \ ((HI, xn\gamma)), \ 801.2 \ 4 \ (^{65} Cu(^{36} S, p4n\gamma)), \ 800.7 \ 1 \\ (^{95} Mo(^{3} He \ 2n\gamma)) \end{aligned}$
2987.8	(0.4)	2155.2.3	100	832.56 2+			( 100( 110,2117)).
2996.30	2+,3+,4+	471.4 <sup>#</sup> 5	15 5	2524.85 3+,4+			I <sub><math>\gamma</math></sub> : weighted average of 15 6 ( <sup>96</sup> Rh $\varepsilon$ decay (1.51 min)) and 15 5 ( <sup>95</sup> Mo( <sup>3</sup> He,2n $\gamma$ )).
		533.7 <sup>#</sup> 3	3.1 5	2462.16 4			I <sub><math>\gamma</math></sub> : weighted average of 3.08 ( <sup>96</sup> Rh $\varepsilon$ decay (1.51 min)) and 3.1 5 ( <sup>95</sup> Mo( <sup>3</sup> He,2n $\gamma$ )).
		1479.0 <sup>#</sup> 5	17.5 22	1518.05 4+			I <sub><math>\gamma</math></sub> : weighted average of 17 6 ( <sup>96</sup> Rh $\varepsilon$ decay (1.51 min)) and 17.6 24 ( <sup>96</sup> Ru(p,p' $\gamma$ )).
		2163.8 <sup>#</sup> 2	100.0 23	832.56 2+			I <sub><math>\gamma</math></sub> : weighted average of 100 <i>11</i> ( <sup>96</sup> Rh $\varepsilon$ decay (1.51 min)) and 100.0 24 ( <sup>96</sup> Ru(p,p' $\gamma$ )).
3060.46	(1,4)	776.8 <sup>#</sup> 3	$25^{@}$ 7	2283.88 2+			
		1129.1 <sup><b>#</b></sup> 2	$100^{@}$ 7	1931.07 2+			
		2228.3 <sup>#</sup> 3	$20^{@}$ 7	832.56 2+			
3072.21	(3 <sup>-</sup> ,4)	483.8 2	100	2588.41 5-			
3076.28	3-	425.7 4	18.0 <sup>@</sup> 20	2649.99 3 <sup>(-)</sup>			$E_{\gamma}$ : weighted average of 425.2 <i>10</i> ( <sup>96</sup> Ru(p,p'γ)), 425.8 5 ( <sup>95</sup> Mo( <sup>3</sup> He,2nγ)).
		487.0 <sup>#</sup> 5	32 <sup>@</sup> 9	2588.41 5-			
		614.9 <sup><b>#</b></sup> 2	8.0 <sup>@</sup> 10	2462.16 4			
		1144.9 <sup><b>#</b></sup> 2	55 <sup>@</sup> 3	1931.07 2+			
		1557.4 <sup>#</sup> 3	$1.0 \times 10^{2}$ @ 4	1518.05 4+			
		2244.0 <sup>#</sup> 5	2.2 <sup>@</sup> 5	832.56 2+			
3077.1	(5,6)	1559.0 5	100	1518.05 4+			$E_{\gamma}$ : from <sup>96</sup> Rh $\varepsilon$ decay (1.51 min).
3090.20	2+	2257.6 <sup>#</sup> 2	$100^{@} 6$	832.56 2+			
		3090.2 <sup>#</sup> 5	6.4 <sup>@</sup> 21	$0.0  0^+$			
3154.24	$1^{(+)}$	1224.1 6	28 10	1931.07 2+			
		2321.5 3	6.0 10	832.56 2+			
		3154.1 3	100 8	$0.0  0^+$	D		
3166.76	(5,6)	1648.7 <sup>#</sup> 2	100	1518.05 4+			
3172.4	(9+)	222.7 4	100	2950.39 8+	D		
3210.13	(2,6)	1692.0 <sup>#</sup> 3	100 <sup>@</sup> 15	1518.05 4+			
		2377.6 <sup>#</sup> 3	64 <sup>@</sup> 25	832.56 2+			

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 $^{96}_{44}$ Ru<sub>52</sub>-8

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#### Adopted Levels, Gammas (continued) $\gamma(^{96}\text{Ru})$ (continued) Mult. & Comments $E_i$ (level) $J_i^{\pi}$ Eγ $I_{\gamma}$ $\mathbf{E}_{f}$ α 3232.2 (0,4)1301.1 5 100 1931.07 2+ 1330.5<sup>#</sup> 10 $I_{\gamma}$ : from <sup>96</sup>Rh $\varepsilon$ decay (1.51 min). 3261.03 $2^{+}$ <12.0 1931.07 2+ 1743.1<sup>#</sup> 5 100<sup>@</sup> 15 1518.05 4+ 32<sup>@</sup> 7 2428.3<sup>#</sup> 2 832.56 2+ 9.0<sup>@</sup> 20 3261.5<sup>#</sup> 5 $0.0 \quad 0^+$ 692.9 3 2588.41 5-3281.3 (3,7)100 3282.4 3282.3 3 $0.0 \quad 0^+$ 100 D 1 497.4<sup>#</sup> 4 $7^{-}$ 3291.46 2793.89 (5,6) 0.00208 3 $\alpha$ (K)=0.00182 3; $\alpha$ (L)=0.000216 3; $\alpha$ (M)=3.96×10<sup>-5</sup> 6; $\alpha$ (N)=6.37×10<sup>-6</sup> 703.04 16 100 2588.41 5-E2 9; $\alpha(O)=3.21\times10^{-7}$ 5 $\alpha$ (N+..)=6.69×10<sup>-6</sup> 10 B(E2)(W.u.)=17.7 23 E<sub>γ</sub>: weighted average of 702.95 25 ((HI,xnγ)), 703.1 2 (<sup>95</sup>Mo(<sup>3</sup>He,2nγ)). Other 703.9 4 ${}^{65}$ Cu( ${}^{36}$ S,p4n $\gamma$ ). 36<sup>@</sup> 8 $4^{+}$ 400.0<sup>#</sup> 4 2891.64 6+ 3291.54 531.2<sup>#</sup> 3 8.0<sup>@</sup> 20 2760.20 (4+,5) 766.8<sup>#</sup> 5 56<sup>@</sup> 11 2524.85 3+.4+ 1773.4<sup>#</sup> 5 44<sup>@</sup> 14 1518.05 4+ 100<sup>@</sup> 14 2459.1<sup>#</sup> 5 832.56 2+ 3306.78 5 415.2 5 32 4 2891.64 6+ 657.5<sup>*a*</sup> 5 2649.99 3(-) 12 6 $\gamma$ previously placed in level 2588.51 (1983Wa06) but not seen in coincidence, inconsistent with $J^{\pi}$ of level. Placed here by evaluator. 1157.0 2 ≈20 2149.74 6+ 1788.6 2 100 4 1518.05 4+ 3362.54 (4,8)1212.8 2 100 2149.74 6+ 3377.55 $5^{+}$ 300.7 5 3.1 8 3076.28 3-485.9 5 2891.64 6+ 6.4 9 852.3 5 2524.85 3+,4+ 6.2 9 2462.16 4 915.2 2 13.2 8 1227.85 10 100 6 2149.74 6+ 1859.7 2 20.6 8 1518.05 4+ 3380.51 $(6,7)^+$ 430.2 1 31 3 2950.39 8+ 488.9 5 5.4 14 2891.64 6+ 586.62 20 21.3 7 2793.89 (5,6) 1230.66 10 100 7 2149.74 6+ 3447.9 0.0 0+ 1 3447.8 10 100 D $0.0 \quad 0^+$ 3479.6 1 3479.5 3 100 D 3544.52 (6,7)237.9 2 33 5 3306.78 5

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From ENSDF

# $\gamma(^{96}\text{Ru})$ (continued)

E <sub>i</sub> (level)	$\mathbf{J}_i^{\pi}$	Eγ	$I_{\gamma}$	$\mathbf{E}_f \qquad \mathbf{J}_f^{\pi}$	Mult. <sup>&amp;</sup>	α	Comments
3544.52	(6,7)	594.1 2 1394 7 2	100 11	2950.39 8 <sup>+</sup> 2149.74 6 <sup>+</sup>			
3706.50	$(5,6)^+$	400.0 5	6.8 16	3306.78 5			
	(- ) - )	415.2 5	32 4	3291.54 4+			
		912.2 5	13.0 10	2793.89 (5,6)			
0540.05	6.0	1556.72 20	100 5	2149.74 6+			
3/42.8/	(5,6)	380.4 5	46 14	3362.54 (4,8)			
		2224 8 2	66.9	$2149.74 \ 0$ 1518 05 $4^+$			
3755.15	$(5.6.7)^+$	863.5 5	4.9 15	2891.64 6+			
	(- / - / - /	1605.4 2	100 3	2149.74 6+			
3805.69	(5,6,7)	1011.4 5	53 11	2793.89 (5,6)			
		1656.0 2	100 11	2149.74 6+			<i>c</i>
3817.22	$10^{+}$	866.71 10	100	2950.39 8+	E2	0.001234 18	$\alpha(K)=0.001081 \ 16; \ \alpha(L)=0.0001262 \ 18; \ \alpha(M)=2.31\times10^{-5} \ 4$
							$\alpha(O)=1.92\times10^{-7}$ 3; $\alpha(N+)=3.92\times10^{-6}$
							B(E2)(W.U.)=12.7/13 E i from ((III vm)) other 867.2.4 (65 Cu(365 m/m))
3887 23	$(567)^+$	995 5 2	1779	2891.64 6+			$E_{\gamma}$ . Holli ((HI,XII $\gamma$ )), ould1. 807.5 4 ( Cu( 3,p4II $\gamma$ )).
5007.25	(3,0,7)	1737.45 10	100 5	2149.74 6+			
3928.6	$(10^{+})$	112.1 4	100	3817.22 10+			
3951.08	9-	659.61 <sup>‡</sup> 11	100 <sup>†</sup>	3291.46 7-	E2	0.00246 4	$\alpha(K)=0.00215 \ 3; \ \alpha(L)=0.000257 \ 4; \ \alpha(M)=4.71\times10^{-5} \ 7;$
							$\alpha(N)=7.57\times10^{-6}$ 11; $\alpha(O)=3.78\times10^{-7}$ 6
							$\alpha$ (N+)=7.94×10 <sup>-6</sup> 12
			- +				$B(E2)(W.u.)=20.2\ 20$
		7/9.4+ 4	1.7 10	3172.4 (9')			
4057.52	( <b>5</b> , <b>6</b> )	1002.1+ 4	1.6 5	2950.39 8+			
4057.52	(5,0)	1907.8 2	83 9 100 7	$2149.74 \ 0^{-1}$			
4080.28	$(5.6.7)^+$	699.5.5	16.5	$3380.51 (6.7)^+$			
	(- / - / - /	1188.6 2	100 9	2891.64 6+			
		1286.4 2	43 9	2793.89 (5,6)			
		2149.6 5	11 4	1931.07 2+			
4112.99	$(6,7)^+$	1162.9 5	27 4	2950.39 8+			
		1525.2 J 1963 10 10	5.5 10 100 5	$2388.41 \ 3$ $2149.74 \ 6^+$			
4148.2	(5.6.7)	1998.4 5	100 5	2149.74 6+			
4210.8	(5,6,7)	1450.5 5	$1.0 \times 10^2 4$	2760.20 (4+,5)			
	× 7 7 7	2061.2 5	1.0×10 <sup>2</sup> 3	2149.74 6+			
4262.1	(8,12)	444.9 <i>4</i>	100	3817.22 10+			
4265.0	$(11^{+})$	337.2 <sup>‡</sup> 4	100	3928.6 (10 <sup>+</sup> )			

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	Adopted Levels, Gammas (continued)											
						$\gamma$ ( <sup>96</sup> R	u) (continued	<u>)</u>				
E <sub>i</sub> (level)	$J_i^{\pi}$	Eγ	Iγ	$E_f$	$J_f^{\pi}$	Mult.&	α	Comments				
4418.27	12+	600.86 10	100	3817.22	10+	E2	0.00317 5	$\begin{aligned} \alpha(K) &= 0.00276 \ 4; \ \alpha(L) &= 0.000333 \ 5; \ \alpha(M) &= 6.12 \times 10^{-5} \ 9; \\ \alpha(N) &= 9.81 \times 10^{-6} \ 14; \ \alpha(O) &= 4.85 \times 10^{-7} \ 7 \\ \alpha(N+) &= 1.029 \times 10^{-5} \ 15 \\ B(E2)(W.u.) &= 13.1 \ 19 \\ Measured Q, \ calculated B(M2)(W.u.) \ exceeds RUL \ excluding M2, \\ hence E2. \\ E_{\gamma}: \ from \ (HI,xn\gamma), \ other; \ 601.3 \ 4 \ (^{65}Cu(^{36}S,p4n\gamma)). \end{aligned}$				
4521.08	(5,6)+	1996.16 <i>20</i> 2059.2 <i>5</i>	100 5 30.4 22	2524.85 2462.16	3+,4+ 4							
4534.03 4560.93	10 <sup>-</sup> (5,6) <sup>+</sup>	582.99 <i>14</i> 1016.8 <i>5</i> 1269.1 <i>5</i> 1800.7 <i>2</i>	100 38 11 66 9 100 11	3951.08 3544.52 3291.54 2760.20	9 <sup>-</sup> (6,7) 4 <sup>+</sup> (4 <sup>+</sup> ,5)	D		$E_{\gamma}$ : from (HI,xn $\gamma$ ), other: 584.1 4 ( <sup>65</sup> Cu( <sup>36</sup> S,p4n $\gamma$ )).				
4592.5 4598.9	(5,6,7)	1048.0 <i>5</i> 336.8 <i>5</i>	100 100	3544.52 4262.1	(6,7) (8,12)							
4710.9	(12 <sup>+</sup> )	292.7 <sup>‡</sup> 4 446.7 <sup>‡</sup> 4 893.9 <sup>‡</sup> 4	71 21 $1.0 \times 10^2$ 3 $8 \times 10^1$ 3	4418.27 4265.0 3817 22	12 <sup>+</sup> (11 <sup>+</sup> ) 10 <sup>+</sup>							
4777.42	5+	890.0 2 1400.5 5 1470.2 5 1701.1 2 1885.7 2 2252.7 2 2628.0 5	88 7 26 7 100 21 60 7 84 9 58 9 26 7	3887.23 3377.55 3306.78 3076.28 2891.64 2524.85 2149.74	$(5,6,7)^+$ $5^+$ $5^-$ $3^-$ $6^+$ $3^+,4^+$ $6^+$							
4798.7	11(-)	265.1 <sup>‡</sup> 4 849.2 4	2.0 <sup>†</sup> 6 100	4534.03 3951.08	10 <sup>-</sup> 9 <sup>-</sup>	D		E <sub>γ</sub> : weighted average of 847.38 25 ((HI,xnγ)), 849.2 4 $({}^{65}Cu({}^{36}S,p4n\gamma))$ .				
4866.0? 4949.64	(10,14) 5 <sup>+</sup>	447.7 4 1642.7 2 2052.4 5 2361.5 5 2424.9 5 2800.0 5 3431.5 5	100 100 <i>11</i> 33 <i>14</i> 44 8 33 8 28 8 56 <i>14</i>	4418.27 3306.78 2897.61 2588.41 2524.85 2149.74 1518.05	$ \begin{array}{c} 12^{+} \\ 5 \\ 3^{(+)} \\ 5^{-} \\ 3^{+}, 4^{+} \\ 6^{+} \\ 4^{+} \\ \end{array} $							
5274.3?	(9,13)	475.52 35	100	4798.7	$11^{(-)}$	D						
5531.9 5533 02	$(13^{+})$	$822.0^{+} 4$	100	4710.9	$(12^+)$ $11^{(-)}$	D						
5555.9?	(11)	999.9 24	100	4798.7 4534.03	10-	Q		$E_{\gamma}$ : weighted average of 999.7 <i>3</i> ((HI,xnγ)), 1000.3 <i>4</i> ( $^{65}$ Cu( $^{36}$ S,p4nγ)).				

 $^{96}_{44}$ Ru<sub>52</sub>-11

From ENSDF

 $^{96}_{44}$ Ru<sub>52</sub>-11

	Adopted Levels, Gammas (continued)												
						$\gamma$ ( <sup>96</sup> I	Ru) (continued)						
$E_i$ (level)	$\mathbf{J}_i^{\pi}$	Eγ	$I_{\gamma}$	$\mathbf{E}_{f}$	$\mathbf{J}_{f}^{\pi}$	Mult.&	α	Comments					
5541.47	(5,6,7)+	2163.9 2	100	3377.55	5+								
5680.69	14+	150.2 <sup>‡</sup> 4	6.0 <sup>†</sup> 16	5531.9	$(13^{+})$								
		1262.18 <i>11</i>	100	4418.27	12+	E2	0.000550 8	$\alpha(K)=0.000467 \ 7; \ \alpha(L)=5.33\times10^{-5} \ 8; \ \alpha(M)=9.76\times10^{-6} \ 14; \\ \alpha(N)=1.579\times10^{-6} \ 23 \\ \alpha(O)=8.34\times10^{-8} \ 12; \ \alpha(N+)=1.94\times10^{-5} \ 3$					
								B(E2)(W.u.)=2.63 23					
								$E_{\gamma}$ : weighted average of 1262.17 <i>11</i> ((HI,xnγ)), 1262.3 <i>4</i> ( <sup>65</sup> Cu( <sup>36</sup> S,p4nγ)).					
5750.2	$13^{(-)}$	217.7 <sup>‡</sup> 4	17 <sup>†</sup> 3	5531.9	(13 <sup>+</sup> )	D		B(M1)(W.u.)=0.14 4					
		952.6 3	100	4798.7	11 <sup>(-)</sup>	E2	0.000988 14	$\alpha(K)=0.000866 \ 13; \ \alpha(L)=0.0001005 \ 14; \ \alpha(M)=1.84\times10^{-5} \ 3$ $\alpha(O)=1.540\times10^{-7} \ 22; \ \alpha(N+)=3.12\times10^{-6}$ B(E2)(W.u.)=11.2 \ 22					
								$E_{\gamma}$ : weighted average of 952.3 4 ((HI,xnγ)), 952.9 4 ( <sup>65</sup> Cu( <sup>36</sup> S,p4nγ)).					
5978.5	$(14^{+})$	447.0 <sup>‡</sup> 4	100	5531.9	(13 <sup>+</sup> )								
5994.5?	(9,13)	1195.8 <i>3</i>	100	4798.7	$11^{(-)}$								
6278.3	$14^{(-)}$	528.8 <sup>‡</sup> 4	$100^{\dagger}$	5750.2	$13^{(-)}$	D							
		597.2 <sup>‡</sup> 4	33 <sup>†</sup> 5	5680.69	$14^{+}$	Q							
		746.5 <sup>‡</sup> 4	33†	5531.9	(13+)	Q							
6441.61	16+	760.74 <i>16</i>	100	5680.69	14+	E2	0.001700 24	$\alpha(K)=0.001487\ 21;\ \alpha(L)=0.0001755\ 25;\ \alpha(M)=3.22\times10^{-5}\ 5$ $\alpha(O)=2.63\times10^{-7}\ 4;\ \alpha(N+)=5.44\times10^{-6}$ B(E2)(Wu)>11					
								$E_{\gamma}$ : weighted average of 760.68 <i>17</i> ((HI,xnγ)), 761.1 <i>4</i> ( <sup>65</sup> Cu( <sup>36</sup> S,p4nγ)).					
6678.9	(14,18)	237.3 <sup>‡</sup> 4	100	6441.61	16+								
6754.1	$15^{(-)}$	475.6 <sup>‡</sup> 4	65	6278.3	$14^{(-)}$								
		1004.4 <sup>‡</sup> 4	100	5750.2	13(-)	E2	0.000875 13	$\alpha$ (K)=0.000768 <i>11</i> ; $\alpha$ (L)=8.87×10 <sup>-5</sup> <i>13</i> ; $\alpha$ (M)=1.625×10 <sup>-5</sup> <i>23</i> $\alpha$ (O)=1.366×10 <sup>-7</sup> <i>20</i> ; $\alpha$ (N+)=2.76×10 <sup>-6</sup>					
6769.8	(14,18)	328.2 <sup>‡</sup> 4	100	6441.61	16+								
6777.1	$16^{(-)}$	499.4 <sup>‡</sup> 4	100	6278.3	$14^{(-)}$	Q							
7415.0	$(17^{+})$	973.4 4	100	6441.61	$16^{+}$								
7425.2	$(16^{+})$	1447.0 <sup>‡</sup> 4	$1.0 \times 10^2 5$	5978.5	$(14^{+})$								
		1744 <sup>‡</sup> <i>1</i>	$1.0 \times 10^2 4$	5680.69	$14^{+}$								
7534.8	$(17^{+})$	1093.2 <sup>‡</sup> 4	100	6441.61	16+								
7558.3	$17^{(-)}$	781.4 <sup>‡</sup> 4	100	6777.1	16 <sup>(-)</sup>								
7951.2	$17^{(-)}$	1197.4 <sup>‡</sup> 4	100	6754.1	15 <sup>(-)</sup>	E2	0.000602 9	$\alpha(K)=0.000522 \ 8; \ \alpha(L)=5.98\times10^{-5} \ 9; \ \alpha(M)=1.094\times10^{-5} \ 16;$					

 $^{96}_{44}$ Ru<sub>52</sub>-12

From ENSDF

						Adopted	Levels, Gamm	as (continued)
							$\gamma$ ( <sup>96</sup> Ru) (conti	nued)
$E_i$ (level)	$\mathbf{J}_i^{\pi}$	$E_{\gamma}$	Iγ	$E_f$	$\mathbf{J}_{f}^{\pi}$	Mult. <sup>&amp;</sup>	α	Comments
								$\alpha(O) = 9.31 \times 10^{-8} I3$ $\alpha(N+) = 9.03 \times 10^{-6} I4$
								B(E2)(W.u.)>2.1
8187.6	$(17^{+})$	1746 <sup>‡</sup> 1	100	6441.61	16+			
8205.7	$18^{+}$	780.8 <sup>‡</sup> 4	29 <sup>†</sup> 14	7425.2	$(16^{+})$			
		1763.1 8	100 <sup>†</sup> 23	6441.61	$16^{+}$	E2	0.000467 7	$\alpha(K)=0.000241 4; \alpha(L)=2.71\times10^{-5} 4; \alpha(M)=4.96\times10^{-6} 7;$
								$\alpha(N) = 8.03 \times 10^{-5} I^2$
								$a(0) = 4.50 \times 10^{-10}$ , $a(14 +) = 0.000194/5$ $F_{rec}$ : weighted average of 1765 <i>J</i> . $6^{5}$ Cu( $^{36}$ S p4n $\gamma$ ), and 1762.8 <i>4</i> . (HL xn $\gamma$ ).
8236.0	$18^{(-)}$	677.9 <sup>‡</sup> 4	100	7558.3	$17^{(-)}$			
		1459.3 <sup>‡</sup> 4	64	6777.1	16 <sup>(-)</sup>			
8499.6	(17 <sup>+</sup> )	2058 <sup>‡</sup> 1	100	6441.61	16+			
8644.1	(18+)	1229.1 <sup>‡</sup> 4	100	7415.0	$(17^{+})$			
8736.2	(18+)	501.0 <sup>‡</sup> 4	$1.0 \times 10^2 5$	8236.0	18(-)			
		2289 <sup>‡</sup> 1	100 20	6441.61	16+			
8968.8	(18 <sup>+</sup> )	781.2 <sup>‡</sup> 4	100	8187.6	$(17^{+})$			
9101.0	(18 <sup>+</sup> )	601.4 <sup>‡</sup> 4	100	8499.6	$(17^{+})$	D		
9249.1	$(20^{+})$	1043.3 <sup>‡</sup> 4	100	8205.7	18+	Q		
9250.3	(18 <sup>-</sup> )	1299.1 <sup>‡</sup> 4	100	7951.2	17 <sup>(-)</sup>			
9391.4	(19 <sup>-</sup> )	1155.0+ 4	100	8236.0	$18^{(-)}$			5
		1440.4* 4	50 10	7951.2	17(-)	E2	0.000468 7	$\alpha(K)=0.000357\ 5;\ \alpha(L)=4.05\times10^{-5}\ 6;\ \alpha(M)=7.40\times10^{-6}\ 11;$
								$\alpha(N) = 1.199 \times 10^{-17}$ $\alpha(O) = 6.37 \times 10^{-8} 9; \alpha(N+) = 6.37 \times 10^{-5} 9$
9586.4	$(20^{+})$	850.2 <sup>‡</sup> 4	100	8736.2	$(18^{+})$	0		
9665.3	(19 <sup>-</sup> )	1429.2 <sup>‡</sup> 4	100	8236.0	18(-)	D		
9713.4	(19 <sup>+</sup> )	977.2 <sup>‡</sup> 4	100	8736.2	$(18^{+})$			
9852.2	$(20^{+})$	751.2 <sup>‡</sup> 4	100	9101.0	$(18^{+})$			
9892.3	(21 <sup>-</sup> )	227.0 <sup>‡</sup> 4	100	9665.3	(19 <sup>-</sup> )			
9992.4	(21 <sup>-</sup> )	601.0 <sup>‡</sup> 4	100	9391.4	(19 <sup>-</sup> )	Q		
9997.4	(21 <sup>+</sup> )	748.3 <sup>‡</sup> 4	100	9249.1	$(20^{+})$	D		
10592.8	(22 <sup>+</sup> )	595.4 <sup>‡</sup> 4	100	9997.4	(21 <sup>+</sup> )			
10631.5	(22 <sup>+</sup> )	1382.4 <sup>‡</sup> 4	100	9249.1	(20 <sup>+</sup> )	_		
10720.4	$(22^+)$	1134.0+ 4	100	9586.4	$(20^+)$	Q		
11066.1	(22+)	1817† <i>1</i>	100	9249.1	$(20^{+})$			

<sup>96</sup><sub>44</sub>Ru<sub>52</sub>-13

L

<sup>96</sup><sub>44</sub>Ru<sub>52</sub>-13

From ENSDF

### $\gamma(^{96}\text{Ru})$ (continued)

E <sub>i</sub> (level)	$\mathbf{J}_i^{\pi}$	Eγ	Iγ	$E_f$	$\mathbf{J}_{f}^{\pi}$	Mult.&
11360.1	(22 <sup>+</sup> )	2111 <sup>‡</sup> <i>1</i>	100	9249.1	$(20^{+})$	
11601.4	$(23^{-})$	1609 <sup>‡</sup> 1	100	9992.4	$(21^{-})$	Q

<sup>†</sup> From <sup>65</sup>Cu(<sup>36</sup>S,p4nγ).
<sup>‡</sup> From <sup>65</sup>Cu(<sup>36</sup>S,p4nγ).
<sup>#</sup> From <sup>95</sup>Mo(<sup>3</sup>He,2nγ).
<sup>@</sup> From <sup>95</sup>Mo(<sup>3</sup>He,2nγ).
<sup>&</sup> From <sup>65</sup>Cu(<sup>36</sup>S,p4nγ), unless otherwise noted.
<sup>a</sup> Placement of transition in the level scheme is uncertain.

	Legend		
Level Scheme Intensities: Type not specified	$\begin{array}{c c} & I_{\gamma} < 2\% \times I_{\gamma}^{max} \\ & I_{\gamma} < 10\% \times I_{\gamma}^{max} \\ & I_{\gamma} > 10\% \times I_{\gamma}^{max} \end{array}$		



<sup>96</sup><sub>44</sub>Ru<sub>52</sub>



	Legend		
Level Scheme (continued) Intensities: Type not specified	$ I_{\gamma} < 2\% \times I_{\gamma}^{max} $ $ I_{\gamma} < 10\% \times I_{\gamma}^{max} $		
	$I_{\gamma} > 10\% \times I_{\gamma}^{max}$		









 $^{96}_{44}{
m Ru}_{52}$ 



 $^{96}_{44}{
m Ru}_{52}$ 



 $^{96}_{44}$ Ru $_{52}$