^{74}Br ε decay (25.4 min) 1974Sc28

History

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

Parent: ^{74}Br: E=0.0; J^π=(0$^-$); $T_{1/2}$=25.4 min *3*; Q(ε)=6907 *15*; %ε+%$β^+$ decay=100.0

γ, γγ study. The source contained a small mixture of 46-min ^{74}Br.

Other: 1974Co38. γ, γγ study.

γγ(t): 1976Ro08.

$β^+$: 1960Bu22.

^{74}Se Levels

The 3112.3 level from 1974Co38 has been discarded.

E(level)‡	Jπ†	$T_{1/2}$	Comments
0.0	0$^+$		
634.79 *8*	2$^+$		
853.79 *10*	0$^+$	0.83 ns *14*	$T_{1/2}$: γγ(t) (1976Ro08).
1268.89 *8*	2$^+$		
1657.51 *11*	(0$^+$)		
1838.69 *10*	(2$^+$)		
1884.00 *18*	3$^+$		
2313.89 *11*	(2$^+$)		
2378.56 *12*	(1,2$^+$)		
3250.04 *12*	(1,2$^+$)		
3539.63 *12*	(1,2$^+$)		
3624.35 *16*	(2$^+$)		
3733.59 *17*	(1,2$^+$)		
3788.24 *12*	(1,2$^+$)		
3930.49 *18*	(0$^+$,1)		
3972.86 *17*	(2$^+$)		
4044.37 *25*	(1,2$^+$)		
4094.42 *20*	(2$^+$)		
4266.7 *4*	(1,2$^+$)		
4342.5 *4*	(2$^+$)		
4379.9 *3*	(1,2$^+$)		
4487.3 *3*	(1,2$^+$)		
4536.49 *24*	(1,2$^+$)		

† From 'Adopted Levels'.

‡ From least squares fit to Eγ's.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+$β^+$)†	Comments
(2371 *15*)	4536.49	1.59 *21*	0.78 *11*	5.83 *6*	2.37 *24*	av Eβ=589 *7*; εK=0.291 *7*; εL=0.0332 *8*; εM+=0.00650 *16*
(2420 *15*)	4487.3	1.02 *14*	0.45 *7*	6.09 *6*	1.47 *19*	av Eβ=611 *7*; εK=0.269 *7*; εL=0.0307 *8*; εM+=0.00601 *15*
(2527 *15*)	4379.9	4.5 *3*	1.6 *1*	5.59 *4*	6.1 *4*	av Eβ=660 *7*; εK=0.227 *6*; εL=0.0259 *7*; εM+=0.00507 *12*
(2565 *15*)	4342.5	1.31 *23*	0.42 *8*	6.18 *8*	1.73 *24*	av Eβ=676 *7*; εK=0.214 *5*; εL=0.0244 *6*; εM+=0.00478 *12*
(2640 *15*)	4266.7	2.9 *2*	0.8 *1*	5.92 *4*	3.7 *3*	av Eβ=711 *7*; εK=0.191 *5*; εL=0.0218 *5*; εM+=0.00426 *10*
(2813 *15*)	4094.42	3.7 *4*	0.7 *1*	6.00 *5*	4.4 *4*	av Eβ=790 *7*; εK=0.148 *4*; εL=0.0168 *4*; εM+=0.00329 *8*
(2863 *15*)	4044.37	2.2 *3*	0.40 *6*	6.28 *7*	2.6 *3*	av Eβ=812 *7*; εK=0.137 *3*; εL=0.0157 *4*; εM+=0.00306 *7*
(2934 *15*)	3972.86	4.6 *3*	0.8 *1*	6.03 *4*	5.4 *3*	av Eβ=845 *7*; εK=0.124 *3*; εL=0.0142 *3*; εM+=0.00277 *6*

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^{74}Br ε decay (25.4 min) 1974Sc28 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(2977 *15*)	3930.49	6.9 *4*	1.0 *1*	5.90 *3*	7.9 *4*	av Eβ=865 *7*; εK=0.1172 *25*; εL=0.0133 *3*; εM+=0.00261 *6*
(3119 *15*)	3788.24	10.2 *4*	1.3 *1*	5.87 *2*	11.5 *4*	av Eβ=931 *7*; εK=0.0969 *20*; εL=0.01103 *22*; εM+=0.00216 *5*
(3173 *15*)	3733.59	3.3 *3*	0.40 *4*	6.41 *5*	3.7 *3*	av Eβ=956 *7*; εK=0.0903 *18*; εL=0.01028 *20*; εM+=0.00201 *4*
(3283 *15*)	3624.35	8.4 *3*	0.80 *4*	6.10 *2*	9.2 *3*	av Eβ=1007 *7*; εK=0.0787 *15*; εL=0.00896 *17*; εM+=0.00175 *4*
(3367 *15*)	3539.63	7.4 *5*	0.70 *5*	6.22 *4*	8.1 *5*	av Eβ=1046 *7*; εK=0.0710 *13*; εL=0.00808 *15*; εM+=0.00158 *3*
(3657 *15*)	3250.04	17.6 *5*	1.10 *4*	6.07 *2*	18.7 *5*	av Eβ=1182 *7*; εK=0.0511 *9*; εL=0.00581 *10*; εM+=0.001135 *19*
(4528‡ *15*)	2378.56	<0.1	<0.003	>8.9	<0.1	av Eβ=1595 *8*; εK=0.0223 *3*; εL=0.00254 *4*; εM+=0.000496 *7*
(5023‡ *15*)	1884.00	<0.6	<0.01	>8.5	<0.6	av Eβ=1832 *8*; εK=0.01520 *17*; εL=0.001726 *19*; εM+=0.000337 *4*
(5068‡ *15*)	1838.69	2.9 *4*	0.049 *7*	7.70 *6*	2.9 *4*	av Eβ=1853 *8*; εK=0.01471 *16*; εL=0.001670 *19*; εM+=0.000327 *4*
(5638 *15*)	1268.89	6.5 *21*	0.075 *24*	7.61 *14*	6.6 *21*	av Eβ=2128 *8*; εK=0.01000 *10*; εL=0.001134 *11*; εM+=0.00022
(6053 *15*)	853.79	3.8 *13*	0.034 *12*	8.02 *15*	3.8 *13*	av Eβ=2330 *8*; εK=0.00776 *7*; εL=0.000881 *8*; εM+=0.00017
(6272‡ *15*)	634.79	<4.0	<0.03	>8.1	<4.0	av Eβ=2436 *8*; εK=0.00685 *6*; εL=0.000777 *7*; εM+=0.00015

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

γ(^{74}Se)

Iγ normalization: from Iγ(γ±)/Iγ(635γ)=3.0 *5* (1974Co38) and decay scheme. This is consistent with No β+, ε feeding to ground state. IT should Be pointed out that incoming intensity At the 2314 level exceeds the outgoing intensity. The imbalance is about 1% per 100 decays.

E_γ†	I_γ‡c	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[d]	Comments
218.9 *1*	28.2 *17*	853.79	0^+	634.79	2^+	E2	0.047	α(K)=0.0404; α(L)=0.00464
615.1@ *3*	0.4 *3*	1884.00	3^+	1268.89	2^+			
634.2 *2*	22 *3*	1268.89	2^+	634.79	2^+			
634.8 *1*	100	634.79	2^+	0.0	0^+			
871.4@ *5*	0.4 *2*	3250.04	$(1,2^+)$	2378.56	$(1,2^+)$			
x879.0#e *10*	0.5 *2*							
936.4@ *2*	1.2 *2*	3250.04	$(1,2^+)$	2313.89	(2^+)			
984.9 *1*	6.2 *4*	1838.69	(2^+)	853.79	0^+			
1022.8 *1*	8.1 *3*	1657.51	(0^+)	634.79	2^+			
1045.1 *2*	0.8 *2*	2313.89	(2^+)	1268.89	2^+			
x1080.2#e *10*	0.5 *2*							
1109.6@ *2*	0.9 *1*	2378.56	$(1,2^+)$	1268.89	2^+			
x1145.0#e *10*	0.5 *2*							

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^{74}Br ε decay (25.4 min) 1974Sc28 (continued)

γ(^{74}Se) (continued)

E_γ †	I_γ ‡c	E_i(level)	J_i^π	E_f	J_f^π
1161.3@ 3	0.3 1	3539.63	(1,2$^+$)	2378.56	(1,2$^+$)
1203.9 1	2.4 2	1838.69	(2$^+$)	634.79	2$^+$
1225.7 1	2.1 2	3539.63	(1,2$^+$)	2313.89	(2$^+$)
1249.2@ 2	0.3 2	1884.00	3$^+$	634.79	2$^+$
1268.9 1	10.5 5	1268.89	2$^+$	0.0	0$^+$
1310.1@ 2	0.8 1	3624.35	(2$^+$)	2313.89	(2$^+$)
x1339.2#e 10	1.0 5				
1409.7 2	1.0 2	3788.24	(1,2$^+$)	2378.56	(1,2$^+$)
1459.4 4	1.5 2	2313.89	(2$^+$)	853.79	0$^+$
1474.5@ 2	1.7 2	3788.24	(1,2$^+$)	2313.89	(2$^+$)
x1512.8 2	2.7 5				
1524.6@ 4	0.5 1	2378.56	(1,2$^+$)	853.79	0$^+$
1679.1 3	1.5 3	2313.89	(2$^+$)	634.79	2$^+$
1700.9 3	1.2 2	3539.63	(1,2$^+$)	1838.69	(2$^+$)
1715.7 2	2.1 3	4094.42	(2$^+$)	2378.56	(1,2$^+$)
1743.9 2	1.8 5	2378.56	(1,2$^+$)	634.79	2$^+$
x1842.8 2	3.5 4				
1882.3 2	2.5 3	3539.63	(1,2$^+$)	1657.51	(0$^+$)
1949.6 2	2.3 2	3788.24	(1,2$^+$)	1838.69	(2$^+$)
1981.0 2	2.1 1	3250.04	(1,2$^+$)	1268.89	2$^+$
x2087.4 15	2.2 4				
2088.7 15	<0.5b	3972.86	(2$^+$)	1884.00	3$^+$
2130.6 2	4.5 2	3788.24	(1,2$^+$)	1657.51	(0$^+$)
2158.0@ 4	0.5 2	4536.49	(1,2$^+$)	2378.56	(1,2$^+$)
2270.6 6	2.6 5	3539.63	(1,2$^+$)	1268.89	2$^+$
2356.0@ 4	1.2 2	3624.35	(2$^+$)	1268.89	2$^+$
2378.3@ 4	0.5 2	2378.56	(1,2$^+$)	0.0	0$^+$
2387.4@ 5	0.7 2	4044.37	(1,2$^+$)	1657.51	(0$^+$)
2396.1 2	4.4a 2	3250.04	(1,2$^+$)	853.79	0$^+$
2437.5@ 4	1.1 2	4094.42	(2$^+$)	1657.51	(0$^+$)
2465.0@ 3	1.5 2	3733.59	(1,2$^+$)	1268.89	2$^+$
2518.3@ 8	0.9 2	3788.24	(1,2$^+$)	1268.89	2$^+$
2541.5@ 5	0.5 2	4379.9	(1,2$^+$)	1838.69	(2$^+$)
2615.2@ 2	11.5 3	3250.04	(1,2$^+$)	634.79	2$^+$
2661.6 2	8.1 5	3930.49	(0$^+$,1)	1268.89	2$^+$
2685.4@ 6	0.4 2	3539.63	(1,2$^+$)	853.79	0$^+$
2704.0@ 3	2.4 2	3972.86	(2$^+$)	1268.89	2$^+$
2770.8@ 5	3.2 2	3624.35	(2$^+$)	853.79	0$^+$
2879.7@ 2	0.7 2	3733.59	(1,2$^+$)	853.79	0$^+$
2904.5@ 3	2.6 2	3539.63	(1,2$^+$)	634.79	2$^+$
2934.2@ 4	1.2 2	3788.24	(1,2$^+$)	853.79	0$^+$
x2950.8@ 40	1.0 3				
x2975.6 3	2.2 4				
2990.1@ 30	0.5 2	3624.35	(2$^+$)	634.79	2$^+$
3098.2@ 6	0.7 2	3733.59	(1,2$^+$)	634.79	2$^+$
3110.2@ 18	0.5 2	4379.9	(1,2$^+$)	1268.89	2$^+$
3119.0 12	1.4 2	3972.86	(2$^+$)	853.79	0$^+$
3190.2@ 4	1.5 2	4044.37	(1,2$^+$)	853.79	0$^+$
3241.0@ 15	1.0 2	4094.42	(2$^+$)	853.79	0$^+$

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^{74}Br ε decay (25.4 min) 1974Sc28 (continued)

γ(^{74}Se) (continued)

E_γ †	I_γ ‡c	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ ‡c	E_i(level)	J_i^π	E_f	J_f^π
3249.9 *5*	9.6 *4*	3250.04	(1,2$^+$)	0.0	0$^+$	3788.0 *3*	6.3 *3*	3788.24	(1,2$^+$)	0.0	0$^+$
3267.5@ *8*	0.8 *2*	4536.49	(1,2$^+$)	1268.89	2$^+$	3852.4 *3*	2.0 *2*	4487.3	(1,2$^+$)	634.79	2$^+$
3295.5 *3*	4.3[a] *2*	3930.49	(0$^+$,1)	634.79	2$^+$	x3895& *5*	1.5 *5*				
3338.6 *18*	0.7[a] *2*	3972.86	(2$^+$)	634.79	2$^+$	3901.5@ *3*	2.2 *2*	4536.49	(1,2$^+$)	634.79	2$^+$
3410.0@ *10*	0.6 *2*	4044.37	(1,2$^+$)	634.79	2$^+$	3972.7@ *2*	3.6 *2*	3972.86	(2$^+$)	0.0	0$^+$
x3412.0@ *15*	1.1 *2*					4044.1@ *4*	1.3 *2*	4044.37	(1,2$^+$)	0.0	0$^+$
3460.0@ *12*	1.9 *2*	4094.42	(2$^+$)	634.79	2$^+$	4093.9@ *7*	0.8 *2*	4094.42	(2$^+$)	0.0	0$^+$
3488.6@ *8*	0.6 *2*	4342.5	(2$^+$)	853.79	0$^+$	x4222.0@ *10*	0.7 *2*				
3526.1@ *8*	1.0 *2*	4379.9	(1,2$^+$)	853.79	0$^+$	4266.5@ *5*	1.7 *3*	4266.7	(1,2$^+$)	0.0	0$^+$
3539.8@ *7*	1.0 *2*	3539.63	(1,2$^+$)	0.0	0$^+$	4342.4@ *4*	2.1 *3*	4342.5	(2$^+$)	0.0	0$^+$
3624.6 *3*	8.7 *2*	3624.35	(2$^+$)	0.0	0$^+$	4379.6@ *4*	6.5 *4*	4379.9	(1,2$^+$)	0.0	0$^+$
3631.9@ *5*	4.0 *3*	4266.7	(1,2$^+$)	634.79	2$^+$	4486.9@ *10*	0.3 *2*	4487.3	(1,2$^+$)	0.0	0$^+$
3733.3@ *4*	2.8 *2*	3733.59	(1,2$^+$)	0.0	0$^+$	4538.0@ *20*	0.2 *1*	4536.49	(1,2$^+$)	0.0	0$^+$
3745.1@ *6*	1.0 *2*	4379.9	(1,2$^+$)	634.79	2$^+$	x4649.5@ *6*	0.6 *2*				

† From 1974Sc28. Values from 1974Co38 disagree by several keV above 3 MeV.
‡ Weighted averages from 1974Sc28 and 1974Co38. Values corrected for small contribution from 46-min ^{74}Br.
# Reported by 1974Co38 only.
@ Seen by 1974Sc28 only.
& Reported by 1974Co38 only. The correct energy is≈3869. This peak is probably due to single escape of 4380γ.
a From 1974Sc28. Value In 1974Co38 low by a factor of≈2.
b 1974Co38 give 2.3 *5*.
c For absolute intensity per 100 decays, multiply by 0.641 *4*.
d 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.
e Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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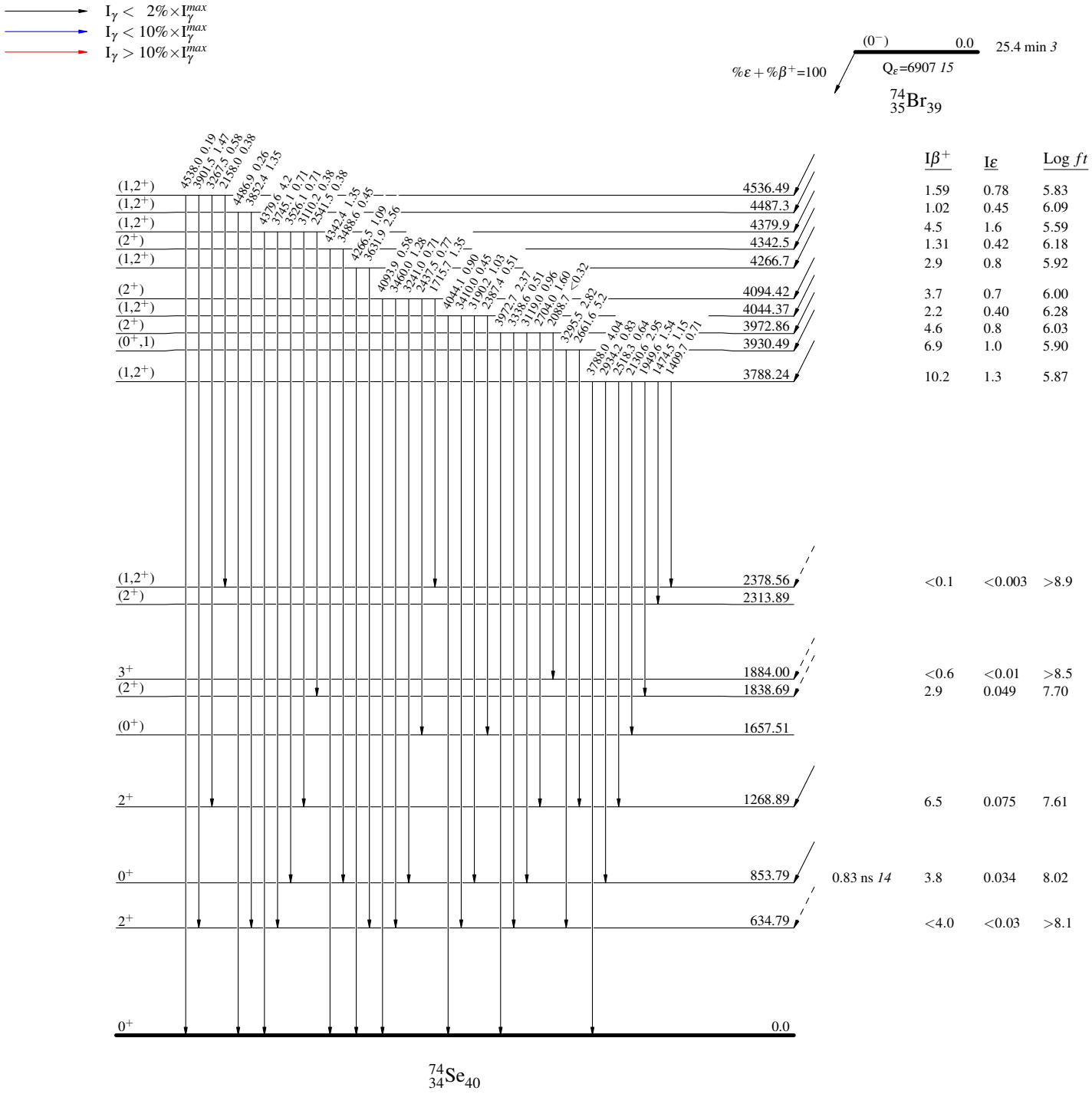
Decay Scheme

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



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Decay Scheme (continued)

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