^{91}Rb β^- decay 1976Gl02,1997Gr09

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 114, 1293 (2013)	1-Sep-2013

Parent: ^{91}Rb: E=0.0; $J^\pi=3/2^{(-)}$; $T_{1/2}$=58.2 s *3*; Q(β^-)=5907 *9*; %β^- decay=100.0

Others: 1970Ma53, 1973Cl02, 1974Ac01, 1978Wo15, 1979Bo26, 1980De02, 1983Ia02, 1992Pr03, 1996Gr20, 2006HaZZ, 2011Ta26 (TAGS spectrum; No details given).

1997Gr09: total absorption γ spectrometer (TAGS) (NaI(Tl) well detector with Si electron detector in well) operated in singles or in 4$\pi\gamma$-β coin mode, summed-Eγ resolution≈5%; deduced β feeding to (g.s. + 94 level) (from 4$\pi\gamma$-β coin data), β feeding to excited states (from summed-Eγ spectrum); see also 1996Gr20.

1976Gl02: on-line separation of fission products. Ge(Li) detectors, FWHM=2.5 keV at 1332 keV. Ge(Li) low-energy photon spectrometer, FWHM=0.5 keV at 122 keV. Measured Eγ, Iγ, $\gamma\gamma$, γ(t).

The decay scheme is that of 1976Gl02 with the omission of a 5289 level deexcited by 3224.4γ and 3346.2γ. TAGS data indicate that the intensities of the latter gammas are far too great for those placements to be correct. Note that the latter data also indicate≈10.8% β- feeding to as yet unknown levels (primarily in the energy ranges of 2.9-4.1 MeV and 4.6-5.5 MeV); since the total unplaced Iγ is≈2.6%, this suggests that some of the gammas in the adopted scheme are incorrectly placed.

^{91}Sr Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0	$5/2^+$	9.65[‡] h *6*	
93.628 *4*	$(3/2)^+$	89.4[#] ns *16*	
439.159 *19*	$(^+)$		
1042.034 *25*	$(^+)$		
1230.84 *5*	$(^+)$		
1367.76 *7*			Additional information 1.
1482.12 *10*			
1740.27 *8*			
1917.09 *12*			
1942.91 *8*	$(1/2^+,3/2,5/2)$		
2064.66 *6*	$1/2^{(+)},3/2,5/2$		
2159.08 *22*			
2236.95 *12*			
≈2350[@]			
2657.89 *6*	$1/2^{(-)}$ to $5/2^{(-)}$		
≈2900[@]			
≈3000[@]			
≈3100[@]			
≈3200[@]			
≈3300[@]			
3364.68 *11*	1/2,3/2,5/2		
3395.5? *4*	$(1/2^+,3/2,5/2)$		
≈3400[@]			
3446.58 *18*	$1/2^{(+)},3/2,5/2$		
≈3550[@]			
3643.81? *21*	$(1/2^+,3/2,5/2)$		
3693.23 *12*	$1/2^{(-)}$ to $5/2^{(-)}$		
3736.80 *14*	$1/2^{(+)},3/2,5/2$		
3776.62 *17*	1/2,3/2,5/2		
≈3800[@]			
3831.08? *14*	(1/2,3/2,5/2)		
3839.4? *3*	$(1/2^+,3/2,5/2)$		
≈3900[@]			

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^{91}Rb β^- decay 1976Gl02,1997Gr09 (continued)

^{91}Sr Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†
3938.42? *20*	(1/2+,3/2,5/2)	4253.8? *3*	(1/2+,3/2,5/2)	≈4800@
≈4000@		4265.50 *16*	3/2(−),5/2(−)	≈4900@
4043.33 *16*	3/2(−),5/2(−)	4327.73 *19*	1/2(−) to 5/2(−)	≈5000@
4078.30 *10*	3/2(−),5/2(−)	4358.37 *16*	(3/2−,5/2−)	≈5100@
≈4100@		4391.0? *4*	(1/2+,3/2,5/2)	≈5200@
4157.55 *19*	3/2(−),5/2(−)	4453.0? *3*	(1/2+,3/2,5/2)	≈5300@
4189.39 *16*	3/2(−),5/2(−)	≈4600@		≈5400@
4240.1? *4*	(1/2,3/2,5/2)	≈4700@		≈5500@
4249.1? *3*	(1/2+,3/2,5/2)	4793.1 *3*	(3/2−,5/2−)	

† From least-squares fit to Eγ, omitting the 1024γ and including tentatively-placed gammas only when there is no definitely-placed γ deexciting the same level.
‡ From Adopted Levels.
# Weighted average of 94 ns *5* (1993Wo07), 87.5 ns *30* (1976Gl02), 88 ns *3* (1970Ma07), 91 ns *3* (1970Ma53). Other $T_{1/2}$: 90 ns *10* (1974Ac01).
@ Not a discrete level. E is the centroid of an energy bin of typically≈100 keV width which encompasses a level or levels fed in β^- decay with the summed Iβ indicated under "β- radiations"; from total absorption γ spectroscopy (1997Gr09). Neither specific level energies nor deexcitation γ energies are known at present. Not included in Adopted Levels.

β^- radiations

β^-decay strength function measured by 1975Al11.
Average Eβ: 1560 *30* (1990Ru05), 1360 *70* (1982Al01).

E(decay)†	E(level)	Iβ−‡&	Log *ft*	Comments
(407 *9*)	≈5500	0.010#		Additional information 2.
(507 *9*)	≈5400	0.014#		Additional information 3.
(607 *9*)	≈5300	0.024#		Additional information 4.
(707 *9*)	≈5200	0.029#		Additional information 5.
(807 *9*)	≈5100	0.048#		Additional information 6.
(907 *9*)	≈5000	0.067#		Additional information 7.
(1007 *9*)	≈4900	0.096#		Additional information 8.
(1107 *9*)	≈4800	0.114#		Additional information 9.
(1114 *9*)	4793.1	0.20 *4*	5.88 *9*	av Eβ=403.9 *39* Iβ−: 0.22 from TAGS data.
(1207 *9*)	≈4700	0.24#		Additional information 10.
(1307 *9*)	≈4600	0.43#		Additional information 11.
(1454[a] *9*)	4453.0?	0.35 *7*	6.08 *9*	av Eβ=552.4 *40* Iβ−: 0.31 from TAGS data.
(1516[a] *9*)	4391.0?	0.32 *6*	6.19 *9*	av Eβ=580.0 *41* Iβ−: 0.28 from TAGS data.
(1549 *9*)	4358.37	0.63 *8*	5.93 *6*	av Eβ=594.6 *41* Iβ−: 0.57 from TAGS data.
(1579 *9*)	4327.73	0.82 *9*	5.85 *5*	av Eβ=608.3 *41* Iβ−: 0.79 from TAGS data.
(1642 *9*)	4265.50	2.26 *17*	5.48 *4*	av Eβ=636.4 *41*

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^{91}Rb β^- decay 1976Gl02,1997Gr09 (continued)

β^- radiations (continued)

E(decay)†	E(level)	Iβ⁻‡&	Log *ft*	Comments
				Iβ⁻: 2.14 from TAGS data.
(1653[a] *9*)	4253.8?	0.38 *5*	6.27 *6*	av Eβ=641.6 *41*
				Iβ⁻: 0.36 from TAGS data.
(1658[a] *9*)	4249.1?	0.34 *4*	6.32 *6*	av Eβ=643.8 *41*
				Iβ⁻: 0.33 from TAGS data.
(1667[a] *9*)	4240.1?	0.34 *7*	6.33 *9*	av Eβ=647.8 *41*
				Iβ⁻: 0.33 from TAGS data.
(1718 *9*)	4189.39	1.26 *11*	5.81 *4*	av Eβ=670.8 *41*
				Iβ⁻: 1.23 from TAGS data.
(1749 *9*)	4157.55	1.24 *11*	5.85 *4*	av Eβ=685.2 *41*
				Iβ⁻: 1.36 from TAGS data.
(1807 *9*)	≈4100	0.50#		Additional information 12.
(1829 *9*)	4078.30	6.8 *5*	5.19 *4*	av Eβ=721.3 *42*
				Iβ⁻: 7.48 from TAGS data.
(1864 *9*)	4043.33	1.65 *21*	5.84 *6*	av Eβ=737.3 *42*
				Iβ⁻: 1.80 from TAGS data.
(1907 *9*)	≈4000	1.37#		Additional information 13.
(1969[a] *9*)	3938.42?	1.31 *13*	6.04 *5*	av Eβ=785.5 *42*
				Iβ⁻: 1.44 from TAGS data.
(2007 *9*)	≈3900	1.32#		Additional information 14.
(2068[a] *9*)	3839.4?	0.82 *9*	6.33 *5*	av Eβ=831.1 *42*
				Iβ⁻: 0.91 from TAGS data.
(2076[a] *9*)	3831.08?	0.68 *8*	6.42 *6*	av Eβ=835.0 *42*
				Iβ⁻: 0.74 from TAGS data.
(2107 *9*)	≈3800	0.30#		Additional information 15.
(2130 *9*)	3776.62	1.03 *12*	6.28 *6*	av Eβ=860.2 *42*
				Iβ⁻: 1.12 from TAGS data.
(2170 *9*)	3736.80	2.13 *20*	6.00 *5*	av Eβ=878.6 *42*
				Iβ⁻: 2.31 from TAGS data.
(2214 *9*)	3693.23	11.6 *9*	5.30 *4*	av Eβ=898.9 *42*
				Iβ⁻: 12.50 from TAGS data.
(2263[a] *9*)	3643.81?	0.84 *10*	6.48 *6*	av Eβ=921.8 *42*
				Iβ⁻: 0.92 from TAGS data.
(2357 *9*)	≈3550	0.96#		Additional information 16.
(2460 *9*)	3446.58	1.98 *19*	6.26 *5*	av Eβ=1014.0 *43*
				Iβ⁻: 2.12 from TAGS data.
(2507 *9*)	≈3400	1.33#		Additional information 17.
(2512[a] *9*)	3395.5?	0.46 *9*	6.93 *9*	av Eβ=1037.9 *43*
				Iβ⁻: 0.51 from TAGS data.
(2542 *9*)	3364.68	2.89 *21*	6.15 *4*	av Eβ=1052.4 *43*
				Iβ⁻: 3.17 from TAGS data.
(2607 *9*)	≈3300	0.76#		Additional information 18.
(2707 *9*)	≈3200	0.57#		Additional information 19.
(2807 *9*)	≈3100	0.57#		Additional information 20.
(2907 *9*)	≈3000	0.67#		Additional information 21.
(3007 *9*)	≈2900	0.67#		Additional information 22.
(3249 *9*)	2657.89	16.4 *11*	5.86 *3*	av Eβ=1386.8 *43*
				Iβ⁻: 16.46 from TAGS data.
(3557 *9*)	≈2350	0.67#		Additional information 23.
(3670 *9*)	2236.95	0.36 *9*	7.74 *11*	av Eβ=1587.7 *43*
				Iβ⁻: 0.34 from TAGS data.
(3748 *9*)	2159.08	0.19 *6*	8.06 *14*	av Eβ=1625.0 *43*
				Iβ⁻: 0.18 from TAGS data.

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^{91}Rb β^- decay 1976Gl02,1997Gr09 (continued)

β^- radiations (continued)

E(decay)†	E(level)	Iβ^-‡&	Log *ft*	Comments
(3842 *9*)	2064.66	5.4 *5*	6.65 *4*	av Eβ=1670.2 *44* Iβ^-: inconsistent with %Iβ=4.32 from TAGS data.
(3964 *9*)	1942.91	3.5 *3*	6.90 *4*	av Eβ=1728.5 *44* Iβ^-: 2.80 from TAGS data.
(3990 *9*)	1917.09	1.08 *11*	7.43 *5*	av Eβ=1740.9 *44* Iβ^-: 0.92 from TAGS data.
(4167 *9*)	1740.27	0.73 *14*	7.68 *9*	av Eβ=1825.8 *44* Iβ^-: 0.70 from TAGS data.
(4425 *9*)	1482.12	1.10 *14*	7.62 *6*	av Eβ=1949.8 *44* Iβ^-: inconsistent with %Iβ=0.15 from TAGS data.
(4676 *9*)	1230.84	1.7 *3*	7.53 *8*	av Eβ=2070.7 *44* Iβ^-: high cf. %Iβ=1.14 from TAGS data.
(4865 *9*)	1042.034	1.8 *3*	7.59 *8*	av Eβ=2161.6 *44* Iβ^-: high cf. %Iβ=1.33 from TAGS data.
(5468 *9*)	439.159	2.3 *6*	7.71 *12*	av Eβ=2452.1 *44* Iβ^-: inconsistent with %Iβ=0.60 from TAGS data.
(5813 *9*)	93.628	24 *5*	6.81 *9*	av Eβ=2618.8 *44* Iβ^-: %Iβ(g.s.+94 level)=17.4 *39* (from 4$\pi\gamma$-β coin data, 1996Gr20 and 1997Gr09); if Iβ(g.s.)=2 *5*, this leaves %Iβ(94)=15 *+2−6*. This is significantly lower than, but not inconsistent with the intensity balance at the 94 level deduced from the decay scheme.
(5907 *9*)	0	2[@] *5*	7.9 *11*	av Eβ=2664.0 *44*

† Based on Q(β^-)=5907 *9* (2012Wa38). Q(β^-) values deduced from measured β^- endpoint energies are as follows: 5860 *10* (1992Pr03), 5850 *20* (1983Ia02), 5857 *8* (1980De02), 5760 *40* (1978Wo15; revision of 5680 *40* from $\beta\gamma$ coin (6 gates) in 1973Cl02). Other Q(β^-): 5880 *50* (2001Ko07); 2006HaZZ (value unstated).

‡ From intensity balance at each level, except as noted; for uncertainly placed lines, the full measured Iγ is assumed. %Iβ values deduced from TAGS data are given in comments for comparison; for most established levels these β feedings agree well, the notable exceptions being for the 439 and 1482 levels, and probably the 93 level. Note that TAGS data also indicate a total %Iβ=10.8 to currently unknown levels.

From TAGS (1997Gr09); may represent feeding to one level or to several levels of undetermined energy, lying within a typically≈100 keV wide energy bin centered on the level energy indicated.

@ 1976Gl02 deduce Iβ=5 *5* based on relative Iγ for ^{91}Kr and ^{91}Rb decay chain activities in decay equilibrium with ^{91}Sr growing in, assuming %Iβ(^{91}Y g.s.)=30.8; the evaluator revises this to Iβ=2 *5* based on adopted %Iβ(^{91}Y g.s.)=28.6. Other %Iβ(g.s.): <6 from direct measurement (dependent on assumed β counter threshold energy) (1976Wo05); 1997Gr09 estimate that, of their measured Iβ(g.s.+94)=17.4 *39*, Iβ≈6.2 feeds the g.s. Iβ(g.s.)=60 *10* (1974Ac01) appears to be erroneous.

& Absolute intensity per 100 decays.

a Existence of this branch is questionable.

^{91}Rb β^- decay 1976Gl02,1997Gr09 (continued)

$\gamma(^{91}Sr)$

Iγ normalization: From Σ (I(γ+ce) to g.s.)=98 *5*, which assumes that %Iβ(^{91}Sr g.s.)=2 *5* (see comment on Iβ to g.s.). Some of the additional levels implied by TAGS data might also have g.s. γ's, but those γ's are probably too weak to greatly affect the adopted normalization; all but 2.6% of total Iγ is placed, and the strongest unplaced γ has Iγ=0.33%.

Average Eγ: 2335 *33* (1990Ru05).

α(K)exp data are from 1974Ac01, if not stated otherwise. Ice spectrum lines are normalized to well-known K conversion lines (556γ(^{91}Y), 304γ(^{85}Kr), and 151γ(^{85}Rb)).

E$_\gamma$[‡]	I$_\gamma$[d]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[#]	δ[#]	α[†]	Comments
93.628[@] *4*	1000 *51*	93.628	(3/2)$^+$	0	5/2$^+$	E2(+M1)	>3.3	1.25 *5*	α(K)exp=1.08 *7*; α(K)exp/α(L)exp=5.95 *24* (1975Wo05) α(K)=1.04 *4*; α(L)=0.175 *8*; α(M)=0.0294 *13*; α(N+..)=0.00351 *15* α(N)=0.00338 *14*; α(O)=0.000132 *5* α(K)exp: weighted average of 1.10 *9* (1975Wo05) and 1.05 *10* (1974Ac01). The datum from 1975Wo05 is the unweighted average of 1.19 *6* from I(ce(K))/Iγ and 1.01 *7* from I(K x ray)/Iγ. K/(L+M+)=5.38 *21* (1970Ma07). δ: from α(K)exp; δ>1.1 from K/L. δ=0.8 *+5−2* from K/(L+M+) is inconsistent with α(K)exp.
345.52[@] *3*	246 *12*	439.159	(+)	93.628	(3/2)$^+$	(M1,E2)		0.009 *3*	α(K)exp=0.009 *4* (1974Ac01) α(K)=0.0080 *25*; α(L)=0.0009 *3*; α(M)=0.00016 *6*; α(N+..)=2.0×10^{-5} *7* α(N)=1.9×10^{-5} *7*; α(O)=1.2×10^{-6} *4* Other Eγ: 345.43 *3* (1976Gl02).
439.15 *3*	62 *3*	439.159	(+)	0	5/2$^+$				
509.6[&] *5*	5.1 *8*	1740.27		1230.84	(+)				
593.23 *3*	38.2 *20*	2657.89	1/2$^{(-)}$ to 5/2$^{(-)}$	2064.66	1/2$^{(+)}$,3/2,5/2				
602.85 *3*	84 *4*	1042.034	(+)	439.159	(+)	(M1,E2)		0.00191 *22*	α(K)exp=0.0018 *11* (1974Ac01) α=0.00191 *22*; α(K)=0.00169 *19*; α(L)=0.000187 *24*; α(M)=3.1×10^{-5} *4*; α(N+..)=4.2×10^{-6} *5* α(N)=3.9×10^{-6} *5*; α(O)=2.51×10^{-7} *24*
[x]702.66 *25*	3.1 *5*								
749.73[e] *25*	3.3 *6*	4793.1	(3/2$^-$,5/2$^-$)	4043.33	3/2$^{(-)}$,5/2$^{(-)}$				
[x]816.5 *5*	3.0 *7*								
875.0 *3*	3.2 *5*	1917.09		1042.034	(+)				
912.8[ae] *4*	2.1 *7*	4358.37	(3/2$^-$,5/2$^-$)	3446.58	1/2$^{(+)}$,3/2,5/2				
917.59 *22*	5.5 *9*	2657.89	1/2$^{(-)}$ to 5/2$^{(-)}$	1740.27					

^{91}Rb β^- decay 1976Gl02,1997Gr09 (continued)

$\gamma(^{91}Sr)$ (continued)

E_γ[‡]	I_γ[d]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
948.49 *5*	34.7 *19*	1042.034	(+)	93.628	(3/2)+	(M1,E2)	0.000641 *17*	α(K)exp=0.0006 *3* (1974Ac01) α=0.000641 *17*; α(K)=0.000568 *15*; α(L)=6.16×10^{-5} *20*; α(M)=1.03×10^{-5} *4*; α(N+..)=1.38×10^{-6} *4* α(N)=1.30×10^{-6} *4*; α(O)=8.46×10^{-8} *18*
993.69 *13*	8.9 *8*	4358.37	(3/2−,5/2−)	3364.68	1/2,3/2,5/2			
1006.3 *4*	2.8 *7*	2236.95		1230.84	(+)			
1023.20 *12*	13.1 *11*	2064.66	1/2(+),3/2,5/2	1042.034	(+)			
1034.9 *6*	3.9 *16*	3693.23	1/2(−) to 5/2(−)	2657.89	1/2(−) to 5/2(−)			
1041.99 *5*	65 *3*	1042.034	(+)	0	5/2+	(M1,E2)	0.000520 *10*	α(K)exp=0.00052 *22* (1974Ac01) α=0.000520 *10*; α(K)=0.000461 *9*; α(L)=4.98×10^{-5} *12*; α(M)=8.36×10^{-6} *19*; α(N+..)=1.120×10^{-6} *2* α(N)=1.051×10^{-6} *22*; α(O)=6.87×10^{-8} *11*
1137.24 *5*	115 *6*	1230.84	(+)	93.628	(3/2)+	(M1,E2)	0.000432 *7*	α(K)exp=0.00036 *15* (1974Ac01) α=0.000432 *7*; α(K)=0.000381 *6*; α(L)=4.11×10^{-5} *7*; α(M)=6.90×10^{-6} *12*; α(N+..)=2.7×10^{-6} *3* α(N)=8.68×10^{-7} *14*; α(O)=5.68×10^{-8} *8*; α(IPF)=1.8×10^{-6} *3*
1149.7[e] *7*	2.0 *8*	4793.1	(3/2−,5/2−)	3643.81?	(1/2+,3/2,5/2)			
1174.1[e] *5*	2.9 *8*	3831.08?	(1/2,3/2,5/2)	2657.89	1/2(−) to 5/2(−)			
1205.6 *3*	3.4 *7*	3364.68	1/2,3/2,5/2	2159.08				
1230.64 *15*	8.7 *8*	1230.84	(+)	0	5/2+			
[x]1238.7 *6*	2.0 *6*							
[x]1250.7 *8*	1.4 *6*							
1274.05 *18*	7.4 *9*	1367.76		93.628	(3/2)+			
1299.9 *3*	4.8 *7*	3364.68	1/2,3/2,5/2	2064.66	1/2(+),3/2,5/2			
1367.76 *8*	22.5 *15*	1367.76		0	5/2+			
1388.13 *24*	6.5 *9*	1482.12		93.628	(3/2)+			
1482.17 *11*	43 *3*	1482.12		0	5/2+			
1503.0 *7*	2.7 *10*	3446.58	1/2(+),3/2,5/2	1942.91	(1/2+,3/2,5/2)			
1594.15[e] *17*	12.2 *11*	3831.08?	(1/2,3/2,5/2)	2236.95				
1615.86 *9*	73 *4*	2657.89	1/2(−) to 5/2(−)	1042.034	(+)			
1624.8 *5*	14.7[b] *10*	3364.68	1/2,3/2,5/2	1740.27				
1625.4 *3*	21.2[b] *14*	2064.66	1/2(+),3/2,5/2	439.159	(+)			
1628.49 *14*	26.8 *17*	3693.23	1/2(−) to 5/2(−)	2064.66	1/2(+),3/2,5/2			
1646.51 *23*	7.7 *10*	1740.27		93.628	(3/2)+			
1712.0 *4*	6.1 *12*	3776.62	1/2,3/2,5/2	2064.66	1/2(+),3/2,5/2			
1719.9 *3*	9.1 *14*	2159.08		439.159	(+)			
1740.25 *10*	42 *3*	1740.27		0	5/2+			

$^{91}_{38}Sr_{53}$-6

$\gamma(^{91}Sr)$ (continued)

E_γ ‡	I_γ [d]	E_i(level)	J_i^π	E_f	J_f^π
1766.17[e] *18*	4.9 *12*	3831.08?	(1/2,3/2,2,5/2)	2064.66	$1/2^{(+)}$,3/2,5/2
1794.5[e] *6*	3.7 *11*	4453.0?	$(1/2^+,3/2,5/2)$	2657.89	$1/2^{(-)}$ to $5/2^{(-)}$
1823.3 *4*	10.6 *18*	1917.09		93.628	$(3/2)^+$
1841.1 *3*	3.8 *13*	4078.30	$3/2^{(-)},5/2^{(-)}$	2236.95	
1849.27 *9*	98 *5*	1942.91	$(1/2^+,3/2,5/2)$	93.628	$(3/2)^+$
1859.56 *25*	4.5 *9*	3776.62	1/2,3/2,5/2	1917.09	
1874.4[e] *4*	3.3 *16*	3938.42?	$(1/2^+,3/2,5/2)$	2064.66	$1/2^{(+)}$,3/2,5/2
1917.11 *15*	22.6 *17*	1917.09		0	$5/2^+$
1942.81 *17*	11.8 *12*	1942.91	$(1/2^+,3/2,5/2)$	0	$5/2^+$
1953.0 *5*	2.1 *9*	3693.23	$1/2^{(-)}$ to $5/2^{(-)}$	1740.27	
1970.99 *10*	199 *10*	2064.66	$1/2^{(+)}$,3/2,5/2	93.628	$(3/2)^+$
2013.5 *3*	7.9 *12*	4078.30	$3/2^{(-)},5/2^{(-)}$	2064.66	$1/2^{(+)}$,3/2,5/2
2036.1 *3*	10.9 *15*	3776.62	1/2,3/2,5/2	1740.27	
2064.69 *14*	23.3 *18*	2064.66	$1/2^{(+)}$,3/2,5/2	0	$5/2^+$
2143.22 *14*	19.8 *15*	2236.95		93.628	$(3/2)^+$
2161.8[e] *6*	3.5 *11*	3643.81?	$(1/2^+,3/2,5/2)$	1482.12	
[x]2196.0 *4*	5.5 *12*				
[x]2208.5 *7*	3.1 *11*				
2218.2 *3*	8.3 *13*	2657.89	$1/2^{(-)}$ to $5/2^{(-)}$	439.159	$(^+)$
2236.9 *5*	4.1 *10*	2236.95		0	$5/2^+$
2254.6 *4*	3.7 *9*	3736.80	$1/2^{(+)}$,3/2,5/2	1482.12	
2263.1 *3*	4.5 *9*	4327.73	$1/2^{(-)}$ to $5/2^{(-)}$	2064.66	$1/2^{(+)}$,3/2,5/2
2322.34 *21*	13.3 *15*	3364.68	1/2,3/2,5/2	1042.034	$(^+)$
2448.5[e] *7*	4.4 *14*	4391.0?	$(1/2^+,3/2,5/2)$	1942.91	$(1/2^+,3/2,5/2)$
2505.95 *14*	42.2 *25*	3736.80	$1/2^{(+)}$,3/2,5/2	1230.84	$(^+)$
2564.19 *14*	372 *19*	2657.89	$1/2^{(-)}$ to $5/2^{(-)}$	93.628	$(3/2)^+$
[x]2606.7 *5*	4.1 *11*				
[x]2724.2 *7*	5.1 *15*				
2783.3 *4*	9.9 *15*	4265.50	$3/2^{(-)},5/2^{(-)}$	1482.12	
2789.6 *4*	14.6 *15*	4157.55	$3/2^{(-)},5/2^{(-)}$	1367.76	
2847.39 *22*	19.3 *20*	4078.30	$3/2^{(-)},5/2^{(-)}$	1230.84	$(^+)$
2872.5[e] *6*	5.6 *17*	4240.1?	(1/2,3/2,5/2)	1367.76	
2897.6 *5*	6.1 *12*	4265.50	$3/2^{(-)},5/2^{(-)}$	1367.76	
[x]2912.0 *4*	9.8 *7*				
2925.72 *18*	45 *3*	3364.68	1/2,3/2,5/2	439.159	$(^+)$
2958.6 *6*	3.8 *11*	4189.39	$3/2^{(-)},5/2^{(-)}$	1230.84	$(^+)$
2990.6 *5*	6.0 *15*	4358.37	$(3/2^-,5/2^-)$	1367.76	
3007.6 *5*	8.1 *15*	3446.58	$1/2^{(+)}$,3/2,5/2	439.159	$(^+)$
[x]3107.9 *9*	4.6 *16*				
3147.30 *24*	19.4 *19*	4189.39	$3/2^{(-)},5/2^{(-)}$	1042.034	$(^+)$
[x]3224.4[c] *3*	9.7 *11*				

$^{91}_{38}Sr_{53}$-7

^{91}Rb β^- decay 1976Gl02,1997Gr09 (continued)

$\gamma(^{91}Sr)$ (continued)

E_γ ‡	I_γ [d]	E_i(level)	J_i^π	E_f	J_f^π
3270.9 *3*	13.2 *18*	3364.68	1/2,3/2,5/2	93.628	$(3/2)^+$
3284.7 *8*	4.8 *14*	4327.73	$1/2^{(-)}$ to $5/2^{(-)}$	1042.034	$(^+)$
3302.2[e] *10*	4.1 *16*	3395.5?	$(1/2^+,3/2,5/2)$	93.628	$(3/2)^+$
3337.8 *5*	6.5 *17*	3776.62	1/2,3/2,5/2	439.159	$(^+)$
[x]3346.2[c] *6*	5.3 *24*				
3353.1 *6*	6.0 *21*	3446.58	$1/2^{(+)}$,3/2,5/2	93.628	$(3/2)^+$
[x]3376.5 *3*	8 *4*				
3395.4[e] *4*	9.6 *17*	3395.5?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
3410.7[e] *8*	2.4 *16*	4453.0?	$(1/2^+,3/2,5/2)$	1042.034	$(^+)$
3446.50 *20*	44 *3*	3446.58	$1/2^{(+)}$,3/2,5/2	0	$5/2^+$
3599.67 *19*	309 *16*	3693.23	$1/2^{(-)}$ to $5/2^{(-)}$	93.628	$(3/2)^+$
3604.3 *6*	11 *5*	4043.33	$3/2^{(-)},5/2^{(-)}$	439.159	$(^+)$
3639.14 *22*	36 *3*	4078.30	$3/2^{(-)},5/2^{(-)}$	439.159	$(^+)$
3643.75[e] *23*	23.3 *23*	3643.81?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
3682.9 *7*	2.4 *13*	3776.62	1/2,3/2,5/2	93.628	$(3/2)^+$
3736.5 *4*	17 *4*	3736.80	$1/2^{(+)}$,3/2,5/2	0	$5/2^+$
3745.9[e] *5*	6.0 *14*	3839.4?	$(1/2^+,3/2,5/2)$	93.628	$(3/2)^+$
3800.7[e] *5*	4.5 *10*	4240.1?	(1/2,3/2,5/2)	439.159	$(^+)$
3839.3[e] *3*	18.2 *19*	3839.4?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
3844.33[e] *25*	30.2 *25*	3938.42?	$(1/2^+,3/2,5/2)$	93.628	$(3/2)^+$
3888.4 *4*	8.4 *11*	4327.73	$1/2^{(-)}$ to $5/2^{(-)}$	439.159	$(^+)$
[x]3906.2 *9*	2.8 *9*				
3938.7[e] *5*	5.4 *11*	3938.42?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
3949.56 *23*	19.1 *16*	4043.33	$3/2^{(-)},5/2^{(-)}$	93.628	$(3/2)^+$
3984.7 *3*	12.3 *13*	4078.30	$3/2^{(-)},5/2^{(-)}$	93.628	$(3/2)^+$
4043.26 *22*	22.0 *16*	4043.33	$3/2^{(-)},5/2^{(-)}$	0	$5/2^+$
[x]4061.3 *5*	3.4 *12*				
4063.9 *7*	1.3 *9*	4157.55	$3/2^{(-)},5/2^{(-)}$	93.628	$(3/2)^+$
4078.25 *19*	121 *6*	4078.30	$3/2^{(-)},5/2^{(-)}$	0	$5/2^+$
4095.7 *3*	7.1 *9*	4189.39	$3/2^{(-)},5/2^{(-)}$	93.628	$(3/2)^+$
4157.48 *22*	20.8 *15*	4157.55	$3/2^{(-)},5/2^{(-)}$	0	$5/2^+$
4171.7 *3*	8.3 *9*	4265.50	$3/2^{(-)},5/2^{(-)}$	93.628	$(3/2)^+$
4189.2 *3*	6.9 *8*	4189.39	$3/2^{(-)},5/2^{(-)}$	0	$5/2^+$
[x]4224.8 *6*	3.0 *6*				
4234.1 *3*	6.5 *7*	4327.73	$1/2^{(-)}$ to $5/2^{(-)}$	93.628	$(3/2)^+$
4249.0[e] *3*	10.1 *10*	4249.1?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
4253.7[e] *3*	11.2 *11*	4253.8?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
4265.45 *21*	42.5 *25*	4265.50	$3/2^{(-)},5/2^{(-)}$	0	$5/2^+$
4297.1[e] *4*	3.4 *5*	4391.0?	$(1/2^+,3/2,5/2)$	93.628	$(3/2)^+$
4357.9 *7*	1.6 *5*	4358.37	$(3/2^-,5/2^-)$	0	$5/2^+$
4391.3[e] *9*	1.6 *5*	4391.0?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
4453.1[e] *4*	4.3 *5*	4453.0?	$(1/2^+,3/2,5/2)$	0	$5/2^+$
[x]4544.1 *5*	1.6 *4*				
4699.3[e] *7*	0.5 *3*	4793.1	$(3/2^-,5/2^-)$	93.628	$(3/2)^+$

† Additional information 24.
‡ From 1976Gl02, except As noted.
# From α(K)exp.
@ From curved-crystal spectrometer measurement (1979Bo26).
& Transition identified only in coincidence.
[a] Transition tentatively placed by the evaluator.
[b] From $\gamma\gamma$ coin (1976Gl02).
[c] Placed by 1976Gl02 from a tentative 5289.2 level; however, TAGS data from 1997Gr09 show that Iγ is far too large for that placement to be correct.
[d] For absolute intensity per 100 decays, multiply by 0.0338 *18*.
[e] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{91}_{38}Sr_{53}$-8

^{91}Rb β^- decay 1976Gl02,1997Gr09

Decay Scheme

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

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)
- Coincidence

$3/2^{(-)}$ 0.0 58.2 s *3*

Q_{β^-}=5907 *9* $\%\beta^-$=100

$^{91}_{37}Rb_{54}$

$I\beta^-$	Log *ft*		
0.010		≈5500	
0.014		≈5400	
0.024		≈5300	
0.029		≈5200	
0.048		≈5100	
0.067		≈5000	
0.096		≈4900	
0.114		≈4800	
0.20	5.88	$(3/2^-,5/2^-)$	4793.1
0.24		≈4700	
0.35	6.08	$(1/2^+,3/2,5/2)$	4453.0
0.32	6.19	$(1/2^+,3/2,5/2)$	4391.0
0.63	5.93	$(3/2^-,5/2^-)$	4358.37
0.82	5.85	$1/2^{(-)}$ to $5/2^{(-)}$	4327.73
2.26	5.48	$3/2^{(-)},5/2^{(-)}$	4265.50
1.65	5.84	$3/2^{(-)},5/2^{(-)}$	4043.33
0.84	6.48	$(1/2^+,3/2,5/2)$	3643.81
1.98	6.26	$1/2^{(+)},3/2,5/2$	3446.58
2.89	6.15	1/2,3/2,5/2	3364.68
16.4	5.86	$1/2^{(-)}$ to $5/2^{(-)}$	2657.89
5.4	6.65	$1/2^{(+)},3/2,5/2$	2064.66
3.5	6.90	$(1/2^+,3/2,5/2)$	1942.91
1.10	7.62		1482.12
			1367.76
1.8	7.59	$(^+)$	1042.034
2.3	7.71	$(^+)$	439.159
24	6.81	$(3/2)^+$	93.628
2	7.9	$5/2^+$	0

89.4 ns *16*
9.65 h *6*

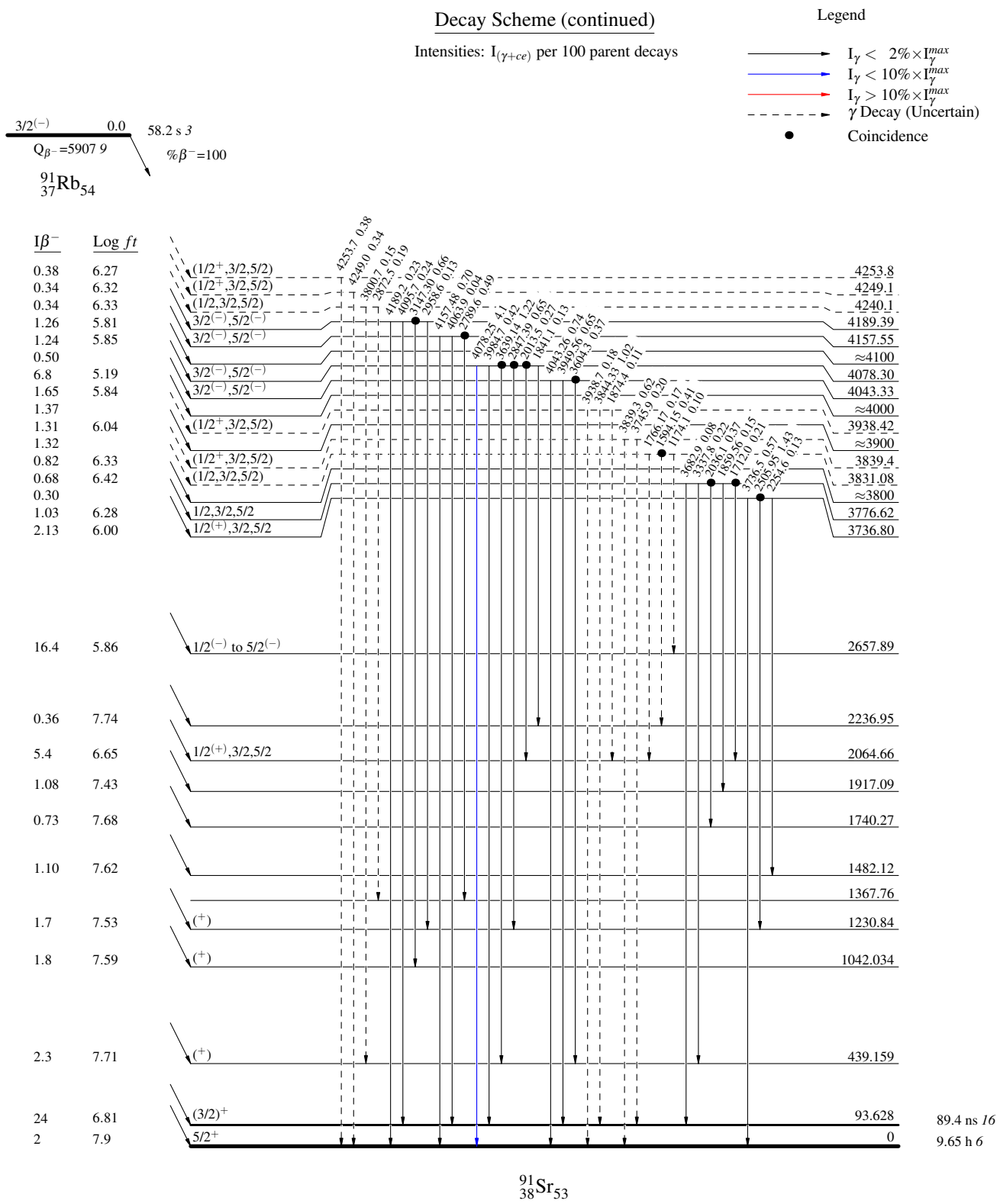
$^{699.3}$ 0.017 $^{1149.7}$ 0.07 $^{749.73}$ 0.112 $^{4453.1}$ 0.145 $^{3410.7}$ 0.08 $^{1794.5}$ 0.13 $^{4391.3}$ 0.054 $^{4297.1}$ 0.115 $^{2448.5}$ 0.15 $^{4357.9}$ 0.054 $^{2990.6}$ 0.20 $^{993.69}$ 0.30 $^{912.8}$ 0.071 $^{4234.1}$ 0.22 $^{3888.4}$ 0.28 $^{3284.7}$ 0.16 $^{2263.1}$ 0.15 $^{4265.45}$ 1.44 $^{4171.1}$ 0.28 $^{2897.6}$ 0.21 $^{2783.3}$ 0.33

$^{91}_{38}Sr_{53}$

^{91}Rb β^- decay 1976Gl02,1997Gr09

Decay Scheme (continued)

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



^{91}Rb β^- decay 1976Gl02,1997Gr09

Decay Scheme (continued)

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

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)
- Coincidence

$3/2^{(-)}$ 0.0 58.2 s *3*

Q_{β^-}=5907 *9* $\%\beta^-$=100

$^{91}_{37}Rb_{54}$

Iβ⁻	Log *ft*		
11.6	5.30	$1/2^{(-)}$ to $5/2^{(-)}$	3693.23
0.84	6.48	$(1/2^+,3/2,5/2)$	3643.81
0.96			≈3550
1.98	6.26	$1/2^{(+)}$,3/2,5/2	3446.58
1.33			≈3400
0.46	6.93	$(1/2^+,3/2,5/2)$	3395.5
2.89	6.15	1/2,3/2,5/2	3364.68
0.76			≈3300
0.57			≈3200
0.57			≈3100
0.67			≈3000
0.67			≈2900
16.4	5.86	$1/2^{(-)}$ to $5/2^{(-)}$	2657.89
0.67			≈2350
0.36	7.74		2236.95
0.19	8.06		2159.08
5.4	6.65	$1/2^{(+)}$,3/2,5/2	2064.66
3.5	6.90	$(1/2^+,3/2,5/2)$	1942.91
1.08	7.43		1917.09
0.73	7.68		1740.27
1.10	7.62		1482.12
1.7	7.53	$(^+)$	1230.84
1.8	7.59	$(^+)$	1042.034
2.3	7.71	$(^+)$	439.159
24	6.81	$(3/2)^+$	93.628 89.4 ns *16*
2	7.9	$5/2^+$	0 9.65 h *6*

$^{91}_{38}Sr_{53}$

^{91}Rb β^- decay 1976Gl02,1997Gr09

Decay Scheme (continued)

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