⁹²Ru ε decay 1976De07

History								
Туре	Author	Citation	Literature Cutoff Date					
Full Evaluation	Coral M. Baglin	NDS 113, 2187 (2012)	15-Sep-2012					

Parent: ⁹²Ru: E=0.0; $J^{\pi}=0^+$; $T_{1/2}=3.65 \text{ min } 5$; $Q(\varepsilon)=4624 5$; $\%\varepsilon+\%\beta^+$ decay=100.0 Others: 1972Ar24, 1972De09.

⁹²Tc Levels

The decay scheme is that established by 1976De07 on the basis of $\gamma\gamma$ coin, intensity balances and energy sums, and the results of $(p,n\gamma)$ data obtained by the same authors. This supersedes earlier level schemes (1972Ar24 or from $(p,n\gamma)$) devised without knowledge of the existence of the 47-keV and 56-keV transitions. Unplaced $I\gamma=8\%$, so deduced log ft and J^{π} for weakly fed levels may be unreliable.

E(level) [†]	$J^{\pi \ddagger}$						
0.0	$(8)^{+}$	711.36 19	1+	1980.52 20	≤3	3004.7 4	1+
213.81 12	(6^{+})	1161.94 20	$(0^+, 1)$	2106.9 4	1^{+}	3048.1 <i>3</i>	1^{+}
270.15 13	(4^{+})	1443.89 20	1^{+}	2316.06 21	1^{+}	3709.2? 4	1^{+}
529.44 18	(3^{+})	1487.22 19	≤3	2390.95 19	1^{+}		
576.90 18	(2^{+})	1796.57 20	1^{+}	2770.99 22	1^{+}		

[†] From least-squares fit to $E\gamma$.

[‡] From Adopted Levels.

E(decay)	E(level)	I β^+ [†]	Ιε [†]	Log ft	$\mathrm{I}(\varepsilon + \beta^+)^\dagger$	Comments
(915 [‡] 5)	3709.2?		0.42 12	4.81 13	0.42 12	εK=0.8661; εL=0.10853 2; εM+=0.025352 6
(1576 5)	3048.1	0.042 5	1.24 15	4.82 6	1.28 15	av Eβ=248.0 22; εK=0.8394 10; εL=0.10342 13; εM+=0.02410 3
(1619 5)	3004.7	0.112 9	2.49 17	4.54 3	2.60 18	av Eβ=266.7 22; εK=0.8307 11; εL=0.10229 15; εM+=0.02384 4
(1853 5)	2770.99	0.59 5	4.0 3	4.45 4	4.6 4	av $E\beta$ =368.1 22; ε K=0.7579 21; ε L=0.0931 3; ε M+=0.02168 6
(2233 5)	2390.95	6.3 4	12.1 7	4.13 3	18.4 11	av $E\beta$ =535.4 23; ε K=0.572 3; ε L=0.0699 4; ε M+=0.01629 8
(2308 5)	2316.06	1.6 <i>1</i>	2.4 2	4.86 4	4.0 3	av $E\beta$ =568.8 23; ε K=0.532 3; ε L=0.0651 4; ε M+=0.01515 8
(2517 5)	2106.9	1.4 2	1.3 2	5.20 7	2.7 4	av E β =662.6 23; ε K=0.4280 24; ε L=0.0523 3; ε M+=0.01217 7
(2827 5)	1796.57	3.5 3	1.9 2	5.15 4	5.4 5	av $E\beta$ =803.2 23; ε K=0.3025 18; ε L=0.03689 21; ε M+=0.00859 5
(3180 5)	1443.89	6.7 6	2.0 2	5.22 4	8.7 8	av E β =964.9 23; ε K=0.2039 12; ε L=0.02483 14; ε M+=0.00578 4
(3462 5)	1161.94	0.9 3	0.19 7	6.32 16	1.1 4	av $E\beta$ =1095.4 24; ε K=0.1510 8; ε L=0.01837 10; ε M+=0.004274 23 Additional information 1
(3913 5)	711.36	44 4	5.6 4	4.96 4	50 4	av $E\beta$ =1305.8 24; εK =0.0970 5; εL =0.01179 6; εM +=0.002743 13

 ε, β^+ radiations

[†] Absolute intensity per 100 decays.
[‡] Existence of this branch is questionable.

92 Ru ε decay 1976De07 (continued)

 $\gamma(^{92}\text{Tc})$

I γ normalization: weighted average of 0.92 3 from Ti(213 γ)=100% (if mult=E2), and 1.01 3 from Ti(259 γ +306 γ)=100% (if 259 γ is M1).

E_{γ}^{\dagger}	$I_{\gamma}^{\dagger}\&$	E_i (level)	\mathbf{J}_i^π	E_f	\mathbf{J}_f^{π}	Mult. [‡]	α^{a}	Comments
47.46 3	29 3	576.90	(2 ⁺)	529.44	(3 ⁺)	M1	2.35	α (K)=2.06; α (L)=0.250; α (M)=0.0454 Mult.: from α (exp)=2.4 <i>4</i> based on intensity balance at the 529 level (if 259 γ is M1)
56.34 2	9.2 9	270.15	(4 ⁺)	213.81	(6 ⁺)	E2	9.79	$\alpha(K)=6.83; \alpha(L)=2.52; \alpha(M)=0.467; \alpha(N+)=0.0772$ Mult.: $\alpha(exp)=10.7 \ 12$ from intensity balance At the 213 level (if 214 γ is E2).
134.60 [#] 9	68.2 20	711.36	1+	576.90	(2 ⁺)	(M1)	0.1227	$\alpha(K)=0.108; \ \alpha(L)=0.0128; \ \alpha(M)=0.00232; \ \alpha(N+)=0.00045$
213.81 [#] <i>12</i>	100 3	213.81	(6 ⁺)	0.0	(8)+	(E2)	0.0821	α (K)=0.0702; α (L)=0.0100; α (M)=0.00181; α (N+)=0.00033
259.27 [#] 15	96.3	529.44	(3^{+})	270.15	(4^{+})	(M1)	0.0216	$\alpha(K)=0.0189; \alpha(L)=0.00220; \alpha(M)=0.00040$
306.8 2	0.33 3	576.90	(2^+)	270.15	(4 ⁺)	(E2)	0.0237	$\alpha(K) = 0.0205 \ 7; \ \alpha(L) = 0.00267 \ 8; \ \alpha(M) = 0.00048 \ 2$
410.4 1	1.87 4	2390.95	1^{+}	1980.52	≤3			
^x 436.5 2	0.46 5							
450.7 1	7.1 2	1161.94	$(0^+, 1)$	711.36	1+			
^x 570.1 1	0.65 7							
585.0 2	0.61 7	1161.94	$(0^+,1)$	576.90	(2^+)			
594.3 2	0.61 7	2390.95	1+	1796.57	1+			
^618.3 4	0.36 4	1706 57	1+	1161.04	(0 ± 1)			
634.8 5	0.29 4	1/96.5/	1 ' 1+	1161.94	$(0^{+},1)$			
030.3 10	0.2 1	3048.1	1	2390.95	1			
^x 663.6 ^w 2	0.51 7							
^x 828.0 5	0.49 10							
^839.1 5	0.34 7	1442.00	1+	576.00	(2^+)			
867.01	11.90	1443.89	1 · 1 +	5/6.90	(2^{+})			
905.01	0.82.5	2390.93	1	576.00	≤ 3 (2 ⁺)			
910.21	5.56 15	1467.22	≥3 1±	370.90	(2)			
938.10 4	0.25 10	3709.2?	1 ' 1 +	2770.99	$\left[\begin{array}{c} 1 \\ 0 \\ 1 \end{array} \right]$			
945.0 3	2.8 3	2106.9	1 ' 1+	1101.94	$(0^{+},1)$			
947.2.5	2.8 3	2390.95	1	1445.89	1			
x068.0.2	0.39 0							
908.0 2	0.400	2770.00	1+	1706 57	1+			
x1024 2 2	0.55 5	2110.99	1	1790.57	1			
x1064 1 3	0.37 5							
^x 1118 7 3	0.12.5							
1219.6 1	6.3.3	1796.57	1+	576.90	(2^{+})			
1229.1 1	3.5 2	2390.95	1+	1161.94	$(0^+,1)$			
1268.9 3	0.36 5	1980.52	≤3	711.36	1+			
^x 1394.9 [@] 4	0.51.6		_					
1403.6 2	1.7 /	1980.52	<3	576.90	(2^{+})			
^x 1460.1 6	0.66.5	1,00.02		2,0.70	(-)			
1517.6 3	2.0 1	3004.7	1^{+}	1487.22	≤3			
1560.7 5	0.78 8	3048.1	1^{+}	1487.22	≤3			
1604.7 <i>1</i>	3.80 14	2316.06	1+	711.36	1^{+}			
1679.6 <i>1</i>	9.6 4	2390.95	1^{+}	711.36	1^{+}			
1738.5 5	0.34 7	2316.06	1+	576.90	(2^{+})			

Continued on next page (footnotes at end of table)

92 Ru ε decay 1976De07 (continued)

$\gamma(^{92}\text{Tc})$ (continued)

E_{γ}^{\dagger}	$I_{\gamma}^{\dagger}\&$	E_i (level)	\mathbf{J}_i^{π}	$\mathbf{E}_f \mathbf{J}_f^{\pi}$	E_{γ}^{\dagger}	I_{γ}^{\dagger} &	E _i (level)	\mathbf{J}_i^{π}	$\mathbf{E}_f \mathbf{J}_f^{\pi}$
1814.0 6	0.20 5	2390.95	1^{+}	576.90 (2 ⁺)	x2302.3 10	1.1 1			
^x 1882.5 5	0.20 5				2427.5 5	0.71 7	3004.7	1^{+}	576.90 (2 ⁺)
x1900.6 2	0.39 <i>3</i>				2471.2 <i>3</i>	0.21 4	3048.1	1^{+}	576.90 (2+)
^x 1928.5 3	0.19 4				2519.3 10	0.09 4	3048.1	1^{+}	529.44 (3 ⁺)
2059.7 2	3.6 2	2770.99	1^{+}	711.36 1+	2997.4 ^b 10	0.09 4	3709.2?	1^{+}	711.36 1+
2194.3 5	0.84 8	2770.99	1^{+}	576.90 (2+)	3133.0 <mark>b</mark> 10	0.10 5	3709.2?	1^{+}	576.90 (2+)
2241.3 5	0.27 9	2770.99	1^{+}	529.44 (3 ⁺)					

[†] From 1976De07, unless noted otherwise.

[‡] From Adopted Gammas, except as noted.

[#] Weighted average of data from 1976De07 and 1972Ar24.

^(a) Authors omitted γ from level scheme but indicate that two (unstated) placements are possible. based on energy sums, the 664 γ May deexcite the 2107 level and/or the 2771 level, and the 1395 γ May deexcite the 2107 level.

[&] For absolute intensity per 100 decays, multiply by 0.96 5.

^{*a*} 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.

^b Placement of transition in the level scheme is uncertain.

 $x \gamma$ ray not placed in level scheme.

 $^{92}_{43}\text{Tc}_{49}\text{-}4$





⁹²₄₃Tc₄₉

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