^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh	NDS 110, 1917 (2009)	30-Jun-2009

Parent: ^{78}Rb: E=111.19 *22*; J$^{\pi}$=4$^{(-)}$; T$_{1/2}$=5.74 min *3*; Q(ε)=7243 *8*; %ε+%β^+ decay=91 *2*

^{78}Rb-Q(ε): from 2009AuZZ, 2003Au03.

1981Ba40 (also 1975BaWR thesis): measured Eγ, Iγ, $\gamma\gamma$, Iβ, $\beta\gamma$, T$_{1/2}$. The data in 1981Ba40 are superior to those in author's earlier work 1975BaWR since ^{78}Kr target enrichment was 99% as compared to 50% in the 1975 work.

1980BaZO is superseded by 1981Ba40.

1995Gi13: Conversion electron spectra. Deduced α(K)exp's for several transitions and observed E0 transition from 0$^+$ state at 1017 keV.

1999Su02: main study was In-beam γ-rays In ^{78}Kr, but the ^{58}Ni+^{23}Na reaction used In this study populated ^{78}Rb also strongly through 2P$_n$ channel, thus some of the γ rays and levels listed by 1999Su02 could Be populated from ^{78}Rb ε decay, mainly from 4$^{(-)}$ isomer and less so from 0$^{(+)}$ isomer. However, No separate decay data were listed by 1999Su02.

Others: 1979He18, 1975We23, 1974Sa32, 1973Ba03, 1973Br32, 1972No14, 1972LiZL, 1972Ar10, 1971Do01, 1969Ch18, 1968To05.

In the high-spin study of 1984Hi08, main activity formed was 5.74-M ^{78}Rb as suggested by Iγ(455)/Iγ(664)=100/48.5 and non-observation of 562γ.

Two activities (5.74 min and 17.66 min) of ^{78}Rb were identified by most of the authors, but only 1981Ba40 and 1972No14 proposed separate decay schemes.

A 4.2-min isomer suggested by 1971Do01 was proven to be nonexistent by 1972De54.

All data given here are from 1981Ba40 unless otherwise stated.

Measured conversion coefficients are from 1995Gi13.

Total decay energy of 6616 keV *50* calculated (by RADLIST code) from level scheme agrees with the expected value of 6619 keV *150*.

^{78}Kr Levels

E(level)†	J$^{\pi}$‡	E(level)†	J$^{\pi}$‡	E(level)†	J$^{\pi}$‡	E(level)†	J$^{\pi}$‡
0.0	0$^+$	1977.81 *8*	6$^+$	2573.34 *7*	1$^-$,2$^-$,3$^-$	3105.37 *7*	3$^-$,4$^-$,5$^-$
455.03 *3*	2$^+$	2007.31? *13*		2677.64 *9*	3$^-$	3161.18 *6*	3$^-$
1017.20 *5*	0$^+$	2234.16 *6*	(0 to 4)$^+$	2749.76 *7*	5$^-$	3233.55 *6*	3$^-$,4$^-$
1119.47 *4*	4$^+$	2240.69 *5*	(1,2)$^+$	2764.10 *5*	(4)$^-$	3361.14 *11*	4$^-$,5$^-$,6$^-$
1147.90 *4*	2$^+$	2299.77 *6*	5$^+$	2882.07 *9*	3$^-$	3669.22 *7*	3$^-$,4$^-$
1564.76 *4*	3$^+$	2399.02 *5*	3$^-$	2992.54 *7*		3725.49 *6*	3$^+$,4$^+$
1755.85 *4*	2$^+$	2413.44 *11*	2$^+$,3$^+$,4$^+$	2999.36 *8*	3$^-$	3749.15 *10*	(3,4,5$^-$)
1772.93 *4*	(1,2)$^+$	2443.37 *5*	(1,2)$^+$	3064.61 *11*	(5)$^-$	3774.61 *5*	(3)$^-$
1872.92 *5*	4$^+$	2508.02 *9*		3072.32 *6*	(5$^-$)	4007.79?# *6*	(1)

† From least-squares fit to Eγ's. The doubly-placed 1852.55γ from 2999 level was omitted from the fitting procedure as its inclusion resulted in a normalized χ^2=3.6.

‡ From 'Adopted Levels'.

If J(4008)=1, population of this level from 4$^{(-)}$ parent state is suspect (evaluators).

ε,β^+ radiations

β^+ radiation studied 1981Ba40, 1979ReZW, 1976DaYR, 1975BaWR and 1975We23.

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(3346# *8*)	4007.79?	0.17 *4*	0.019 *4*	7.2 *1*	0.19 *4*	av Eβ=1037.6 *38*; εK=0.0898 *9*; εL=0.01040 *10*;

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^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13 (continued)

ε,β$^+$ radiations (continued)

E(decay)	E(level)	Iβ$^+$ [‡]	Iε[‡]	Log *ft*	I(ε+β$^+$)[†‡]	Comments
						εM+=0.002135 21 I(ε+β$^+$),Log *ft*: too low for ΔJ=3. The apparent small feeding is probably due either to unobserved γ rays from higher levels or to improper division of γ-ray intensities between the two activities of ^{78}Rb.
(3580 8)	3774.61	8.8 4	0.75 3	5.65 2	9.6 4	av Eβ=1146.5 38; εK=0.0689 6; εL=0.00797 7; εM+=0.001637 15
(3605 8)	3749.15	0.57 6	0.047 5	6.86 5	0.62 6	av Eβ=1158.4 38; εK=0.0670 6; εL=0.00776 7; εM+=0.001592 14
(3629 8)	3725.49	2.89 19	0.232 15	6.17 3	3.12 20	av Eβ=1169.5 38; εK=0.0653 6; εL=0.00756 7; εM+=0.001552 14
(3685 8)	3669.22	3.35 16	0.252 12	6.15 3	3.60 17	av Eβ=1195.9 38; εK=0.0615 6; εL=0.00712 6; εM+=0.001461 13
(3993 8)	3361.14	0.98 8	0.053 4	6.90 4	1.03 8	av Eβ=1341.0 38; εK=0.0451 4; εL=0.00521 4; εM+=0.001070 9
(4121 8)	3233.55	2.31 11	0.110 6	6.61 3	2.42 12	av Eβ=1401.4 38; εK=0.0400 3; εL=0.00462 4; εM+=0.000948 7
(4193 8)	3161.18	4.46 19	0.199 9	6.37 2	4.66 20	av Eβ=1435.7 38; εK=0.0374 3; εL=0.00432 4; εM+=0.000887 7
(4249 8)	3105.37	2.77 15	0.117 7	6.61 3	2.89 16	av Eβ=1462.2 38; εK=0.0356 3; εL=0.00411 3; εM+=0.000844 6
(4282 8)	3072.32	2.14 9	0.088 4	6.74 2	2.23 9	av Eβ=1477.9 38; εK=0.03453 25; εL=0.00399 3; εM+=0.000819 6
(4290 8)	3064.61	0.68 5	0.028 2	7.24 4	0.71 5	av Eβ=1481.5 38; εK=0.03430 25; εL=0.00397 3; εM+=0.000814 6
(4355 8)	2999.36	2.38 18	0.091 7	6.74 4	2.47 19	av Eβ=1512.6 38; εK=0.03240 23; εL=0.00375 3; εM+=0.000769 6
(4362 8)	2992.54	0.19 3	0.0073 11	7.83 7	0.20 3	av Eβ=1515.8 38; εK=0.03221 23; εL=0.00372 3; εM+=0.000764 6
(4472 8)	2882.07	0.81 9	0.028 3	7.27 5	0.84 9	av Eβ=1568.4 39; εK=0.02932 20; εL=0.003389 23; εM+=0.000695 5
(4590 8)	2764.10	12.0 5	0.376 16	6.17 2	12.4 5	av Eβ=1624.7 39; εK=0.02660 18; εL=0.003074 20; εM+=0.000631 5
(4604 8)	2749.76	4.29 19	0.132 6	6.63 2	4.42 20	av Eβ=1631.5 39; εK=0.02629 17; εL=0.003038 20; εM+=0.000624 4
(4677 8)	2677.64	2.66 12	0.077 4	6.87 2	2.74 12	av Eβ=1665.9 39; εK=0.02481 16; εL=0.002867 19; εM+=0.000588 4
(4781 8)	2573.34	1.38 12	0.037 3	7.21 4	1.42 12	av Eβ=1715.8 39; εK=0.02287 15; εL=0.002642 17; εM+=0.000542 4
(4846 8)	2508.02	0.096 24	0.0024 6	8.41 12	0.098 25	av Eβ=1747.1 39; εK=0.02175 14; εL=0.002513 16; εM+=0.000516 4
(4911 8)	2443.37	0.16 4	0.0038 9	8.23 11	0.16 4	av Eβ=1778.1 39; εK=0.02072 13; εL=0.002393 15; εM+=0.000491 3
(4941 8)	2413.44	1.89 10	0.0445 24	7.16 3	1.93 10	av Eβ=1792.4 39; εK=0.02026 12; εL=0.002340 14; εM+=0.000480 3
(4955 8)	2399.02	3.12 22	0.073 5	6.95 4	3.19 23	av Eβ=1799.4 39; εK=0.02004 12; εL=0.002315 14; εM+=0.000475 3
(5054 8)	2299.77	2.15 12	0.047 3	7.16 3	2.20 12	av Eβ=1847.0 39; εK=0.01864 11; εL=0.002153 13; εM+=0.000442 3
(5114 8)	2240.69	0.43 6	0.0090 12	7.89 6	0.44 6	av Eβ=1875.4 39; εK=0.01787 11; εL=0.002064 12; εM+=0.0004235 2
(5120 8)	2234.16	0.93 5	0.019 1	7.56 3	0.95 5	av Eβ=1878.5 39; εK=0.01778 11; εL=0.002054 12; εM+=0.0004215 2
(5376 8)	1977.81	0.84 9	0.033 3	9.41[1u] 5	0.87 9	av Eβ=2008.7 38; εK=0.03327 19; εL=0.003860 22; εM+=0.000793 5
(5481 8)	1872.92	4.1 4	0.066 6	7.08 5	4.2 4	av Eβ=2052.5 39; εK=0.01390 8; εL=0.001605 9; εM+=0.0003293 1
(5581 8)	1772.93	0.89 6	0.013 1	7.79 3	0.90 6	av Eβ=2100.7 39; εK=0.01303 7; εL=0.001504 8;

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^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13 (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	$I\beta^+$ ‡	$I\varepsilon$‡	Log *ft*	$I(\varepsilon+\beta^+)$†‡	Comments
						εM+=0.0003086 *1*
(5598 *8*)	1755.85	1.38 *14*	0.047 *5*	9.33[1u] *5*	1.43 *14*	av Eβ=2114.3 *39*; εK=0.02854 *16*; εL=0.003311 *18*; εM+=0.000680 *4*
(5789 *8*)	1564.76	5.4 *4*	0.072 *5*	7.09 *4*	5.5 *4*	av Eβ=2201.4 *39*; εK=0.01143 *6*; εL=0.001320 *7*; εM+=0.0002708 *1*
(6206# *8*)	1147.90	0.6 *4*	0.01 *1*	10.1[1u] *3*	0.6 *4*	av Eβ=2404.6 *39*; εK=0.01943 *10*; εL=0.002252 *11*; εM+=0.0004623 *2*
(6235 *8*)	1119.47	13.0 *7*	0.131 *7*	6.89 *3*	13.1 *7*	av Eβ=2417.2 *39*; εK=0.00880 *4*; εL=0.001016 *5*; εM+=0.0002084 *1*

† Because of the large Q value, and the consequent likelihood of a large number of unobserved transitions, the feedings with intensity less than a few percent should be considered tentative.

‡ For absolute intensity per 100 decays, multiply by 1.010 *22*.

Existence of this branch is questionable.

^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13 (continued)

$\gamma(^{78}Kr)$

Iγ normalization: from γ-ray intensity balance at each level. Decay through isomeric transition was taken as 9% 2 (based on Iγ(103γ)). I($\gamma^{\pm}$)/I(454γ)=1.97 *3*. Intensity of annihilation radiation=197 *3* (1981Ba40), relative to 100 for 455γ.

E_γ	I_γ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	δ	α#	Comments
341.26 *7*	1.88 *15*	3105.37	$3^-,4^-,5^-$	2764.10	$(4)^-$	M1		0.00531	α(K)exp=0.0051 *6* α(K)=0.00471 *7*; α(L)=0.000509 *8*; α(M)=8.25×10^{-5} *12*; α(N+..)=8.32×10^{-6} *12* α(N)=8.32×10^{-6} *12*
416.77 *5*	2.82 *12*	1564.76	3^+	1147.90	2^+				
445.28 *5*	0.85 *5*	1564.76	3^+	1119.47	4^+				
454.99 *5*	100.0	455.03	2^+	0.0	0^+	E2		0.00428	α(K)=0.00378 *6*; α(L)=0.000421 *6*; α(M)=6.81×10^{-5} *10*; α(N+..)=6.75×10^{-6} *10* α(N)=6.75×10^{-6} *10*
562.15 *5*	0.35 *10*	1017.20	0^+	455.03	2^+	E2		0.00225	α(K)=0.00199 *3*; α(L)=0.000219 *3*; α(M)=3.54×10^{-5} *5*; α(N+..)=3.53×10^{-6} *5* α(N)=3.53×10^{-6} *5*
607.94 *8*	0.04 *2*	1755.85	2^+	1147.90	2^+				
611.37 *8*	1.26 *8*	3361.14	$4^-,5^-,6^-$	2749.76	5^-	M1		1.35×10^{-3}	α(K)exp=0.00121 *5* α(K)=0.001201 *17*; α(L)=0.0001281 *18*; α(M)=2.07×10^{-5} *3*; α(N+..)=2.10×10^{-6} *3* α(N)=2.10×10^{-6} *3*
636.27 *10*	0.11 *3*	1755.85	2^+	1119.47	4^+				
664.42 *5*	47.3 *5*	1119.47	4^+	455.03	2^+	E2		1.40×10^{-3}	α(K)=0.001240 *18*; α(L)=0.0001350 *19*; α(M)=2.18×10^{-5} *3*; α(N+..)=2.19×10^{-6} *3* α(N)=2.19×10^{-6} *3* (664γ)(455γ)(θ): A_2=+0.11 *4*, A_4=+0.03 *7* (1974Sa32); consistent with J=3, 4 for 1119 level.
675.89 *9*	0.08 *2*	2240.69	$(1,2)^+$	1564.76	3^+				
687.55 *8*	0.04 *2*	2443.37	$(1,2)^+$	1755.85	2^+	E2,M1		0.00116 *12*	α(K)=0.00103 *11*; α(L)=0.000110 *13*; α(M)=1.79×10^{-5} *20*; α(N+..)=1.80×10^{-6} *19* α(N)=1.80×10^{-6} *19*
692.88 *5*	15.13 *17*	1147.90	2^+	455.03	2^+	M1+E2	+0.45 *10*	1.06×10^{-3} *2*	α(K)=0.000941 *19*; α(L)=0.0001006 *21*; α(M)=1.63×10^{-5} *4*; α(N+..)=1.64×10^{-6} *4* α(N)=1.64×10^{-6} *4*
725.06 *8*	7.70 *22*	1872.92	4^+	1147.90	2^+	E2		1.10×10^{-3}	α(K)=0.000980 *14*; α(L)=0.0001061 *15*; α(M)=1.717×10^{-5} *24*; α(N+..)=1.722×10^{-6} *25* α(N)=1.722×10^{-6} *25*
734.98 *5*	1.83 *10*	2299.77	5^+	1564.76	3^+	E2		1.07×10^{-3}	α(K)=0.000945 *14*; α(L)=0.0001023 *15*; α(M)=1.655×10^{-5} *24*; α(N+..)=1.660×10^{-6} *24* α(N)=1.660×10^{-6} *24*

γ(^{78}Kr) (continued)

E_γ	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	δ	α#	Comments
738.66 *5*	0.47 *7*	1755.85	2^+	1017.20	0^+				
753.37 *8*	4.81 *12*	1872.92	4^+	1119.47	4^+	E2+M1	+3.2 *+23−12*	9.85×10^{-4} *22*	α(K)exp=0.000889 *22* α(K)=0.000874 *19*; α(L)=9.44×10^{-5} *22*; α(M)=1.53×10^{-5} *4*; α(N+..)=1.53×10^{-6} *4* α(N)=1.53×10^{-6} *4*
771.95 *7*	0.54 *5*	2749.76	5^-	1977.81	6^+				
848.58 *15*	0.81 *6*	2413.44	$2^+,3^+,4^+$	1564.76	3^+	M1,E2		0.00070 *5*	α(K)exp=0.00066 *17* α(K)=0.00062 *4*; α(L)=6.6×10^{-5} *5*; α(M)=1.07×10^{-5} *7*; α(N+..)=1.08×10^{-6} *7* α(N)=1.08×10^{-6} *7*
858.33 *10*	2.47 *7*	1977.81	6^+	1119.47	4^+	E2		7.16×10^{-4}	α(K)=0.000635 *9*; α(L)=6.83×10^{-5} *10*; α(M)=1.105×10^{-5} *16*; α(N+..)=1.111×10^{-6} *16* α(N)=1.111×10^{-6} *16*
1086.79 *7*	0.87 *5*	3064.61	$(5)^-$	1977.81	6^+	E1		1.82×10^{-4}	α(K)exp=0.00016 *3* α(K)=0.0001624 *23*; α(L)=1.704×10^{-5} *24*; α(M)=2.75×10^{-6} *4*; α(N+..)=2.79×10^{-7} *4* α(N)=2.79×10^{-7} *4*
1096.02 *15*	1.08 *5*	3669.22	$3^-,4^-$	2573.34	$1^-,2^-,3^-$	M1,E2		3.92×10^{-4} *11*	α(K)exp=0.00033 *3* α(K)=0.000349 *10*; α(L)=3.70×10^{-5} *12*; α(M)=5.98×10^{-6} *19*; α(N+..)=6.05×10^{-7} *18* α(N)=6.05×10^{-7} *18*
1109.72 *5*	16.17 *25*	1564.76	3^+	455.03	2^+				
1147.87 *5*	9.57 *15*	1147.90	2^+	0.0	0^+				
1180.35 *7*	0.86 *4*	2299.77	5^+	1119.47	4^+	E2+M1	+2 *1*	3.44×10^{-4} *7*	α(K)exp=0.00030 *5* α(K)=0.000301 *6*; α(L)=3.19×10^{-5} *6*; α(M)=5.16×10^{-6} *10*; α(N+..)=6.0×10^{-6} *5* α(N)=5.21×10^{-7} *10*; α(IPF)=5.4×10^{-6} *5*
1199.33@ *5*	8.3@ *2*	2764.10	$(4)^-$	1564.76	3^+	E1		1.97×10^{-4}	α(K)exp=0.000132 *5* α(K)=0.0001357 *19*; α(L)=1.421×10^{-5} *20*; α(M)=2.30×10^{-6} *4*; α(N+..)=4.50×10^{-5} *7* α(N)=2.33×10^{-7} *4*; α(IPF)=4.48×10^{-5} *7* I_γ: two placements and intensity division based on In-beam γ-ray data of 1999Su02 In ^{58}Ni(^{23}Na,3pγ) reaction. 1981Ba40 proposed only the placement from 2764 level. Total Iγ=8.89 *20* (1981Ba40). Placement from 3774 level proposed by 1999Su02 is not consistent with level-energy difference, thus it is not included here.
1199.33@ *5*	≈0.6@	3072.32	(5^-)	1872.92	4^+				
1232.44 *7*	1.64 *4*	3105.37	$3^-,4^-,5^-$	1872.92	4^+	E1		2.11×10^{-4}	α(K)exp=0.000131 *10*

From ENSDF

$^{78}_{36}$Kr$_{42}$-5

γ(^{78}Kr) (continued)

E_γ	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	δ	α#	Comments
									α(K)=0.0001292 *18*; α(L)=1.354×10^{-5} *19*; α(M)=2.19×10^{-6} *3*; α(N+..)=6.61×10^{-5} *10* α(N)=2.21×10^{-7} *4*; α(IPF)=6.59×10^{-5} *10*
1265.63 *15*	1.54 *7*	2413.44	2$^+$,3$^+$,4$^+$	1147.90	2$^+$	M1,E2		3.07×10^{-4} *8*	α(K)exp=0.000240 *14* α(K)=0.000257 *5*; α(L)=2.72×10^{-5} *6*; α(M)=4.40×10^{-6} *9*; α(N+..)=1.82×10^{-5} *24* α(N)=4.45×10^{-7} *9*; α(IPF)=1.77×10^{-5} *24*
1270.17 *6*	1.67 *7*	3669.22	3$^-$,4$^-$	2399.02	3$^-$	M1		3.00×10^{-4}	α(K)exp=0.000238 *14* α(K)=0.000252 *4*; α(L)=2.66×10^{-5} *4*; α(M)=4.30×10^{-6} *6*; α(N+..)=1.660×10^{-5} *24* α(N)=4.36×10^{-7} *7*; α(IPF)=1.616×10^{-5} *23*
1288.45 *15*	0.71 *7*	3161.18	3$^-$	1872.92	4$^+$	E1		2.38×10^{-4}	α(K)exp=0.000146 *17* α(K)=0.0001195 *17*; α(L)=1.251×10^{-5} *18*; α(M)=2.02×10^{-6} *3*; α(N+..)=0.0001043 *15* α(N)=2.05×10^{-7} *3*; α(IPF)=0.0001041 *15*
1295.45 *8*	0.04 *2*	2443.37	(1,2)$^+$	1147.90	2$^+$	M1,E2		2.99×10^{-4} *8*	α(K)=0.000245 *5*; α(L)=2.59×10^{-5} *5*; α(M)=4.19×10^{-6} *9*; α(N+..)=2.4×10^{-5} *3* α(N)=4.24×10^{-7} *8*; α(IPF)=2.4×10^{-5} *3*
1300.83 *5*	0.93 *13*	1755.85	2$^+$	455.03	2$^+$	M1+E2	−1.32 *+12−55*	3.00×10^{-4}	α(K)=0.000244 *4*; α(L)=2.58×10^{-5} *4*; α(M)=4.17×10^{-6} *6*; α(N+..)=2.60×10^{-5} *10* α(N)=4.22×10^{-7} *6*; α(IPF)=2.55×10^{-5} *10*
1317.90 *5*	0.89 *5*	1772.93	(1,2)$^+$	455.03	2$^+$	M1,E2		2.94×10^{-4} *8*	α(K)exp=0.00021 *7* α(K)=0.000237 *4*; α(L)=2.50×10^{-5} *5*; α(M)=4.04×10^{-6} *8*; α(N+..)=2.9×10^{-5} *4* α(N)=4.09×10^{-7} *8*; α(IPF)=2.8×10^{-5} *4*
1326.48 *9*	0.49 *6*	3725.49	3$^+$,4$^+$	2399.02	3$^-$	E1		2.57×10^{-4}	α(K)exp=0.000130 *26* α(K)=0.0001136 *16*; α(L)=1.189×10^{-5} *17*; α(M)=1.92×10^{-6} *3*; α(N+..)=0.0001294 *19* α(N)=1.95×10^{-7} *3*; α(IPF)=0.0001292 *18*
1350.11 *8*	0.76 *7*	3749.15	(3,4,5$^-$)	2399.02	3$^-$				
1360.63 *7*	0.77 *5*	3233.55	3$^-$,4$^-$	1872.92	4$^+$	E1		2.73×10^{-4}	α(K)exp=0.000062 *23* α(K)=0.0001087 *16*; α(L)=1.138×10^{-5} *16*; α(M)=1.84×10^{-6} *3*; α(N+..)=0.0001510 *22* α(N)=1.86×10^{-7} *3*; α(IPF)=0.0001509 *22*
1375.61 *12*	1.51 *7*	3774.61	(3)$^-$	2399.02	3$^-$	M1,E2		2.85×10^{-4} *8*	α(K)exp=0.000193 *12* α(K)=0.000217 *4*; α(L)=2.29×10^{-5} *4*; α(M)=3.70×10^{-6} *7*; α(N+..)=4.1×10^{-5} *5* α(N)=3.75×10^{-7} *7*; α(IPF)=4.1×10^{-5} *5*
1417.90 *8*	1.17 *7*	1872.92	4$^+$	455.03	2$^+$	E2		2.88×10^{-4}	α(K)exp=0.00019 *4* α(K)=0.000205 *3*; α(L)=2.17×10^{-5} *3*; α(M)=3.51×10^{-6} *5*; α(N+..)=5.78×10^{-5} *8* α(N)=3.55×10^{-7} *5*; α(IPF)=5.75×10^{-5} *8*

γ(^{78}Kr) (continued)

E_γ	I_γ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	α#	Comments
1425.56 *14*	0.75 *7*	2573.34	$1^-,2^-,3^-$	1147.90	2^+	E1	3.06×10^{-4}	α(K)exp=0.00011 *3* α(K)=0.0001005 *14*; α(L)=1.051×10^{-5} *15*; α(M)=1.698×10^{-6} *24*; α(N+..)=0.000193 *3* α(N)=1.720×10^{-7} *24*; α(IPF)=0.000193 *3*
1529.81 *12*	2.19 *6*	2677.64	3^-	1147.90	2^+	E1	3.72×10^{-4}	α(K)exp=0.000085 *23* α(K)=8.94×10^{-5} *13*; α(L)=9.34×10^{-6} *13*; α(M)=1.509×10^{-6} *22*; α(N+..)=0.000272 *4* α(N)=1.528×10^{-7} *22*; α(IPF)=0.000272 *4*
1630.28 *6*	6.12 *15*	2749.76	5^-	1119.47	4^+			
1644.61 *5*	8.76 *20*	2764.10	$(4)^-$	1119.47	4^+	E1	4.53×10^{-4}	α(K)exp=0.000083 *7* α(K)=7.95×10^{-5} *12*; α(L)=8.29×10^{-6} *12*; α(M)=1.341×10^{-6} *19*; α(N+..)=0.000364 *5* α(N)=1.358×10^{-7} *19*; α(IPF)=0.000364 *5*
1668.61 *15*	1.16 *7*	3233.55	$3^-,4^-$	1564.76	3^+	E1	4.70×10^{-4}	α(K)exp=0.00008 *4* α(K)=7.76×10^{-5} *11*; α(L)=8.10×10^{-6} *12*; α(M)=1.310×10^{-6} *19*; α(N+..)=0.000383 *6* α(N)=1.327×10^{-7} *19*; α(IPF)=0.000383 *6*
1755.94 *10*	0.24 *5*	1755.85	2^+	0.0	0^+			
1767.05 *8*	0.04 *2*	4007.79?	(1)	2240.69	$(1,2)^+$			
1772.89 *5*	0.21 *4*	1772.93	$(1,2)^+$	0.0	0^+			
1779.11 *5*	1.16 *4*	2234.16	$(0\text{ to }4)^+$	455.03	2^+	M1,E2	3.35×10^{-4} *18*	α(K)exp=0.00015 *4* α(K)=0.0001312 *19*; α(L)=1.377×10^{-5} *20*; α(M)=2.23×10^{-6} *4*; α(N+..)=0.000188 *17* α(N)=2.26×10^{-7} *4*; α(IPF)=0.000187 *17*
1785.55 *12*	0.19 *4*	2240.69	$(1,2)^+$	455.03	2^+			
1796.25 *9*	1.65 *12*	3669.22	$3^-,4^-$	1872.92	4^+			
1844.66 *7*	0.15 *3*	2992.54		1147.90	2^+			
1852.55@ *12*	1.3@ *2*	2999.36	3^-	1147.90	2^+			
1852.55@ *6*	2.5@ *2*	3725.49	$3^+,4^+$	1872.92	4^+	(M1,E2)	3.56×10^{-4} *20*	α(K)exp=0.000117 *21* α(K)=0.0001216 *18*; α(L)=1.275×10^{-5} *19*; α(M)=2.06×10^{-6} *3*; α(N+..)=0.000220 *19* α(N)=2.09×10^{-7} *3*; α(IPF)=0.000220 *19* I_γ: two placements and intensity division based on In-beam γ-ray data of 1999Su02 In ^{58}Ni(^{23}Na,3pγ) reaction. 1981Ba40 proposed only the placement from 3725 level. Total Iγ=3.77 *25* (1981Ba40).
1879.87 *7*	1.71 *7*	2999.36	3^-	1119.47	4^+	E1	6.12×10^{-4}	α(K)exp=0.00007 *3* α(K)=6.44×10^{-5} *9*; α(L)=6.71×10^{-6} *10*; α(M)=1.085×10^{-6} *16*; α(N+..)=0.000540 *8* α(N)=1.100×10^{-7} *16*; α(IPF)=0.000540 *8*
1901.79 *15*	0.74 *5*	3774.61	$(3)^-$	1872.92	4^+			
1943.97 *5*	8.33 *20*	2399.02	3^-	455.03	2^+			
1952.91 *6*	2.12 *7*	3072.32	(5^-)	1119.47	4^+			

From ENSDF

γ(^{78}Kr) (continued)

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[#]	Comments
1988.20 *15*	0.06 *3*	2443.37	(1,2)$^+$	455.03	2$^+$	M1,E2	4.01×10^{-4} *23*	α(K)=0.0001066 *15*; α(L)=1.118×10^{-5} *16*; α(M)=1.81×10^{-6} *3*; α(N+..)=0.000282 *22* α(N)=1.83×10^{-7} *3*; α(IPF)=0.000282 *22*
2000.45 *12*	0.02 *1*	4007.79?	(1)	2007.31?				
2013.25 *6*	3.88 *13*	3161.18	3$^-$	1147.90	2$^+$	E1	7.01×10^{-4}	α(K)exp=0.000054 *7* α(K)=5.80×10^{-5} *9*; α(L)=6.05×10^{-6} *9*; α(M)=9.77×10^{-7} *14*; α(N+..)=0.000636 *9* α(N)=9.90×10^{-8} *14*; α(IPF)=0.000636 *9*
2041.52 *15*	1.10 *5*	3161.18	3$^-$	1119.47	4$^+$			
2052.96 *8*	0.12 *3*	2508.02		455.03	2$^+$			
2114.07 *7*	1.02 *6*	3233.55	3$^-$,4$^-$	1119.47	4$^+$	E1	7.67×10^{-4}	α(K)exp=0.000053 *7* α(K)=5.40×10^{-5} *8*; α(L)=5.62×10^{-6} *8*; α(M)=9.08×10^{-7} *13*; α(N+..)=0.000707 *10* α(N)=9.20×10^{-8} *13*; α(IPF)=0.000707 *10*
2118.28 *8*	2.06 *10*	2573.34	1$^-$,2$^-$,3$^-$	455.03	2$^+$			
2209.76 *8*	0.98 *7*	3774.61	(3)$^-$	1564.76	3$^+$			
2222.49 *12*	1.15 *7*	2677.64	3$^-$	455.03	2$^+$			
2240.69 *7*	0.31 *5*	2240.69	(1,2)$^+$	0.0	0$^+$			
2427.00 *8*	1.03 *10*	2882.07	3$^-$	455.03	2$^+$			
2443.32 *8*	0.05 *2*	2443.37	(1,2)$^+$	0.0	0$^+$			
2537.37 *11*	0.10 *2*	2992.54		455.03	2$^+$			
2626.86 *13*	3.51 *13*	3774.61	(3)$^-$	1147.90	2$^+$			
2654.97 *12*	1.44 *6*	3774.61	(3)$^-$	1119.47	4$^+$			
2990.38 *12*	0.08 *3*	4007.79?	(1)	1017.20	0$^+$			
3270.35 *9*	0.82 *5*	3725.49	3$^+$,4$^+$	455.03	2$^+$			
3319.50 *7*	3.57 *11*	3774.61	(3)$^-$	455.03	2$^+$			
3552.70 *9*	0.06 *2*	4007.79?	(1)	455.03	2$^+$			
4007.77 *9*	0.03 *1*	4007.79?	(1)	0.0	0$^+$			

† From measured α(K)exp values of 1995Gi13, some of the α(K)exp values are measured in the decay of 17.66-min activity of ^{78}Rb.

‡ For absolute intensity per 100 decays, multiply by 0.82 *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.

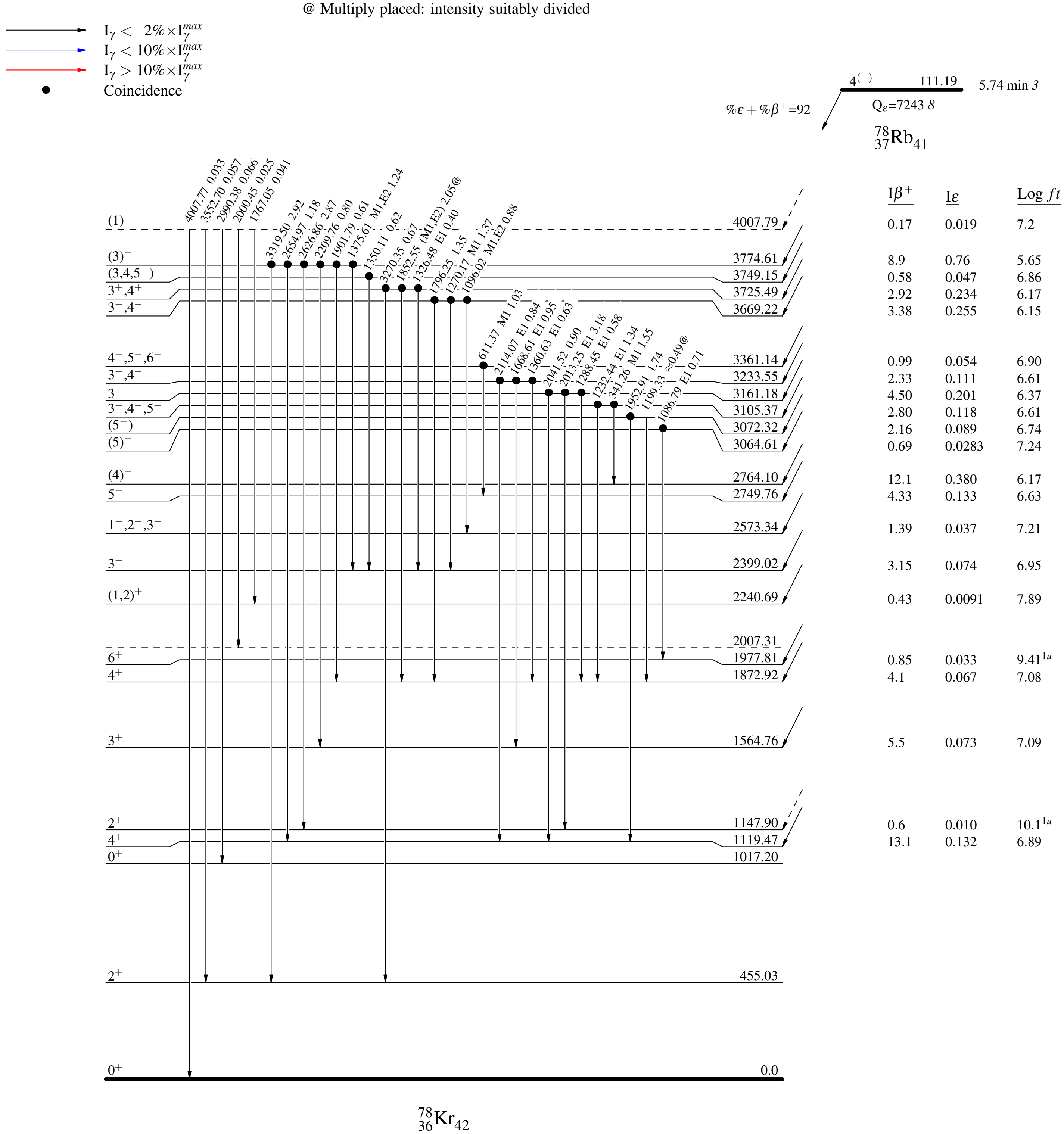
@ Multiply placed with intensity suitably divided.

^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13

Decay Scheme

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

@ Multiply placed: intensity suitably divided



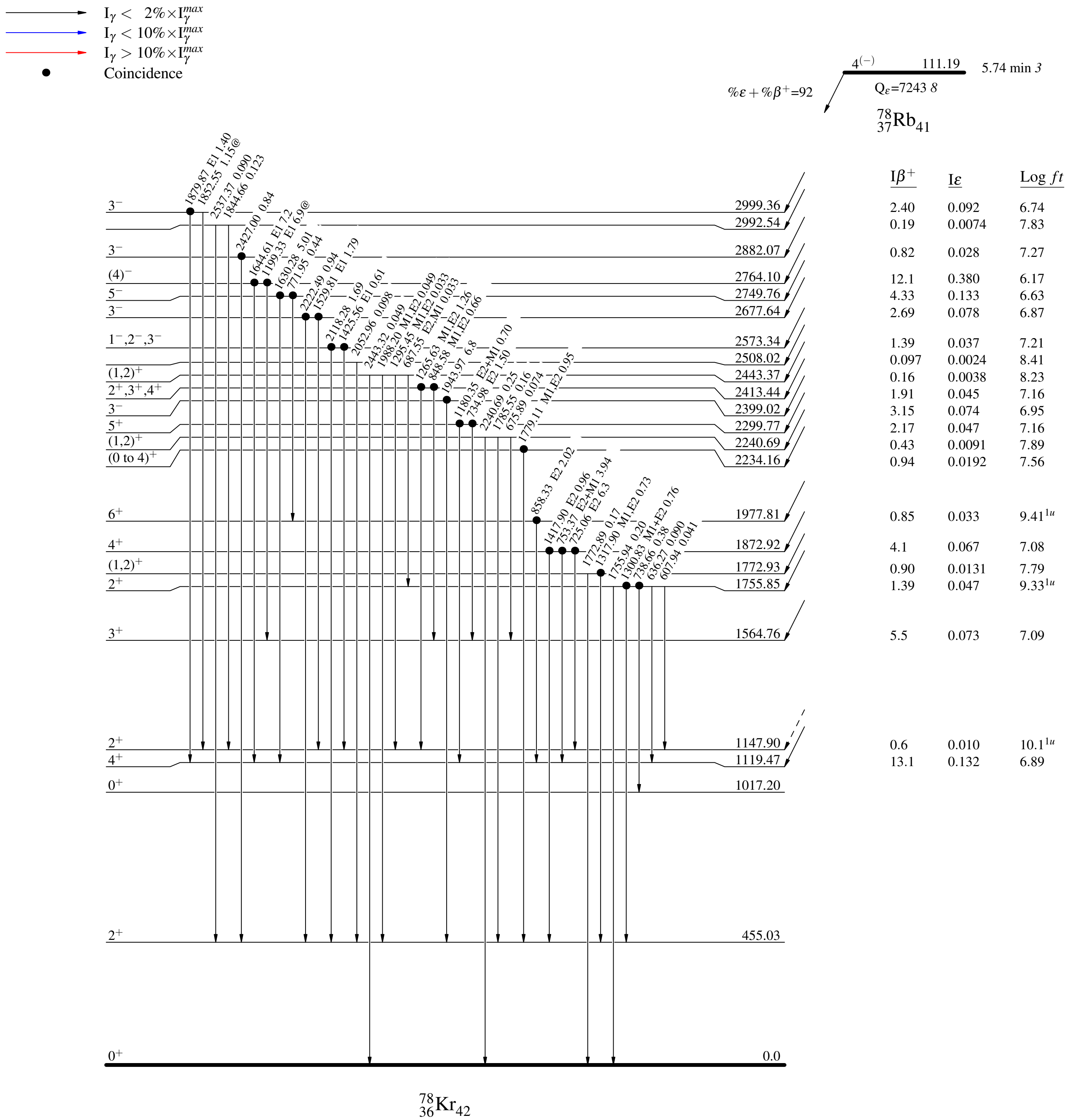
^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13

Decay Scheme (continued)

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

@ Multiply placed: intensity suitably divided

Legend



^{78}Rb ε decay (5.74 min) 1981Ba40,1995Gi13

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided