^{75}Br ε decay (96.7 min) 1972Co06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh	NDS 114, 841 (2013)	30-Jun-2013

Parent: ^{75}Br: E=0.0; $J^\pi=3/2^-$; $T_{1/2}$=96.7 min *13*; Q(ε)=3062 *4*; %ε+%β^+ decay=100.0

^{75}Br-J^π,$T_{1/2}$: From ^{75}Br Adopted Levels.

^{75}Br-Q(ε): From 2012Wa38.

^{75}Br produced by the ^{65}Cu(^{12}C,2n)^{75}Br reaction. Enriched target. Measured γ, $\gamma\gamma$, $T_{1/2}$, ce.

Others: 1948Wo08, 1952Fu04, 1961Ba43, 1969Dz05, 1969La07, 1969Ra24, 1970Dz10, 1974Ro11, 1995BeZS.

Measured ce, K-conversion coefficients: 1995BeZS.

Measured end point energies: 1952Fu04, 1961Ba43, 1969La07, 1969Ra24, 1974Ro11.

Measured $T_{1/2}$(^{75}Br g.s.): 1972Co06, 1969Ra24, 1969La07, 1961Ba43, 1957Be46, 1953Ho53.

Measured annihilation radiation intensity: 166 *11* (1969Dz05), 167 *10* (1972Co06).

Measured $\gamma(\theta$,H,t): 1995Ma97.

The decay scheme is based on $\gamma\gamma$ data of 1972Co06 and some γ rays from other reactions.

^{75}Se Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0	$5/2^+$	119.78 d *4*	$T_{1/2}$: from Adopted Levels.
112.16 *8*	$7/2^+$		
286.55 *8*	$3/2^-$	1.23 ns *15*	$T_{1/2}$: from B(287γ)(t) using delayed coincidence technique (1969Ra24). Value is 1.29 ns *15* in Adopted Levels.
293.07 *8*	$1/2^-$	30 ns *3*	E(level): resolved doublet of 286 suggested by authors. $T_{1/2}$: from delayed $\beta\gamma$ coincidence with the 287γ (1972Co06). The authors erroneously assigned this half-life to the 286.5 level. Value is 30.0 ns *4* in Adopted Levels.
427.80 *8*	$5/2^-$		
585.99 *10*	$3/2^-$		
663.89 *9*	$5/2^-$		
748.00 *19*	$7/2^-$		
777.24 *14*	$5/2^-$		
859.44 *9*	$3/2^-$		
895.29 *25*	$1/2^-$,$3/2^-$		
962.87 *23*	$3/2^-$		
1002.9 *3*	$5/2^+$		
1020.49 *15*	$1/2^-$,$3/2^-$		
1073.77 *14*	$5/2^-$		
1144.51 *20*	$3/2^+$,$5/2^+$		
1184.38 *14*	1/2,3/2,5/2		
1198.61 *12*	$5/2^+$		
1245.26 *12*	$3/2^-$		
1374.70 *22*	1/2,3/2,5/2		
1380.5 *3*			
1561.04 *14*	(5/2,7/2$^-$)		J^π: $7/2^-$ is not possible if β feeding to this level is correct.

[†] From Adopted Levels.

^{75}Br ε decay (96.7 min) 1972Co06 (continued)

ε,β+ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(1501 *4*)	1561.04	0.040 *4*	0.68 *7*	6.08 *5*	0.72 *7*	av Eβ=209.3 *17*; εK=0.8305 *15*; εL=0.09527 *17*; εM+=0.01866 *4* I(ε+β+): no feeding is expected if Jπ(1561)=7/2−.
(1682 *4*)	1380.5	0.018 *3*	0.096 *16*	7.03 *8*	0.114 *19*	av Eβ=286.3 *18*; εK=0.7423 *25*; εL=0.0850 *3*; εM+=0.01664 *6*
(1687 *4*)	1374.70	0.053 *6*	0.28 *3*	6.57 *6*	0.33 *4*	av Eβ=288.7 *18*; εK=0.7387 *25*; εL=0.0846 *3*; εM+=0.01656 *6*
(1817 *4*)	1245.26	0.72 *7*	2.03 *19*	5.77 *4*	2.75 *25*	av Eβ=344.6 *18*; εK=0.650 *3*; εL=0.0744 *4*; εM+=0.01457 *7*
(1863 *4*)	1198.61	0.48 *5*	1.11 *11*	6.05 *5*	1.59 *15*	av Eβ=364.8 *18*; εK=0.616 *3*; εL=0.0705 *4*; εM+=0.01379 *7*
(1878 *4*)	1184.38	0.29 *3*	0.64 *7*	6.30 *5*	0.93 *10*	av Eβ=371.0 *18*; εK=0.605 *3*; εL=0.0692 *4*; εM+=0.01355 *7*
(1917 *4*)	1144.51	0.062 *10*	0.12 *2*	7.05 *8*	0.18 *3*	av Eβ=388.4 *18*; εK=0.576 *3*; εL=0.0658 *4*; εM+=0.01288 *7*
(1988 *4*)	1073.77	0.45 *4*	0.66 *6*	6.34 *4*	1.11 *10*	av Eβ=419.3 *18*; εK=0.523 *3*; εL=0.0598 *4*; εM+=0.01171 *7*
(2042 *4*)	1020.49	0.69 *9*	0.85 *11*	6.25 *6*	1.54 *20*	av Eβ=442.7 *18*; εK=0.485 *3*; εL=0.0554 *4*; εM+=0.01085 *7*
(2059 *4*)	1002.9	0.12 *1*	0.13 *2*	7.06 *6*	0.25 *3*	av Eβ=450.5 *18*; εK=0.473 *3*; εL=0.0540 *4*; εM+=0.01057 *7*
(2099 *4*)	962.87	0.065 *10*	0.067 *11*	7.38 *7*	0.132 *21*	av Eβ=468.2 *18*; εK=0.445 *3*; εL=0.0509 *3*; εM+=0.00995 *6*
(2167 *4*)	895.29	1.03 *11*	0.86 *10*	6.30 *5*	1.89 *21*	av Eβ=498.1 *18*; εK=0.4016 *25*; εL=0.0459 *3*; εM+=0.00897 *6*
(2203 *4*)	859.44	3.6 *4*	2.7 *3*	5.81 *5*	6.3 *7*	av Eβ=514.0 *18*; εK=0.3798 *24*; εL=0.0434 *3*; εM+=0.00848 *6*
(2285 *4*)	777.24	0.48 *5*	0.30 *3*	6.81 *5*	0.78 *8*	av Eβ=550.6 *18*; εK=0.3336 *22*; εL=0.03807 *25*; εM+=0.00745 *5*
(2314‡ *4*)	748.00	<0.08	<0.05	>7.6	<0.13	av Eβ=563.7 *18*; εK=0.3184 *21*; εL=0.03634 *24*; εM+=0.00711 *5*
(2398 *4*)	663.89	3.3 *2*	1.6 *1*	6.13 *3*	4.9 *3*	av Eβ=601.4 *18*; εK=0.2786 *18*; εL=0.03178 *21*; εM+=0.00622 *4*
(2476 *4*)	585.99	1.24 *14*	0.48 *5*	6.67 *5*	1.72 *19*	av Eβ=636.5 *18*; εK=0.2463 *16*; εL=0.02809 *18*; εM+=0.00550 *4*
(2634 *4*)	427.80	4.9 *8*	1.4 *2*	6.26 *7*	6.3 *10*	av Eβ=708.1 *19*; εK=0.1927 *12*; εL=0.02196 *14*; εM+=0.00430 *3*
(2775 *4*)	286.55	53 *3*	11 *1*	5.39 *3*	64 *4*	av Eβ=772.5 *19*; εK=0.1560 *10*; εL=0.01777 *11*; εM+=0.003477 *21* E(β+)=1720 *20* (1974Ro11).
(3062 *4*)	0	4 *4*	0.5 *5*	6.9 *5*	4 *4*	av Eβ=904.3 *19*; εK=0.1045 *6*; εL=0.01189 *7*; εM+=0.002326 *13*

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

^{75}Br ε decay (96.7 min) 1972Co06 (continued)

γ(^{75}Se)

Iγ normalization: from sum of Ti(to g.s.)=96 *4*, based on I($\gamma^{\pm}$)=167 *10* (1972Co06), the β^+ feeding to g.s. is deduced as<8%.

E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[†]	$I_{(\gamma+ce)}$[a]	Comments
6.5 *1*	<0.17	293.07	1/2−	286.55	3/2−	[M1]		34.4 *17*	5.9 *3*	ce(L)/(γ+ce)=0.832 *22*; ce(M)/(γ+ce)=0.129 *9* ce(N)/(γ+ce)=0.0108 *8* α(L)=29.4 *15*; α(M)=4.58 *23*; α(N)=0.382 *19* E_γ: from 1974Ro12, where it was incorrectly assigned to decay of ^{75}Kr. A 6.2 *4* γ ray has been seen in ^{75}As(p,n) reaction. Additional information 1. $I_{(\gamma+ce)}$: from intensity balance at the 293 level. Value given is an upper limit corresponding to the assumption of no direct ε+β^+ feeding to the 293 level.
112.10 *10*	1.90 *20*	112.16	7/2+	0	5/2+	M1+E2	−0.31 *3*	0.116 *8*		α(K)=0.102 *7*; α(L)=0.0121 *9*; α(M)=0.00188 *14* α(N)=0.000152 *11* Mult.,δ: M1(+E2), δ<0.25 from α(K)exp=0.076 *13* (1995BeZS).
141.19 *10*	7.5 *6*	427.80	5/2−	286.55	3/2−	M1+E2	−0.29 *4*	0.055 *4*		α(K)=0.048 *4*; α(L)=0.0055 *5*; α(M)=0.00086 *7* α(N)=7.1×10^{-5} *6* Mult.,δ: M1(+E2), δ<0.15 from α(K)exp=0.034 *5* (1995BeZS).
195.5 *5*	0.10 *3*	859.44	3/2−	663.89	5/2−					
236.10 *10*	0.90 *6*	663.89	5/2−	427.80	5/2−	M1+E2	+0.07 *6*	0.0107 *4*		α(K)=0.0095 *3*; α(L)=0.00102 *4*; α(M)=0.000159 *5* α(N)=1.35×10^{-5} *5* α(K)exp=0.016 *5* (1995BeZS) gives M1+E2, δ=0.70 *35*.
286.50 *20*	100	286.55	3/2−	0	5/2+	E1		0.00362		α(K)=0.00323 *5*; α(L)=0.000338 *5*; α(M)=5.24×10^{-5} *8* α(N)=4.43×10^{-6} *7* α(K)exp=0.0028 *4*, measured relative to α(K)exp for 279.2γ in ^{203}Hg (1972Co06); α(K)exp=0.0036 *11*, α(L)exp=0.0003 *1* (1995BeZS).
292.85 *10*	3.03 *15*	585.99	3/2−	293.07	1/2−	M1+E2	+0.12 *8*	0.0063 *3*		α(K)=0.00564 *23*; α(L)=0.00060 *3*; α(M)=9.4×10^{-5} *4* α(N)=8.0×10^{-6} *4* Mult.,δ: M1(+E2), δ<0.55 from α(K)exp=0.0057 *18* (1995BeZS). E_γ: shown incorrectly from 579 level by 1972Co06.
299.4 *2*	0.27 *4*	585.99	3/2−	286.55	3/2−	M1(+E2)	0.4 *4*	0.0071 *23*		α(K)=0.0063 *21*; α(L)=0.00068 *24*; α(M)=0.00011 *4* α(N)=9.E−6 *3* Mult.: M1,E2 from α(K)exp=0.010 *6* (1995BeZS).

From ENSDF

$^{75}_{34}Se_{41}$-3

^{75}Br ε decay (96.7 min) 1972Co06 (continued)

γ(^{75}Se) (continued)

E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[†]	Comments
309.4 *3*	0.10 *2*	895.29	1/2$^-$,3/2$^-$	585.99	3/2$^-$				
315.61 *15*	0.69 *7*	427.80	5/2$^-$	112.16	7/2$^+$	(E1)		0.00277	α(K)=0.00247 *4*; α(L)=0.000258 *4*; α(M)=4.00×10^{-5} *6* α(N)=3.39×10^{-6} *5*
319.7 *3*	0.11 *2*	748.00	7/2$^-$	427.80	5/2$^-$	M1+E2	+1.38 *10*	0.0095 *3*	α(K)=0.00845 *25*; α(L)=0.00093 *3*; α(M)=0.000145 *5* α(N)=1.20×10^{-5} *4*
325.4[b#] *2*	0.15[b] *3*	1073.77	5/2$^-$	748.00	7/2$^-$				
325.4[b] *2*	0.12[b] *5*	1184.38	1/2,3/2,5/2	859.44	3/2$^-$				
349.2 *2*	0.20 *5*	777.24	5/2$^-$	427.80	5/2$^-$	M1+E2	+3.27 *9*	0.00841	α(K)=0.00745 *11*; α(L)=0.000820 *12*; α(M)=0.0001274 *19* α(N)=1.059×10^{-5} *16*
377.39 *11*	4.47 *4*	663.89	5/2$^-$	286.55	3/2$^-$	M1+E2	−0.75 *18*	0.0046 *4*	α(K)=0.0041 *4*; α(L)=0.00044 *4*; α(M)=6.8×10^{-5} *7* α(N)=5.8×10^{-6} *5* α(K)exp=0.0034 *12* (1995BeZS) gives M1(+E2), δ<1.1.
427.79 *13*	5.0 *5*	427.80	5/2$^-$	0	5/2$^+$	E1		1.23×10^{-3}	α(K)=0.001097 *16*; α(L)=0.0001143 *16*; α(M)=1.775×10^{-5} *25* α(N)=1.508×10^{-6} *22* Mult.,δ: δ(E2/M1)<0.6 from α(K)exp=0.0020 *7* (1995BeZS); α(K)exp marginally overlaps E1. ΔJ^π requires E1.
431.75 *13*	4.4 *5*	859.44	3/2$^-$	427.80	5/2$^-$	M1+E2	0.35 *24*	0.0026 *3*	α(K)=0.0024 *3*; α(L)=0.00025 *3*; α(M)=3.9×10^{-5} *5* α(N)=3.3×10^{-6} *4* α(K)exp=0.0035 *12* (1995BeZS) gives E2(+M1), δ<0.3.
460.9 *4*	0.13 *3*	748.00	7/2$^-$	286.55	3/2$^-$	E2		0.00355	α(K)=0.00315 *5*; α(L)=0.000341 *5*; α(M)=5.30×10^{-5} *8* α(N)=4.45×10^{-6} *7*
467.3 *4*	0.14 *3*	895.29	1/2$^-$,3/2$^-$	427.80	5/2$^-$				
484.4 *2*	0.32 *4*	777.24	5/2$^-$	293.07	1/2$^-$	E2		0.00304	α(K)=0.00270 *4*; α(L)=0.000291 *4*; α(M)=4.53×10^{-5} *7* α(N)=3.80×10^{-6} *6*
488.1 *3*	0.20 *4*	1073.77	5/2$^-$	585.99	3/2$^-$				
490.7 *2*	0.37 *4*	777.24	5/2$^-$	286.55	3/2$^-$	(M1+E2)		0.0024 *6*	α(K)=0.0021 *5*; α(L)=0.00022 *6*; α(M)=3.5×10^{-5} *9* α(N)=3.0×10^{-6} *7*
[x]514.0[@] *5*	0.10 *5*								
534.8[b] *3*	0.02[b] *1*	962.87	3/2$^-$	427.80	5/2$^-$				
534.8[b#] *3*	0.13[b] *2*	1198.61	5/2$^+$	663.89	5/2$^-$				
551.65 *15*	0.34 *4*	663.89	5/2$^-$	112.16	7/2$^+$				
566.43 *12*	0.51 *5*	859.44	3/2$^-$	293.07	1/2$^-$				
572.93 *10*	2.26 *25*	859.44	3/2$^-$	286.55	3/2$^-$	E2		0.00183	α(K)=0.001626 *23*; α(L)=0.0001740 *25*; α(M)=2.71×10^{-5} *4* α(N)=2.28×10^{-6} *4*
[x]579.8 *3*	0.10 *2*								
586.1 *2*	0.21 *3*	585.99	3/2$^-$	0	5/2$^+$				
598.2 *2*	0.37 *5*	1184.38	1/2,3/2,5/2	585.99	3/2$^-$				

From ENSDF

$^{75}_{34}Se_{41}$-4

^{75}Br ε decay (96.7 min) 1972Co06 (continued)

γ(^{75}Se) (continued)

E_γ	I_γ[a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[†]	Comments
608.9 *12*	1.91 *20*	895.29	1/2$^-$,3/2$^-$	286.55	3/2$^-$	M1(+E2)		0.00132 *22*	α(K)=0.00118 *19*; α(L)=0.000124 *22*; α(M)=1.9×10^{-5} *4* α(N)=1.6×10^{-6} *3*
646.1 *3*	0.17 *3*	1073.77	5/2$^-$	427.80	5/2$^-$				
x652.2 *3*	0.16 *3*								
659.1 *2*	0.40 *5*	1245.26	3/2$^-$	585.99	3/2$^-$				
663.8 *3*	0.13 *2*	663.89	5/2$^-$	0	5/2$^+$				
676.6 *3*	0.13 *2*	962.87	3/2$^-$	286.55	3/2$^-$				
701.6 *2*	0.21 *3*	1561.04	(5/2,7/2$^-$)	859.44	3/2$^-$				
733.94 *12*	1.75 *20*	1020.49	1/2$^-$,3/2$^-$	286.55	3/2$^-$	(M1)		7.35×10^{-4}	α(K)=0.000655 *10*; α(L)=6.83×10^{-5} *10*; α(M)=1.063×10^{-5} *15* α(N)=9.10×10^{-7} *13*
770.80 *15*	0.53 *6*	1198.61	5/2$^+$	427.80	5/2$^-$	(E1(+M2))	<0.012		
781.0 *3*	0.12 *2*	1073.77	5/2$^-$	293.07	1/2$^-$				
788.7 *2*	0.38 *4*	1374.70	1/2,3/2,5/2	585.99	3/2$^-$				
859.3 *2*	0.27 *3*	859.44	3/2$^-$	0	5/2$^+$				
890.7 *3*	0.28 *3*	1002.9	5/2$^+$	112.16	7/2$^+$				
897.60 *18*	0.57 *6*	1184.38	1/2,3/2,5/2	286.55	3/2$^-$				
912.05 *15*	1.15 *12*	1198.61	5/2$^+$	286.55	3/2$^-$	(E1(+M2))	<0.014		
x946.2 *3*	0.16 *3*								
952.10 *15*	1.89 *20*	1245.26	3/2$^-$	293.07	1/2$^-$				
959.0 *4*	0.30 *5*	1245.26	3/2$^-$	286.55	3/2$^-$				
961.4 *3*	0.50 *6*	1073.77	5/2$^-$	112.16	7/2$^+$				
974.9& *4*	0.10 *2*	1561.04	(5/2,7/2$^-$)	585.99	3/2$^-$				
1074.2 *4*	0.12 *2*	1073.77	5/2$^-$	0	5/2$^+$				
1144.5 *2*	0.21 *3*	1144.51	3/2$^+$,5/2$^+$	0	5/2$^+$	(M1+E2)		3.01×10^{-4} *12*	α(K)=0.000266 *10*; α(L)=2.77×10^{-5} *11*; α(M)=4.31×10^{-6} *17* α(N)=3.68×10^{-7} *14*; α(IPF)=2.3×10^{-6} *4*
1245.5 *2*	0.54 *6*	1245.26	3/2$^-$	0	5/2$^+$				
1380.5 *3*	0.13 *2*	1380.5		0	5/2$^+$				
1448.9 *2*	0.37 *4*	1561.04	(5/2,7/2$^-$)	112.16	7/2$^+$				
x1515.8 *3*	0.13 *2*								
1561.0 *3*	0.14 *2*	1561.04	(5/2,7/2$^-$)	0	5/2$^+$				

† Additional information 2.
‡ From Adopted Gammas.
# Assigned by the evaluators on the basis of (n,γ).
@ Observed only in the coincidence measurements.
& Shown incorrectly from 1554 level by 1972Co06.

From ENSDF

$^{75}_{34}Se_{41}$-5

$\gamma(^{75}$Se) (continued)

[a] For absolute intensity per 100 decays, multiply by 0.88 *5*.
[b] Multiply placed with intensity suitably divided.
[x] γ ray not placed in level scheme.

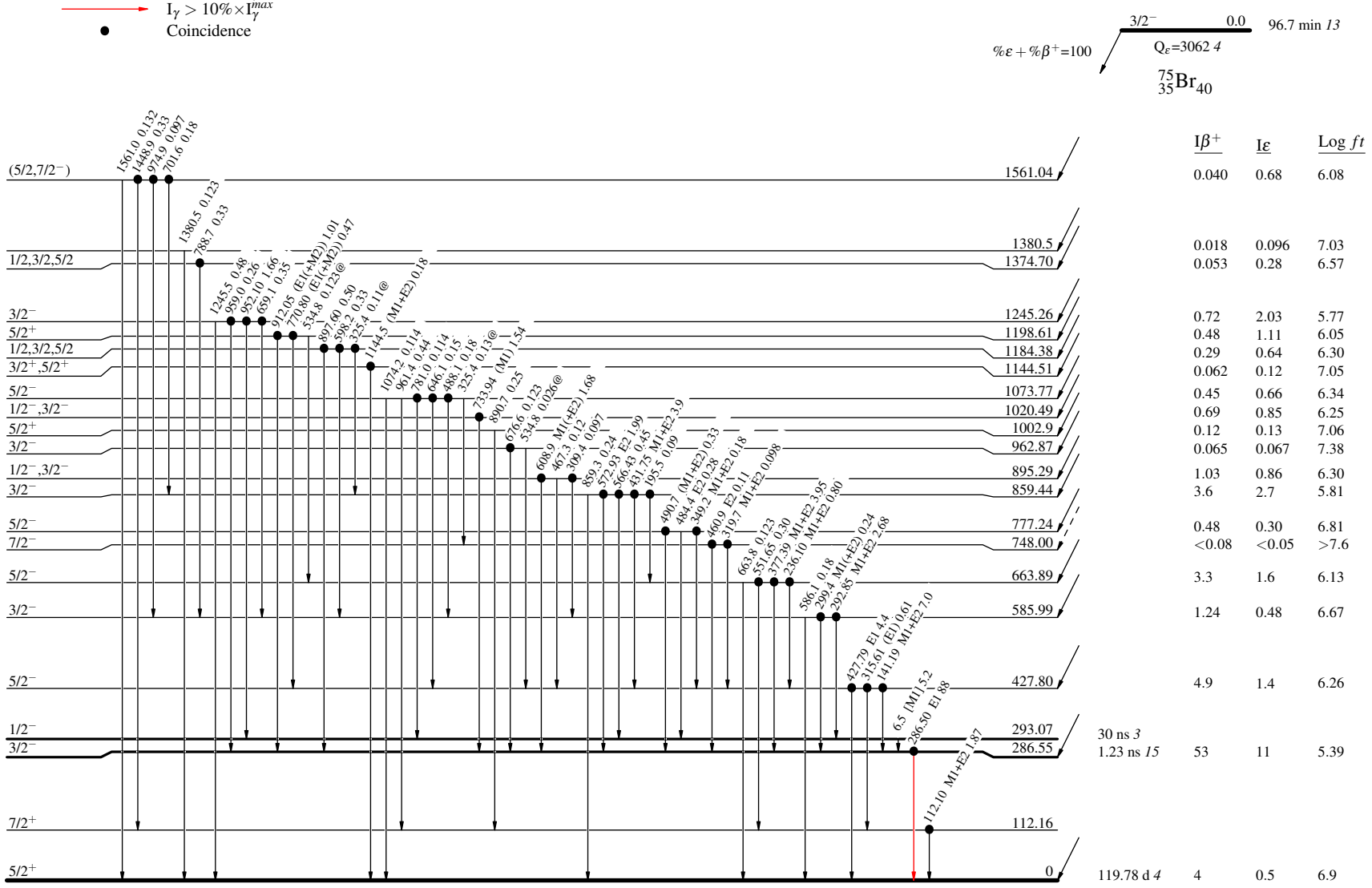
From ENSDF

^{75}Br ε decay (96.7 min) 1972Co06

Decay Scheme

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

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- Coincidence



$^{75}_{34}Se_{41}$

From ENSDF

$^{75}_{34}Se_{41}$-7