^{82}Br β^- decay (35.282 h) 2011Kr06,1994Go12,1983Me08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne	NDS 157, 260 (2019)	1-Mar-2019

Parent: ^{82}Br: E=0; $J^\pi=5^-$; $T_{1/2}$=35.282 h *7*; Q(β^-)=3093.0 *10*; %β^- decay=100.0

Based on XUNDL compiled dataset from 2011Kr06 by B. Singh (McMaster); Jan 12, 2011.

2011Kr06: ^{82}Br source produced by neutron irradiation of NH_4Br powder at Oregon State University Triga reactor. The γ rays were observed by a Ge detector, and the γ-ray spectra were analyzed using SAMPO code. Minimum uncertainty is set at 10 eV for Eγ; 2% in intensity for Eγ<200 keV and 1% for Eγ>200 keV.

1994Go12: Measured γ (HPGe, FWHM=1.8 at 1332), K x ray (Si(Li), FWHM=0.18 at 5.96), ce (s, FWHM=1.8 at 624.5), $\gamma\gamma$, $\gamma\gamma(\theta)$.

1983Me08: Measured Eγ, Iγ, $\gamma\gamma$, Ge(Li).

1979Gr01: Precision measurement of Eγ, Ge(Li).

1977Ge12: Precision measurement of Iγ, Ge(Li).

1977Ca26: Measured anisotropy of γ's emitted by oriented nuclei. Deduced δ.

1958Be81, 1956Wa24: Measured ce, S. Deduced α(exp).

Others: 1980So06, 1971Ge07, 1970Me02, 1969Li14.

Decay scheme from 1994Go12,1983Me08 with Eγ, Iγ from 2011Kr06, unless given otherwise.

^{82}Kr Levels

E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡
0	0^+	1956.770 *11*	(2^+)	2547.446 *12*	(3^-)
776.528 *8*	2^+	2094.017 *9*	3^+	2556.184 *9*	(4^+)
1474.895 *8*	2^+	2171.5?	0^+	2648.368 *9*	4^-
1820.537 *9*	4^+	2426.899 *9*	(4^+)	2828.140 *11*	$5^{(-)}$
				2920.4?	(6^+)

† From least-squares fit to Eγ, level energies are about 0.02 keV lower in 2011Kr06.

‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(172.6# *10*)	2920.4?	<0.002	>8.4	av Eβ=47.48 *30*
(264.9 *10*)	2828.140	1.42 *2*	6.139 *9*	av Eβ=76.32 *33*
(444.6 *10*)	2648.368	99.1 *13*	5.047 *7*	av Eβ=137.92 *36*
(536.8# *10*)	2556.184	<0.04	>8.7	av Eβ=171.76 *38*
(545.6# *10*)	2547.446	<0.004	>9.7	av Eβ=175.03 *38*
(666.1# *10*)	2426.899			
(921.5# *10*)	2171.5?	<0.006	>10.4	av Eβ=324.28 *42*
(999.0# *10*)	2094.017	<0.7	>9.0[1u]	av Eβ=378.08 *42*
(1136.2# *10*)	1956.770	<0.024	>10.1	av Eβ=415.14 *43*
(1272.5# *10*)	1820.537	<0.4	>9.1	av Eβ=474.26 *44*
(1618.1# *10*)	1474.895	<0.6	>9.3	av Eβ=628.09 *46*
(2316.5# *10*)	776.528	<0.7	>9.9	av Eβ=949.68 *47*

† From intensity imbalance.

‡ Absolute intensity per 100 decays.

Existence of this branch is questionable.

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$\gamma(^{82}Kr)$

Iγ normalization: ΣI(γ+ce) to g.s.=100. No β feeding is expected to g.s.
For summary of γγ(θ) measurements see 1994Go12.
Measured E(K x ray(α))=12.6, I(x ray)=0.370 *12*; E(K x ray(β))=14.2 I(x ray)=0.052 *8* (1994Go12).

E_γ †	I_γ †b	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡a	α&	Comments
92.188 *10*	0.86 *2*	2648.368	4−	2556.184	(4+)	[E1]		0.1147	α(K)=0.1017 *15*; α(L)=0.01103 *16*; α(M)=0.001770 *25* α(N)=0.0001734 *25*
100.948 *16*	0.074 *2*	2648.368	4−	2547.446	(3−)	[M1+E2]		0.51 *39*	α(K)=0.44 *33*; α(L)=0.063 *51*; α(M)=0.0101 *82* α(N)=9.3×10^{-4} *73*
129.34 *3*	0.014 *1*	2556.184	(4+)	2426.899	(4+)	[M1+E2]		0.21 *15*	α(K)=0.18 *13*; α(L)=0.024 *18*; α(M)=0.0039 *29* α(N)=3.6×10^{-4} *27*
137.244 *10*	0.110 *2*	2094.017	3+	1956.770	(2+)	[M1+E2]		0.17 *12*	α(K)=0.15 *10*; α(L)=0.019 *14*; α(M)=0.0031 *23* α(N)=2.9×10^{-4} *21*
179.80 *4*	0.010 *1*	2828.140	5(−)	2648.368	4−	[M1+E2]		0.066 *40*	α(K)=0.058 *35*; α(L)=0.0071 *45*; α(M)=0.00114 *72* α(N)=1.10×10^{-4} *68*
x182.84@ *4*	0.014 *1*								Eγ: this γ may deexcite a level at 3010.97 keV *4* to 2828.1-keV level.
214.8#c	<0.004	2171.5?	0+	1956.770	(2+)				
221.478 *10*	2.73 *3*	2648.368	4−	2426.899	(4+)	(E1(+M2))	+0.0 *4*	0.009 *11*	α(K)=0.0077 *93*; α(L)=8.E−4 *12*; α(M)=1.3×10^{-4} *19* α(N)=1.3×10^{-5} *19*
271.96@ *5*	0.0220 *24*	2828.140	5(−)	2556.184	(4+)				
273.492 *10*	0.96 *1*	2094.017	3+	1820.537	4+	(M1+E2)	+0.3 *1*	0.0103 *8*	α(K)=0.0092 *7*; α(L)=0.00101 *9*; α(M)=0.000164 *14* α(N)=1.64×10^{-5} *14* δ: 0.2<δ<0.4 (1994Go12).
280.73c *6*	0.0106 *15*	2828.140	5(−)	2547.446	(3−)				
332.78 *9*	0.0088 *14*	2426.899	(4+)	2094.017	3+	[M1+E2]		0.0088 *32*	α(K)=0.0078 *28*; α(L)=8.7×10^{-4} *33*; α(M)=1.41×10^{-4} *53* α(N)=1.39×10^{-5} *51*
401.249 *13*	0.103 *1*	2828.140	5(−)	2426.899	(4+)				
470.07c *3*	0.026 *2*	2426.899	(4+)	1956.770	(2+)				
554.352 *10*	85.8 *9*	2648.368	4−	2094.017	3+	E1(+M2)	−0.02 *2*	7.59×10^{-4} *12*	α(K)=0.000675 *11*; α(L)=7.15×10^{-5} *12*; α(M)=1.155×10^{-5} *19* α(N)=1.163×10^{-6} *19* α(K)exp=0.0030 *3* (1995Go12)
599.29 *9*	0.0092 *14*	2556.184	(4+)	1956.770	(2+)				
606.358 *10*	1.47 *1*	2426.899	(4+)	1820.537	4+	(M1+E2)		0.00159 *22*	α(K)=0.00141 *19*; α(L)=0.000153 *23*; α(M)=2.5×10^{-5} *4* α(N)=2.5×10^{-6} *4* δ: 0.16 *3* or - 1.32 *9* (1994Go12).

^{82}Br β^- decay (35.282 h) 2011Kr06,1994Go12,1983Me08 (continued)

$\gamma(^{82}Kr)$ (continued)

E_γ [†]	I_γ [†b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡a]	α[&]	Comments
619.105 *10*	52.3 *5*	2094.017	3^+	1474.895	2^+	E2(+M1)	+2.1 *+8–6*	0.00163 *6*	α(K)=0.00145 *5*; α(L)=0.000157 *6*; α(M)=2.55×10^{-5} *9* α(N)=2.55×10^{-6} *9* α(K)exp=0.00110 *5* (1995Go12); α(L+...)exp=3.0×10^{-4} *4* (1995Go12) δ: other: 2.2 *4* from oriented nuclei (1976Ca26).
698.361 *10*	34.0 *3*	1474.895	2^+	776.528	2^+	E2+M1	+1.5 *+9–5*	0.00115 *5*	α(K)=0.00102 *4*; α(L)=0.000111 *5*; α(M)=1.79×10^{-5} *8* α(N)=1.80×10^{-6} *8* α(K)exp=0.00099 *12* (1995Go12); α(L+...)exp=1.0×10^{-4} *4* (1995Go12) δ: other: 2.7 *3* from oriented nuclei (1976Ca26).
735.645 *12*	0.076 *1*	2556.184	(4^+)	1820.537	4^+				
776.511 *10*	100 *1*	776.528	2^+	0	0^+	E2		9.23×10^{-4}	α(K)=0.000819 *12*; α(L)=8.84×10^{-5} *13*; α(M)=1.430×10^{-5} *20* α(N)=1.436×10^{-6} *21* α(K)exp=0.00082 *4* (1995Go12); α(L+...)exp=0.72×10^{-4} *13* (1995Go12)
827.826 *10*	28.9 *3*	2648.368	4^-	1820.537	4^+	E1(+M2)	−0.02 *6*	3.12×10^{-4} *10*	α(K)exp=0.00082 *4* (1995Go12); α(L+...)exp=1.0×10^{-4} *4* (1995Go12) α(K)=0.000277 *9*; α(L)=2.92×10^{-5} *10*; α(M)=4.72×10^{-6} *15* α(N)=4.77×10^{-7} *16*
[x]932.1[#]	<0.003								
952.029 *10*	0.452 *5*	2426.899	(4^+)	1474.895	2^+				E_γ: poor fit. Level-energy difference=951.999.
1007.589 *10*	1.56 *2*	2828.140	$5^{(-)}$	1820.537	4^+	(E1(+M2))	+0.03 *+60–3*	2.1×10^{-4} *25*	α(K)=1.9×10^{-4} *22*; α(L)=2.0×10^{-5} *24*; α(M)=3.2×10^{-6} *38* α(N)=3.2×10^{-7} *38*
1044.005 *10*	33.0 *3*	1820.537	4^+	776.528	2^+	E2+M3	−0.08 *5*	4.58×10^{-4} *18*	α(N)=7.1×10^{-7} *3* α(K)exp=0.00082 *4* (1995Go12); α(L+...)exp=1.0×10^{-4} *4* (1995Go12) α(K)=0.000407 *16*; α(L)=4.35×10^{-5} *17*; α(M)=7.0×10^{-6} *3*
1072.554 *10*	0.086 *1*	2547.446	(3^-)	1474.895	2^+				
1081.288 *10*	0.770 *8*	2556.184	(4^+)	1474.895	2^+				
1099.9[#c]	<0.003	2920.4?	(6^+)	1820.537	4^+				
1173.432 *13*	0.016 *2*	2648.368	4^-	1474.895	2^+				E_γ: level-energy difference=1173.465.
1180.209 *24*	0.106 *1*	1956.770	(2^+)	776.528	2^+				
1317.485 *10*	32.2 *3*	2094.017	3^+	776.528	2^+	E2+M1	+5.0 *5*	3.00×10^{-4}	α(K)=0.000239 *4*; α(L)=2.53×10^{-5} *4*; α(M)=4.09×10^{-6} *6* α(N)=4.13×10^{-7} *6*; α(IPF)=3.14×10^{-5} *5*

$^{82}_{36}Kr_{46}$-3

^{82}Br β^- decay (35.282 h) 2011Kr06,1994Go12,1983Me08 (continued)

$\gamma(^{82}Kr)$ (continued)

E_γ [†]	I_γ [†b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡a]	α[&]	Comments
									α(K)exp=0.000253 *19* (1995Go12) δ: other: 3.1 *6* from oriented nuclei (1976Ca26).
1395.2[#c]	<0.003	2171.5?	0^+	776.528	2^+				
[x]1426.0[#]	<0.004								
1474.895 *10*	19.6 *2*	1474.895	2^+	0	0^+	E2		2.89×10^{-4}	α(K)=0.000190 *3*; α(L)=2.00×10^{-5} *3*; α(M)=3.24×10^{-6} *5* α(N)=3.27×10^{-7} *5*; α(IPF)=7.58×10^{-5} *11* α(K)exp=0.000197 *24* (1995Go12)
1650.346 *10*	0.884 *9*	2426.899	(4^+)	776.528	2^+	(E2+(M3))	−0.07 *5*	3.19×10^{-4} *6*	α(K)=0.000154 *4*; α(L)=1.62×10^{-5} *5*; α(M)=2.62×10^{-6} *7* α(N)=2.65×10^{-7} *7*; α(IPF)=0.0001466 *24*
1779.623 *13*	0.133 *1*	2556.184	(4^+)	776.528	2^+				
1871.807 *15*	0.041 *2*	2648.368	4^-	776.528	2^+				δ: 0.0 *8* or 1.6 (1994Go12).
1956.740 *21*	0.046 *1*	1956.770	(2^+)	0	0^+				

[†] From 2011Kr06, unless given otherwise.
[‡] From ce,$\gamma\gamma(\theta)$ In 1994Go12.
[#] No evidence of this γ in 2011Kr06, an upper limit of intensity is given.
[@] New γ ray reported in 2011Kr06.
[&] Additional information 1.
[a] If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[b] For absolute intensity per 100 decays, multiply by 0.836 *8*.
[c] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{82}_{36}Kr_{46}$-4

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Decay Scheme

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