^{74}Kr ε decay (11.50 min) 1975Sc07,1974Co38,1974Ro11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Ameenah R. Farhan	NDS 107, 1923 (2006)	30-Apr-2006

Parent: ^{74}Kr: E=0.0; $J^\pi=0^+$; $T_{1/2}$=11.50 min *11*; Q(ε)=2975 *15*; %ε+%$β^+$ decay=100.0

1975Sc07, 1974Co38, 1974Ro11: Measured Eγ, Iγ, γγ, γβ+ coin.

2004Po08 (also 2004Co29,2003Ma69): Measured β strength functions using total absorption gamma spectrometer (TAGS).

The level scheme is mainly from 1975Sc07.

Others:

γ′s: 1973DaYM.

γβ+: 1973HoYM, 1960Bu22, 1960Gr19.

Additional information 1.

^{74}Br Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	(0⁻)	179.5 *4*	(1)	534.7 *6*	(1)	970.0 *4*	(1⁺)
9.84 *4*	(1⁻)	212.86 *6*	1⁺	609.11 *16*	(1⁺)	978.3 *8*	(1)
72.62 *7*	(2⁻)	239.32 *9*	(1)	612.9 *7*	(1)		
89.62 *7*	(1⁻)	306.55 *6*	1⁺	701.28 *17*	(1⁺)		
132.6? *2*	(1,2⁻)	390.06 *22*	(1)	831.8 *6*	(1)		

† From least-squares fit to Eγ′s.

‡ From 'Adopted Levels'.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
(1997 *15*)	978.3	0.19 *6*	0.31 *9*	5.8	0.50 *11*	av Eβ=424 *7*; εK=0.541 *11*; εL=0.0623 *13*; εM+=0.01249 *25*
(2005 *15*)	970.0	0.39 *12*	0.61 *18*	5.5	1.00 *22*	av Eβ=428 *7*; εK=0.535 *11*; εL=0.0617 *13*; εM+=0.01235 *25* I(ε+β+): 3.4 *3* for 970 and 978 levels (2004Po08).
(2143 *15*)	831.8	0.20 *7*	0.20 *7*	6.0	0.40 *10*	av Eβ=489 *7*; εK=0.442 *10*; εL=0.0508 *12*; εM+=0.01018 *23* I(ε+β+): 1.1 *1* (2004Po08).
(2274 *15*)	701.28	1.9 *4*	1.34 *25*	5.3	3.2 *5*	av Eβ=547 *7*; εK=0.364 *9*; εL=0.0418 *10*; εM+=0.00838 *20* I(ε+β+): 5.4 *5* (2004Po08).
(2362 *15*)	612.9	0.19 *7*	0.11 *4*	6.4	0.30 *8*	av Eβ=587 *7*; εK=0.318 *8*; εL=0.0366 *9*; εM+=0.00732 *17*
(2366 *15*)	609.11	2.0 *5*	1.10 *24*	5.4	3.1 *6*	av Eβ=588 *7*; εK=0.316 *8*; εL=0.0363 *9*; εM+=0.00728 *17* I(ε+β+): 3.7 *3* for 609 and 613 levels (2004Po08).
(2440 *15*)	534.7	0.61 *18*	0.29 *9*	6.0	0.90 *21*	av Eβ=622 *7*; εK=0.282 *7*; εL=0.0324 *8*; εM+=0.00649 *15* I(ε+β+): 0.68 *6* (2004Po08).
(2585 *15*)	390.06	0.34 *18*	0.12 *6*	6.4	0.46 *19*	av Eβ=687 *7*; εK=0.227 *6*; εL=0.0260 *6*; εM+=0.00521 *12* I(ε+β+): 0.06 *1* (2004Po08).
(2668 *15*)	306.55	32 *6*	9.4 *17*	4.6	41 *7*	av Eβ=725 *7*; εK=0.200 *5*; εL=0.0230 *6*; εM+=0.00460 *11* I(ε+β+): 46 *4* (2004Po08).
(2736# *15*)	239.32	<1.59	<0.41	>5.9	<2.0	av Eβ=756 *7*; εK=0.181 *4*; εL=0.0208 *5*; εM+=0.00417

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^{74}Kr ε decay (11.50 min) 1975Sc07,1974Co38,1974Ro11 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log ft	I(ε+β+)†‡	Comments
					10	
						I(ε+β+): 5.8 *5* (2004Po08).
(2762 *15*)	212.86	25 *5*	6.1 *12*	4.8	31 *6*	av Eβ=768 *7*; εK=0.175 *4*; εL=0.0200 *5*; εM+=0.00401 *9*
						I(ε+β+): 20 *2* (2004Po08).
(2796 *15*)	179.5	1.4 *6*	0.34 *14*	6.1	1.7 *7*	av Eβ=783 *7*; εK=0.166 *4*; εL=0.0191 *5*; εM+=0.00382 *9*
						I(ε+β+): 0.020 *2* (2004Po08).
(2842# *15*)	132.6?	0.65 *20*	0.14 *5*	6.4	0.79 *21*	av Eβ=804 *7*; εK=0.156 *4*; εL=0.0179 *4*; εM+=0.00358 *8*
						I(ε+β+): 0 (2004Po08).
(2885 *15*)	89.62	10 *4*	1.9 *8*	5.3	12 *4*	av Eβ=824 *7*; εK=0.147 *3*; εL=0.0168 *4*; εM+=0.00337 *8*
						I(ε+β+): 2.4 *2* (2004Po08).
(2902# *15*)	72.62	<1.67	<0.326	>6.1	<2.0	av Eβ=832 *7*; εK=0.143 *3*; εL=0.0164 *4*; εM+=0.00329 *7*
(2965# *15*)	9.84	<8.5	<1.5	>5.5	<10	av Eβ=861 *7*; εK=0.131 *3*; εL=0.0151 *4*; εM+=0.00302 *7*

† From total absorption spectroscopy, 2004Po08 obtain 11.4% 3 ε+β+ feeding to possible levels between 978 and 3000. The feeding to g.s. could not Be obtained In this experiment.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

γ(^{74}Br)

Iγ normalization: From I(β+β−)/I(89.78)=4.69, feeding to g.s., 9.8, and 72.6 levels is negligible. α′s have been included by assuming that the transitions are either dipole or E2. Above 350 keV α′s are negligible.

E_γ†	I_γ†&	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[a]	Comments
9.85 *4*	14 *4*	9.84	(1−)	0.0	(0−)	[M1]	11.9	
26.40‡ *15*	0.5 *2*	239.32	(1)	212.86	1+	[D]	4.5 *10*	
62.84 *10*	31 *3*	72.62	(2−)	9.84	(1−)	[M1,E2]	2.7 *23*	α(K)=2.2 *19*; α(L)=0.4 *4*; α(M)=0.06 *6*
67.29 *15*	4.7 *4*	306.55	1+	239.32	(1)	[D,E2]	2.1 *17*	
72.38 *20*	1.6@ *8*	72.62	(2−)	0.0	(0−)	[E2]	2.93	α(K)=2.44; α(L)=0.411; α(M)=0.0657
79.96 *20*	0.9 *2*	89.62	(1−)	9.84	(1−)	[M1,E2]	1.1 *9*	α(K)=0.9 *8*; α(L)=0.15 *13*; α(M)=0.023 *20*
83.6‡ *4*	0.4 *2*	390.06	(1)	306.55	1+	[D,E2]	1.0 *8*	
89.70 *10*	100	89.62	(1−)	0.0	(0−)	[M1]	0.156	α(K)=0.137; α(L)=0.015; α(M)=0.00245
89.7‡ *10*	3.0 *6*	179.5	(1)	89.62	(1−)	[D,E2]	0.7 *6*	
93.81 *10*	10.6 *7*	306.55	1+	212.86	1+	[M1,E2]	0.6 *5*	α(K)=0.5 *5*; α(L)=0.08 *7*; α(M)=0.012 *11*
123.36 *10*	27 *3*	212.86	1+	89.62	(1−)	[E1]	0.045	
x129.6#b *4*	7 *1*							
132.6‡b *2*	2.1 *2*	132.6?	(1,2−)	0.0	(0−)	[D,E2]	0.18 *13*	
140.27 *10*	26 *3*	212.86	1+	72.62	(2−)	[E1]	0.031	
149.72 *15*	6.9 *4*	239.32	(1)	89.62	(1−)	[D,E2]	0.12 *8*	
166.84 *25*	1.2 *4*	239.32	(1)	72.62	(2−)	[D,E2]	0.08 *5*	
179.3 *4*	1.1 *2*	179.5	(1)	0.0	(0−)	[D]	0.06 *4*	
202.98 *10*	58 *5*	212.86	1+	9.84	(1−)	[E1]	0.011	
210.0‡ *6*	0.30 *15*	390.06	(1)	179.5	(1)	[D,E2]	0.04 *2*	
212.75 *20*	3.1 *3*	212.86	1+	0.0	(0−)	[E1]	0.009	
216.90 *15*	26@ *7*	306.55	1+	89.62	(1−)	[E1]	0.01	
x225.1‡ *5*	0.9 *2*							
229.7 *5*	1.5@ *7*	239.32	(1)	9.84	(1−)	[D,E2]	0.028 *14*	

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^{74}Kr ε decay (11.50 min) 1975Sc07,1974Co38,1974Ro11 (continued)

γ(^{74}Br) (continued)

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[a]
233.88 *10*	14 *2*	306.55	1^+	72.62	(2^-)	[E1]	0.012
239.4 *6*	1.4@ *9*	239.32	(1)	0.0	(0^-)	[D]	0.024 *12*
296.67 *10*	32 *3*	306.55	1^+	9.84	(1^-)	[E1]	0.007
300.4 *3*	2.8 *4*	390.06	(1)	89.62	(1^-)	[D,E2]	0.011 *5*
306.51 *10*	30 *3*	306.55	1^+	0.0	(0^-)	[E1]	0.007
310.9 *5*	2.5 *4*	701.28	(1^+)	390.06	(1)	[D,E2]	0.010 *4*
369.7‡ *7*	1.0 *2*	609.11	(1^+)	239.32	(1)		
373.6‡ *7*	1.0 *3*	612.9	(1)	239.32	(1)		
396.0 *3*	2.6 *3*	609.11	(1^+)	212.86	1^+		
444.8‡ *10*	1.6 *3*	534.7	(1)	89.62	(1^-)		
488.9‡ *10*	0.8 *2*	701.28	(1^+)	212.86	1^+		
519.8 *5*	1.9 *4*	609.11	(1^+)	89.62	(1^-)		
524.4‡ *12*	0.25 *15*	534.7	(1)	9.84	(1^-)		
[x]530.5‡ *8*	0.6 *2*						
535.3 *10*	1.1 *3*	534.7	(1)	0.0	(0^-)		
536.0 *10*	1.1 *3*	609.11	(1^+)	72.62	(2^-)		
[x]606.5‡ *8*	0.8 *2*						
609.2 *2*	3.4 *4*	609.11	(1^+)	0.0	(0^-)		
611.5‡ *10*	0.6 *2*	701.28	(1^+)	89.62	(1^-)		
618.9‡ *6*	0.8 *2*	831.8	(1)	212.86	1^+		
628.8‡ *7*	0.8 *3*	701.28	(1^+)	72.62	(2^-)		
691.5‡ *7*	0.9 *2*	701.28	(1^+)	9.84	(1^-)		
701.3 *2*	4.7 *4*	701.28	(1^+)	0.0	(0^-)		
738.8‡ *10*	0.6 *2*	978.3	(1)	239.32	(1)		
757.3‡ *4*	1.9 *3*	970.0	(1^+)	212.86	1^+		
765.9‡ *15*	0.6 *2*	978.3	(1)	212.86	1^+		
[x]797.6‡ *13*	0.7 *2*						
831.9‡ *20*	0.5 *2*	831.8	(1)	0.0	(0^-)		
[x]862.0‡ *15*	0.4 *2*						
879.5‡ *15*	0.5 *2*	970.0	(1^+)	89.62	(1^-)		
[x]900.0‡ *10*	0.7 *2*						
969.0‡ *10*	0.8 *2*	970.0	(1^+)	0.0	(0^-)		
978.1‡ *20*	0.5 *2*	978.3	(1)	0.0	(0^-)		
[x]1013.8‡ *15*	0.7 *2*						
[x]1060.9‡ *15*	0.7 *2*						

† 1975Sc07 report 57 γ's whereas 1974Co38 and 1974Ro11 report only 26 intense γ's. The evaluators have taken weighted averages for γ's reported in all three references.

‡ Reported by 1975Sc07 only.

Reported by 1974Ro11 only. Treated here as uncertain.

@ Large difference between values from 1975Sc07 and 1974Co38. Value given here is unweighted average of the two.

& For absolute intensity per 100 decays, multiply by 0.31 *3*.

[a] 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.

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

[x] γ ray not placed in level scheme.

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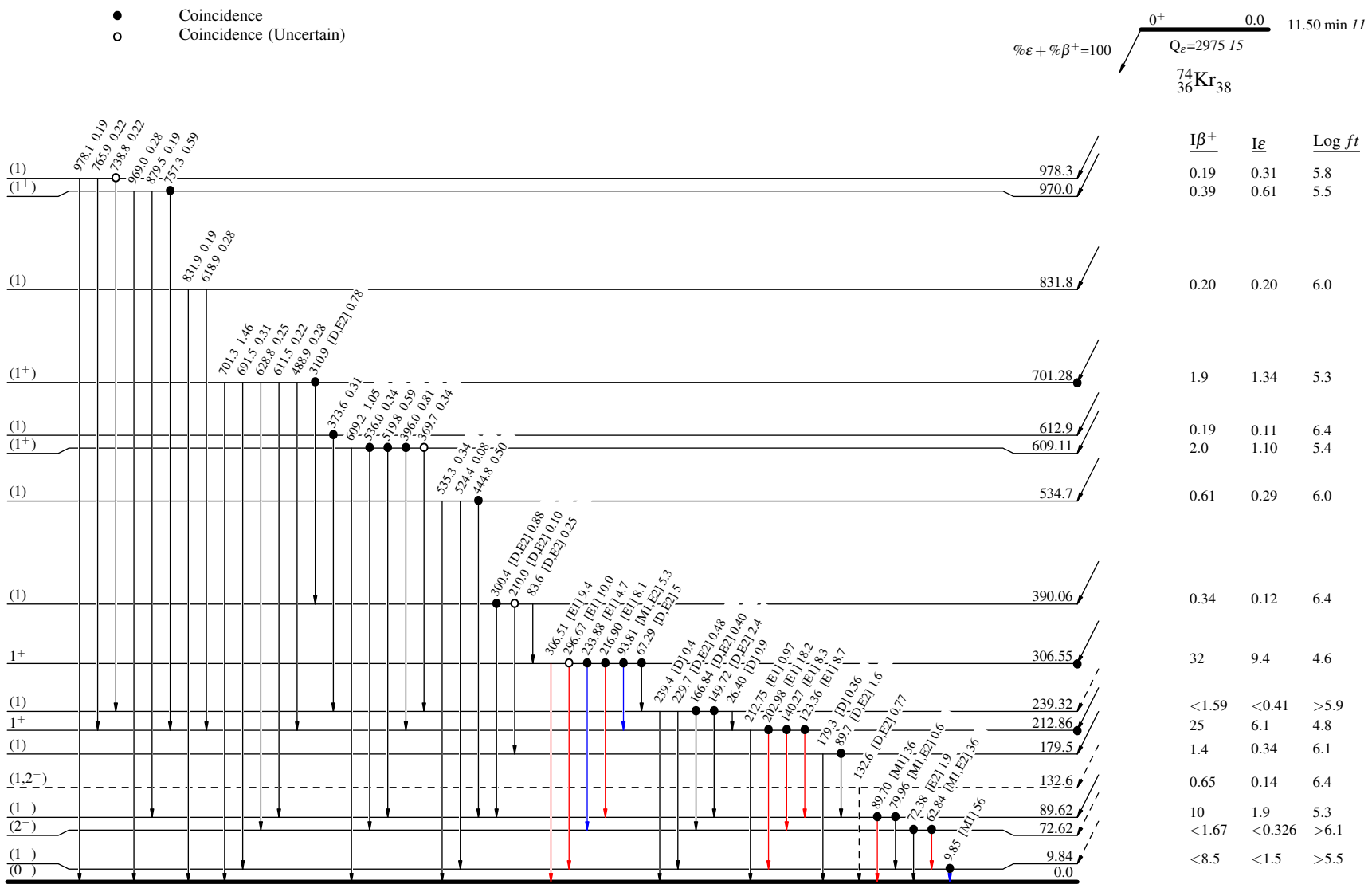
Decay Scheme

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
- Coincidence (Uncertain)



	Iβ+	Iε	Log *ft*
978.3	0.19	0.31	5.8
970.0	0.39	0.61	5.5
831.8	0.20	0.20	6.0
701.28	1.9	1.34	5.3
612.9	0.19	0.11	6.4
609.11	2.0	1.10	5.4
534.7	0.61	0.29	6.0
390.06	0.34	0.12	6.4
306.55	32	9.4	4.6
239.32	<1.59	<0.41	>5.9
212.86	25	6.1	4.8
179.5	1.4	0.34	6.1
132.6	0.65	0.14	6.4
89.62	10	1.9	5.3
72.62	<1.67	<0.326	>6.1
9.84	<8.5	<1.5	>5.5
0.0			

$^{74}_{35}Br_{39}$

$^{74}_{35}Br_{39}$-4