^{88}Kr β^- decay 1976Bu05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan and A. A. Sonzogni	NDS 115, 135 (2014)	1-Nov-2013

Parent: ^{88}Kr: E=0.0; $J^\pi=0^+$; $T_{1/2}$=2.825 h *19*; Q(β^-)=2918 *3*; %β^- decay=100.0

1976Bu05: ^{88}Kr activity from ^{235}U(n,F) and subsequent mass-separation and gas-chromatographic-isolation. Measured Eγ, Iγ, and $\gamma\gamma$ using two coaxial Ge(Li) detectors (FWHM=2.5 keV), a Compton-suppressed Ge(Li) detector, and a planar Ge(Li) low-energy photon spectrometer.

1976Wo05: ^{88}Kr activity from ^{235}U(n,f) and subsequent separation by the TRISTAN on-line separator. Measured absolute Iβ and Iγ using a Ge(Li) detector and plastic scintillator.

Shapes of β spectra measured by 1986HeZY.

Others: 1974WoZO, 1973BlZH, 1973GeZZ, 1970Ly01.

Total energy release of 2930 keV *100* is calculated using the RADLST code, in good agreement with the decay Q value of 2918 keV *3*.

α: Additional information 1.

^{88}Rb Levels

E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡
0	2^-	862.349 *9*	2^-	1441.51 *3*	$(1,2^-)$	2089.07?# *13*	
27.515 *9*	$(3)^-$	1141.360 *22*	$1^-,2^-$	1603.83 *3*	$(0^-,1^-,2^-)$	2231.761 *14*	1^+
196.292 *8*	$(1)^-$	1182.090 *17*	(0,1,2)	1661.15 *4*	$1^-,2^-$	2392.147 *9*	1^+
268.24 *3*	4^-	1212.578 *21*	$(1,2)^-$	1714.714 *24*	$0^-,1^-$	2456.00? *16*	$(0^-,1^-)$
362.240 *10*	$(2)^-$	1245.24? *4*	$(2)^-$	1793.3? *3*	$0^-,1^-,2^-$	2548.420 *23*	1^+
390.547 *10*	(2^-)	1352.494 *22*	$1^-,2^-$	1915.52 *4*	$(1,2)^-$	2771.11 *4*	1^+

† From a least-squares fit to Eγ by evaluators.
‡ From the Adopted Levels.
# Level is not adopted.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(147 *3*)	2771.11	0.353 *25*	4.85 *5*	av Eβ=39.79 *88*
(370 *3*)	2548.420	2.65 *16*	5.27 *3*	av Eβ=111.2 *11*
(462# *3*)	2456.00?	0.066 *17*	7.20 *12*	av Eβ=143.9 *11*
(526 *3*)	2392.147	67 *4*	4.39 *3*	av Eβ=167.3 *12*
(686 *3*)	2231.761	9.1 *5*	5.665 *25*	av Eβ=228.5 *12*
(829# *3*)	2089.07?	0.14 *3*	7.78 *10*	av Eβ=285.6 *13*
(1002 *3*)	1915.52	0.204 *17*	8.48[1u] *4*	av Eβ=378.4 *13*
(1125# *3*)	1793.3?	0.035 *14*	8.87 *18*	av Eβ=409.3 *13*
(1203 *3*)	1714.714	1.92 *12*	7.25 *3*	av Eβ=443.2 *13*
(1257 *3*)	1661.15	0.23 *4*	8.24 *8*	av Eβ=466.5 *13*
(1476 *3*)	1441.51	0.22 *3*	8.54 *6*	av Eβ=563.4 *14*
(1736 *3*)	1182.090	1.02 *7*	9.12[1u] *3*	av Eβ=694.1 *14*
(1777 *3*)	1141.360	0.10 *6*	9.2 *3*	av Eβ=698.8 *14*
(2056 *3*)	862.349	1.3 *3*	9.44[1u] *10*	av Eβ=837.8 *14*
(2527 *3*)	390.547	0.26 *10*	10.68[1u] *17*	av Eβ=1053.8 *14*
(2722 *3*)	196.292	2.0 *3*	8.67 *7*	av Eβ=1138.5 *15*
(2918 *3*)	0	14 *4*	9.32[1u] *13*	av Eβ=1235.4 *14*

Continued on next page (footnotes at end of table)

^{88}Kr β^- decay 1976Bu05 (continued)

β^- radiations (continued)

† From an intensity balance at each level.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

^{88}Kr β^- decay 1976Bu05 (continued)

$\gamma(^{88}Rb)$

Iγ normalization: from Σ(I(γ+ce) to g.s.)=86 *4* determined by absolute β and γ counting (1976Wo05).
α(K)exp: from magnetic spectrometer measurement (1973HaZW), except where noted.

E_γ [†]	I_γ [‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α	$I_{(\gamma+ce)}$ [#]	Comments
27.513 *14*	5.6 *4*	27.515	(3)$^-$	0	2$^-$	M1(+E2)	0.07 *+3−7*	6.3 *5*	41.4 *4*	α(exp)=6.4 *5*; ce(K)/(γ+ce)=0.74 *5*; ce(L)/(γ+ce)=0.106 *24*; ce(M)/(γ+ce)=0.018 *5*; ce(N)/(γ+ce)=0.0019 *4* ce(O)/(γ+ce)=6.5×10^{-5} *5* α(K)=5.4 *3*; α(L)=0.78 *19*; α(M)=0.13 *3*; α(N)=0.014 *3*; α(O)=0.000476 *18* Mult.,δ: from α(exp). α,$I_{(\gamma+ce)}$: α(exp) from intensity balance since β feeding is negligible for a third-forbidden transition.
28.26 *11*	0.08 *3*	390.547	(2$^-$)	362.240	(2)$^-$	[M1]		5.42 *10*		α(K)=4.77 *9*; α(L)=0.551 *10*; α(M)=0.0911 *17*; α(N)=0.01022 *19*; α(O)=0.000426 *8* Mult.,α: δ probably small since a larger α would result in a large negative feeding of the 362 level.
122.27 *6*	0.57 *2*	390.547	(2$^-$)	268.24	4$^-$	[E2]		0.463		α(K)=0.396 *6*; α(L)=0.0566 *8*; α(M)=0.00934 *14*; α(N)=0.000980 *14*; α(O)=3.04×10^{-5} *5*
165.98 *4*	8.97 *40*	362.240	(2)$^-$	196.292	(1)$^-$	M1+E2	0.74 *10*	0.077 *8*		α(K)exp=0.067 *7* α(K)=0.067 *7*; α(L)=0.0084 *9*; α(M)=0.00138 *14*; α(N)=0.000150 *15*; α(O)=5.5×10^{-6} *5* Mult.,δ: from α(K)exp. α(K)exp: from 1974WoZO (also quoted in 1976Bu05). α(K)exp: Other: 0.029 *3* (1973HaZW); results in a small negative feeding of the level.
168.5 *2*	≤0.02	196.292	(1)$^-$	27.515	(3)$^-$					
[x]176.71 *17*	0.07 *2*									
196.301 *10*	75.1 *5*	196.292	(1)$^-$	0	2$^-$	M1+E2	0.92 *15*	0.050 *5*		α(K)exp=0.044 *4*; α(L)exp=0.005 *1* α(K)=0.044 *5*; α(L)=0.0053 *6*; α(M)=0.00088 *10*; α(N)=9.7×10^{-5} *10*; α(O)=3.6×10^{-6} *4* E_γ: weighted average of 196.320 *15* (1976Bu05), 196.288 *15* (1973GeZZ), both from Ge(Li), and 196.292 *17* from curved-crystal spectrometer (1979Bo26). Mult.,δ: from α(K)exp.
240.71 *4*	0.73 *2*	268.24	4$^-$	27.515	(3)$^-$					
(268.24)		268.24	4$^-$	0	2$^-$	[E2]		0.0268	0.09 *4*	ce(K)/(γ+ce)=0.0228 *4*; ce(L)/(γ+ce)=0.00272 *4*; ce(M)/(γ+ce)=0.000448 *7*; ce(N)/(γ+ce)=4.92×10^{-5} *7*; ce(O)/(γ+ce)=1.88×10^{-6} *3* α(K)=0.0234 *4*; α(L)=0.00279 *4*; α(M)=0.000460 *7*;

$^{88}_{37}Rb_{51}$-3

^{88}Kr β^- decay 1976Bu05 (continued)

$\gamma(^{88}Rb)$ (continued)

E_γ [†]	I_γ [‡#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
						α(N)=5.05×10^{-5} *7*; α(O)=1.93×10^{-6} *3* E_γ: from level energy difference. $I_{(\gamma+ce)}$: from intensity balance since β feeding is negligible for third-unique forbidden transition.
311.69 *3*	0.31 *2*	1915.52	(1,2)$^-$	1603.83	(0$^-$,1$^-$,2$^-$)	
334.71 *3*	0.42 *2*	362.240	(2)$^-$	27.515	(3)$^-$	
350.04 *19*	0.05 *2*	1212.578	(1,2)$^-$	862.349	2$^-$	
362.226 *13*	6.50 *16*	362.240	(2)$^-$	0	2$^-$	
363.5 *5*	0.14 *9*	390.547	(2$^-$)	27.515	(3)$^-$	
390.543 *11*	1.86 *12*	390.547	(2$^-$)	0	2$^-$	
391.20 *10*	0.23 *12*	1603.83	(0$^-$,1$^-$,2$^-$)	1212.578	(1,2)$^-$	
421.70 *18*	0.03 *1*	1603.83	(0$^-$,1$^-$,2$^-$)	1182.090	(0,1,2)	
471.80 *3*	2.10 *4*	862.349	2$^-$	390.547	(2$^-$)	
500.02 *6*	0.28 *2*	862.349	2$^-$	362.240	(2)$^-$	
517.00 *8*	0.10 *3*	2231.761	1$^+$	1714.714	0$^-$,1$^-$	
570.57 *7*	0.18 *2*	2231.761	1$^+$	1661.15	1$^-$,2$^-$	
573.27 *6*	0.21 *2*	1714.714	0$^-$,1$^-$	1141.360	1$^-$,2$^-$	
579.04 *14*	0.07 *3*	1441.51	(1,2$^-$)	862.349	2$^-$	
[x]603.21 *13*	0.12 *3*					
665.94 *6*	0.25 *4*	862.349	2$^-$	196.292	(1)$^-$	
677.34 *5*	0.68 *4*	2392.147	1$^+$	1714.714	0$^-$,1$^-$	
731.01 *9*	0.10 *3*	2392.147	1$^+$	1661.15	1$^-$,2$^-$	
741.34[&] *18*	0.10 *3*	2456.00?	(0$^-$,1$^-$)	1714.714	0$^-$,1$^-$	
774.14 *6*	0.28 *4*	1915.52	(1,2)$^-$	1141.360	1$^-$,2$^-$	
779.12 *8*	0.28 *6*	1141.360	1$^-$,2$^-$	362.240	(2)$^-$	
788.28 *4*	1.54 *4*	2392.147	1$^+$	1603.83	(0$^-$,1$^-$,2$^-$)	
790.32 *7*	0.36 *3*	2231.761	1$^+$	1441.51	(1,2$^-$)	
798.65 *21*	0.08 *3*	1661.15	1$^-$,2$^-$	862.349	2$^-$	
822.01 *12*	0.26 *3*	1212.578	(1,2)$^-$	390.547	(2$^-$)	
834.83 *1*	37.5 *4*	862.349	2$^-$	27.515	(3)$^-$	
850.34 *5*	0.50 *3*	1212.578	(1,2)$^-$	362.240	(2)$^-$	
862.327 *19*	1.94 *5*	862.349	2$^-$	0	2$^-$	
879.51 *19*	0.07 *2*	2231.761	1$^+$	1352.494	1$^-$,2$^-$	
883.06[&] *14*	0.12 *2*	1245.24?	(2)$^-$	362.240	(2)$^-$	
944.92 *4*	0.85 *4*	1141.360	1$^-$,2$^-$	196.292	(1)$^-$	
950.49 *12*	0.11 *3*	2392.147	1$^+$	1441.51	(1,2$^-$)	
961.83 *6*	0.24 *3*	1352.494	1$^-$,2$^-$	390.547	(2$^-$)	
985.780 *16*	3.80 *7*	1182.090	(0,1,2)	196.292	(1)$^-$	
990.09 *9*	0.41 *5*	1352.494	1$^-$,2$^-$	362.240	(2)$^-$	
1039.59 *3*	1.40 *5*	2392.147	1$^+$	1352.494	1$^-$,2$^-$	
1049.48 *12*	0.41 *3*	2231.761	1$^+$	1182.090	(0,1,2)	
[x]1054.54 *20*	0.09 *3*					
1090.53 *12*	0.18 *4*	2231.761	1$^+$	1141.360	1$^-$,2$^-$	

$^{88}_{37}Rb_{51}$-4

^{88}Kr β^- decay 1976Bu05 (continued)

$\gamma(^{88}Rb)$ (continued)

E_γ †	I_γ ‡#	E_i(level)	J_i^π	E_f	J_f^π
1141.33 *6*	3.71 *9*	1141.360	1^-,2^-	0	2^-
1179.51 *3*	2.88 *6*	2392.147	1^+	1212.578	$(1,2)^-$
1184.95 *4*	1.99 *8*	1212.578	$(1,2)^-$	27.515	$(3)^-$
1209.84 *8*	0.41 *7*	2392.147	1^+	1182.090	(0,1,2)
1212.73 *17*	0.40 *14*	1212.578	$(1,2)^-$	0	2^-
1245.22@& *4*		1245.24?	$(2)^-$	0	2^-
1245.22@ *4*	1.05 *5*	1441.51	$(1,2^-)$	196.292	$(1)^-$
1250.67 *4*	3.24 *6*	2392.147	1^+	1141.360	1^-,2^-
1298.78 *15*	0.27 *6*	1661.15	1^-,2^-	362.240	$(2)^-$
1303.09 *24*	0.19 *7*	2548.420	1^+	1245.24?	$(2)^-$
1324.98 *4*	0.46 *10*	1352.494	1^-,2^-	27.515	$(3)^-$
1335.81 *14*	0.19 *3*	2548.420	1^+	1212.578	$(1,2)^-$
1352.32 *11*	0.46 *6*	1352.494	1^-,2^-	0	2^-
1369.5 *2*	4.27 *17*	2231.761	1^+	862.349	2^-
1406.94 *10*	0.63 *5*	2548.420	1^+	1141.360	1^-,2^-
1464.84 *9*	0.33 *4*	1661.15	1^-,2^-	196.292	$(1)^-$
1518.39 *3*	6.22 *16*	1714.714	0^-,1^-	196.292	$(1)^-$
1529.77 *3*	31.6 *5*	2392.147	1^+	862.349	2^-
1603.79 *5*	1.32 *8*	1603.83	$(0^-,1^-,2^-)$	0	2^-
x1608.01 *20*	0.20 *5*				
1661.3 *3*	0.26 *6*	1661.15	1^-,2^-	0	2^-
1685.6 *4*	1.92 *21*	2548.420	1^+	862.349	2^-
x1789.14 *22*	0.13 *5*				
1793.3& *3*	0.10 *4*	1793.3?	0^-,1^-,2^-	0	2^-
x1801.3 *3*	0.11 *4*				
1892.76& *13*	0.40 *7*	2089.07?		196.292	$(1)^-$
1908.7 *4*	0.29 *4*	2771.11	1^+	862.349	2^-
2029.84 *3*	13.09 *25*	2392.147	1^+	362.240	$(2)^-$
2035.411 *18*	10.8 *3*	2231.761	1^+	196.292	$(1)^-$
2186.5 *3*	0.83 *17*	2548.420	1^+	362.240	$(2)^-$
2195.84 *1*	38.1 *3*	2392.147	1^+	196.292	$(1)^-$
2231.772 *21*	9.80 *19*	2231.761	1^+	0	2^-
2259.5& *3*	0.09 *4*	2456.00?	$(0^-,1^-)$	196.292	$(1)^-$
2352.08 *4*	2.11 *6*	2548.420	1^+	196.292	$(1)^-$
2364.7 *3*	0.09 *4*	2392.147	1^+	27.515	$(3)^-$
2392.11 *4*	100.0 *3*	2392.147	1^+	0	2^-
2408.91 *7*	0.30 *3*	2771.11	1^+	362.240	$(2)^-$
x2535.52 *11*	0.12 *1*				
2548.40 *3*	1.80 *3*	2548.420	1^+	0	2^-
2771.02 *5*	0.43 *2*	2771.11	1^+	0	2^-

† From 1976Bu05, except where noted.
‡ From 1976Bu05, normalized to Iγ(2392γ)=100.
# For absolute intensity per 100 decays, multiply by 0.346 *16*.
@ Multiply placed.
& Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

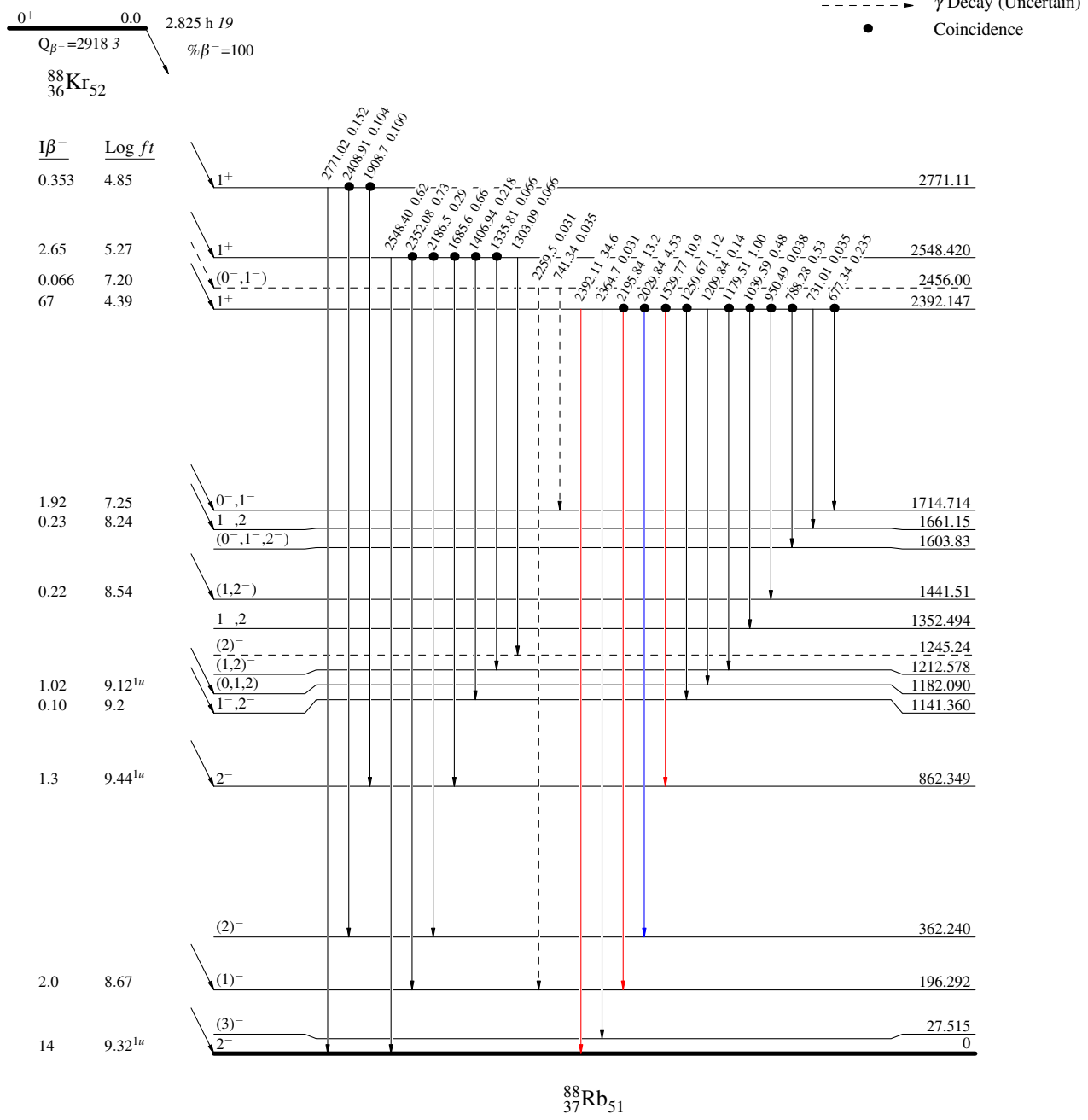
$^{88}_{37}Rb_{51}$-5

^{88}Kr β^- decay 1976Bu05

Decay Scheme

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

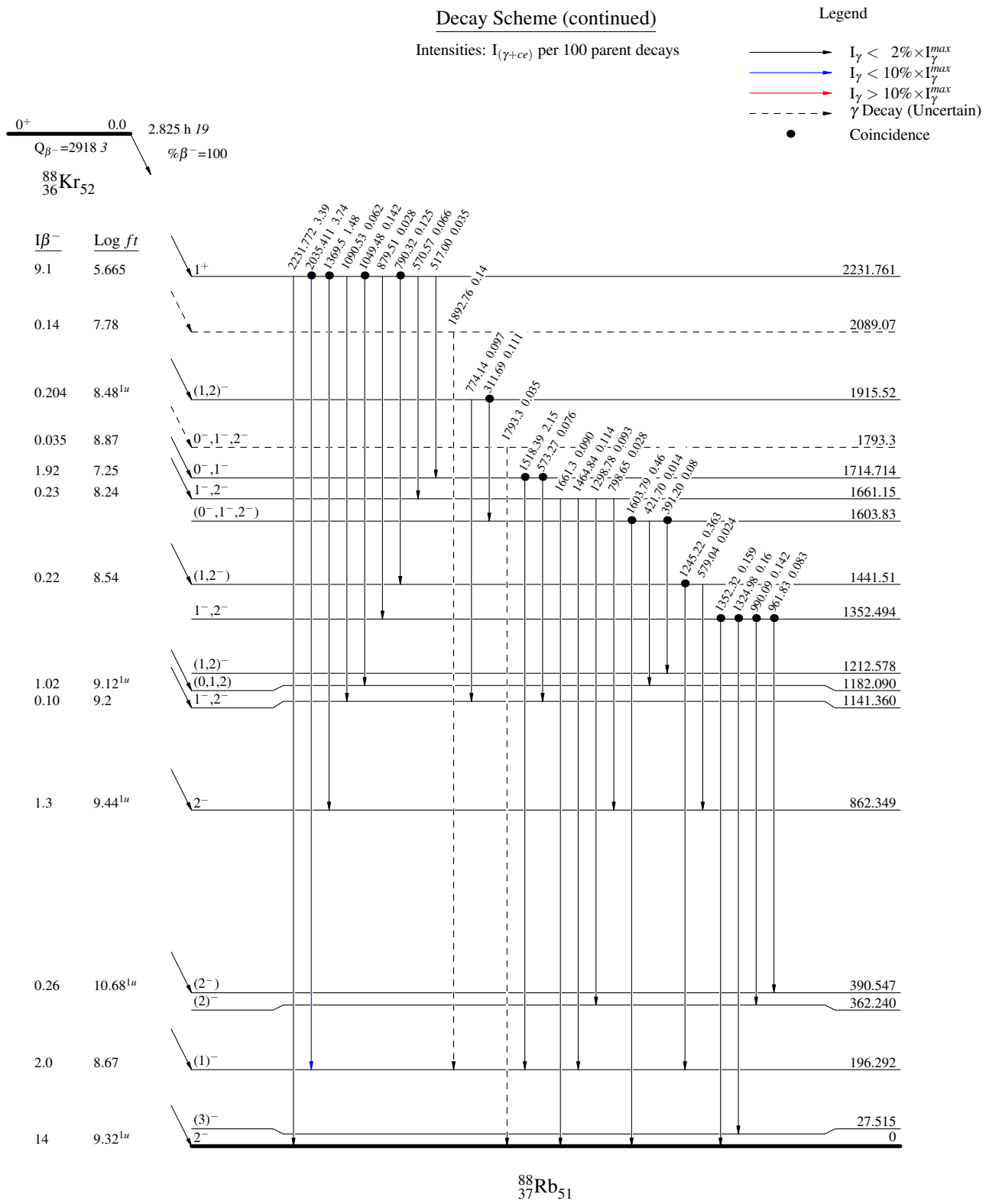
Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



^{88}Kr β^- decay 1976Bu05

Decay Scheme (continued)

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



^{88}Kr β^- decay 1976Bu05

Decay Scheme (continued)

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