^{92}Kr β^- decay 1972Ol03,1973Cl02

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

Parent: ^{92}Kr: E=0.0; J$^\pi$=0$^+$; T$_{1/2}$=1.840 s *8*; Q(β^-)=6003 *7*; %β^- decay=100.0

Others: 1970Lu05, 1972Mc04, 1973HaZK, 1974ClZX, 1978St02, 1982Al01, 1988GrZX, 1989Gr03, 1992GrZX, 1992Gr06.

^{92}Rb Levels

The adopted decay scheme is essentially that obtained by 1972Ol03 based upon γ-ray singles and coincidence measurements, but renormalized in accord with %β(g.s.) estimate from 1973Cl02.

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0.0	0$^-$	4.48[‡] s *3*	868.35 *9*	(1,2$^-$)	2611.06 *12*	(1$^+$)
142.308 *6*	1$^-$	0.75[#] ns *3*	920.87 *9*	(1,2$^-$)	2718.81 *16*	(1,2$^-$)
316.73 *7*	(1,2$^-$)		928.04 *9*	(1,2$^-$)	2901.50 *14*	(1$^+$)
333.40 *7*	(1,2$^-$)		1360.91 *5*	1$^+$	3057.29 *22*	(1,2$^-$)
484.60 *6*	(1,2$^-$)		1663.55 *17*	(1,2$^-$)	3149.48 *19*	(1$^+$)
492.58 *7*	(1,2$^-$)		2038.99 *7*	(1$^+$)	3338.5? *4*	
548.31 *6*	(1,2$^-$)		2079.44 *24*	(1,2$^-$)	3341.89 *17*	1$^+$
623.60 *8*	(1,2$^-$)		2321.02 *20*		3659.7? *4*	
728.24 *13*	(1,2$^-$)		2587.45 *20*	(1$^+$)	4192.99 *25*	1$^+$

† From least-squares fit to Eγ.
‡ From Adopted Levels.
# From 1972Mc04.

β^- radiations

Singles and coincidence β^- spectrum measurements:
1973Cl02: eight gated spectra give an average Q(β^-) value of 5970 keV *80*, revised to Q(β^-)=6160 *80* in 1978Wo15.
1978St02: measured four β^- spectra gated by γ rays deexciting the 1361 level to obtain Q(β^-)=5915 *120*.
1988GrZX: Q(β^-)=6000 *60*, from $\beta\gamma$ coin data.
1989Gr03: measured six β^- spectra gated by γ rays deexciting the 1361 level to obtain Q(β^-)=6045 *80*.
1992Gr06: measured five β^- spectra gated by γ rays deexciting the 1361 level to obtain Q(β^-)=5993 *27*.
1992GrZX: measured six β^- spectra gated by γ rays deexciting the 1361 level to obtain Q(β^-)=5987 *10* (adopted by 2003Au03).
1982Al01: average Eβ=2670 *470* cf. 2000 *100* calculated for the decay scheme adopted here using the RADLST code.

E(decay)	E(level)	Iβ^-[‡&]	Log *ft*[†]	Comments
(1810 *7*)	4192.99	0.29 *6*	5.03 *9*	av Eβ=714.0 *32*
(2343[a] *7*)	3659.7?	0.11 *3*	5.91 *12*	av Eβ=960.6 *33*
(2661 *7*)	3341.89	0.60 *6*	5.41 *5*	av Eβ=1109.8 *33*
(2665[a] *7*)	3338.5?	0.10 *6*	6.2 *3*	av Eβ=1111.4 *33*
(2854 *7*)	3149.48	0.42 *5*	5.69 *6*	av Eβ=1200.7 *34*
(2946 *7*)	3057.29	0.36 *5*	5.82 *6*	av Eβ=1244.4 *34*
(3102 *7*)	2901.50	0.60 *10*	5.69 *8*	av Eβ=1318.4 *34*
(3284 *7*)	2718.81	0.28 *8*	6.13 *13*	av Eβ=1405.4 *34*
(3392 *7*)	2611.06	0.92 *7*	5.67 *4*	av Eβ=1456.8 *34*
(3416 *7*)	2587.45	0.78 *23*	5.76 *13*	av Eβ=1468.0 *34*
(3682 *7*)	2321.02	0.32 *4*	6.29 *6*	av Eβ=1595.4 *34*

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^{92}Kr β^- decay 1972Ol03,1973Cl02 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^- ‡&	Log *ft*†	Comments
(3924 *7*)	2079.44	0.17 *6*	6.68 *16*	av Eβ=1711.2 *34*
(3964 *7*)	2038.99	1.8 *3*	5.68 *8*	av Eβ=1730.6 *34*
(4339 *7*)	1663.55	0.26 *6*	6.69 *10*	av Eβ=1911.0 *34*
4626# *10*	1360.91	88 *5*	4.291 *25*	av Eβ=2056.7 *34*
(5075 *7*)	928.04	0.27 *8*	6.98 *13*	av Eβ=2265.3 *34*
(5275 *7*)	728.24	0.15 *8*	7.31 *24*	av Eβ=2361.7 *34*
(5379 *7*)	623.60	0.43 *12*	6.89 *13*	av Eβ=2412.2 *34*
(5510 *7*)	492.58	0.6 *3*	6.79 *22*	av Eβ=2475.5 *34*
(6003 *7*)	0.0	≈2@	≈6.4	av Eβ=2713.3 *34*

† Calculated assuming g.s. β^- feeding of ≈2%, as determined from β^- spectrum by 1973Cl02.

‡ From intensity balance at level, assuming a γ intensity of $I_\gamma/2 \pm I_\gamma/2$ for multiply-placed or tentatively-placed lines.

From Q(β^-)=5987 *10* (1992GrZX, based on $\beta\gamma$ coin spectrum endpoint energies) minus E(1361 level).

@ From 1973Cl02, whose singles β^- spectrum agreed much better with a calculated spectrum which assumed 2% g.s. β^- branching than with one which assumed the 50% 15 g.s. branch deduced indirectly by 1972Ol03 (on the basis of authors′ estimated relative amounts of ^{92}Sr, ^{92}Kr, ^{92}Br on source collection tape, authors′ decay schemes (without allowance for possible internal conversion) and I(1384γ in ^{92}Sr)=90% 10). A 50% 15 b- branch to g.s. would imply allowed β^- feeding from the 0$^+$ parent and hence J$^\pi$=1$^+$ for the ^{92}Rb g.s., in contradiction to J(^{92}Rb)=0 adopted from atomic beam work (note that Iβ(g.s.) must be <8% if log *ft*(g.s.)≥5.9).

& Absolute intensity per 100 decays.

^{a} Existence of this branch is questionable.

γ(^{92}Rb)

Iγ normalization: from Σ(I(γ+ce) g.s.)=98% 2. %β^-n(^{92}Kr)=0.033 is negligible; the evaluator assumes Iβ(g.s.)=2% (as deduced by 1973Cl02) and, for the purpose of normalization, allows a 100% uncertainty in Iβ(g.s.); Iγ=0.44 *44* and Iγ=0.32 *32* were assumed, respectively, for the doubly placed 493γ and 2039γ.

E$_\gamma$†	I$_\gamma$‡@	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.	α&	Comments
142.307 *6*	100 *5*	142.308	1$^-$	0.0	0$^-$	M1#	0.0555#	α(K)=0.0490 *7*; α(L)=0.00549 *8*; α(M)=0.000908 *13*; α(N+..)=0.0001069 *15* α(N)=0.0001025 *15*; α(O)=4.37×10^{-6} *7* %Iγ=64.1 *19* assuming proposed Iγ normalization. α(K)exp=0.051 *6* (1972Mc04).
159.2 *3*	0.16 *4*	492.58	(1,2$^-$)	333.40	(1,2$^-$)			
167.9 *2*	0.20 *3*	484.60	(1,2$^-$)	316.73	(1,2$^-$)			
^{x}185.6 *2*	0.17 *3*							
191.1 *1*	1.3 *1*	333.40	(1,2$^-$)	142.308	1$^-$			
214.9 *1*	0.56 *5*	548.31	(1,2$^-$)	333.40	(1,2$^-$)			
282.0 *2*	0.42 *4*	2321.02		2038.99	(1$^+$)			
316.8 *1*	9.1 *5*	316.73	(1,2$^-$)	0.0	0$^-$			
333.4 *5*	0.07 *3*	333.40	(1,2$^-$)	0.0	0$^-$			
342.3 *1*	3.30 *18*	484.60	(1,2$^-$)	142.308	1$^-$			
350.3 *1*	0.42 *4*	492.58	(1,2$^-$)	142.308	1$^-$			
372.3 *3*	0.18 *5*	920.87	(1,2$^-$)	548.31	(1,2$^-$)			
394.7 *3*	0.18 *4*	728.24	(1,2$^-$)	333.40	(1,2$^-$)			
436.2 *3*	0.33 *6*	920.87	(1,2$^-$)	484.60	(1,2$^-$)			

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^{92}Kr β^- decay 1972Ol03,1973Cl02 (continued)

$\gamma(^{92}Rb)$ (continued)

E_γ [†]	I_γ [‡@]	E_i(level)	J_i^π	E_f	J_f^π
440.0 *1*	0.94 *8*	1360.91	1^+	920.87	$(1,2^-)$
480.9 *2*	0.28 *4*	623.60	$(1,2^-)$	142.308	1^-
484.6 *1*	5.00 *26*	484.60	$(1,2^-)$	0.0	0^-
492.6[a] *1*	0.88[a] *7*	492.58	$(1,2^-)$	0.0	0^-
492.6[a] *1*	0.88[a] *7*	1360.91	1^+	868.35	$(1,2^-)$
535.0 *1*	0.64 *6*	868.35	$(1,2^-)$	333.40	$(1,2^-)$
548.3 *1*	21.8 *12*	548.31	$(1,2^-)$	0.0	0^-
585.9 *2*	0.35 *6*	728.24	$(1,2^-)$	142.308	1^-
623.7 *1*	2.1 *1*	623.60	$(1,2^-)$	0.0	0^-
632.6 *3*	0.29 *7*	1360.91	1^+	728.24	$(1,2^-)$
678.1 *1*	0.58 *5*	2038.99	(1^+)	1360.91	1^+
[x]683.7 *2*	0.26 *5*				
728.4 *4*	0.18 *5*	728.24	$(1,2^-)$	0.0	0^-
737.4 *2*	0.80 *8*	1360.91	1^+	623.60	$(1,2^-)$
785.7 *1*	0.70 *6*	928.04	$(1,2^-)$	142.308	1^-
812.6 *1*	22.7 *12*	1360.91	1^+	548.31	$(1,2^-)$
[x]826.0 *6*	0.20 *9*				
867.9 *8*	0.13 *8*	868.35	$(1,2^-)$	0.0	0^-
876.3 *1*	6.6 *4*	1360.91	1^+	484.60	$(1,2^-)$
921.0 *2*	0.43 *6*	920.87	$(1,2^-)$	0.0	0^-
928.0 *4*	0.21 *6*	928.04	$(1,2^-)$	0.0	0^-
1044.2 *1*	7.4 *4*	1360.91	1^+	316.73	$(1,2^-)$
1115.8 *3*	0.16 *3*	1663.55	$(1,2^-)$	548.31	$(1,2^-)$
1178.9 *3*	0.16 *4*	1663.55	$(1,2^-)$	484.60	$(1,2^-)$
1218.6 *1*	93 *5*	1360.91	1^+	142.308	1^-
[x]1232.5 *6*	0.08 *4*				
[x]1240.5 *2*	0.24 *4*				
1249.9 *3*	0.15 *3*	2611.06	(1^+)	1360.91	1^+
1258.8[b] *4*	0.12 *3*	3338.5?		2079.44	$(1,2^-)$
[x]1285.0 *5*	0.08 *3*				
1291.6 *7*	0.14 *7*	4192.99	1^+	2901.50	(1^+)
1310.7 *3*	0.18 *3*	2038.99	(1^+)	728.24	$(1,2^-)$
1345.5 *7*	0.07 *3*	1663.55	$(1,2^-)$	316.73	$(1,2^-)$
1360.8 *1*	5.4 *3*	1360.91	1^+	0.0	0^-
1394.2 *5*	0.08 *3*	3057.29	$(1,2^-)$	1663.55	$(1,2^-)$
1415.1 *2*	0.26 *3*	2038.99	(1^+)	623.60	$(1,2^-)$
1474.1 *3*	0.15 *3*	4192.99	1^+	2718.81	$(1,2^-)$
[x]1525.8 *3*	0.13 *3*				
1540.4 *7*	0.07 *4*	2901.50	(1^+)	1360.91	1^+
1554.4 *1*	0.60 *5*	2038.99	(1^+)	484.60	$(1,2^-)$
1594.4 *6*	0.08 *3*	2079.44	$(1,2^-)$	484.60	$(1,2^-)$
1621.1[b] *8*	0.06 *3*	3659.7?		2038.99	(1^+)
1658.7 *7*	0.07 *3*	2587.45	(1^+)	928.04	$(1,2^-)$
1663.4 *4*	0.14 *3*	1663.55	$(1,2^-)$	0.0	0^-
1675.1[b] *5*	0.09 *3*	3338.5?		1663.55	$(1,2^-)$
1762.8 *4*	0.11 *3*	2079.44	$(1,2^-)$	316.73	$(1,2^-)$
1896.8 *2*	1.3 *2*	2038.99	(1^+)	142.308	1^-
[x]1932.9 *5*	0.09 *3*				
1973.4 *3*	0.22 *4*	2901.50	(1^+)	928.04	$(1,2^-)$
1981.0 *4*	0.13 *3*	2901.50	(1^+)	920.87	$(1,2^-)$
1987.4 *2*	0.38 *4*	2611.06	(1^+)	623.60	$(1,2^-)$
2004.5 *6*	0.08 *3*	2321.02		316.73	$(1,2^-)$
2039.0[a] *2*	0.63[a] *6*	2038.99	(1^+)	0.0	0^-
2039.0[a] *2*	0.63[a] *6*	2587.45	(1^+)	548.31	$(1,2^-)$
[x]2075.4 *4*	0.14 *3*				

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^{92}Kr β^- decay 1972Ol03,1973Cl02 (continued)

γ(^{92}Rb) (continued)

E_γ[†]	I_γ[‡@]	E_i(level)	J^π_i	E_f	J^π_f
2079.2 4	0.14 3	2079.44	(1,2$^-$)	0.0	0$^-$
2095.3[a] 3	0.20[a] 4	2587.45	(1$^+$)	492.58	(1,2$^-$)
2095.3[a] 3	0.20[a] 4	2718.81	(1,2$^-$)	623.60	(1,2$^-$)
2128.7 5	0.13 4	3057.29	(1,2$^-$)	928.04	(1,2$^-$)
2271.0 5	0.08 3	2587.45	(1$^+$)	316.73	(1,2$^-$)
2277.3 3	0.18 3	2611.06	(1$^+$)	333.40	(1,2$^-$)
2401.8 6	0.07 3	2718.81	(1,2$^-$)	316.73	(1,2$^-$)
2414.1 9	0.07 4	3341.89	1$^+$	928.04	(1,2$^-$)
2417.2 5	0.14 4	2901.50	(1$^+$)	484.60	(1,2$^-$)
2435.1 6	0.16 3	3057.29	(1,2$^-$)	623.60	(1,2$^-$)
2444.9 3	0.27 4	2587.45	(1$^+$)	142.308	1$^-$
2468.5 3	0.27 5	2611.06	(1$^+$)	142.308	1$^-$
2585.1 7	0.19 9	2901.50	(1$^+$)	316.73	(1,2$^-$)
2587.5 4	0.38 9	2587.45	(1$^+$)	0.0	0$^-$
2611.4 2	0.46 5	2611.06	(1$^+$)	0.0	0$^-$
[x]2713.2 6	0.09 3				
2718.7 2	0.42 4	2718.81	(1,2$^-$)	0.0	0$^-$
2759.0 2	0.33 4	2901.50	(1$^+$)	142.308	1$^-$
2793.3 4	0.15 3	3341.89	1$^+$	548.31	(1,2$^-$)
2832.8 2	0.47 5	3149.48	(1$^+$)	316.73	(1,2$^-$)
2854.5[b] 7	0.11 4	3338.5?		484.60	(1,2$^-$)
3056.9 3	0.20 4	3057.29	(1,2$^-$)	0.0	0$^-$
[x]3099.8 5	0.14 4				
3149.0 4	0.19 4	3149.48	(1$^+$)	0.0	0$^-$
3199.5 2	0.68 5	3341.89	1$^+$	142.308	1$^-$
3272.3 5	0.10 3	4192.99	1$^+$	920.87	(1,2$^-$)
3324.4 7	0.07 2	4192.99	1$^+$	868.35	(1,2$^-$)
3342.7[a] 7	0.06[a] 2	3341.89	1$^+$	0.0	0$^-$
3342.7[ab] 7	0.06[a] 2	3659.7?		316.73	(1,2$^-$)
3659.6[b] 5	0.13 3	3659.7?		0.0	0$^-$
[x]3727.3 8	0.06 3				

† From 1972Ol03, except for 142γ which is from 1979Bo26.

‡ From 1972Ol03.

Evaluator adopts α(K)exp=0.051 6 (1972Mc04) which allows mult=M1(+E2) or E1+M2; the latter mult is excluded by RUL. Other data: α(K)exp=0.128 6 and K/L=5.6 9 (1973HaZK); these values imply mutually inconsistent mult; also, this α(K)exp requires significant mixing for this transition to J=0 g.s., which is untenable (pure mult demanded for J to 0 transition).

@ For absolute intensity per 100 decays, multiply by 0.64 3.

& 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.

a Multiply placed with undivided intensity.

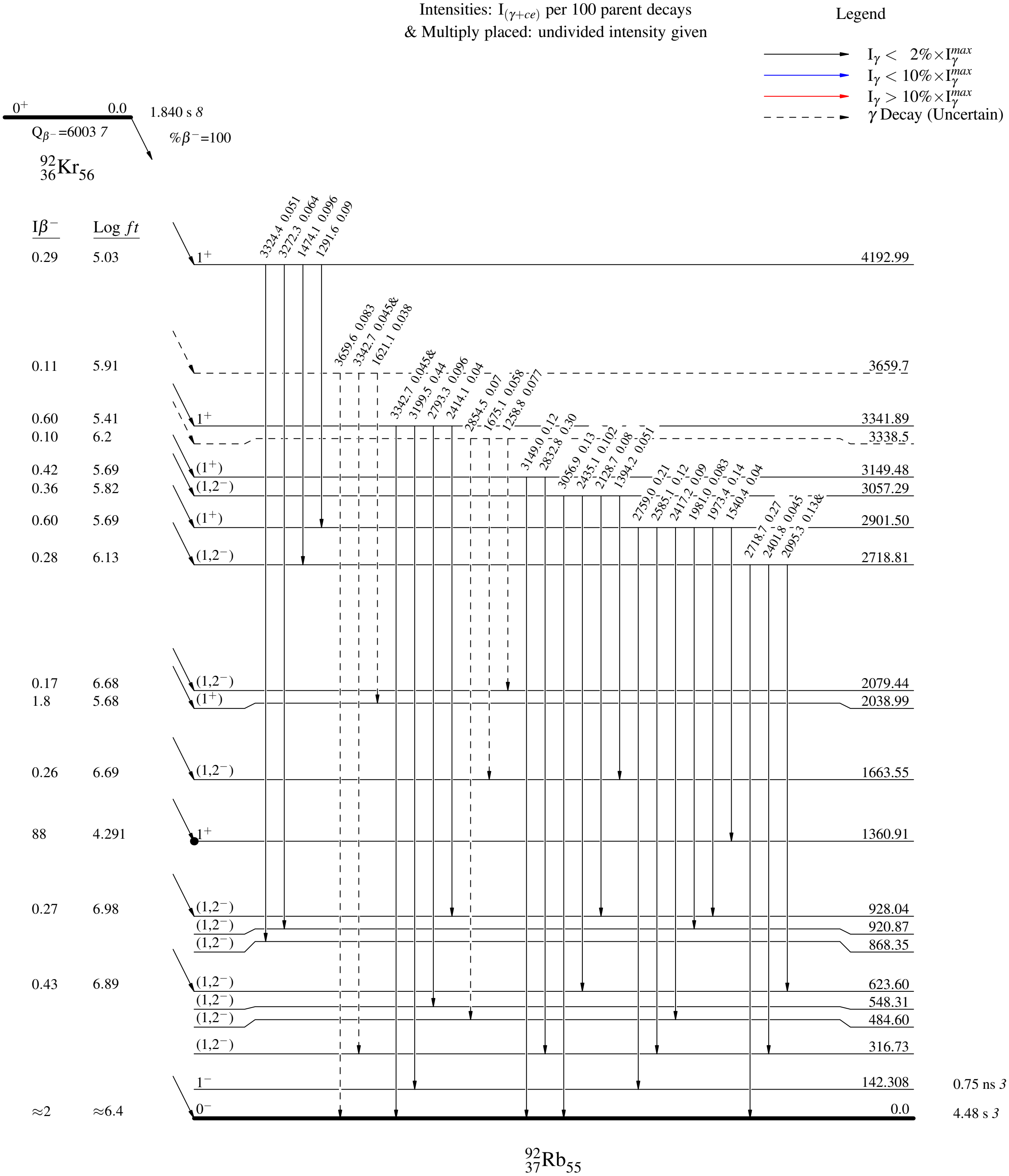
b Placement of transition in the level scheme is uncertain.

x γ ray not placed in level scheme.

^{92}Kr β^- decay 1972Ol03,1973Cl02

Decay Scheme

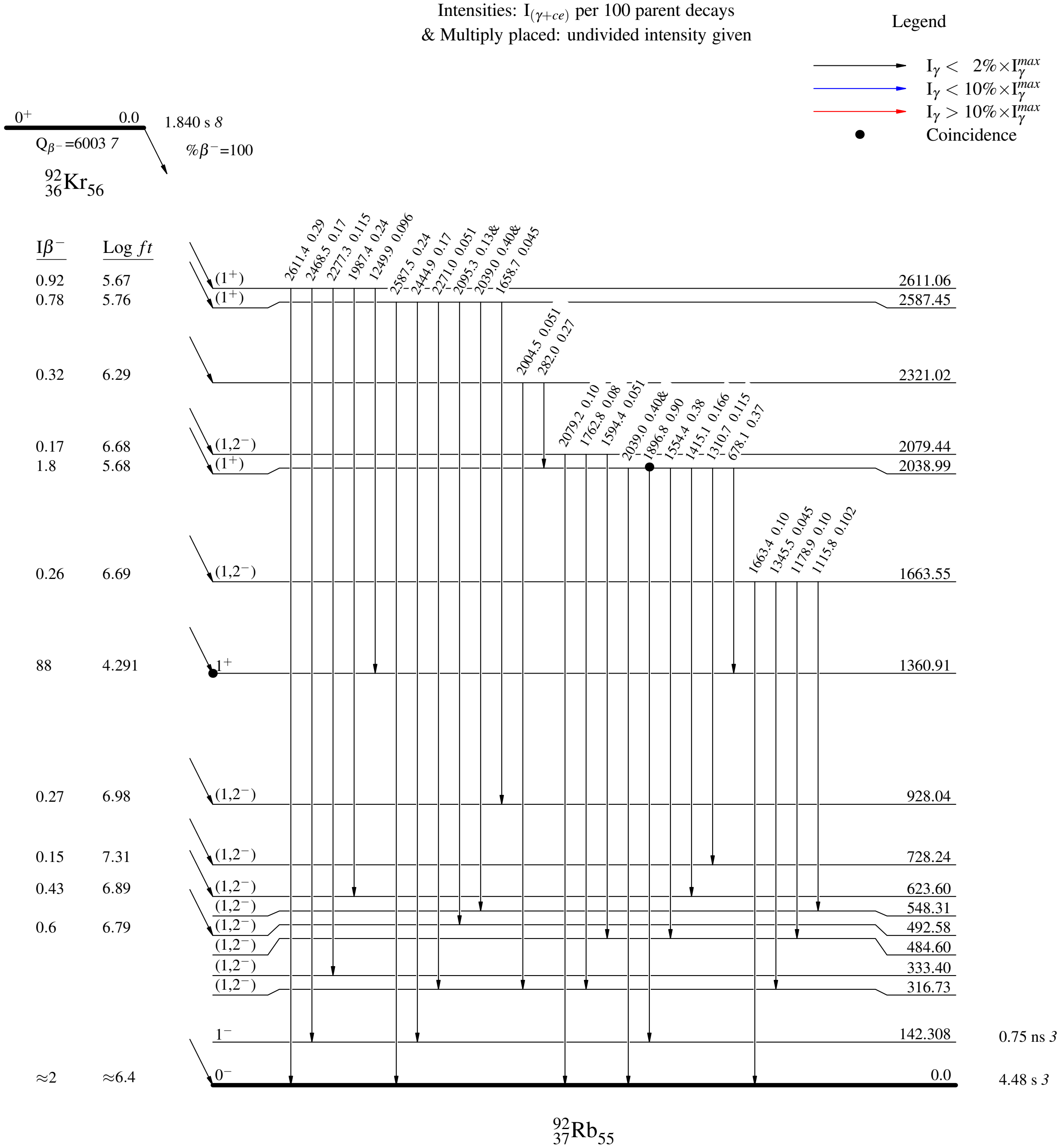
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{92}Kr β^- decay 1972Ol03,1973Cl02

Decay Scheme (continued)

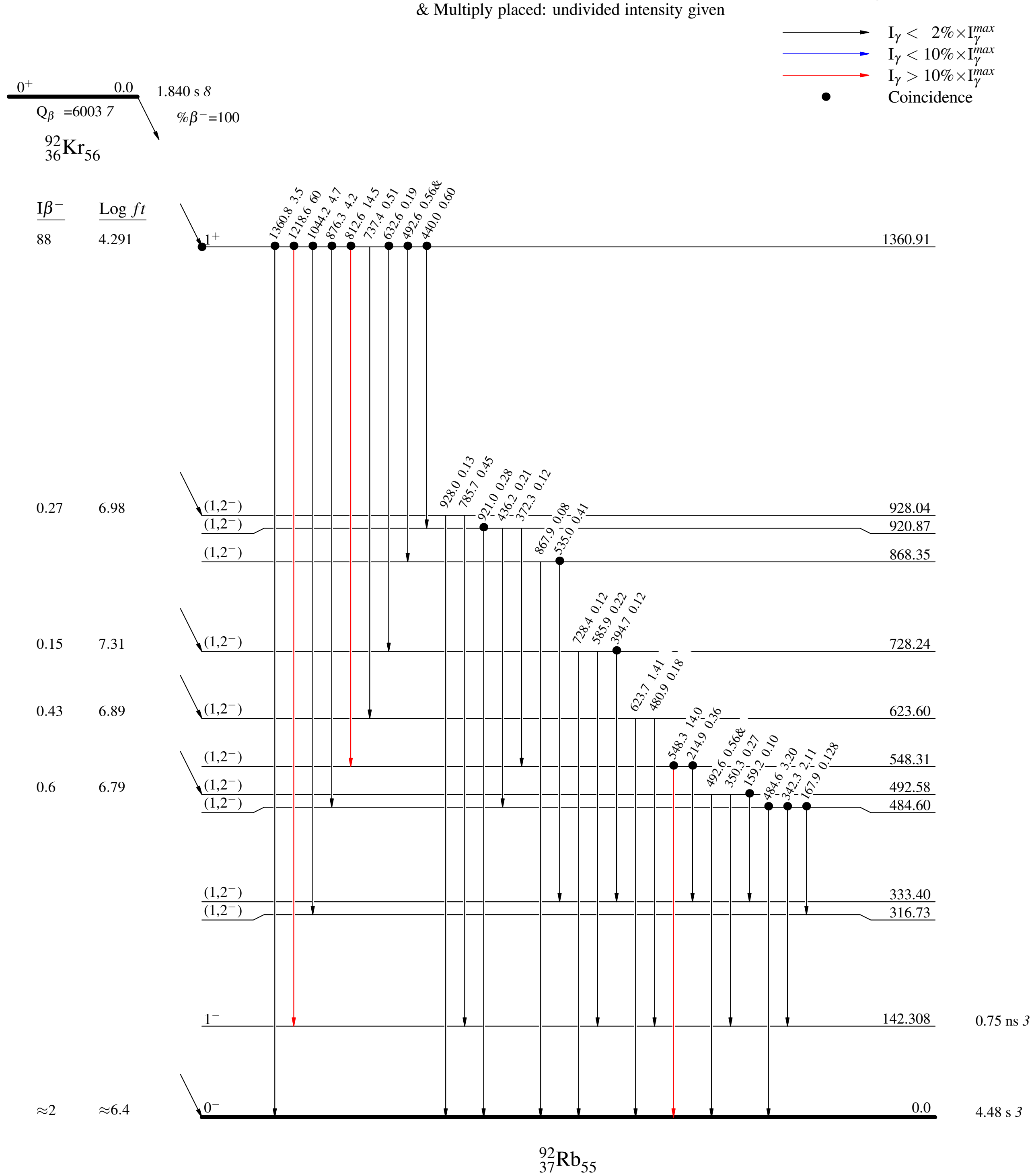
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



$^{92}Kr\ \beta^-$ decay 1972Ol03,1973Cl02

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{92}Kr β^- decay 1972Ol03,1973Cl02

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given