^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 109, 1383 (2008)	1-Mar-2008

Parent: ^{107}Tc: E=0.0; J^π=(3/2$^-$); $T_{1/2}$=21.2 s *2*; Q(β^-)=4820 *90*; %β^- decay=100.0
Source: ^{239}Pu(n,F) E=th, rapid technetium chem (1979St24), mass separator LOHENGRIN (1989Gr23).
$\gamma\gamma$(coin): see drawings for summary of extensive analysis (1979St24).
$\beta\gamma$(coin): 1989Gr23.

^{107}Ru Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	(5/2)$^+$	3.75 min *5*	
102.683 *22*	(+)	10.8 ns	
106.299 *22*	(+)	33.4 ns *7*	$T_{1/2}$: from $\gamma\gamma$(t) (1979St24).
142.100 *23*	(+)		
177.004 *21*	(+)	1.00 ns	
199.71 *6*			
250.55 *6*	(+)		
291.45 *4*			
322.55 *4*			
360.28 *4*			
428.45 *8*			
460.87 *5*			
470.88 *7*			
490.94 *6*			
492.45 *6*			
561.34 *5*			
582.46 *6*			
585.93 *5*			
631.92 *6*			
698.27 *5*			
713.43 *10*			
741.41 *7*			
807.22 *7*			
825.93 *6*			
894.03 *6*			
900.21 *6*			
923.18 *5*			
957.08 *8*			
1076.21 *6*			
1162.48 *9*			
1284.13 *7*			
1486.23 *6*			
1555.18 *7*			
1679.53 *6*			
1757.32 *5*			
1844.76 *22*			
2555.91 *22*			
2679.67 *12*			

[†] Only the J^π for the g.s. is adopted, for the others, see Adopted Levels.

^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23 (continued)

β^- radiations

E(decay)†	E(level)	Iβ^-‡	Log *ft*	Comments
(2.14×10^3 *9*)	2679.67	1.9 *2*	5.68 *9*	av Eβ=856 *42*
(2.26×10^3 *9*)	2555.91	0.6	6.3	av Eβ=913 *42*
(2.98×10^3 *9*)	1844.76	0.9	6.6	av Eβ=1246 *43*
(3.06×10^3 *9*)	1757.32	3.3 *3*	6.09 *7*	av Eβ=1287 *43* E(decay): Eβ=3260 *130*, for coinc with 1264γ.
(3.14×10^3 *9*)	1679.53	5.5 *5*	5.92 *7*	av Eβ=1323 *43* E(decay): Eβ=3160 *105* for coinc with 1118γ and 1218γ, Eβ=3095 *70* for coinc with 1573γ.
(3.26×10^3 *9*)	1555.18	3.5 *3*	6.19 *7*	av Eβ=1382 *43* E(decay): Eβ=3415 *150*.
(3.33×10^3 *9*)	1486.23	1.3 *2*	6.66 *9*	av Eβ=1415 *43*
(3.54×10^3 *9*)	1284.13	0.8	7.0	av Eβ=1511 *43*
(3.66×10^3 *9*)	1162.48	0.7	7.1	av Eβ=1568 *43*
(3.74×10^3 *9*)	1076.21	1.2 *2*	6.91 *9*	av Eβ=1609 *43*
(3.86×10^3 *9*)	957.08	0.4	7.4	av Eβ=1666 *43*
(3.90×10^3 *9*)	923.18	1.0 *2*	7.06 *10*	av Eβ=1682 *43*
(3.92×10^3 *9*)	900.21	0.7	7.2	av Eβ=1693 *43*
(3.93×10^3 *9*)	894.03	0.8	7.2	av Eβ=1696 *43*
(3.99×10^3 *9*)	825.93	1.2 *2*	7.03 *9*	av Eβ=1728 *43*
(4.01×10^3 *9*)	807.22	2.8	6.7	av Eβ=1737 *43*
(4.08×10^3 *9*)	741.41	1.7 *3*	6.92 *9*	av Eβ=1769 *43*
(4.11×10^3 *9*)	713.43	0.6	7.4	av Eβ=1782 *43*
(4.12×10^3 *9*)	698.27	2.4 *4*	6.79 *9*	av Eβ=1789 *43* E(decay): Eβ=3990 *170*.
(4.19×10^3 *9*)	631.92	1.4 *6*	7.06 *19*	av Eβ=1821 *43* E(decay): Eβ=4320 *200*.
(4.23×10^3 *9*)	585.93	1.0 *4*	7.22 *18*	av Eβ=1843 *43* E(decay): Eβ=4355 *260*.
(4.24×10^3 *9*)	582.46	1.1 *2*	7.18 *9*	av Eβ=1845 *43*
(4.26×10^3 *9*)	561.34	3.2 *10*	6.73 *15*	av Eβ=1855 *43*
(4.33×10^3 *9*)	492.45	1.2 *2*	7.18 *9*	av Eβ=1888 *43*
(4.33×10^3 *9*)	490.94	1.3 *3*	7.15 *11*	av Eβ=1888 *43*
(4.35×10^3 *9*)	470.88	≈0.3	≈7.8	av Eβ=1898 *43*
(4.36×10^3 *9*)	460.87	1.4 *4*	7.13 *13*	av Eβ=1903 *43* E(decay): Eβ=4465 *200*.
(4.39×10^3 *9*)	428.45	≈0.2	≈8.0	av Eβ=1918 *43*
(4.46×10^3 *9*)	360.28	2.0 *6*	7.02 *14*	av Eβ=1951 *43* E(decay): Eβ=4555 *190*.
(4.50×10^3 *9*)	322.55	3.3 *5*	6.82 *8*	av Eβ=1969 *43* E(decay): Eβ=4470 *115*.
(4.53×10^3 *9*)	291.45	3.6 *7*	6.79 *10*	av Eβ=1983 *43* E(decay): Eβ=4570 *190*.
(4.62×10^3 *9*)	199.71	1.3 *3*	7.27 *11*	av Eβ=2027 *43*
(4.64×10^3 *9*)	177.004	3.9 *15*	6.81 *18*	av Eβ=2038 *43* E(decay): Eβ=4620 *85*.
(4.68×10^3 *9*)	142.100	8.4 *34*	6.49 *18*	av Eβ=2055 *43*
(4.71×10^3 *9*)	106.299	≈2.8	≈7.0	av Eβ=2072 *43* E(decay): Eβ=4645 *100*.
(4.72×10^3 *9*)	102.683	12 *7*	6.3 *3*	av Eβ=2074 *43* E(decay): Eβ=4500 *220*.
(4.82×10^3 *9*)	0.0	22 *8*	6.13 *17*	av Eβ=2123 *43*

† From 1989Gr23.
‡ Absolute intensity per 100 decays.

^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23 (continued)

$\gamma(^{107}Ru)$

Iγ normalization: absolute Iγ(102.7γ)=21.0% 22 (1979St24) from genetic relation to absolute Iγ(194γ,^{107}Rh).

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[&]	Comments
39.44 *3*	0.35 *7*	142.100	(+)	102.683	(+)	M1+E2	1.6 *2*	27.9[#] *17*	α(K)=14.7 *11*; α(L)=10.3 *11*; α(M)=1.95 *20*; α(N+..)=0.66 *7*
70.71 *3*	1.27 *19*	177.004	(+)	106.299	(+)	(M1+E2)	≤0.36	1.03[#] *23*	α(K)=0.726; α(L)=0.0881; α(M)=0.01618; α(N+..)=0.00311
102.70 *3*	21.0 *22*	102.683	(+)	0.0	(5/2)+	M1+E2	1.0 *2*	0.75[#] *9*	α(K)=0.604; α(L)=0.116; α(M)=0.0217; α(N+..)=0.0072
106.31 *3*	7.6 *6*	106.299	(+)	0.0	(5/2)+	M1+E2	>1.0	0.87[#] *21*	α(K)=0.67 *13*; α(L)=0.13 *3*; α(M)=0.025 *6*
108.5[‡] *1*	0.70 *12*	250.55	(+)	142.100	(+)	(E2)		0.98	α(K)=0.783; α(L)=0.1587; α(M)=0.0296; α(N+..)=0.00515 Mult.: from consideration of I(γ+ce) balance at 250.6 level.
114.5 *1*	0.56 *7*	291.45		177.004	(+)	[D,E2]		0.45 *35*	α(K)=0.186; α(L)=0.0224; α(M)=0.00411; α(N+..)=0.00079
138.5[‡] *1*	0.30 *7*	460.87		322.55		[D,E2]		0.23 *18*	α(K)=0.110; α(L)=0.0132; α(M)=0.00242; α(N+..)=0.00047
142.07 *3*	3.0 *3*	142.100	(+)	0.0	(5/2)+	[M1,E2]		0.24 *13*	α(K)=0.103; α(L)=0.0123; α(M)=0.00225; α(N+..)=0.00044
145.55 *3*	2.3 *2*	322.55		177.004	(+)	[D,E2]		0.20 *15*	α(K)=0.096; α(L)=0.0115; α(M)=0.00211; α(N+..)=0.00041
147.9 *1*	0.12 *4*	250.55	(+)	102.683	(+)				
169.3[‡] *1*	0.21 *4*	460.87		291.45					
177.00 *3*	9.2 *8*	177.004	(+)	0.0	(5/2)+	[M1,E2]		0.12 *5*	α(K)=0.057; α(L)=0.0068; α(M)=0.00124; α(N+..)=0.00024
180.1 *1*	0.3 *1*	741.41		561.34					
183.3 *1*	0.11 *2*	360.28		177.004	(+)				
185.2 *1*	0.65 *7*	291.45		106.299	(+)				
188.8 *1*	0.40 *4*	291.45		102.683	(+)				
195.7 *1*	0.11 *4*	894.03		698.27					
199.7 *1*	2.1 *2*	199.71		0.0	(5/2)+				
216.3 *1*	0.40 *4*	322.55		106.299	(+)				
228.9 *1*	0.11 *1*	428.45		199.71					
257.7 *1*	0.08 *2*	360.28		102.683	(+)				
271.2[‡] *1*	0.23 *7*	470.88		199.71					
291.1[‡] *1*	0.07 *2*	582.46		291.45					
291.2 *1*	0.12 *4*	490.94		199.71					
291.5 *1*	4.1 *5*	291.45		0.0	(5/2)+				
314.0 *1*	0.30 *2*	490.94		177.004	(+)				
315.4 *1*	0.63 *7*	492.45		177.004	(+)				
322.5 *1*	1.20 *12*	322.55		0.0	(5/2)+				
335.4 *1*	1.30 *13*	585.93		250.55	(+)				
337.3 *1*	0.65 *7*	923.18		585.93					
[x]346.3 *1*									
354.5 *1*	2.50 *25*	460.87		106.299	(+)				
360.3 *1*	3.0 *4*	360.28		0.0	(5/2)+				
360.8[‡] *1*	0.09 *4*	1284.13		923.18					
378.0 *1*	0.46 *5*	1076.21		698.27					
382.6 *1*	0.30 *4*	582.46		199.71					
386.3 *1*	0.98 *9*	492.45		106.299	(+)				
419.2 *1*	0.44 *11*	561.34		142.100	(+)				

Continued on next page (footnotes at end of table)

^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23 (continued)

$\gamma(^{107}Ru)$ (continued)

E_γ †	I_γ †@	E_i(level)	E_f	J_f^π
423.1 *1*	0.3 *1*	894.03	470.88	
428.3 *1*	0.11 *4*	428.45	0.0	$(5/2)^+$
443.9‡ *1*	0.63 *14*	585.93	142.100	$(^+)$
458.7 *1*	5.6 *6*	561.34	102.683	$(^+)$
460.9 *1*	0.54 *7*	460.87	0.0	$(5/2)^+$
465.7‡ *1*	0.25 *6*	825.93	360.28	
470.8 *1*	0.33 *8*	470.88	0.0	$(5/2)^+$
479.8 *1*	0.07 *2*	582.46	102.683	$(^+)$
483.4 *1*	0.07 *2*	585.93	102.683	$(^+)$
489.8 *1*	1.4 *3*	631.92	142.100	$(^+)$
490.9 *1*	0.9 *2*	490.94	0.0	$(5/2)^+$
514.7 *1*	0.46 *4*	1076.21	561.34	
521.4‡ *1*	0.11 *4*	698.27	177.004	$(^+)$
529.1 *1*	0.70 *7*	631.92	102.683	$(^+)$
530.5‡ *1*	0.25 *7*	1162.48	631.92	
533.1 *5*	0.17 *7*	894.03	360.28	
534.5‡ *1*	0.32 *8*	825.93	291.45	
536.4 *1*	0.46 *4*	713.43	177.004	$(^+)$
540.0 *1*	0.17 *2*	900.21	360.28	
556.1‡ *1*	0.04 *2*	698.27	142.100	$(^+)$
556.7‡ *1*	0.11 *4*	807.22	250.55	$(^+)$
562.8‡ *1*	0.11 *4*	923.18	360.28	
576.6‡ *1*	0.44 *14*	1162.48	585.93	
577.5 *1*	0.09 *4*	900.21	322.55	
582.5 *1*	0.65 *7*	582.46	0.0	$(5/2)^+$
585.8 *1*	0.11 *1*	585.93	0.0	$(5/2)^+$
595.4 *1*	4.6 *2*	698.27	102.683	$(^+)$
603.2‡ *1*	0.17 *4*	1679.53	1076.21	
635.1 *1*	0.86 *9*	741.41	106.299	$(^+)$
638.7 *1*	0.56 *7*	741.41	102.683	$(^+)$
648.9 *1*	0.23 *2*	825.93	177.004	$(^+)$
652.1 *1*	0.40 *4*	1284.13	631.92	
665.1‡ *1*	0.38 *11*	807.22	142.100	$(^+)$
665.7‡ *1*	0.12 *4*	957.08	291.45	
681.1 *1*	0.32 *4*	1757.32	1076.21	
704.5 *1*	0.14 *2*	807.22	102.683	$(^+)$
714.0 *5*	0.11 *2*	713.43	0.0	$(5/2)^+$
722.7 *5*	0.35 *11*	825.93	102.683	$(^+)$
723.0 *1*	0.17 *4*	1284.13	561.34	
723.1‡ *1*	0.32 *11*	900.21	177.004	$(^+)$
746.1 *1*	0.32 *3*	923.18	177.004	$(^+)$
751.9 *1*	0.30 *3*	894.03	142.100	$(^+)$
787.7 *1*	0.14 *4*	1486.23	698.27	
807.7 *5*	0.21 *2*	807.22	0.0	$(5/2)^+$
≈820.5‡	0.14 *2*	923.18	102.683	$(^+)$
x822‡				
825.9 *1*	0.07 *1*	825.93	0.0	$(5/2)^+$
834.3 *1*	0.14 *2*	1757.32	923.18	
850.7‡ *1*	0.32 *9*	957.08	106.299	$(^+)$
856.9 *1*	1.07 *7*	1555.18	698.27	
863.1 *1*	0.09 *1*	1757.32	894.03	
900.4 *1*	0.09 *1*	900.21	0.0	$(5/2)^+$
923.3 *1*	0.04 *1*	923.18	0.0	$(5/2)^+$
924.9 *1*	0.33 *4*	1486.23	561.34	
969.4‡ *5*	0.56 *4*	1076.21	106.299	$(^+)$
973.6‡ *3*	0.17 *4*	1076.21	102.683	$(^+)$
981.4 *1*	0.56 *4*	1679.53	698.27	
993.8 *1*	0.30 *3*	1555.18	561.34	
1025.5 *1*	0.19 *2*	1486.23	460.87	
1062.9 *2*	0.19 *2*	1555.18	492.45	
x1070.9 *1*				
1076.0 *3*	0.09 *2*	1076.21	0.0	$(5/2)^+$
1094.2 *2*	0.23 *2*	1555.18	460.87	
1118.1‡ *1*	1.10 *17*	1679.53	561.34	
1126.0 *1*	0.09 *1*	1486.23	360.28	
1218.7‡ *1*	1.10 *11*	1679.53	460.87	
1264.0 *3*	0.53 *4*	1555.18	291.45	
1264.9‡ *1*	0.23 *2*	1757.32	492.45	
1284.4 *3*	0.14 *2*	1284.13	0.0	$(5/2)^+$
1296.3 *1*	0.51 *4*	1757.32	460.87	
x1361.3 *1*				
1378.0 *3*	0.75 *7*	1555.18	177.004	$(^+)$
1380.1 *3*	0.54 *9*	1486.23	106.299	$(^+)$
1388.3 *3*	0.44 *5*	1679.53	291.45	
1397.1‡ *1*	0.38 *7*	1757.32	360.28	
1435.1 *3*	0.35 *4*	1757.32	322.55	
1452.2 *3*	0.25 *3*	1555.18	102.683	$(^+)$
1465.9 *3*	0.42 *4*	1757.32	291.45	
1502.5 *3*	0.65 *7*	1679.53	177.004	$(^+)$
1555.4 *3*	0.14 *2*	1555.18	0.0	$(5/2)^+$
1573.2 *3*	1.50 *17*	1679.53	106.299	$(^+)$
1650.9 *3*	0.61 *6*	1757.32	106.299	$(^+)$
1654.6 *3*	0.21 *2*	1757.32	102.683	$(^+)$
1667.9 *3*	0.33 *9*	1844.76	177.004	$(^+)$
1741.9 *3*	0.54 *7*	1844.76	102.683	$(^+)$
x1993.8 *1*				
2095.0 *3*	0.14 *2*	2555.91	460.87	
2118.2 *3*	0.17 *2*	2679.67	561.34	
2357.1 *3*	0.11 *2*	2679.67	322.55	
2378.9 *3*	0.49 *5*	2555.91	177.004	$(^+)$
2388.5‡ *3*	0.11 *3*	2679.67	291.45	
2429.3‡ *3*	0.17 *2*	2679.67	250.55	$(^+)$
2502.3 *3*	0.56 *6*	2679.67	177.004	$(^+)$
2537.4 *3*	0.56 *6*	2679.67	142.100	$(^+)$
2577.0 *3*	0.25 *2*	2679.67	102.683	$(^+)$

Continued on next page (footnotes at end of table)

^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23 (continued)

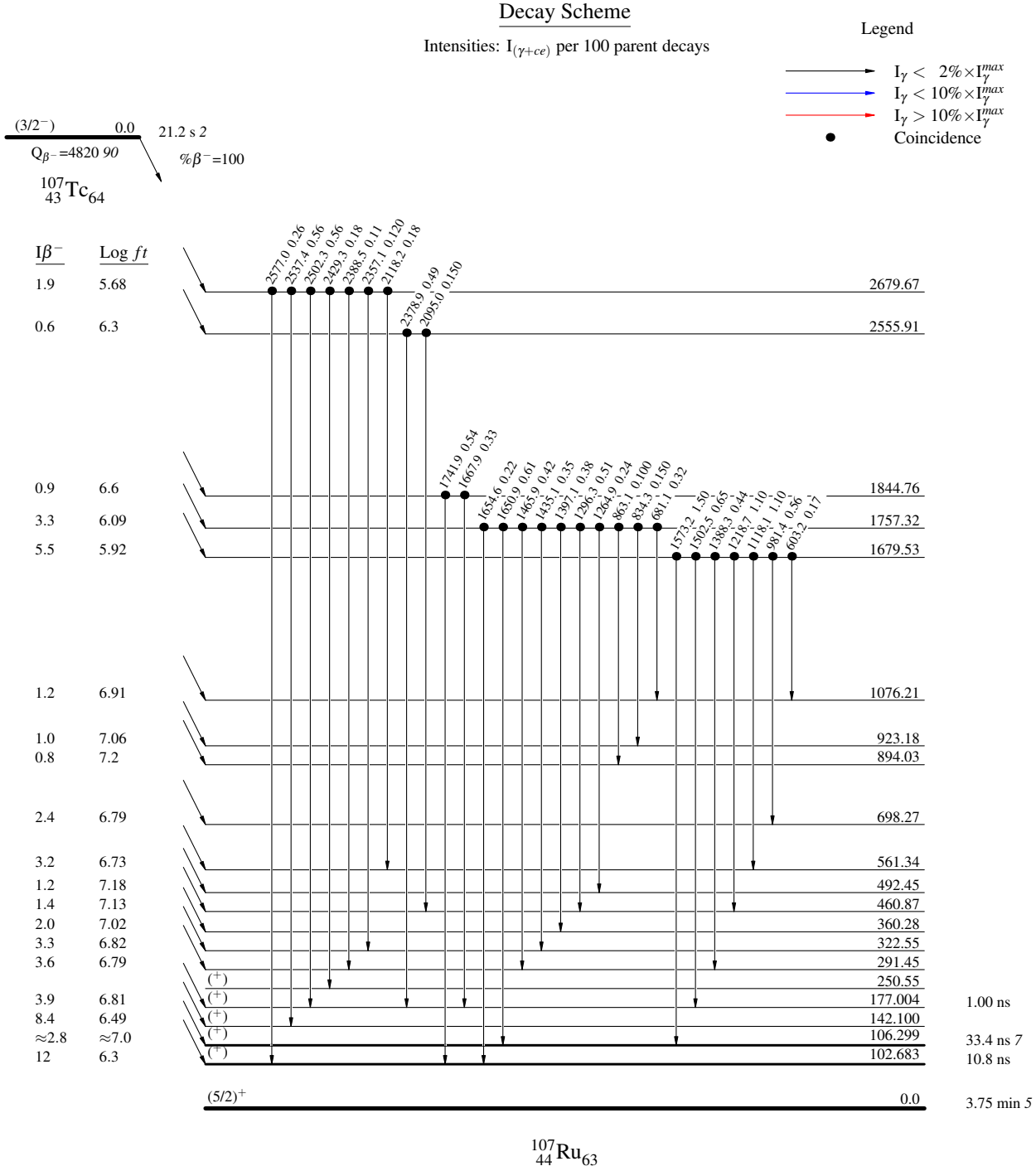
$\gamma(^{107}Ru)$ (continued)

† Eγ, Iγ are from γ singles (1979St24), except for complex peaks which are evaluated via γγ coin.
‡ The Eγ and the Iγ are from γγ (1979St24).
# Estimated by 1979St24 from intensity balance arguments using Iγ data from γγ.
@ For absolute intensity per 100 decays, multiply by 1.0 *1*.
& 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.
x γ ray not placed in level scheme.

^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23

Decay Scheme

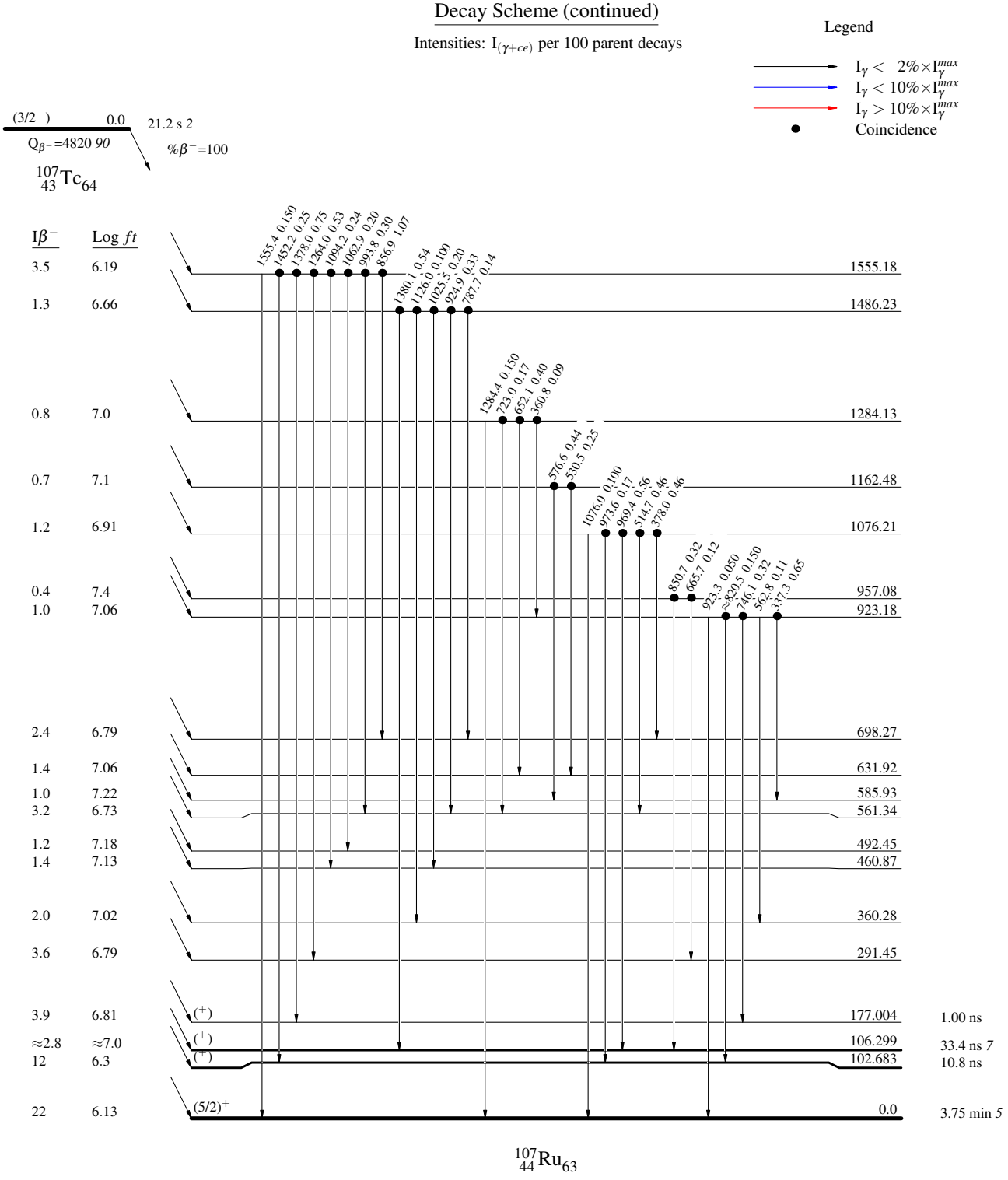
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23

Decay Scheme (continued)

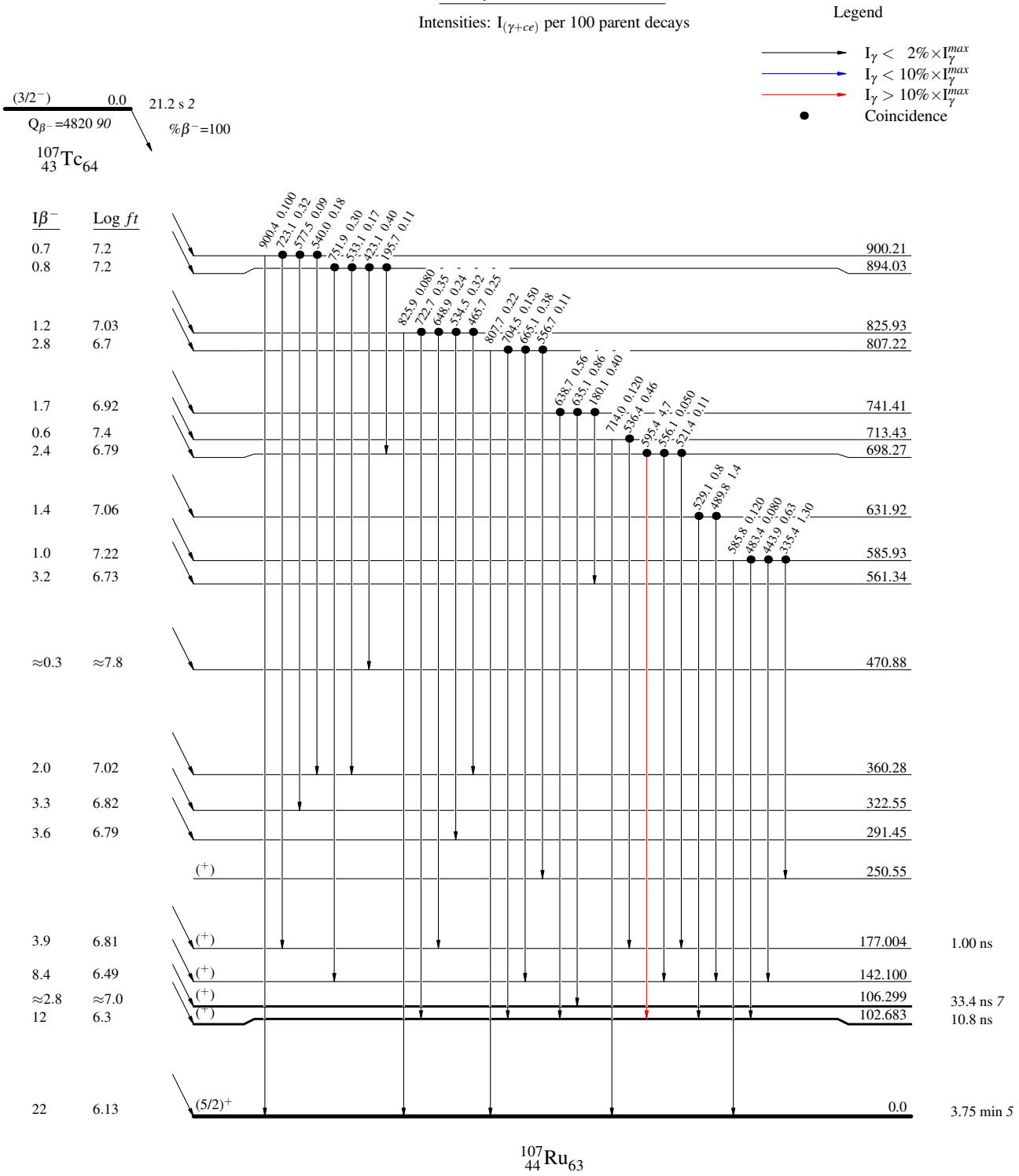
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

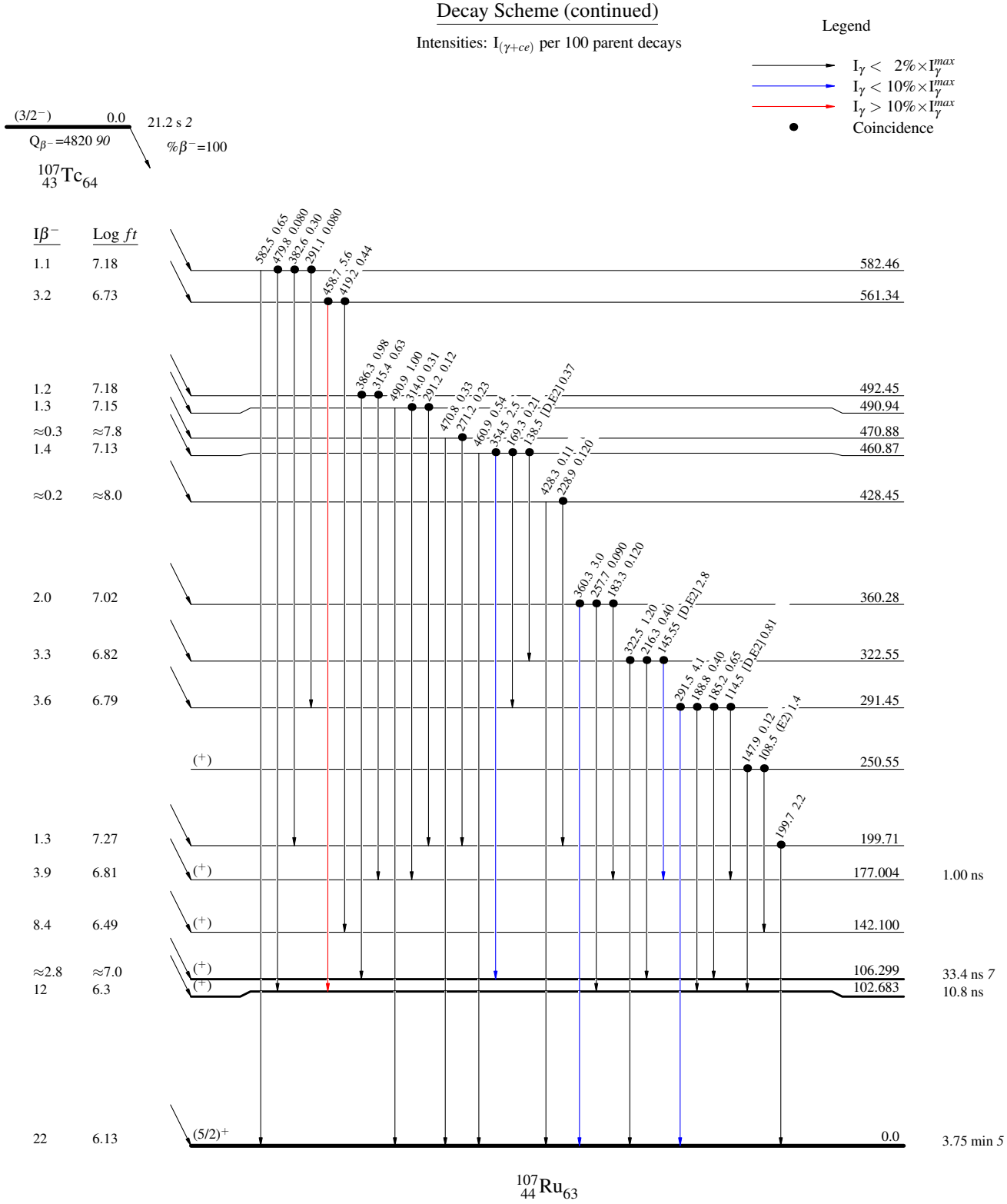


$^{107}_{44}Ru_{63}$

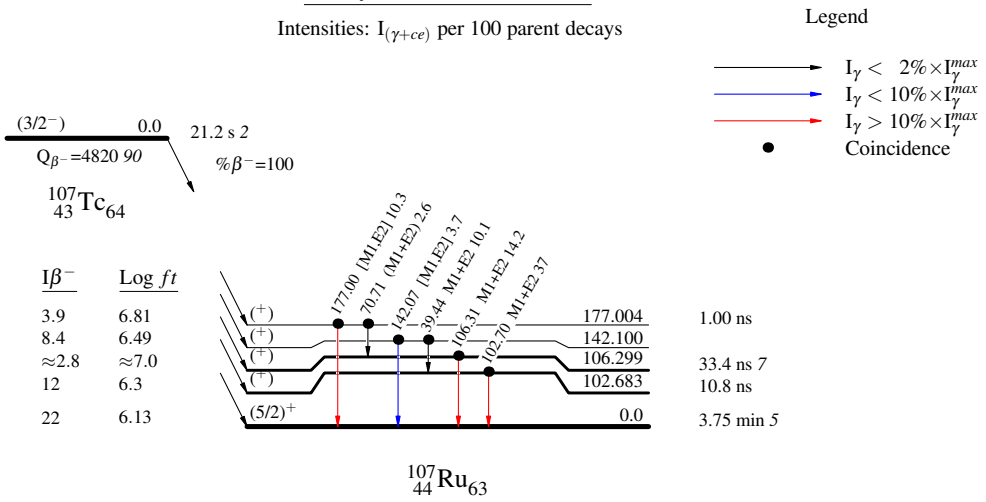
^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{107}Tc β^- decay (21.2 s) 1979St24,1989Gr23

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays