^{93}Rb β^- decay 1977Bi01

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 112, 1163 (2011)	15-Dec-2010

Parent: ^{93}Rb: E=0; $J^\pi=5/2^-$; $T_{1/2}$=5.84 s *2*; Q(β^-)=7465 *9*; %β^- decay=100.0

Others: 1970MaZC, 1972Am01, 1972Mc04, 1974Ac04, 1975Br03, 1978St02, 1978Wo15, 1978Wu04, 1979Bo26, 1980De02, 1983Ia02, 1986Ka20, 1988Al42, 1988GrZX, 1992Pr03, 1996Gr20, 1996GrZZ, 1996GrZY, 2004Sa69.

2004Sa69: ^{93}Rb from ^{235}U(n,F); KUR-ISOL on-line separator; BaF_2 detectors (+90°, +135°, −135°); 30-keV ^{93}Rb ions implanted In Fe foil; 0.2 tesla magnetic field; measured $T_{1/2}$(213 LEVEL), g-factor(213 level) using TDPAC.

1996Gr20, 1997Gr09: total absorption γ spectrometer (TAGS) (NaI(Tl) well detector with Si e-detector in well) operated in singles or in $4\pi\gamma$-β coin mode, summed-Eγ resolution≈5%; deduced β^- feeding to g.s. (1996Gr20; supersedes 1996GrZZ), β^- feeding to excited states (1997Gr09; supersedes 1996GrZY).

1979Bo26: curved crystal spectrometer; measured Eγ for two lines.

1977Bi01: Ge(Li); measured Eγ, Iγ (243 lines), $\gamma\gamma$ coin.

1975Br03: Ge(Li); measured Eγ, Iγ (69 lines), Eβ, Iβ, $\gamma\gamma$ coin, $\beta\gamma$ coin.

1974Ac04: Ge(Li) and Si(Li); measured Eγ, Iγ (45 lines), $\gamma\gamma$ coin, α(K)exp (relative to ^{85}Kr(304γ) and ^{85}Rb(151γ)).

The adopted decay scheme is essentially that of 1977Bi01. For E(level)<4100, it is supported by $\gamma\gamma$-coin information. The schemes proposed by 1977Bi01 and 1975Br03 are in excellent agreement; however, of the 19 levels proposed in 1974Ac04, only 7 are common to the scheme of 1977Bi01. Total unplaced Iγ is≈0.40% in 1977Bi01.

For the decay scheme of 1977Bi01, negative β^- feeding of 2460, 2774, 2886 levels is implied by Iγ imbalance. Also, the distribution of β^- strength implied by their decay scheme differs from that indicated by the TAGS data of 1997Gr09, in that their scheme significantly overestimates β^- strength to E(level)=0.2-2.2 MeV, underestimates it to E(level)=2.9-3.6 MeV, 4.1-4.4 MeV and≈5.2 MeV, and grossly overestimates it to E(level)≥5.4 MeV. From their total γ absorption measurements, 1988Al42 drew conclusions which were qualitatively similar to those of 1997Gr09 concerning the β^- strength distribution.

Consequently, the evaluator has modified the scheme from 1977Bi01, as follows: (i) the placement is indicated as tentative for all gammas (except the 4645γ) deexciting levels which have E>5500 (presumably, all of these are misplaced since each individual Iγ exceeds the total β^- branching to the relevant level and no gammas are placed so they feed these levels); (ii) gammas deexciting these levels in 1977Bi01 have been relocated by the evaluator whenever possible (based on Eγ alone) − this affects 981.1γ, 1359.9γ, 1533.8γ, 1753.6γ, 1983.2γ, 3585.4γ, 4004.5γ; (iii) when calculating intensity balance, all Iγ (except I(4645γ)) originating from E(level)>5500 have been ignored (total Iγ=4.9%); (iv) a new level (or group of levels) has been introduced at≈4250 keV and at≈5200 keV, although no unique assignment of gammas to the level(s) can be suggested at this time; (v) the previously unplaced 405γ has been placed from the 3603 level, and the 1992γ (from the 5396 level in 1977Bi01) has been relocated deexciting the 4038 level (based on Eγ and intensity balance at the 5396 level); (vi) placement of the 4271γ from the 5414 level is shown as tentative, based on intensity balance at the 5414 level cf. Iβ from TAGS.

These changes result in a scheme which does not imply negative β^- feeding to any level and which marginally improves agreement between β^- feeding deduced from intensity balance and from the TAGS data of 1997Gr09; however, the major discrepancies in β^- strength distribution persist. It appears to be necessary to introduce a number of additional levels between 2900 and 3600 keV; transitions between these levels and ones below 2200 keV may conceivably eliminate much of the feeding to E(level)<2200 implied by the present decay scheme. However, the observation of $\beta\gamma$ coin at the 433, 1143 and 1385 levels (1978St02) appears to establish that significant β^- feeding to those levels does indeed occur.

^{93}Sr Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0	$5/2^+$	7.423 min *24*	$T_{1/2}$: from Adopted Levels.
213.431 *11*	$(9/2)^+$	4.3 ns *1*	$T_{1/2}$: from 2004Sa69. others: 4.6 ns *3* from 1986Ka20 ($\beta\gamma$ delayed coin), 4.6 ns *5* (1983Ka41), 4.6 ns *3* (1970MaZC) and 5 ns *1* (1982Ka03). g-factor=−0.227 *13* (2004Sa69) from TDPAC assuming hyperfine field for Sr In Fe At low temperature is −23.83 *7* tesla.
432.604 *24*	$(5/2,7/2,9/2)^+$	<0.3 ns	$T_{1/2}$: from 1972Mc04.
986.12 *5*	$(9/2^+)$		
1142.55 *4*	$(5/2^+,7/2,9/2^+)$		
1148.20 *6*	$(5/2^+,7/2,9/2^+)$		

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^{93}Rb β^- decay 1977Bi01 (continued)

^{93}Sr Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
1238.24 *7*	(7/2+)	2869.07 *11*		4461.12 *15*	3/2,5/2,7/2
1385.31 *6*		2886.45& *9*		4509.26 *12*	3/2(−),5/2,7/2
1529.32 *10*		2979.92 *10*	3/2,5/2,7/2	4577.6 *3*	3/2,5/2,7/2
1562.95 *9*	(5/2+,7/2,9/2+)	3198.14 *15*		4620.20 *16*	3/2−,5/2−,7/2−
1779.78 *8*	(11/2−)	3233.01 *14*	(7/2−,9/2+)	4714.64 *13*	3/2,5/2,7/2
1808.48 *7*	(5/2+,7/2,9/2+)	3256.40 *12*	(5/2+,7/2,9/2+)	4790.38 *25*	3/2,5/2,7/2
1869.64 *7*		3404.39 *21*	(5/2+,7/2)	4913.09 *13*	(7/2)−
1910.86 *9*		3603.18 *11*	(5/2+,7/2)	4991.28 *14*	(7/2)−
2045.58 *9*		3623.70 *16*		5012.24 *14*	3/2,5/2,7/2
2054.02 *9*		3789.19 *14*	3/2,5/2,7/2	≈5200[a]	
2117.45 *11*		3803.73 *9*	3/2−,5/2−,7/2−	5384.61 *13*	3/2−,5/2−,7/2−
2141.07 *11*	(5/2+,7/2,9/2+)	3847.62 *8*	(7/2)−	5395.5 *4*	(5/2−,7/2−)
2273.00 *12*		3866.86 *12*	(5/2+,7/2)	5413.6 *3*	3/2(−) to 7/2(−)
2292.87 *7*	(5/2+,7/2,9/2+)	3867.40 *8*	(7/2)−	5601.3? *9*	
2319.10 *8*	(5/2+,7/2,9/2+)	3876.73 *10*	(5/2+,7/2)	5631.2 *9*	
2351.51 *11*	(5/2+,7/2,9/2+)	3890.64 *10*	3/2−,5/2−,7/2−	5775.5? *4*	
2456.44 *19*		3934.66 *12*	(5/2+,7/2)	6000.51? *16*	
2459.78# *13*		3954.94 *8*	3/2,5/2,7/2	6096.7? *3*	
2553.80 *10*		4017.60 *15*	3/2,5/2,7/2	6260.72? *21*	
2621.39 *14*	(5/2+,7/2,9/2+)	4037.88 *10*	3/2,5/2,7/2	6272.70? *21*	
2737.44 *17*		4041.9 *3*		6277.40? *22*	
2770.69 *13*	(≥7/2)	4097.43 *12*	(7/2−)	6707.42? *22*	
2773.99@ *25*		≈4250[a]			
2782.20 *11*	(5/2+,7/2,9/2+)	4336.12 *24*	3/2,5/2,7/2		

† From least-squares fit to Eγ, omitting lines with uncertain placement, except when all lines deexciting level are uncertain.
‡ From Adopted Levels.
# Intensity balance implies %Iβ=−0.23 *5* to this level if the decay scheme of 1977Bi01 is assumed.
@ Intensity balance implies %Iβ=−0.38 *8* to this level if the decay scheme of 1977Bi01 is assumed.
& Intensity balance implies %Iβ=−0.20 *11* to this level if the decay scheme of 1977Bi01 is assumed.
[a] Not a discrete level and, consequently, not included in Adopted Levels. 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; from total absorption γ spectroscopy (1997Gr09). Neither specific level energies nor deexcitation γ energies are presently known.

β^- radiations

<E_β>=2630 30 (1990Ru05), 2590 140 (1982Al01) cf. 2229 *160* calculated by the evaluator for the decay scheme presented here using the code RADLST.

Iβ,log *ft* From I(γ+ce) imbalance, except as noted. Independent Iβ values (uncertainty unstated) are available, as a function of excitation energy, from the total absorption γ spectrometry data of 1997Gr09 and, after being scaled to achieve consistency with adopted Iβ(g.s.) (4% reduction required), these are given in comments. Where the latter values significantly exceed those based on intensity balance, they possibly indicate the existence of an additional level (or levels) at comparable energy(ies); relatively low values may indicate incorrect placement of gammas from the relevant level and/or failure of the level scheme to account for gammas directly feeding the level (presumably the former for E(level)>5390, and the latter for low-lying levels).

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^{93}Rb β^- decay 1977Bi01 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[&]	Log *ft*	Comments
(758[a] *9*)	6707.42?	0.038[†]	5.0[†]	av Eβ=256.2 *36* Iβ^-: 0.040% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.51% 5 from intensity balance.
(1188[a] *9*)	6277.40?	0.019[†]	6.0[†]	av Eβ=435.5 *39* Iβ^-: 0.020% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.38% 5 from intensity balance. 4005γ also placed from this level in 1977Bi01.
(1192[a] *9*)	6272.70?	0.019[†]	6.0[†]	av Eβ=437.6 *39* Iβ^-: 0.020% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.63% 5 from intensity balance. 1360γ also placed from this level in 1977Bi01.
(1204[a] *9*)	6260.72?	0.019[†]	6.0[†]	av Eβ=442.7 *39* Iβ^-: 0.020% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.62% 6 from intensity balance.
(1368[a] *9*)	6096.7?	0.022[†]	6.2[†]	av Eβ=514.4 *40* Iβ^-: 0.023% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.33% 4 from intensity balance.
(1464[a] *9*)	6000.51?	0.027[†]	6.2[†]	av Eβ=557.0 *40* Iβ^-: 0.028% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=1.19% 9 from intensity balance. 1983γ also placed from this level in 1977Bi01.
(1690[a] *9*)	5775.5?	0.033[†]	6.4[†]	av Eβ=658.0 *41* Iβ^-: 0.034% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.34% 6 from intensity balance.
(1834 *9*)	5631.2	0.075[†]	6.2[†]	av Eβ=723.7 *42* Iβ^-: 0.078% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.57% 6 from intensity balance. 1534γ, 3585γ also placed from this level in 1977Bi01.
(1864[a] *9*)	5601.3?	0.037[†]	6.5[†]	av Eβ=737.3 *42* Iβ^-: 0.039% to level(s) at or near this energy; from TAGS data (1997Gr09). Iβ=0.16% 7 from intensity balance. 981γ, 1754γ also placed from this level in 1977Bi01.
(2051 *9*)	5413.6	0.19[†]	5.9[†]	av Eβ=823.6 *42* Iβ^-: 0.19% from TAGS data (1997Gr09). other: 0.46 *20* from intensity balance if 4271γ deexcites this level.
(2070 *9*)	5395.5	0.31[†] *5*	5.75[†] *7*	av Eβ=832.0 *42* Iβ^-: 0.17% from TAGS data (1997Gr09).
(2080 *9*)	5384.61	1.03[†] *8*	5.24[†] *4*	av Eβ=837.0 *42* Iβ^-: 0.35% from TAGS data (1997Gr09).
(2265 *9*)	≈5200	0.74[@]	≥5.5	Log *ft*: =5.55 if only one level is fed.
(2453 *9*)	5012.24	0.50 *7*	5.85 *7*	av Eβ=1010.4 *43* Iβ^-: 0.76% from TAGS data (1997Gr09).
(2474 *9*)	4991.28	0.61 *7*	5.78 *5*	av Eβ=1020.2 *43* Iβ^-: 0.79% from TAGS data (1997Gr09).
(2552 *9*)	4913.09	1.22 *9*	5.54 *4*	av Eβ=1056.9 *43* Iβ^-: 1.45% from TAGS data (1997Gr09).
(2675 *9*)	4790.38	0.41 *8*	6.10 *9*	av Eβ=1114.6 *43* Iβ^-: 0.35% from TAGS data (1997Gr09).
(2750 *9*)	4714.64	0.83 *9*	5.84 *5*	av Eβ=1150.3 *43* Iβ^-: 1.12% from TAGS data (1997Gr09).
(2845 *9*)	4620.20	1.25 *22*	5.73 *8*	av Eβ=1194.9 *43* Iβ^-: 1.40% from TAGS data (1997Gr09).
(2887 *9*)	4577.6	0.58 *8*	6.09 *6*	av Eβ=1215.1 *43* Iβ^-: 0.70% from TAGS data (1997Gr09).

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^{93}Rb β^- decay 1977Bi01 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[&]	Log *ft*	Comments
(2956 *9*)	4509.26	0.46 *10*	6.23 *10*	av Eβ=1247.4 *43* Iβ^-: 0.42% from TAGS data (1997Gr09).
(3004 *9*)	4461.12	0.82 *7*	6.01 *4*	av Eβ=1270.2 *43* Iβ^-: 1.03% from TAGS data (1997Gr09).
(3129[a] *9*)	4336.12	0.38 *5*	6.42 *6*	av Eβ=1329.6 *43* Iβ^-: 1.55% from TAGS data (1997Gr09).
(3215 *9*)	≈4250	1.48[@]	≥5.9	Log *ft*: =5.9 if only one level is fed.
(3368 *9*)	4097.43	2.09 *14*	5.82 *3*	av Eβ=1443.2 *43* Iβ^-: 2.96% from TAGS data (1997Gr09).
(3423 *9*)	4041.9	0.23 *4*	6.81 *8*	av Eβ=1469.7 *43* Iβ^-: 0.27% from TAGS data (1997Gr09).
(3427 *9*)	4037.88	2.15 *14*	5.84 *3*	av Eβ=1471.6 *43* Iβ^-: 2.18% from TAGS data (1997Gr09).
(3447 *9*)	4017.60	0.85 *9*	6.25 *5*	av Eβ=1481.3 *43* Iβ^-: 0.75% from TAGS data (1997Gr09).
(3510 *9*)	3954.94	2.24 *15*	5.87 *3*	av Eβ=1511.2 *43* Iβ^-: 2.60% from TAGS data (1997Gr09).
(3530 *9*)	3934.66	2.19 *17*	5.89 *4*	av Eβ=1520.9 *43* Iβ^-: 2.60% from TAGS data (1997Gr09).
(3574 *9*)	3890.64	5.6 *5*	5.50 *4*	av Eβ=1541.9 *43* E(decay): weighted average of 3640 *170* and 3280 *220* from β spectra gated by 432γ and 3458γ, respectively (1978St02) is 3510 *170*. Iβ^-: 6.20% from TAGS data (1997Gr09).
(3588 *9*)	3876.73	1.82 *15*	6.00 *4*	av Eβ=1548.5 *43* Iβ^-: 2.11% from TAGS data (1997Gr09).
(3598 *9*)	3867.40	5.2 *4*	5.55 *4*	av Eβ=1553.0 *43* E(decay): Measured endpoint energy for γ-gated β^- spectrum: 3560 *300* (1978St02). Iβ^-: 5.79% from TAGS data (1997Gr09).
(3598 *9*)	3866.86	1.62 *15*	6.05 *4*	av Eβ=1553.3 *43* Iβ^-: 1.89% from TAGS data (1997Gr09).
(3617 *9*)	3847.62	3.73 *24*	5.70 *3*	av Eβ=1562.4 *43* Iβ^-: 4.20% from TAGS data (1997Gr09).
(3661 *9*)	3803.73	3.72 *24*	5.73 *3*	av Eβ=1583.4 *43* Iβ^-: 4.01% from TAGS data (1997Gr09).
(3676 *9*)	3789.19	0.59 *10*	6.53 *8*	av Eβ=1590.4 *43* Iβ^-: 0.69% from TAGS data (1997Gr09).
(3841 *9*)	3623.70	0.41 *5*	6.78 *6*	av Eβ=1669.6 *44* Iβ^-: 0.92% from TAGS data (1997Gr09).
(3862 *9*)	3603.18	0.67 *9*	6.57 *6*	av Eβ=1679.4 *44* Iβ^-: 3.73% from TAGS data (1997Gr09).
(4061 *9*)	3404.39	0.56 *9*	6.75 *7*	av Eβ=1774.7 *44* Iβ^-: 2.69% from TAGS data (1997Gr09).
(4209 *9*)	3256.40	0.21 *7*	7.24 *15*	av Eβ=1845.8 *44* Iβ^-: 1.21% from TAGS data (1997Gr09).
(4232 *9*)	3233.01	0.17 *4*	7.34 *11*	av Eβ=1857.0 *44* Iβ^-: 0.74% from TAGS data (1997Gr09).
(4267[a] *9*)	3198.14	≤0.04	≥8.0	av Eβ=1873.8 *44* Iβ^-: 0.81% from TAGS data (1997Gr09).
(4485 *9*)	2979.92	1.05 *8*	6.66 *4*	av Eβ=1978.6 *44* Iβ^-: 1.89% from TAGS data (1997Gr09).
(4596 *9*)	2869.07	0.50 *7*	7.03 *6*	av Eβ=2031.9 *44* Iβ^-: no branch reported by 1997Gr09.
(4683 *9*)	2782.20	0.26 *22*	7.4 *4*	av Eβ=2073.7 *44* Iβ^-: 0.54% from TAGS data (1997Gr09).
(4728[a] *9*)	2737.44	≤0.04	≥8.2	av Eβ=2095.3 *44*

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^{93}Rb β^- decay 1977Bi01 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[&]	Log *ft*	Comments
				Iβ^-: 0.19% from TAGS data (1997Gr09); −0.07 *11* from I(γ+ce) balance.
(4844 *9*)	2621.39	0.44 *8*	7.19 *8*	av Eβ=2151.2 *44*
				Iβ^-: 0.51% from TAGS data (1997Gr09).
(5113 *9*)	2351.51	0.18 *7*	7.68 *17*	av Eβ=2281.2 *44*
				Iβ^-: 0.22% from TAGS data (1997Gr09).
(5146 *9*)	2319.10	0.37 *15*	7.38 *18*	av Eβ=2296.8 *44*
				Iβ^-: 0.15 % from TAGS data (1997Gr09).
(5172 *9*)	2292.87	0.56 *9*	7.21 *7*	av Eβ=2309.4 *44*
				Iβ^-: 0.47% from TAGS data (1997Gr09).
(5324 *9*)	2141.07	0.44 *10*	7.37 *10*	av Eβ=2382.6 *44*
				Iβ^-: 0.26% from TAGS data (1997Gr09).
(5348 *9*)	2117.45	0.16 *7*	7.82 *19*	av Eβ=2394.0 *44*
				Iβ^-: 0.08% from TAGS data (1997Gr09).
(5411 *9*)	2054.02	≤0.74	≥7.2	av Eβ=2424.6 *44*
				Iβ^-: 0.17% from TAGS data (1997Gr09).
(5419 *9*)	2045.58	≤0.76	≥7.2	av Eβ=2428.6 *44*
				Iβ^-: 0.27% from TAGS data (1997Gr09); 0.61% 15 from I(γ+ce) balance.
(5554 *9*)	1910.86	≤0.8	≥7.2	av Eβ=2493.6 *44*
				Iβ^-: 0.27% from TAGS data (1997Gr09); 0.73% 11 from I(γ+ce) balance.
(5595[a] *9*)	1869.64	≤0.31	≥7.6	av Eβ=2513.5 *44*
				Iβ^-: 0.07% from TAGS data (1997Gr09); 0.13% 18 from I(γ+ce) balance.
(5657 *9*)	1808.48	≤1.5	≥7.0	av Eβ=2543.0 *44*
				Iβ^-: 0.38% from TAGS data (1997Gr09); 1.34% 20 from I(γ+ce) balance.
(5685 *9*)	1779.78	≤0.63	≥7.3	av Eβ=2556.8 *44*
				Iβ^-: 0.17% from TAGS data (1997Gr09); 0.53% 10 from I(γ+ce) balance.
(5902 *9*)	1562.95	≤1.0	≥7.2	av Eβ=2661.4 *44*
				Iβ^-: 0.22% from TAGS data (1997Gr09); 0.85% 11 from I(γ+ce) balance.
(5936 *9*)	1529.32	≤0.5	≥7.5	av Eβ=2677.6 *44*
				Iβ^-: 0.12% from TAGS data (1997Gr09); 0.46% 4 from I(γ+ce) balance.
(6080 *9*)	1385.31	<3.2	>6.8	av Eβ=2747.1 *44*
				E(decay): Measured endpoint energy for γ-gated β^- spectrum: 6120 *250* (1978St02).
				Iβ^-: 0.61% from TAGS data (1997Gr09); 2.8% 4 from I(γ+ce) balance.
(6227 *9*)	1238.24	0.52 *13*	7.61 *11*	av Eβ=2818.1 *44*
				Iβ^-: 0.40% from TAGS data (1997Gr09).
(6317[a] *9*)	1148.20	≤1.2	≥7.3	av Eβ=2861.5 *44*
				Iβ^-: ≈0% from TAGS data (1997Gr09); 1.08% 17 from I(γ+ce) balance.
(6322[a] *9*)	1142.55	≤1.8	≥7.1	av Eβ=2864.3 *44*
				E(decay): Measured endpoint energy for γ-gated β^- spectrum: 6190 *250* (1978St02).
				Iβ^-: ≈0% from TAGS data (1997Gr09); 1.2% 6 from I(γ+ce) balance.
(6479[a] *9*)	986.12	0.6 *5*	7.6 *4*	av Eβ=2939.8 *44*
				Iβ^-: ≈0% from TAGS data (1997Gr09).
(7032 *9*)	432.604	≤6.3	≥6.8	av Eβ=3206.8 *44*
				E(decay): Measured endpoint energy for γ-gated β^- spectrum: 6950 *220* (1978St02).
				Iβ^-: ≈0% from TAGS data (1997Gr09); 5.1% 12 (log *ft*=6.86 *11*) from I(γ+ce) balance.
(7252[a] *9*)	213.431	≤1.5	≥9.6[1u]	av Eβ=3307.0 *44*
				Iβ^-: 0.9 *6* from intensity balance;≈0% from TAGS data (1997Gr09).
7470[‡] *8*	0	35[#] *3*	6.14 *4*	av Eβ=3415.5 *44*

[†] Level may also deexcite via n emission, in which case Iβ would be higher (by 1.39% 7 at most) and log *ft* correspondingly

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^{93}Rb β^- decay 1977Bi01 (continued)

β^- radiations (continued)

lower.

‡ β end-point energy; weighted average of 7450 *40* (2001Ko07), 7456 *15* (1992Pr03), 7488 *15* (from Blonnigen, quoted by 1992Pr03), 7455 *35* (1988GrZX), 7486 *15* (1980De02, table 1), 7560 *120* (1978Wo15), 7410 *100* (1978St02), 7440 *30* (1978Wu04), 7440 *30* (1983Ia02), 7550 *150* (1970MaZC).

From $4\pi\gamma$-β data, 1996Gr20 obtain 32.6% 24. 1975Br03 report 42% 4, based on I(432γ, ^{93}Sr)/I(590γ, ^{93}Y) in source at saturation and %I(590γ) (values unstated), without allowance for %β^-n=1.39 *7* or for their decay scheme in which Iγ(432)/(Σ I(γ+ce) to g.s.) is≈103% of that in 1977Bi01 (corrected Iβ(g.s.)=39% 4). 1974Ac04 report 59% 3, based on saturation values for Σ(Iγ to ^{93}Sr g.s.)/ Σ(Iγ to ^{93}Y g.s.) and authors′ decay schemes, assuming Iβ(g.s., ^{93}Y)=0 and %β^-n(^{93}Rb)=1.7. Compared with the adopted decay schemes, the ratio from 1974Ac04 is a factor of 1.34 low; consequently, Σ(Iβ to excited states of ^{93}Sr)=39% 3 implied in 1974Ac04 is an underestimate (probably 52% 4, leading to Iβ(g.s.)=46% 4, consistent with datum from 1975Br03, but not 1996Gr20). The evaluator adopts the weighted average of data from 1996Gr20 and 1975Br03 (after the revisions above), assuming adopted %β^-n=1.39 *7*.

@ 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 at the level energy indicated.

& Absolute intensity per 100 decays.

a Existence of this branch is questionable.

^{93}Rb β^- decay 1977Bi01 (continued)

$\gamma(^{93}Sr)$

Iγ normalization: 0.0202 *10* from Σ(I(γ+ce) to g.s.)=65% 3, based on Iβ(g.s.)=34% 3 and %β^-n(^{93}Rb)=1.39 *7*. Note, however, that Iγ normalization=0.0136 *11* is implied by I(432γ)/I_n from ^{94}Rb β^-n decay and adopted %β^-n.

1977Bi01 observe more than three times as many γ rays as 1975Br03 or 1974Ac04 and resolve five multiplets reported as single lines in prior studies. The evaluator, therefore, omits γ rays reported by 1974Ac04 alone (Eγ=1380.1, 1597.1, 2456.1, 2946.85, 2999.0, 4879.0, 5135.7, 5269.9).

α(K)exp data are from 1974Ac04.

<E_γ>=1920 100 (1990Ru05) cf. 2257 *25* calculated using the code RADLST for the decay scheme presented here.

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[b]	Comments
163.4 *3*	6.6 *15*	2456.44		2292.87	(5/2$^+$,7/2,9/2$^+$)			
205.2 *6*	6 *3*	4714.64	3/2,5/2,7/2	4509.26	3/2$^{(-)}$,5/2,7/2			
213.429[#] *11*	384[#] *21*	213.431	(9/2)$^+$	0	5/2$^+$	E2	0.0639	α(K)exp=0.056 *6* α(K)=0.0556 *8*; α(L)=0.00701 *10*; α(M)=0.001177 *17*; α(N+..)=0.0001498 *21* α(N)=0.0001422 *20*; α(O)=7.67×10^{-6} *11* E_γ: weighted average of 213.433 *12* (1979Bo26), 213.39 *5* (1977Bi01), 213.39 *5* (1974Ac04). δ(M1,E2)>2.4 from adopted α(K)exp. α(K)exp: from 1986Ka20. Others: 0.038 *8* (1974Ac04), 0.04 *1* (1972Mc04).
219.16[#] *6*	158[#] *9*	432.604	(5/2,7/2,9/2)$^+$	213.431	(9/2)$^+$	M1,E2[@]	0.039 *19*	α(K)=0.034 *17*; α(L)=0.0042 *22*; α(M)=0.0007 *4*; α(N+..)=9.E−5 *5* α(N)=9.E−5 *5*; α(O)=4.8×10^{-6} *22*
351.74 *11*	3.8 *4*	3954.94	3/2,5/2,7/2	3603.18	(5/2$^+$,7/2)			
404.99[&] *18*	3.1 *5*	3603.18	(5/2$^+$,7/2)	3198.14				
432.61[#] *3*	1000[#] *50*	432.604	(5/2,7/2,9/2)$^+$	0	5/2$^+$	M1,E2[@]	0.0047 *11*	α(K)=0.0042 *9*; α(L)=0.00047 *12*; α(M)=7.9×10^{-5} *19*; α(N+..)=1.04×10^{-5} *24* α(N)=9.8×10^{-6} *23*; α(O)=6.1×10^{-7} *12* E_γ: weighted average of 432.633 *23* (1979Bo26), 432.51 *5* (1977Bi01), 432.62 *5* (1974Ac04). Iγ=20.2% 12 based on recommended decay scheme normalization (cf. 13.2% 8 from I(432γ)/I_n in ^{94}Rb β^-n decay).
473.8 *6*	1.6 *7*	4097.43	(7/2$^-$)	3623.70				
595.87 *13*	12.7 *17*	2869.07		2273.00				
602.6 *4*	10.1 *18*	4620.20	3/2$^-$,5/2$^-$,7/2$^-$	4017.60	3/2,5/2,7/2			
610.1 *4*	10.1 *18*	3866.86	(5/2$^+$,7/2)	3256.40	(5/2$^+$,7/2,9/2$^+$)			
661.64 *11*	16 *3*	4509.26	3/2$^{(-)}$,5/2,7/2	3847.62	(7/2)$^-$			
709.95[#] *5*	308[#] *22*	1142.55	(5/2$^+$,7/2,9/2$^+$)	432.604	(5/2,7/2,9/2)$^+$			
721.99 *17*	2.9 *4*	3954.94	3/2,5/2,7/2	3233.01	(7/2$^-$,9/2$^+$)			

$^{93}_{38}Sr_{55}$-7

^{93}Rb β^- decay 1977Bi01 (continued)

$\gamma(^{93}Sr)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
768.36 *23*	6.6 *11*	1910.86		1142.55	$(5/2^+,7/2,9/2^+)$	
776.4 *4*	3.0 *10*	3233.01	$(7/2^-,9/2^+)$	2456.44		
793.65[#] *6*	62[#] *3*	1779.78	$(11/2^-)$	986.12	$(9/2^+)$	
822.41 *22*	9.7 *17*	1808.48	$(5/2^+,7/2,9/2^+)$	986.12	$(9/2^+)$	
831.2 *3*	3.6 *8*	4620.20	$3/2^-,5/2^-,7/2^-$	3789.19	3/2,5/2,7/2	
859.05[c] *18*	4.8 *6*	6272.70?		5413.6	$3/2^{(-)}$ to $7/2^{(-)}$	
867.74 *16*	4.2 *5*	3847.62	$(7/2)^-$	2979.92	3/2,5/2,7/2	
901.08 *18*	6.3 *8*	2770.69	$(\geq 7/2)$	1869.64		
905.6 *3*	3.8 *8*	2054.02		1148.20	$(5/2^+,7/2,9/2^+)$	
910.91 *14*	8.2 *9*	4714.64	3/2,5/2,7/2	3803.73	$3/2^-,5/2^-,7/2^-$	
929.04[#] *9*	24.4[#] *17*	1142.55	$(5/2^+,7/2,9/2^+)$	213.431	$(9/2)^+$	
934.70 *10*	18.4 *14*	1148.20	$(5/2^+,7/2,9/2^+)$	213.431	$(9/2)^+$	
981.1 *3*	7.5 *17*	3867.40	$(7/2)^-$	2886.45		Placed by evaluator; deexcites 5601 level in 1977Bi01.
986.05[#] *6*	391[#] *20*	986.12	$(9/2^+)$	0	$5/2^+$	
990.9 *3*	6.5 *13*	2770.69	$(\geq 7/2)$	1779.78	$(11/2^-)$	
1035.1 *5*	3.8 *12*	2273.00		1238.24	$(7/2^+)$	
1054.7 *3*	3.4 *7*	2292.87	$(5/2^+,7/2,9/2^+)$	1238.24	$(7/2^+)$	
1059.4 *3*	3.7 *7*	2045.58		986.12	$(9/2^+)$	
1068.51[#] *11*	35[#] *3*	3954.94	3/2,5/2,7/2	2886.45		
1077.60 *17*	2.6 *3*	5012.24	3/2,5/2,7/2	3934.66	$(5/2^+,7/2)$	
1096.71 *9*	23.0 *14*	1529.32		432.604	$(5/2,7/2,9/2)^+$	
1100.63 *12*	10.4 *9*	4991.28	$(7/2)^-$	3890.64	$3/2^-,5/2^-,7/2^-$	
1115.77 *22*	5.4 *8*	3233.01	$(7/2^-,9/2^+)$	2117.45		
1120.0 *4*	4.2 *12*	3890.64	$3/2^-,5/2^-,7/2^-$	2770.69	$(\geq 7/2)$	
1130.12 *16*	11.0 *12*	2273.00		1142.55	$(5/2^+,7/2,9/2^+)$	
1138.0 *3*	11.6 *18*	4336.12	3/2,5/2,7/2	3198.14		
1142.58[#] *12*	18.1[#] *15*	1142.55	$(5/2^+,7/2,9/2^+)$	0	$5/2^+$	
1148.18[#] *8*	88[#] *5*	1148.20	$(5/2^+,7/2,9/2^+)$	0	$5/2^+$	
1150.38 *13*	26.7 *24*	2292.87	$(5/2^+,7/2,9/2^+)$	1142.55	$(5/2^+,7/2,9/2^+)$	
1164.36 *25*	5.2 *8*	3623.70		2459.78		
1167.1 *5*	2.6 *7*	3623.70		2456.44		
1202.4 *7*	2.7 *12*	4991.28	$(7/2)^-$	3789.19	3/2,5/2,7/2	
1204.9 *7*	2.9 *12*	4461.12	3/2,5/2,7/2	3256.40	$(5/2^+,7/2,9/2^+)$	
1208.55 *19*	8.9 *11*	5012.24	3/2,5/2,7/2	3803.73	$3/2^-,5/2^-,7/2^-$	
1222.7 *4*	4.0 *9*	5012.24	3/2,5/2,7/2	3789.19	3/2,5/2,7/2	
1238.30[#] *8*	85[#] *5*	1238.24	$(7/2^+)$	0	$5/2^+$	
1284.0 *4*	8.6 *20*	3603.18	$(5/2^+,7/2)$	2319.10	$(5/2^+,7/2,9/2^+)$	
1287.0 *5*	6.4 *20*	2273.00		986.12	$(9/2^+)$	
1306.92 *19*	6.6 *8*	2292.87	$(5/2^+,7/2,9/2^+)$	986.12	$(9/2^+)$	
1315.64 *10*	21.7 *15*	2553.80		1238.24	$(7/2^+)$	
1332.97 *8*	61 *6*	2319.10	$(5/2^+,7/2,9/2^+)$	986.12	$(9/2^+)$	
1349.67 *21*	8.1 *10*	1562.95	$(5/2^+,7/2,9/2^+)$	213.431	$(9/2)^+$	

^{93}Rb β^- decay 1977Bi01 (continued)

$\gamma(^{93}Sr)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1359.92 *16*	11.8 *11*	4097.43	(7/2$^-$)	2737.44		Placed by evaluator; deexcites 6272 level in 1977Bi01.
1365.36 *11*	18.7 *14*	2351.51	(5/2$^+$,7/2,9/2$^+$)	986.12	(9/2$^+$)	
1385.21[#] *8*	328[#] *16*	1385.31		0	5/2$^+$	
1388.7 *6*	13 *3*	2773.99		1385.31		
1397.7 *5*	3.3 *9*	2782.20	(5/2$^+$,7/2,9/2$^+$)	1385.31		
1405.37 *22*	5.7 *7*	2553.80		1148.20	(5/2$^+$,7/2,9/2$^+$)	
1437.10 *16*	24.0 *21*	1869.64		432.604	(5/2,7/2,9/2)$^+$	
1439.6[#c] *5*	5.2[#] *17*	5775.5?		4336.12	3/2,5/2,7/2	
1452.7 *7*	2.9 *11*	3233.01	(7/2$^-$,9/2$^+$)	1779.78	(11/2$^-$)	
1470.13 *22*	10.9 *12*	3789.19	3/2,5/2,7/2	2319.10	(5/2$^+$,7/2,9/2$^+$)	
1473.2 *6*	3.1 *10*	2459.78		986.12	(9/2$^+$)	
1479.1 *3*	3.5 *7*	2621.39	(5/2$^+$,7/2,9/2$^+$)	1142.55	(5/2$^+$,7/2,9/2$^+$)	
1483.96 *24*	5.0 *7*	4037.88	3/2,5/2,7/2	2553.80		
1491.25[c] *24*	7.0 *10*	6000.51?		4509.26	3/2$^{(-)}$,5/2,7/2	
1494.85 *15*	13.2 *11*	3954.94	3/2,5/2,7/2	2459.78		
1501.18 *12*	20.0 *13*	2886.45		1385.31		
1507.77 *14*	13.6 *11*	5384.61	3/2$^-$,5/2$^-$,7/2$^-$	3876.73	(5/2$^+$,7/2)	
1515.8 *3*	5.4 *10*	3867.40	(7/2)$^-$	2351.51	(5/2$^+$,7/2,9/2$^+$)	
1531.1 *7*	3.7 *11*	3803.73	3/2$^-$,5/2$^-$,7/2$^-$	2273.00		
1533.8 *3*	8.1 *12*	4790.38	3/2,5/2,7/2	3256.40	(5/2$^+$,7/2,9/2$^+$)	Placed by evaluator; deexcites 5631 level in 1977Bi01.
1547.78 *15*	16.3 *13*	3866.86	(5/2$^+$,7/2)	2319.10	(5/2$^+$,7/2,9/2$^+$)	
1562.91 *11*	58 *4*	1562.95	(5/2$^+$,7/2,9/2$^+$)	0	5/2$^+$	
1566.2 *9*	3.4 *16*	1779.78	(11/2$^-$)	213.431	(9/2)$^+$	
1574.71 *22*	7.1 *8*	3867.40	(7/2)$^-$	2292.87	(5/2$^+$,7/2,9/2$^+$)	
1578.0 *3*	8.8 *12*	3623.70		2045.58		
1594.61[#] *12*	33.3[#] *21*	2979.92	3/2,5/2,7/2	1385.31		
1612.87[#] *11*	96[#] *6*	2045.58		432.604	(5/2,7/2,9/2)$^+$	
1635.20 *15*	21.5 *18*	2621.39	(5/2$^+$,7/2,9/2$^+$)	986.12	(9/2$^+$)	
1662.16 *15*	21.0 *17*	3954.94	3/2,5/2,7/2	2292.87	(5/2$^+$,7/2,9/2$^+$)	
1684.76[#] *13*	31.6[#] *24*	2117.45		432.604	(5/2,7/2,9/2)$^+$	
1690.9 *7*	3.5 *12*	4041.9		2351.51	(5/2$^+$,7/2,9/2$^+$)	
1726.3 *4*	4.5 *9*	2869.07		1142.55	(5/2$^+$,7/2,9/2$^+$)	
1736.3 *13*	6 *3*	3876.73	(5/2$^+$,7/2)	2141.07	(5/2$^+$,7/2,9/2$^+$)	
1738.4 *9*	6 *4*	2886.45		1148.20	(5/2$^+$,7/2,9/2$^+$)	
1743.2 *5*	6.4 *18*	3789.19	3/2,5/2,7/2	2045.58		
1745.7 *5*	6.9 *18*	4097.43	(7/2$^-$)	2351.51	(5/2$^+$,7/2,9/2$^+$)	
1749.61 *19*	14.5 *13*	3867.40	(7/2)$^-$	2117.45		
1753.6 *4*	5.4 *11*	3623.70		1869.64		Placed by evaluator; deexcites 5601 level in 1977Bi01.
1793.62 *18*	15.4 *14*	3934.66	(5/2$^+$,7/2)	2141.07	(5/2$^+$,7/2,9/2$^+$)	
1803.6 *3*	13.7 *20*	4577.6	3/2,5/2,7/2	2773.99		
1808.50 *10*	161 *8*	1808.48	(5/2$^+$,7/2,9/2$^+$)	0	5/2$^+$	%Iγ=3.25 *22* based on recommended decay scheme normalization.
1812.76 *21*	14.3 *16*	3198.14		1385.31		

^{93}Rb β^- decay 1977Bi01 (continued)

$\gamma(^{93}Sr)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1821.86 *21*	33.0 *22*	3867.40	$(7/2)^-$	2045.58		
1831.10 *22*	11.9 *14*	3876.73	$(5/2^+,7/2)$	2045.58		
1836.4 *6*	16 *10*	3890.64	$3/2^-,5/2^-,7/2^-$	2054.02		
1838.0 *4*	27 *10*	4620.20	$3/2^-,5/2^-,7/2^-$	2782.20	$(5/2^+,7/2,9/2^+)$	
1841.6 *7*	4.7 *14*	3404.39	$(5/2^+,7/2)$	1562.95	$(5/2^+,7/2,9/2^+)$	
1869.69[#] *11*	109[#] *6*	1869.64		0	$5/2^+$	
1882.9 *4*	5.9 *12*	4620.20	$3/2^-,5/2^-,7/2^-$	2737.44		
1886.6 *3*	8.3 *13*	2319.10	$(5/2^+,7/2,9/2^+)$	432.604	$(5/2,7/2,9/2)^+$	
1892.70 *24*	10.0 *12*	3803.73	$3/2^-,5/2^-,7/2^-$	1910.86		
1900.94 *12*	26.5 *17*	3954.94	3/2,5/2,7/2	2054.02		
1908.1[c] *6*	5.6 *18*	5775.5?		3867.40	$(7/2)^-$	
1910.72[#] *12*	65[#] *4*	1910.86		0	$5/2^+$	
1919.0 *4*	6.2 *12*	2351.51	$(5/2^+,7/2,9/2^+)$	432.604	$(5/2,7/2,9/2)^+$	
1927.64 *12*	43 *3*	2141.07	$(5/2^+,7/2,9/2^+)$	213.431	$(9/2)^+$	
1933.9 *3*	14.8 *23*	3803.73	$3/2^-,5/2^-,7/2^-$	1869.64		
1956.4 *3*	10.0 *13*	3867.40	$(7/2)^-$	1910.86		
1978.28 *15*	46 *3*	3847.62	$(7/2)^-$	1869.64		
1983.2 *9*	4.0 *18*	4037.88	3/2,5/2,7/2	2054.02		Placed by evaluator; deexcites 6001 level in 1977Bi01.
1991.8 *3*	9.6 *13*	4037.88	3/2,5/2,7/2	2045.58		Placed by evaluator; deexcites 5396 level in 1977Bi01.
1997.8 *6*	3.4 *11*	3867.40	$(7/2)^-$	1869.64		
2023.9 *4*	7.0 *15*	2456.44		432.604	$(5/2,7/2,9/2)^+$	
2026.88 *25*	13.3 *17*	2459.78		432.604	$(5/2,7/2,9/2)^+$	
[x]2037.0 *8*	3.9 *18*					
2043.82 *17*	17.5 *14*	4913.09	$(7/2)^-$	2869.07		
2054.06[#] *12*	77[#] *4*	2054.02		0	$5/2^+$	
2058.78 *17*	20.1 *17*	3867.40	$(7/2)^-$	1808.48	$(5/2^+,7/2,9/2^+)$	
2068.36 *24*	8.2 *9*	3876.73	$(5/2^+,7/2)$	1808.48	$(5/2^+,7/2,9/2^+)$	
2087.4 *3*	10.0 *14*	3867.40	$(7/2)^-$	1779.78	$(11/2^-)$	
2147.6 *3*	16.6 *22*	4017.60	3/2,5/2,7/2	1869.64		
2168.24 *14*	25.2 *18*	4037.88	3/2,5/2,7/2	1869.64		
2170.4 *16*	3 *3*	4790.38	3/2,5/2,7/2	2621.39	$(5/2^+,7/2,9/2^+)$	
2206.2[c] *3*	10.4 *15*	6096.7?		3890.64	$3/2^-,5/2^-,7/2^-$	
2229.44[#] *12*	54[#] *3*	4037.88	3/2,5/2,7/2	1808.48	$(5/2^+,7/2,9/2^+)$	
2256.2 *9*	4 *3*	3404.39	$(5/2^+,7/2)$	1148.20	$(5/2^+,7/2,9/2^+)$	
2258.4 *4*	15 *3*	4577.6	3/2,5/2,7/2	2319.10	$(5/2^+,7/2,9/2^+)$	
2262.0 *3*	8.1 *11*	4041.9		1779.78	$(11/2^-)$	
2270.20 *12*	31.3 *18*	3256.40	$(5/2^+,7/2,9/2^+)$	986.12	$(9/2^+)$	
2292.80 *13*	30.7 *19*	2292.87	$(5/2^+,7/2,9/2^+)$	0	$5/2^+$	
2327.5 *3*	6.6 *10*	3890.64	$3/2^-,5/2^-,7/2^-$	1562.95	$(5/2^+,7/2,9/2^+)$	
2334.0 *5*	3.7 *8*	4790.38	3/2,5/2,7/2	2456.44		
2349.58 *17*	35 *3*	2782.20	$(5/2^+,7/2,9/2^+)$	432.604	$(5/2,7/2,9/2)^+$	
2359.45 *16*	18.7 *13*	4913.09	$(7/2)^-$	2553.80		

$^{93}_{38}Sr_{55}$-10

^{93}Rb β^- decay 1977Bi01 (continued)

$\gamma(^{93}Sr)$ (continued)

E_γ †	I_γ †[a]	E_i(level)	J_i^π	E_f	J_f^π
2377.0[c] *3*	7.8 *12*	6000.51?		3623.70	
2386.72[c] *23*	12.9 *14*	6277.40?		3890.64	$3/2^-,5/2^-,7/2^-$
2398.3[c] *3*	7.0 *10*	5631.2		3233.01	$(7/2^-,9/2^+)$
2403.5 *6*	3.7 *9*	3789.19	3/2,5/2,7/2	1385.31	
2418.22 *22*	19.1 *19*	3404.39	$(5/2^+,7/2)$	986.12	$(9/2^+)$
[x]2451.7 *8*	9.3 *22*				
2454.97 *22*	28 *3*	3603.18	$(5/2^+,7/2)$	1148.20	$(5/2^+,7/2,9/2^+)$
2461.98 *19*	27.6 *24*	3847.62	$(7/2)^-$	1385.31	
2491.20[#] *22*	22.6[#] *23*	3876.73	$(5/2^+,7/2)$	1385.31	
2505.20 *15*	47 *3*	3890.64	$3/2^-,5/2^-,7/2^-$	1385.31	
2523.7 *5*	14 *5*	2737.44		213.431	$(9/2)^+$
2550.06 *22*	15.4 *15*	4461.12	3/2,5/2,7/2	1910.86	
2557.5 *4*	7.1 *12*	2770.69	$(\geq 7/2)$	213.431	$(9/2)^+$
2568.59 *20*	21.9 *19*	2782.20	$(5/2^+,7/2,9/2^+)$	213.431	$(9/2)^+$
2602.38 *22*	20.1 *19*	5384.61	$3/2^-,5/2^-,7/2^-$	2782.20	$(5/2^+,7/2,9/2^+)$
2614.1 *3*	7.4 *11*	5384.61	$3/2^-,5/2^-,7/2^-$	2770.69	$(\geq 7/2)$
2620.2 *6*	4.8 *11*	4913.09	$(7/2)^-$	2292.87	$(5/2^+,7/2,9/2^+)$
2624.8 *5*	5.3 *11*	5395.5	$(5/2^-,7/2^-)$	2770.69	$(\geq 7/2)$
2638.1 *4*	16.1 *21*	3876.73	$(5/2^+,7/2)$	1238.24	$(7/2^+)$
2646.6 *6*	10 *3*	3789.19	3/2,5/2,7/2	1142.55	$(5/2^+,7/2,9/2^+)$
2652.62 *22*	17.9 *18*	4461.12	3/2,5/2,7/2	1808.48	$(5/2^+,7/2,9/2^+)$
2661.08 *22*	17.8 *17*	3803.73	$3/2^-,5/2^-,7/2^-$	1142.55	$(5/2^+,7/2,9/2^+)$
2674.2[c] *4*	6.1 *12*	6277.40?		3603.18	$(5/2^+,7/2)$
2704.97[#] *17*	59[#] *4*	3847.62	$(7/2)^-$	1142.55	$(5/2^+,7/2,9/2^+)$
2724.60 *25*	32 *5*	3866.86	$(5/2^+,7/2)$	1142.55	$(5/2^+,7/2,9/2^+)$
2734.0 *10*	3.4 *13*	3876.73	$(5/2^+,7/2)$	1142.55	$(5/2^+,7/2,9/2^+)$
2766.48 *17*	22.9 *17*	2979.92	3/2,5/2,7/2	213.431	$(9/2)^+$
2773.2 *4*	7.0 *12*	4336.12	3/2,5/2,7/2	1562.95	$(5/2^+,7/2,9/2^+)$
2799.9 *4*	8.7 *15*	4037.88	3/2,5/2,7/2	1238.24	$(7/2^+)$
2812.6 *5*	6.2 *14*	3954.94	3/2,5/2,7/2	1142.55	$(5/2^+,7/2,9/2^+)$
2861.34 *15*	64 *4*	3847.62	$(7/2)^-$	986.12	$(9/2^+)$
2869.23 *18*	25.2 *19*	2869.07		0	$5/2^+$
2875.3 *6*	6.0 *14*	4017.60	3/2,5/2,7/2	1142.55	$(5/2^+,7/2,9/2^+)$
2880.48 *22*	21.9 *18*	3866.86	$(5/2^+,7/2)$	986.12	$(9/2^+)$
2886.3 *3*	19.0 *20*	2886.45		0	$5/2^+$
2890.4 *3*	23.5 *21*	3876.73	$(5/2^+,7/2)$	986.12	$(9/2^+)$
2903.6[c] *3*	12.9 *15*	6707.42?		3803.73	$3/2^-,5/2^-,7/2^-$
2954.93 *24*	26 *3*	4097.43	$(7/2^-)$	1142.55	$(5/2^+,7/2,9/2^+)$
2958.1 *6*	9.3 *24*	5012.24	3/2,5/2,7/2	2054.02	
3027.6[c] *11*	2.8 *12*	6260.72?		3233.01	$(7/2^-,9/2^+)$
3104.1 *8*	4.1 *14*	4913.09	$(7/2)^-$	1808.48	$(5/2^+,7/2,9/2^+)$
3113.85[c] *24*	24.4 *20*	6000.51?		2886.45	

$^{93}_{38}Sr_{55}$-11

^{93}Rb β^- decay 1977Bi01 (continued)

$\gamma(^{93}Sr)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
[x]3129.2 *8*	5.0 *15*					
3133.1 *8*	5.1 *15*	4913.09	$(7/2)^-$	1779.78	$(11/2^-)$	
3172.1[c] *4*	11.1 *15*	5631.2		2459.78		
3211.6[#] *6*	6.4[#] *13*	4991.28	$(7/2)^-$	1779.78	$(11/2^-)$	
3226.4[c] *3*	17.4 *18*	6000.51?		2773.99		
3296.1 *10*	4.0 *17*	5413.6	$3/2^{(-)}$ to $7/2^{(-)}$	2117.45		
3338.0[c] *4*	7.8 *13*	5631.2		2292.87	$(5/2^+,7/2,9/2^+)$	
3366.6 *3*	13.0 *16*	4509.26	$3/2^{(-)},5/2,7/2$	1142.55	$(5/2^+,7/2,9/2^+)$	
3370.97[#] *16*	65[#] *4*	3803.73	$3/2^-,5/2^-,7/2^-$	432.604	$(5/2,7/2,9/2)^+$	
3389.8 *9*	3.5 *11*	3603.18	$(5/2^+,7/2)$	213.431	$(9/2)^+$	
3403.56[c] *18*	26.3 *17*	6272.70?		2869.07		
3458.19[#] *16*	214[#] *11*	3890.64	$3/2^-,5/2^-,7/2^-$	432.604	$(5/2,7/2,9/2)^+$	
3477.39[#] *24*	15.5[#] *13*	4620.20	$3/2^-,5/2^-,7/2^-$	1142.55	$(5/2^+,7/2,9/2^+)$	
3486.9[c] *7*	3.9 *10*	6260.72?		2773.99		
3502.6[#] *4*	31[#] *5*	3934.66	$(5/2^+,7/2)$	432.604	$(5/2,7/2,9/2)^+$	
3544.0 *8*	9 *3*	5413.6	$3/2^{(-)}$ to $7/2^{(-)}$	1869.64		
3547.2[c] *9*	8 *3*	5601.3?		2054.02		
3572.05 *25*	17.1 *15*	4714.64	3/2,5/2,7/2	1142.55	$(5/2^+,7/2,9/2^+)$	
3585.4 *5*	6.1 *11*	4017.60	3/2,5/2,7/2	432.604	$(5/2,7/2,9/2)^+$	Placed by evaluator; deexcites 5631 level in 1977Bi01.
3642.4 *6*	5.6 *12*	4790.38	3/2,5/2,7/2	1148.20	$(5/2^+,7/2,9/2^+)$	
3664.75 *19*	31.5 *21*	4097.43	$(7/2^-)$	432.604	$(5/2,7/2,9/2)^+$	
3706.6[c] *7*	4.2 *10*	6260.72?		2553.80		
3721.6 *4*	8.7 *14*	3934.66	$(5/2^+,7/2)$	213.431	$(9/2)^+$	
3770.4 *3*	10.2 *12*	4913.09	$(7/2)^-$	1142.55	$(5/2^+,7/2,9/2^+)$	
3789.3 *3*	8.7 *11*	3789.19	3/2,5/2,7/2	0	$5/2^+$	
3803.98[#] *19*	90[#] *5*	3803.73	$3/2^-,5/2^-,7/2^-$	0	$5/2^+$	
3821.9 *4*	5.6 *8*	5384.61	$3/2^-,5/2^-,7/2^-$	1562.95	$(5/2^+,7/2,9/2^+)$	
3848.7 *7*	6.1 *14*	4991.28	$(7/2)^-$	1142.55	$(5/2^+,7/2,9/2^+)$	
3867.60 *17*	148 *8*	3867.40	$(7/2)^-$	0	$5/2^+$	
3876.7 *3*	12.1 *13*	3876.73	$(5/2^+,7/2)$	0	$5/2^+$	
3883.95[#] *22*	25.9[#] *19*	4097.43	$(7/2^-)$	213.431	$(9/2)^+$	
3890.5 *3*	12.0 *13*	3890.64	$3/2^-,5/2^-,7/2^-$	0	$5/2^+$	
3934.34[#] *18*	56[#] *3*	3934.66	$(5/2^+,7/2)$	0	$5/2^+$	
3941.7[c] *4*	6.5 *13*	6260.72?		2319.10	$(5/2^+,7/2,9/2^+)$	
3954.2 *12*	2.2 *9*	3954.94	3/2,5/2,7/2	0	$5/2^+$	
4004.5 *8*	4.5 *11*	4991.28	$(7/2)^-$	986.12	$(9/2^+)$	Placed by evaluator; deexcites 6277 level in 1977Bi01.
4009.9 *12*	3.0 *11*	5395.5	$(5/2^-,7/2^-)$	1385.31		
4017.55 *21*	23.6 *17*	4017.60	3/2,5/2,7/2	0	$5/2^+$	
4156.6 *6*	5.5 *11*	5395.5	$(5/2^-,7/2^-)$	1238.24	$(7/2^+)$	
4242.1 *5*	4.4 *7*	5384.61	$3/2^-,5/2^-,7/2^-$	1142.55	$(5/2^+,7/2,9/2^+)$	

$^{93}_{38}Sr_{55}$-12

$\gamma(^{93}Sr)$ (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
4250.9[c] 7	2.8 7	6707.42?		2456.44		
4271.23[#c] 19	19.3[#] 13	5413.6	3/2$^{(-)}$ to 7/2$^{(-)}$	1142.55	(5/2$^+$,7/2,9/2$^+$)	Iγ is too large for this placement (cf. Iβ from TAGS data).
4281.9 3	9.7 8	4714.64	3/2,5/2,7/2	432.604	(5/2,7/2,9/2)$^+$	
4387.9[c] 4	6.7 8	6707.42?		2319.10	(5/2$^+$,7/2,9/2$^+$)	
4461.4 4	4.4 6	4461.12	3/2,5/2,7/2	0	5/2$^+$	
4481.2[c] 6	3.4 6	6260.72?		1779.78	(11/2$^-$)	
4615.4[c] 9	2.5 8	6000.51?		1385.31		E_γ: could also be placed from 5601 level.
4627.0[c] 5	5.9 8	5775.5?		1148.20	(5/2$^+$,7/2,9/2$^+$)	
4645.0 9	2.5 8	5631.2		986.12	(9/2$^+$)	
4875.1[c] 3	10.1 8	6260.72?		1385.31		
[x]4890.0 8	1.5 3					
4899.4[c] 5	2.8 4	6707.42?		1808.48	(5/2$^+$,7/2,9/2$^+$)	
4947.5[c] 6	4.0 7	6096.7?		1148.20	(5/2$^+$,7/2,9/2$^+$)	
4953.9[c] 11	2.1 5	6096.7?		1142.55	(5/2$^+$,7/2,9/2$^+$)	
[x]4971.8 6	1.9 4					
[x]4996.8 5	2.9 5					
[x]5137.9 10	5.1 15					
[x]5154.6 10	1.3 4					
[x]5164.8 11	1.1 4					
5396.7 9	1.7 4	5395.5	(5/2$^-$,7/2$^-$)	0	5/2$^+$	
[x]5409.0 7	2.3 4					

[†] From 1977Bi01, except as noted. Data from 1977Bi01 and 1975Br03 are typically in excellent agreement. However, those from 1974Ac04 show systematic differences; Eγ tends to be higher than in 1977Bi01 and Iγ is usually low, sometimes by a factor of at least two.

[‡] From α(K)exp.

[#] Also observed in studies other than 1977Bi01.

[@] 1986Ka20 report I(K x ray)/(I(219γ)+I(432γ))=0.0063 *22* in spectrum gated by 710γ (after correction for I(K x ray) arising from 213 transition). Based on mult(213γ), Δπ is the same for the 219 and 432 transitions. This ratio is consistent with mult=M1 or E2 for both transitions and rules out mult=E1. However, 1974Ac04 report α(K)exp(219γ)<0.010 and α(K)exp(432γ)<0.0015, both of which indicate mult=E1. The evaluator adopts the conclusions of 1986Ka20.

[&] Eγ also approximates that required for a 5396 to 4992 transition.

[a] For absolute intensity per 100 decays, multiply by 0.0202 *10*.

[b] 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.

[c] Placement of transition in the level scheme is uncertain.

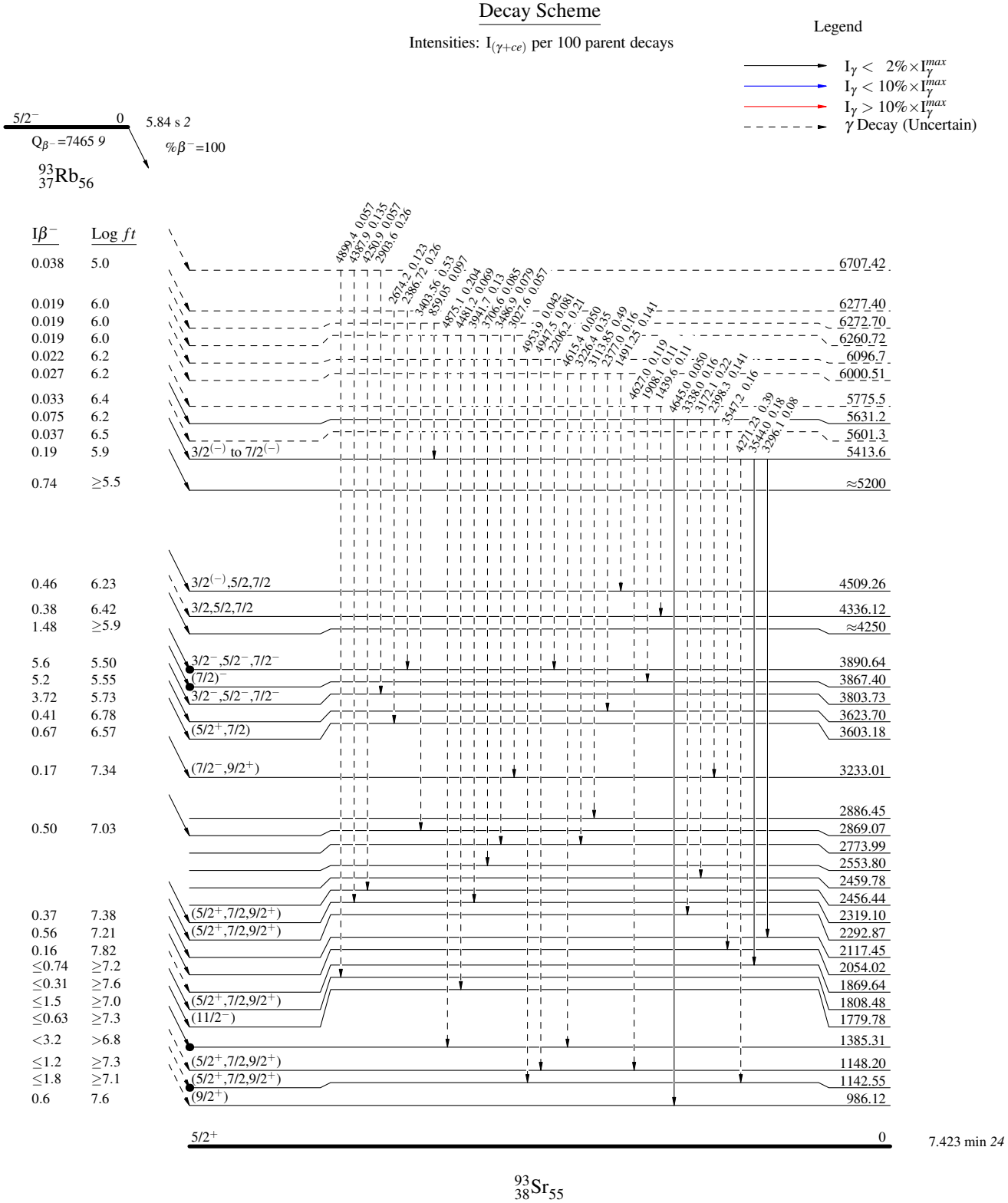
[x] γ ray not placed in level scheme.

$^{93}_{38}Sr_{55}$-13

^{93}Rb β^- decay 1977Bi01

Decay Scheme

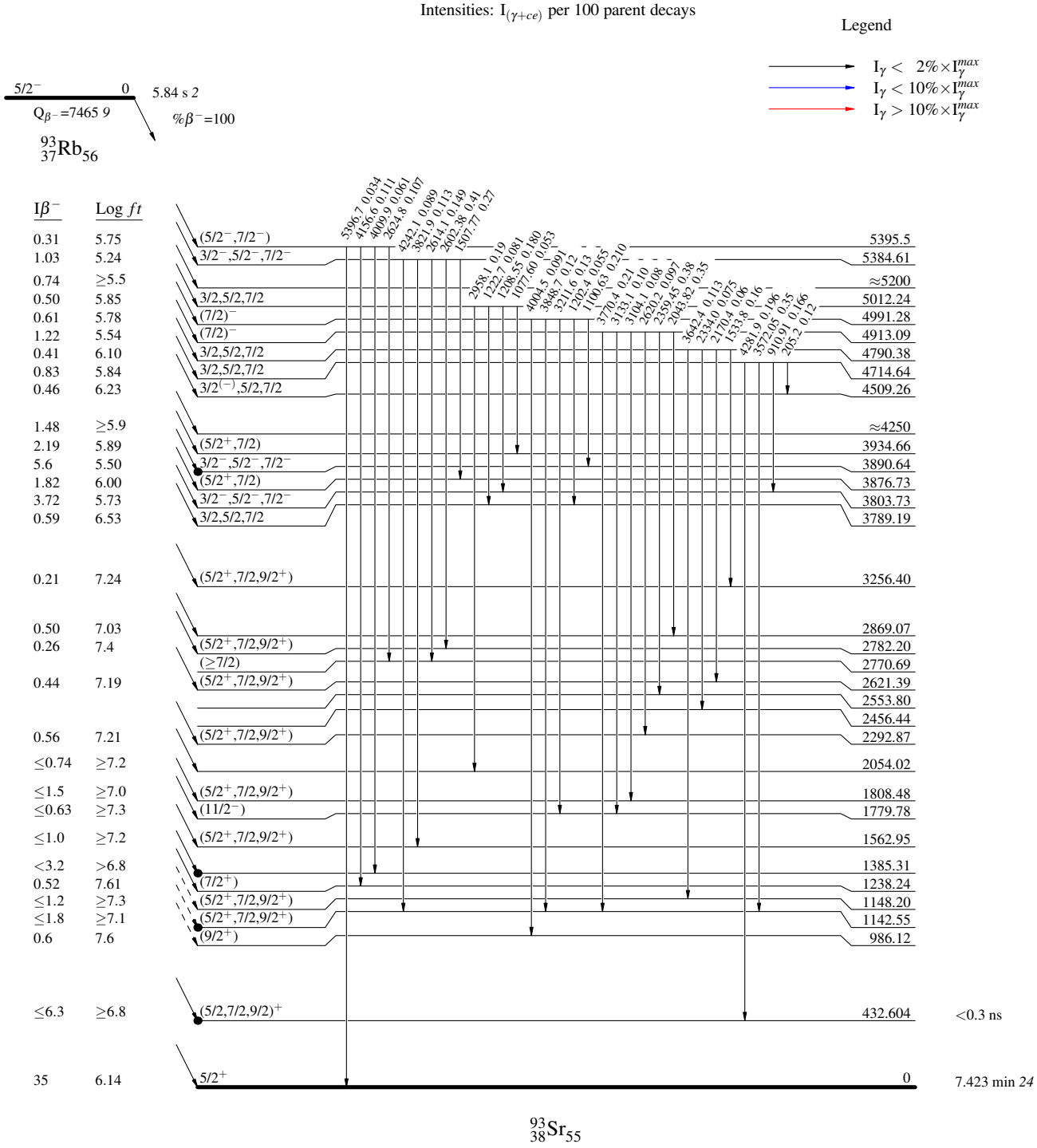
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

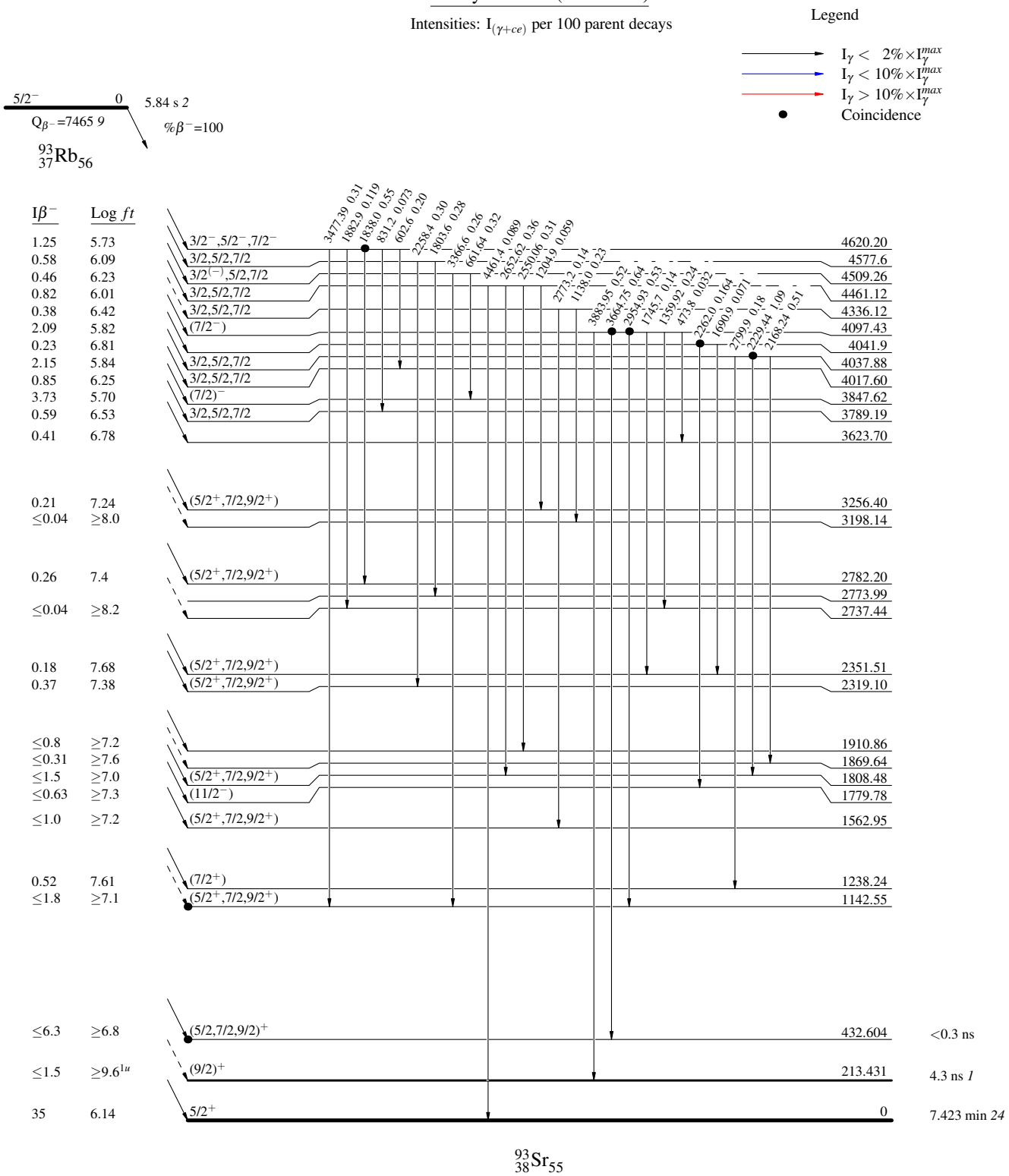
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

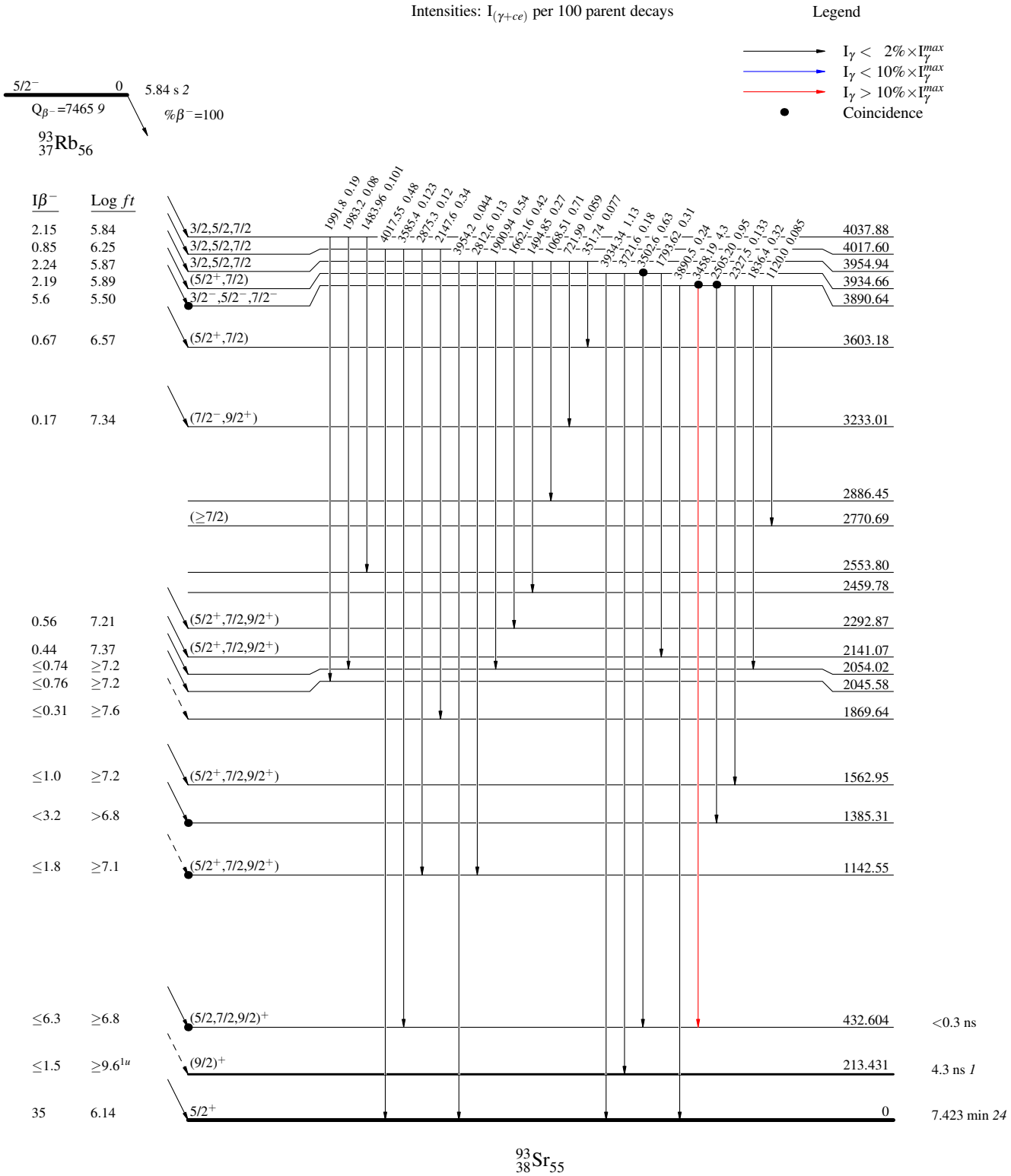
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

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

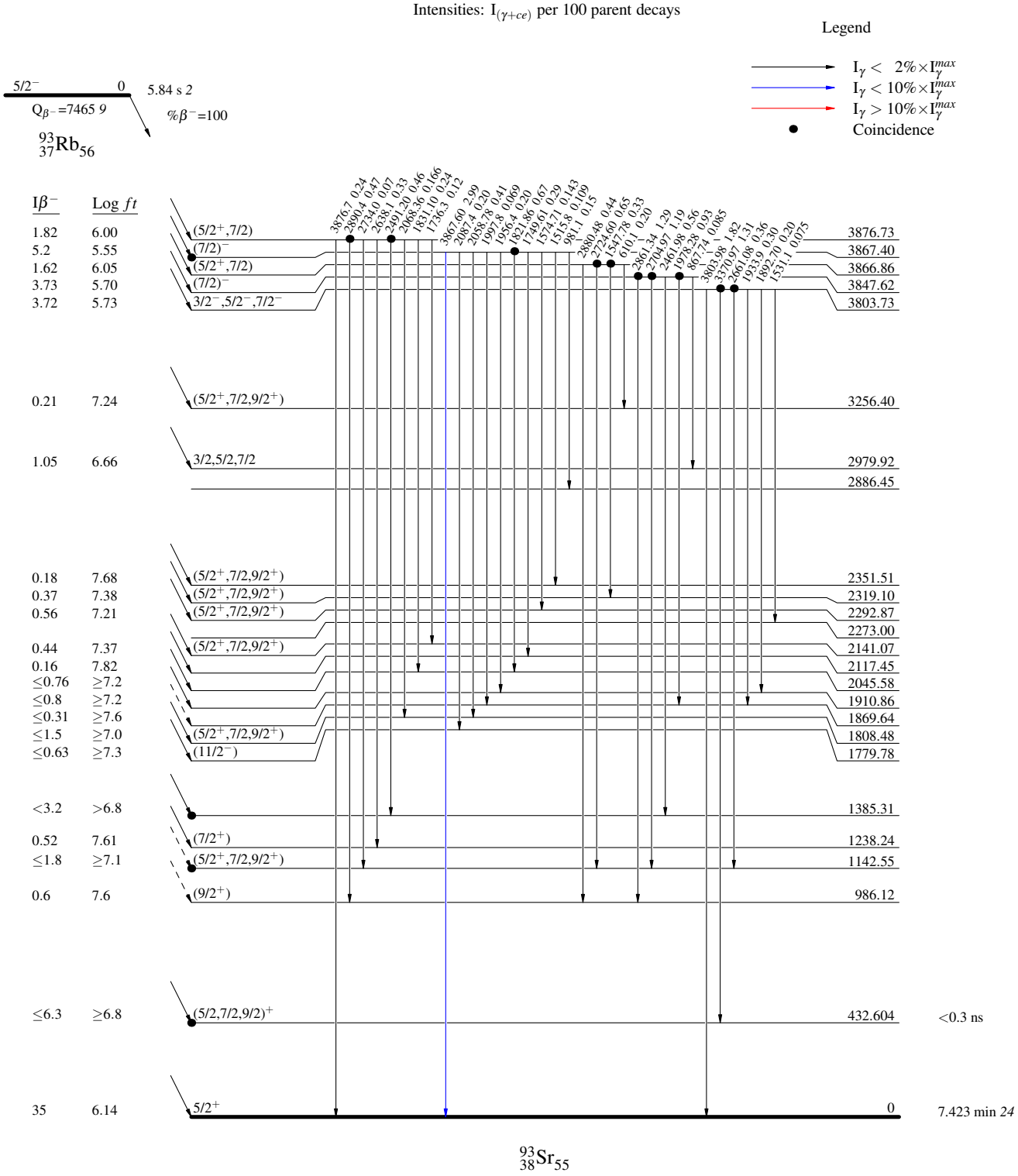


$^{93}_{38}Sr_{55}$

^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

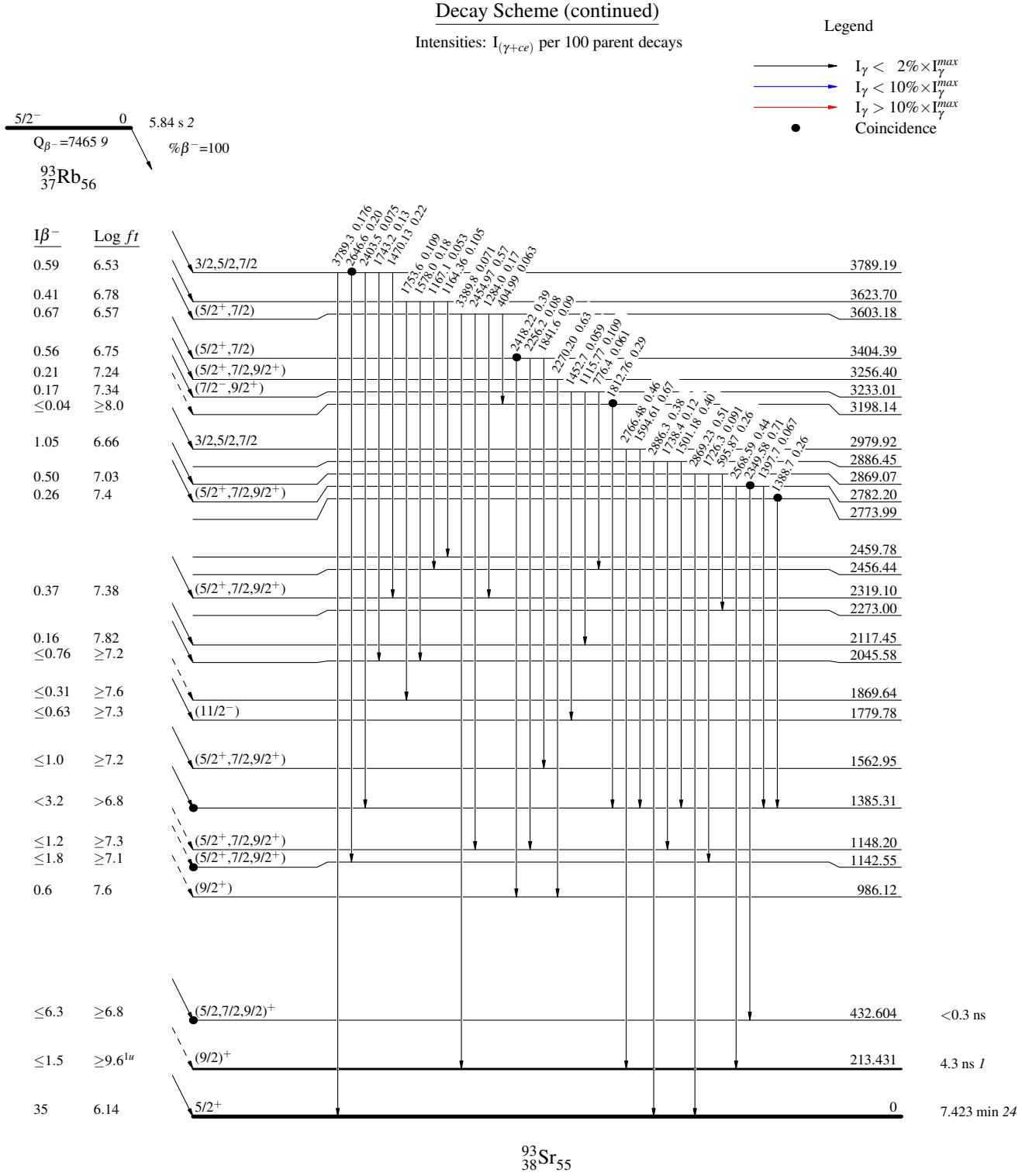
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

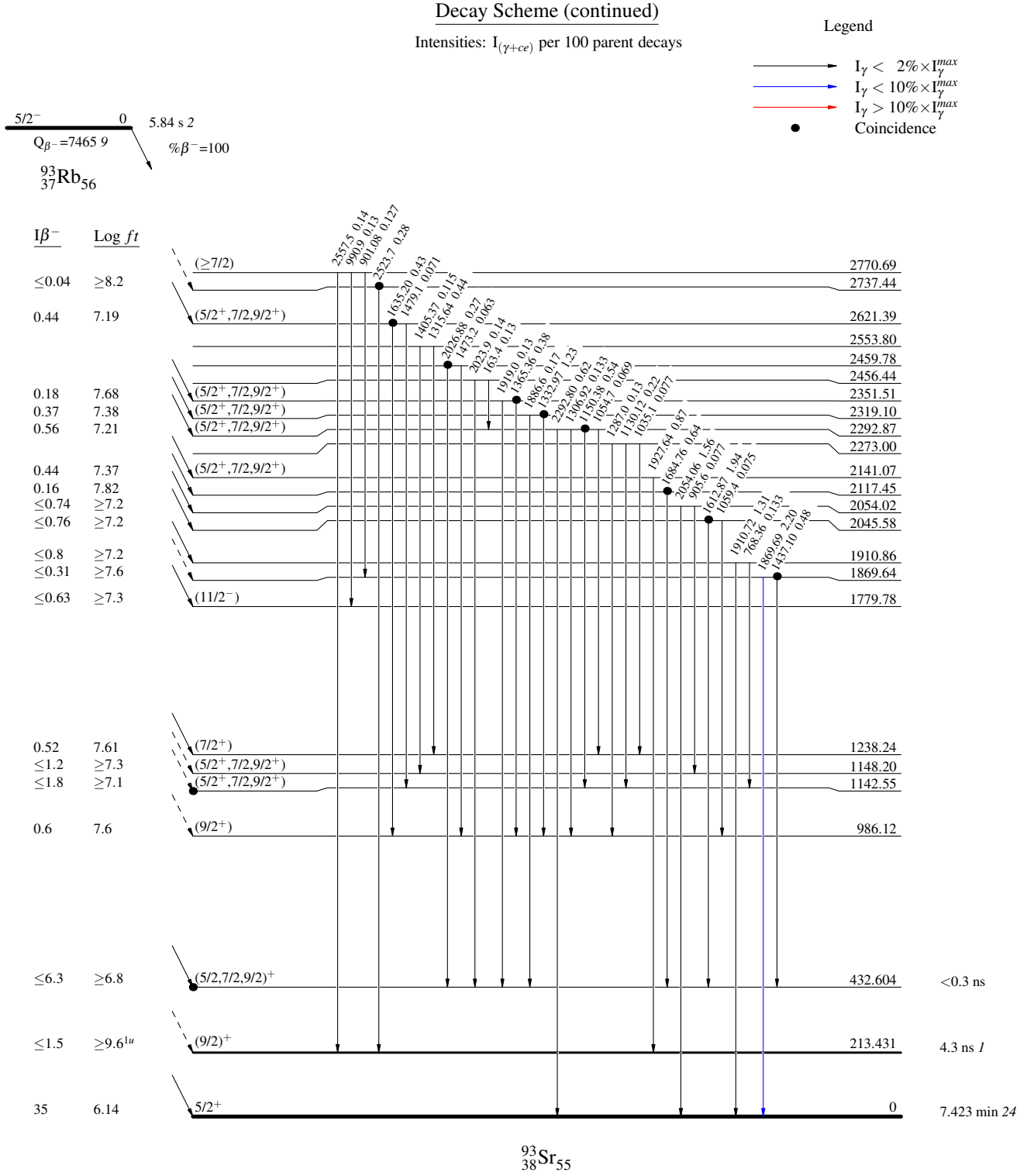
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

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



^{93}Rb β^- decay 1977Bi01

Decay Scheme (continued)

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