^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 125, 201 (2015)	31-Dec-2014

Parent: ^{83}Se: E=0.0; $J^\pi=9/2^+$; $T_{1/2}$=22.25 min *4*; Q(β^-)=3673 *5*; %β^- decay=100.0

2015Kr02: ^{83}Se activity from ^{82}Se(n,γ), E=thermal. Measured Eγ, Iγ, and γ(t) using two HPGe detectors; deduced $T_{1/2}$.

1974Kr27: ^{83}Se activity from ^{82}Se(n,γ), E=thermal. Measured Eγ, Iγ, $\gamma\gamma$ using two coaxial Ge(Li) detectors.

1973Fe08: ^{83}Se activity from ^{82}Se(n,γ), E=thermal. Measured Eγ, Iγ, $\gamma\gamma$ using two Ge(Li) detectors.

All of the gamma rays observed in 1974Kr27 and 1973Fe08 have been confirmed by 2015Kr02 with the exception of two transitions: a 581.9-keV transition reported by 1973Fe08 was determined to be due to coincidence summing and a 2167-keV transition reported by 1973Fe08 was found to be associated with the decay of ^{38}Cl.

Others: 1973BeXW, 1967Ma35, 1962Ba27, 1960Yt03, 1959Co51.

A total energy release of 3770 keV *30* is calculated for this decay scheme using the RADLST code, compared with the Q value of 3673 keV *5*. Non-physical negative β feedings and a large reduced χ^2 for least-squares fit to γ-ray energies suggests that some aspects of the decay scheme remain unsettled.

α: Additional information 1.

^{83}Br Levels

E(level)†	J^π‡	$T_{1/2}$#	Comments
0.0	$3/2^-$	2.374 h *4*	
356.733 *6*	$5/2^-$		
799.223 *7*	$(5/2,7/2)^-$		
866.930 *7*	$7/2^-$		
988.171 *14*	$1/2^-,3/2^-$		
1030.797 *20*	$(3/2)^-$		
1092.138 *7*	$9/2^+$	4.1 ns *1*	$T_{1/2}$: from $\gamma\gamma$(t) in 1967Ma35. Other: 3.65 ns *9* from $\beta\gamma$(t) in 1973BeXW.
1238.625 *10*	$(5/2,7/2^-)$		
1352.815 *6*	$(5/2)^+$		
1421.078 *8*	$(7/2^-,5/2^+)$		
1438.972 *9*	$9/2^-$		
1701.726 *17*	$13/2^+$		E(level): energy sums involving this level group into two values which differ by 0.4 keV suggesting this level is possibly a closely spaced doublet (2015Kr02). Further support for a doublet comes from the negative β^- feeding intensity derived for this level and the fact that the 671- and 1702-keV transitions would correspond to E5 or M6 multipolarities given the adopted J^π's of the levels.
1804.485 *8*	(7/2)		
1810.398 *7*	$(7/2^+)$		
2058.787 *9*	$(5/2^+,7/2,9/2^+)$		
2073.408 *10*	$(5/2^-,7/2^-)$		
2134.502 *13*	$11/2^+$		E(level): level included by the evaluator since placement of the 1042γ is known from (^{7}Li,α2nγ).
2398.068 *11*	$9/2^+,7/2^+$		
2531.592 *11*			
2647.187 *8*	$(7/2)^+$		
2694.305 *8*	$(7/2)^+$		
2738.382 *8*	$(9/2)^+$		
2777.114 *22*	(7/2,9/2)		
2946.784 *9*	$9/2^+,11/2^+$		
3137.825 *16*	$9/2^+,11/2^+$		

† From a least-squares fit to Eγ, by evaluator. Large reduced χ^2 suggests incorrect placements in the level scheme or that the uncertainties are underestimated.

‡ From the Adopted Levels.

From the Adopted Levels, except where noted.

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

β^- radiations

Levels at 1352.8, 1701.9, and 2073.4 keV have negative β^- feedings of −0.53 *11*, −1.16 *2*, and −0.73 *5*, respectively.

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(535 *5*)	3137.825	1.91 *2*	5.0 *1*	av Eβ=171.5 *19*
(726 *5*)	2946.784	10.3 *1*	4.8 *1*	av Eβ=245.4 *20*
(896 *5*)	2777.114	0.90 *1*	6.2 *1*	av Eβ=314.4 *21*
(935 *5*)	2738.382	16.4 *2*	5.0 *1*	av Eβ=330.5 *21*
(979 *5*)	2694.305	26.3 *2*	4.9 *1*	av Eβ=348.9 *21*
(1026 *5*)	2647.187	30.7 *3*	4.8 *1*	av Eβ=368.8 *22*
(1141[#] *5*)	2531.592	<0.05	>7.8	av Eβ=418.2 *22*
(1275 *5*)	2398.068	0.94 *2*	6.7 *1*	av Eβ=476.3 *22*
(1538 *5*)	2134.502	0.60 *2*	7.3 *2*	av Eβ=593.3 *23*
(1614 *5*)	2058.787	0.56 *7*	7.4 *1*	av Eβ=627.5 *23*
(1863 *5*)	1810.398	0.4 *2*	7.77 *22*	av Eβ=740.6 *23*
(1869 *5*)	1804.485	2.98 *5*	6.9 *1*	av Eβ=743.3 *23*
(2234 *5*)	1438.972	0.60 *8*	7.9 *1*	av Eβ=912.6 *24*
(2252 *5*)	1421.078	0.44 *8*	8.1 *1*	av Eβ=920.9 *24*
(2434 *5*)	1238.625	0.50 *3*	8.2 *1*	av Eβ=1006.4 *24*
(2581 *5*)	1092.138	4.1 *6*	7.4 *1*	av Eβ=1075.3 *24*
(2806[#] *5*)	866.930	1.9 *7*	7.83 *16*	av Eβ=1181.7 *24*
(2874 *5*)	799.223	1.7 *2*	9.3[1u] *1*	av Eβ=1219.9 *24*
(3316 *5*)	356.733	1.2 *9*	9.8[1u] *4*	av Eβ=1428.1 *24*

[†] From γ-ray transition intensity balance.
[‡] Absolute intensity per 100 decays.
[#] Existence of this branch is questionable.

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

$\gamma(^{83}Br)$

Iγ normalization: ΣI(γ+ce) to g.s.=100. Direct g.s. feeding is not expected with ΔJ=3 and $\Delta\pi$=yes.

E$_\gamma$[†]	I$_\gamma$[†#]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	δ[‡]	α	Comments
208.40 *1*	2.54 *5*	2946.784	9/2$^+$,11/2$^+$	2738.382	(9/2)$^+$				I$_\gamma$: others: 2.9 *3* (1974Kr27), 2.7 *2* (1973Fe08).
225.22 *1*	42.5 *8*	1092.138	9/2$^+$	866.930	7/2$^-$	E1(+M2)	−0.07 *7*	0.0080 *10*	α(K)=0.0072 *9*; α(L)=0.00076 *10*; α(M)=0.000120 *16*; α(N)=1.11×10^{-5} *15* I$_\gamma$: others: 48 *4* (1974Kr27), 46.5 *20* (1973Fe08).
[x]260.584 *22*	0.352 *13*								
[x]263.68 *4*	0.295 *18*								
296.232 *23*	0.412 *15*	2694.305	(7/2)$^+$	2398.068	9/2$^+$,7/2$^+$				I$_\gamma$: others: 0.5 *3* (1974Kr27), 0.4 *1* (1973Fe08).
322.07 *4*	0.221 *15*	1352.815	(5/2)$^+$	1030.797	(3/2)$^-$				E$_\gamma$,I$_\gamma$: unplaced transition with Eγ=322.2 *3*, Iγ=0.10 *5* observed in 1973Fe08. I$_\gamma$: other: 0.28 *5* (1974Kr27).
329.599[@] *18*	0.640 *14*	1421.078	(7/2$^-$,5/2$^+$)	1092.138	9/2$^+$				I$_\gamma$: other: 0.86 *11* (1974Kr27). E$_\gamma$: questionable placement as measured energy disagrees significantly with level energy difference=328.94 keV; not included in least-squares fitting.
340.316 *16*	0.684 *14*	2738.382	(9/2)$^+$	2398.068	9/2$^+$,7/2$^+$				I$_\gamma$: others: 0.69 *9* (1974Kr27), 0.6 *1* (1973Fe08).
356.73 *1*	100 *1*	356.733	5/2$^-$	0.0	3/2$^-$	M1(+E2)	+0.02 *16*	0.00428 *16*	α(K)=0.00381 *14*; α(L)=0.000407 *16*; α(M)=6.47×10^{-5} *25*; α(N)=6.05×10^{-6} *22*
371.671 *14*	0.858 *13*	1238.625	(5/2,7/2$^-$)	866.930	7/2$^-$				I$_\gamma$: others: 0.88 *8* (1974Kr27), 0.8 *1* (1973Fe08). E$_\gamma$: placed by 1973Fe08 and 1974Kr27 as depopulating the 1810-keV level. However, Eγ differs by more than 12σ from the level energy difference and thus, 2015Kr02 propose a placement as depopulating the 1239-keV level.
389.293 *15*	0.945 *13*	1810.398	(7/2$^+$)	1421.078	(7/2$^-$,5/2$^+$)				I$_\gamma$: others: 0.94 *8* (1974Kr27), 0.9 *1* (1973Fe08).
415.112 *14*	2.33 *2*	2946.784	9/2$^+$,11/2$^+$	2531.592					I$_\gamma$: other: unplaced transition with Eγ= 415.2 *5* and Iγ=2.32 *15* observed in 1974Kr27.
433.03 *5*	0.237 *12*	1421.078	(7/2$^-$,5/2$^+$)	988.171	1/2$^-$,3/2$^-$				I$_\gamma$: other: 0.23 *6* (1974Kr27).
439.39 *3*	0.265 *13*	1238.625	(5/2,7/2$^-$)	799.223	(5/2,7/2)$^-$				
442.494 *14*	1.55 *2*	799.223	(5/2,7/2)$^-$	356.733	5/2$^-$				E$_\gamma$: 1974Kr27 doubly place a 442γ as depopulating the 779- and 3137-keV levels. The level energy difference from the 779-keV level is 442.5 keV whereas it is 443.5 keV from the 3137-keV level. 2015Kr02 find that

$^{83}_{35}Br_{48}$-3

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

$\gamma(^{83}Br)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	α	Comments
									the transition is well fit as a singlet and thus conclude that its contribution to the placement from the 3137-keV level is negligible.
451.666 *10*	1.47 *2*	1804.485	(7/2)	1352.815	$(5/2)^+$				I_γ: others: 1.42 *11* (1974Kr27), 1.2 *1* (1973Fe08).
457.592 *10*	5.08 *5*	1810.398	$(7/2^+)$	1352.815	$(5/2)^+$				I_γ: others: 4.8 *3* (1974Kr27), 5.1 *3* (1973Fe08).
472.82 *4*	0.243 *12*	2531.592		2058.787	$(5/2^+,7/2,9/2^+)$				E_γ,I_γ: unplaced transition with Eγ=473 *1*, Iγ=0.25 *5* observed in 1974Kr27. I_γ: other: 0.21 *5* (1973Fe08).
485.894 *14*	3.37 *3*	1352.815	$(5/2)^+$	866.930	$7/2^-$				I_γ: others: 3.5 *3* (1974Kr27), 3.3 *2* (1973Fe08).
[x]502.27 *6*	0.178 *14*								
510.204 *14*	61.7 *6*	866.930	$7/2^-$	356.733	$5/2^-$	M1(+E2)	−0.04 *12*	0.00184 *4*	α(K)=0.00164 *3*; α(L)=0.000174 *4*; α(M)=2.76×10^{-5} *6*; α(N)=2.59×10^{-6} *5* I_γ: others: 56 *3* (1974Kr27), 64.6 *25* (1973Fe08).
553.608 *17*	5.14 *5*	1352.815	$(5/2)^+$	799.223	$(5/2,7/2)^-$				I_γ: others: 4.8 *3* (1974Kr27), 6.2 *15* (1973Fe08).
559.99 *5*	0.220 *12*	2694.305	$(7/2)^+$	2134.502	$11/2^+$				
572.015 *10*	6.42 *6*	1438.972	$9/2^-$	866.930	$7/2^-$	M1(+E2)	−0.07 *13*	0.00142 *3*	α(K)=0.001264 *25*; α(L)=0.000134 *3*; α(M)=2.12×10^{-5} *5*; α(N)=1.99×10^{-6} *4* I_γ: others: 5.7 *3* (1974Kr27), 6.5 *3* (1973Fe08).
573.71 *7*	0.187 *14*	2647.187	$(7/2)^+$	2073.408	$(5/2^-,7/2^-)$				
593.580 *14*	1.09 *1*	2398.068	$9/2^+,7/2^+$	1804.485	(7/2)				I_γ: others: 1.03 *6* (1974Kr27), 1.1 *1* (1973Fe08).
[x]600.97 *3*	0.302 *13*								
603.91 *6*	0.169 *12*	2738.382	$(9/2)^+$	2134.502	$11/2^+$				
609.369[@] *14*	4.34 *4*	1701.726	$13/2^+$	1092.138	$9/2^+$	E2		1.65×10^{-3}	α(K)=0.001467 *21*; α(L)=0.0001585 *23*; α(M)=2.51×10^{-5} *4*; α(N)=2.33×10^{-6} *4* I_γ: others: 4.00 *15* (1974Kr27), 4.5 *3* (1973Fe08). E_γ: questionable placement as measured energy disagrees with level energy difference=609.59 keV; not included in least-squares fitting.
621.796 *14*	0.905 *14*	1421.078	$(7/2^-,5/2^+)$	799.223	$(5/2,7/2)^-$				I_γ: others: 0.90 *6* (1974Kr27), 0.6 *1* (1973Fe08).

$^{83}_{35}Br_{48}$-4

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

$\gamma(^{83}Br)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	α	Comments
634.55 *4*	0.187 *14*	2073.408	$(5/2^-,7/2^-)$	1438.972	$9/2^-$				
636.57[@] *3*	0.561 *14*	2694.305	$(7/2)^+$	2058.787	$(5/2^+,7/2,9/2^+)$				I_γ: other: 0.6 *3* (1974Kr27). E_γ: questionable placement as measured energy disagrees significantly with level energy difference=635.52 keV; not included in least-squares fitting.
652.26 *5*	0.195 *11*	2073.408	$(5/2^-,7/2^-)$	1421.078	$(7/2^-,5/2^+)$				
665.007 *14*	4.80 *5*	2738.382	$(9/2)^+$	2073.408	$(5/2^-,7/2^-)$				E_γ,I_γ: unplaced transitions with $E\gamma$=665.0 *3* and $I\gamma$=4.3 *2* observed in 1974Kr27. 1973Fe08 place a transition with $E\gamma$=664.8 *1* and $I\gamma$=4.7 *3* as depopulating a level at 1021 keV.
670.899 *22*	0.512 *14*	1701.726	$13/2^+$	1030.797	$(3/2)^-$				I_γ: other: 0.48 *9* (1974Kr27). E_γ: adopted J^π's suggest an E5 or M6 multipolarity for this transition; not included in the Adopted Levels.
673.99 *5*	0.257 *10*	1030.797	$(3/2)^-$	356.733	$5/2^-$				E_γ: 1973Fe08 placed this γ ray in ^{83}Se β^- decay (70.1 s) only.
679.578 *14*	1.70 *2*	2738.382	$(9/2)^+$	2058.787	$(5/2^+,7/2,9/2^+)$				I_γ: others: 1.39 *8* (1974Kr27), 1.6 *1* (1973Fe08).
[x]688.32 *5*	0.172 *17*								
705.94 *3*	0.453 *15*	2058.787	$(5/2^+,7/2,9/2^+)$	1352.815	$(5/2)^+$				I_γ: others: 0.60 *6* (1974Kr27), 0.3 *1* (1973Fe08).
[x]708.03 *6*	0.218 *14*								
712.344 *10*	4.63 *5*	1804.485	(7/2)	1092.138	$9/2^+$				I_γ: others: 4.63 *15* (1974Kr27), 3.9 *2* (1973Fe08).
718.253 *10*	21.2 *2*	1810.398	$(7/2^+)$	1092.138	$9/2^+$	M1+E2	−0.12 *10*	8.56×10^{-4} *14*	α(K)=0.000762 *12*; α(L)=8.03×10^{-5} *13*; α(M)=1.275×10^{-5} *21*; α(N)=1.196×10^{-6} *19* I_γ: others: 19.0 *6* (1974Kr27), 23.8 *10* (1973Fe08).
[x]723.01 *3*	0.433 *18*								
735.375 *14*	0.90 *1*	1092.138	$9/2^+$	356.733	$5/2^-$				I_γ: others: 1.00 *9* (1974Kr27), 1.2 *1* (1973Fe08).
799.225 *10*	21.1 *2*	799.223	$(5/2,7/2)^-$	0.0	$3/2^-$				I_γ: others: 19.0 *5* (1974Kr27), 23.3 *10* (1973Fe08).
812.311 *19*	0.641 *13*	2946.784	$9/2^+,11/2^+$	2134.502	$11/2^+$				E_γ: placed by evaluator after introducing the 2134-keV level found in (^{7}Li,α2nγ). γ not placed by 1974Kr27. I_γ: other: 0.54 *6* (1974Kr27).
834.789 *14*	1.21 *2*	2073.408	$(5/2^-,7/2^-)$	1238.625	$(5/2,7/2^-)$				
836.797 *10*	16.6 *2*	2647.187	$(7/2)^+$	1810.398	$(7/2^+)$				I_γ: others: 15.4 (1974Kr27), 23.2 *10* (1973Fe08).

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

$\gamma(^{83}Br)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α	Comments
866.912 *17*	11.9 *1*	866.930	7/2$^-$	0.0	3/2$^-$	[E2]	6.45×10^{-4}	α(K)=0.000574 *8*; α(L)=6.10×10^{-5} *9*; α(M)=9.68×10^{-6} *14*; α(N)=9.01×10^{-7} *13* I_γ: others: 10.5 *2* (1974Kr27), 12.9 *5* (1973Fe08).
881.957 *21*	1.06 *1*	1238.625	(5/2,7/2$^-$)	356.733	5/2$^-$			
883.897 *10*	10.7 *1*	2694.305	(7/2)$^+$	1810.398	(7/2$^+$)			I_γ: others: 10.2 *2* (1974Kr27), 11.3 *5* (1973Fe08).
888.031 *10*	5.68 *6*	2946.784	9/2$^+$,11/2$^+$	2058.787	(5/2$^+$,7/2,9/2$^+$)			I_γ: others: 5.2 *2* (1974Kr27), 6.9 *3* (1973Fe08).
889.85 *3*	0.427 *15*	2694.305	(7/2)$^+$	1804.485	(7/2)			
928.02 *8*	0.211 *12*	2738.382	(9/2)$^+$	1810.398	(7/2$^+$)			I_γ: other: 0.31 *11* (1974Kr27).
933.878 *15*	1.08 *1*	2738.382	(9/2)$^+$	1804.485	(7/2)			I_γ: others: 1.03 *8* (1974Kr27), 1.0 *1* (1973Fe08).
943.480 *15*	1.09 *1*	1810.398	(7/2$^+$)	866.930	7/2$^-$			I_γ: others: 1.22 *6* (1974Kr27), 1.3 *1* (1973Fe08).
966.74 *5*	0.251 *13*	2058.787	(5/2$^+$,7/2,9/2$^+$)	1092.138	9/2$^+$			I_γ: other: 0.39 *11* (1974Kr27).
988.200 *17*	1.12 *1*	988.171	1/2$^-$,3/2$^-$	0.0	3/2$^-$			I_γ: others: 1.03 *12* (1974Kr27), 0.9 *1* (1973Fe08).
992.37 *4*	0.311 *13*	2694.305	(7/2)$^+$	1701.726	13/2$^+$			I_γ: other: 0.5 *3* (1974Kr27).
996.054 *14*	2.23 *2*	1352.815	(5/2)$^+$	356.733	5/2$^-$			I_γ: others: 1.85 *15* (1974Kr27), 1.9 *2* (1973Fe08).
1030.80 *5*	0.321 *12*	1030.797	(3/2)$^-$	0.0	3/2$^-$			E_γ: 1973Fe08 placed this γ ray in ^{83}Se β^- decay (70.1 s) only. I_γ: other: 0.32 *12* (1974Kr27).
1036.45 *4*	0.495 *15*	2738.382	(9/2)$^+$	1701.726	13/2$^+$			I_γ: others: 0.54 *11* (1974Kr27), 0.3 *1* (1973Fe08).
1042.392 *14*	1.89 *2*	2134.502	11/2$^+$	1092.138	9/2$^+$			E_γ: placement by evaluator based on data in (^{7}Li,α2nγ). Placement is supported by observed coincidences with 225γ and 356γ in 1974Kr27. The 1042γ is unplaced in both 1974Kr27 and 1973Fe08. I_γ: others: 1.82 *8* (1974Kr27), 1.5 *1* (1973Fe08).
1064.336 *14*	7.89 *8*	1421.078	(7/2$^-$,5/2$^+$)	356.733	5/2$^-$			I_γ: others: 7.3 *3* (1974Kr27), 8.6 *4* (1973Fe08).
1082.247 *14*	4.11 *4*	1438.972	9/2$^-$	356.733	5/2$^-$	E2	3.81×10^{-4}	α(K)=0.000339 *5*; α(L)=3.57×10^{-5} *5*; α(M)=5.67×10^{-6} *8*; α(N)=5.30×10^{-7} *8* I_γ: others: 3.77 *14* (1974Kr27), 3.9 *3* (1973Fe08).
1085.264 *22*	0.890 *15*	2073.408	(5/2$^-$,7/2$^-$)	988.171	1/2$^-$,3/2$^-$			
1092.538 *14*	0.491 *18*	2531.592		1438.972	9/2$^-$			E_γ: 1974Kr27 place a 1093 *1* transition with Iγ=0.39 *12* from the 1091.9-keV level. This, however, results in an energy mismatch of 10σ.
1110.44 *3*	0.739 *18*	2531.592		1421.078	(7/2$^-$,5/2$^+$)			E_γ,I_γ: unplaced transition with Eγ=1110.2 *9*, Iγ=0.71 *5* observed in 1974Kr27. I_γ: other: 0.6 *1* (1973Fe08).
1136.21 *6*	0.199 *10*	2946.784	9/2$^+$,11/2$^+$	1810.398	(7/2$^+$)			
[x]1148.75 *5*	0.253 *12*							
[x]1179.36 *5*	0.194 *11*							
1191.861 *14*	6.30 *6*	2058.787	(5/2$^+$,7/2,9/2$^+$)	866.930	7/2$^-$			I_γ: others: 5.7 *2* (1974Kr27), 6.1 *3* (1973Fe08).
1206.46 *4*	0.707 *18*	2073.408	(5/2$^-$,7/2$^-$)	866.930	7/2$^-$			E_γ,I_γ: unplaced transition with Eγ=1206.9 *2* and Iγ=1.3 *1* observed in 1973Fe08.
1208.22 *4*	0.681 *18*	2647.187	(7/2)$^+$	1438.972	9/2$^-$			E_γ,I_γ: other: unresolved doublet (Iγ=1.1) with an unplaced 1206.9γ (1974Kr27).
1226.124 *14*	1.94 *2*	2647.187	(7/2)$^+$	1421.078	(7/2$^-$,5/2$^+$)			I_γ: others: 1.87 *9* (1974Kr27), 1.8 *2* (1973Fe08).

$^{83}_{35}Br_{48}$-6

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

$\gamma(^{83}Br)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1238.72 *5*	0.271 *12*	1238.625	(5/2,7/2$^-$)	0.0	3/2$^-$	E_γ,I_γ: unplaced transition with Eγ=1239 *1* and Iγ=0.31 *6* observed in 1974Kr27.
1245.38[@] *2*	1.06 *1*	2946.784	9/2$^+$,11/2$^+$	1701.726	13/2$^+$	I_γ: others: 0.96 *6* (1974Kr27), 1.0 *1* (1973Fe08). E_γ: questionable placement as measured energy disagrees with level energy difference=1245.06 keV; not included in least-squares fitting.
1259.603 *14*	1.43 *1*	2058.787	(5/2$^+$,7/2,9/2$^+$)	799.223	(5/2,7/2)$^-$	I_γ: others: 1.30 *9* (1974Kr27), 1.3 *1* (1973Fe08).
1274.20 *4*	0.261 *12*	2073.408	(5/2$^-$,7/2$^-$)	799.223	(5/2,7/2)$^-$	
1294.324 *14*	3.31 *5*	2647.187	(7/2)$^+$	1352.815	(5/2)$^+$	I_γ: other: 2.4 *5* (1973Fe08).
1299.419 *14*	7.63 *8*	2738.382	(9/2)$^+$	1438.972	9/2$^-$	I_γ: others: 6.9 *2* (1974Kr27), 8.5 *4* (1973Fe08).
1305.930 *23*	1.07 *2*	2398.068	9/2$^+$,7/2$^+$	1092.138	9/2$^+$	I_γ: others: 0.97 *11* (1974Kr27), 0.8 *1* (1973Fe08).
1317.259 *14*	6.25 *6*	2738.382	(9/2)$^+$	1421.078	(7/2$^-$,5/2$^+$)	I_γ: others: 5.6 *2* (1974Kr27), 6.0 *6* (1973Fe08).
1341.498 *10*	7.84 *8*	2694.305	(7/2)$^+$	1352.815	(5/2)$^+$	I_γ: others: 7.1 *2* (1974Kr27), 8.3 *4* (1973Fe08).
[x]1345.74 *5*	0.318 *15*					
1352.799 *10*	6.80 *7*	1352.815	(5/2)$^+$	0.0	3/2$^-$	I_γ: others: 6.3 *2* (1974Kr27), 7.0 *4* (1973Fe08).
[x]1383.26 *6*	0.194 *15*					
1385.35 *6*	0.377 *15*	2738.382	(9/2)$^+$	1352.815	(5/2)$^+$	I_γ: other: 0.54 *14* (1974Kr27).
1408.73 *9*	0.124 *12*	2647.187	(7/2)$^+$	1238.625	(5/2,7/2$^-$)	
1421.014 *20*	1.67 *2*	1421.078	(7/2$^-$,5/2$^+$)	0.0	3/2$^-$	I_γ: others: 1.64 *9* (1974Kr27), 1.6 *1* (1973Fe08).
1436.179 *21*	1.38 *2*	3137.825	9/2$^+$,11/2$^+$	1701.726	13/2$^+$	E_γ,I_γ: unplaced transition with Eγ=1435.8 *3*, Iγ=1.2 *1* observed in 1973Fe08. I_γ: other: 1.28 *9* (1974Kr27).
1447.73 *3*	0.788 *15*	1804.485	(7/2)	356.733	5/2$^-$	I_γ: others: 0.68 *11* (1974Kr27), 0.7 *1* (1973Fe08).
1455.66 *5*	0.395 *15*	2694.305	(7/2)$^+$	1238.625	(5/2,7/2$^-$)	E_γ,I_γ: unplaced transition with Eγ=1456 *2* and Iγ=0.43 *11* observed in 1974Kr27.
[x]1475.58 *2*	1.21 *2*					
1507.81 *3*	0.685 *16*	2946.784	9/2$^+$,11/2$^+$	1438.972	9/2$^-$	I_γ: other: 0.73 *8* (1974Kr27).
1531.09 *6*	0.290 *12*	2398.068	9/2$^+$,7/2$^+$	866.930	7/2$^-$	I_γ: other: 0.311 *12* (1974Kr27).
1555.019 *14*	3.71 *4*	2647.187	(7/2)$^+$	1092.138	9/2$^+$	I_γ: others: 3.4 *3* (1974Kr27), 3.7 *2* (1973Fe08).
[x]1565.25 *6*	0.276 *11*					
1646.17 *5*	0.319 *10*	2738.382	(9/2)$^+$	1092.138	9/2$^+$	I_γ: other: 0.65 *11* (1974Kr27).
1664.66 *3*	0.732 *17*	2531.592		866.930	7/2$^-$	E_γ,I_γ: unplaced transition with Eγ=1665 *2*, Iγ=0.80 *9* observed in 1974Kr27. I_γ: other: 0.8 *1* (1973Fe08).
1684.94 *3*	0.657 *15*	2777.114	(7/2,9/2)	1092.138	9/2$^+$	E_γ,I_γ: unplaced transition with Eγ=1684.2 *10*, Iγ=0.3 *1* observed in 1973Fe08. I_γ: other: 0.65 *8* (1974Kr27).
1701.79[@] *7*	0.251 *12*	1701.726	13/2$^+$	0.0	3/2$^-$	E_γ: adopted J^π's suggest an E5 or M6 multipolarity for this transition; not included in the Adopted Levels. I_γ: other: 0.31 *8* (1974Kr27).
1716.61[@] *3*	0.965 *16*	3137.825	9/2$^+$,11/2$^+$	1421.078	(7/2$^-$,5/2$^+$)	E_γ: placement from 1974Kr27. Alternate placement by 1973Fe08 is from the 2737-keV level, however, this results in population of a 1021-keV level, the existence of which could not be confirmed by 2015Kr02. Thus, the placement of 1974Kr27 is adopted here. I_γ: others: 0.94 *9* (1974Kr27), 0.9 *3* (1973Fe08).
1780.218 *21*	3.65 *4*	2647.187	(7/2)$^+$	866.930	7/2$^-$	I_γ: others: 3.1 *3* (1974Kr27), 2.8 *4* (1973Fe08).
1827.318 *23*	2.21 *2*	2694.305	(7/2)$^+$	866.930	7/2$^-$	I_γ: others: 1.85 *15* (1974Kr27), 2.0 *2* (1973Fe08).
1847.970 *18*	1.48 *2*	2647.187	(7/2)$^+$	799.223	(5/2,7/2)$^-$	I_γ: others: 1.57 *14* (1974Kr27), 1.0 *1* (1973Fe08).
1854.607 *23*	2.78 *3*	2946.784	9/2$^+$,11/2$^+$	1092.138	9/2$^+$	I_γ: others: 2.8 *3* (1974Kr27), 2.2 *2* (1973Fe08).

$^{83}_{35}Br_{48}$-7

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08 (continued)

$\gamma(^{83}Br)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1871.493 *19*	2.49 *2*	2738.382	$(9/2)^+$	866.930	$7/2^-$	I_γ: others: 2.3 *2* (1974Kr27), 2.1 *2* (1973Fe08).
1895.053 *17*	10.7 *1*	2694.305	$(7/2)^+$	799.223	$(5/2,7/2)^-$	I_γ: others: 10.5 *9* (1974Kr27), 11.3 *5* (1973Fe08).
[x]1973.45 *3*	0.874 *17*					
2045.624 *21*	1.37 *2*	3137.825	$9/2^+,11/2^+$	1092.138	$9/2^+$	E_γ,I_γ: unplaced transition with Eγ=2045.2 *5*, Iγ=1.0 *1* observed in 1973Fe08. I_γ: other: 1.39 *15* (1974Kr27).
2073.35 *5*	0.490 *14*	2073.408	$(5/2^-,7/2^-)$	0.0	$3/2^-$	E_γ,I_γ: unplaced transition with Eγ=2072.4 *7* and Iγ=0.4 *1* observed in 1973Fe08; unplaced transition with Eγ=2075 *2* and Iγ=0.5 *1* observed in 1974Kr27.
[x]2084.99 *3*	1.07 *2*					
2174.95 *7*	0.157 *10*	2531.592		356.733	$5/2^-$	
2290.398 *18*	12.6 *1*	2647.187	$(7/2)^+$	356.733	$5/2^-$	I_γ: others: 12.0 *12* (1974Kr27), 13.5 *5* (1973Fe08).
2337.529 *19*	4.69 *5*	2694.305	$(7/2)^+$	356.733	$5/2^-$	I_γ: others: 4.6 *5* (1974Kr27), 5.0 *3* (1973Fe08).
2420.36 *3*	0.641 *10*	2777.114	(7/2,9/2)	356.733	$5/2^-$	E_γ,I_γ: unplaced transition with Eγ=2419.9 *4*, Iγ=0.6 *1* observed in 1973Fe08. I_γ: other: 0.60 *8* (1974Kr27).

[†] From 2015Kr02. Intensities from 1974Kr27 and 1973Fe08 are included in the comments.
[‡] From the Adopted Gammas.
[#] For absolute intensity per 100 decays, multiply by 0.694 *5*.
[@] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

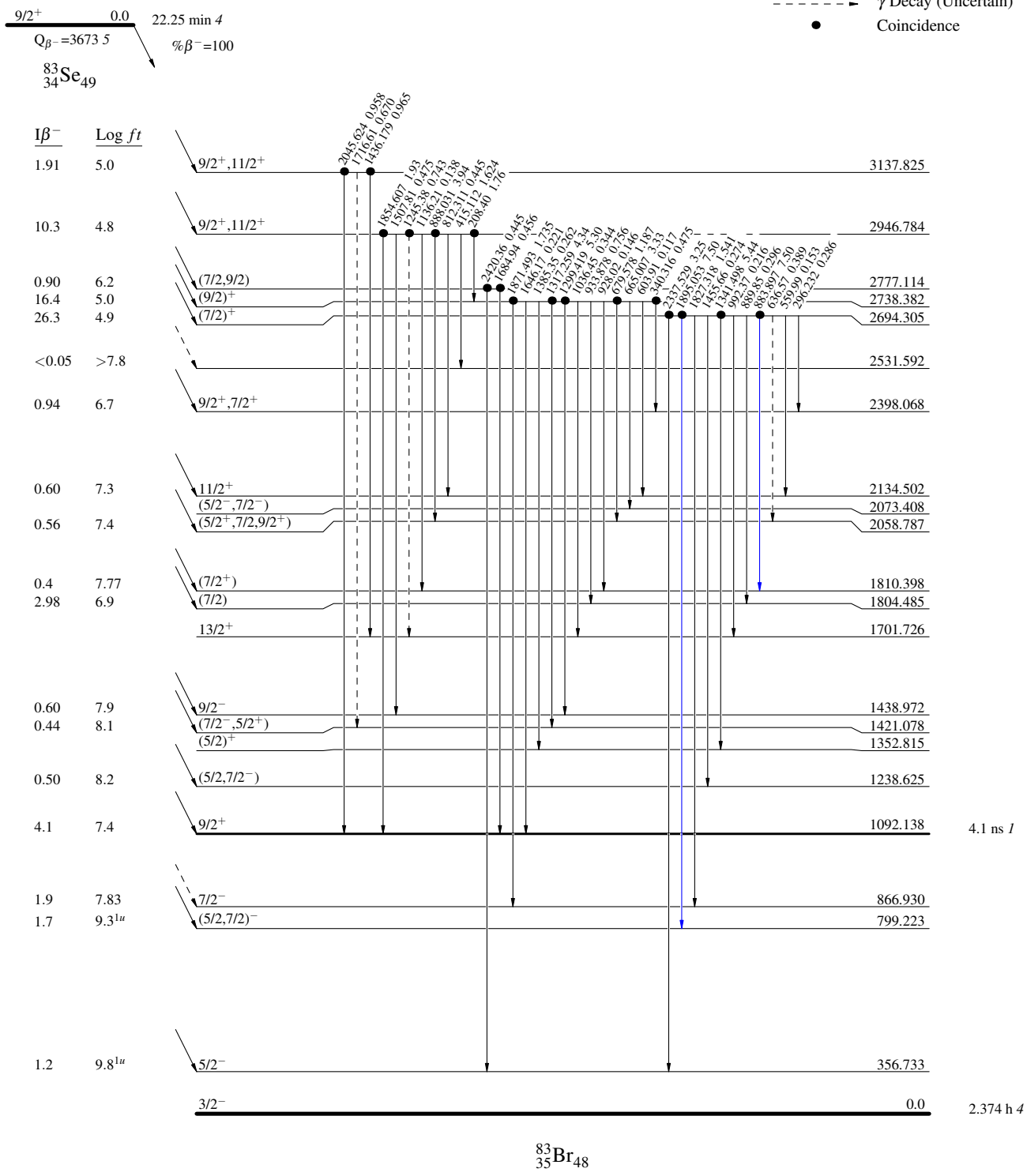
$^{83}_{35}Br_{48}$-8

^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08

Decay Scheme

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

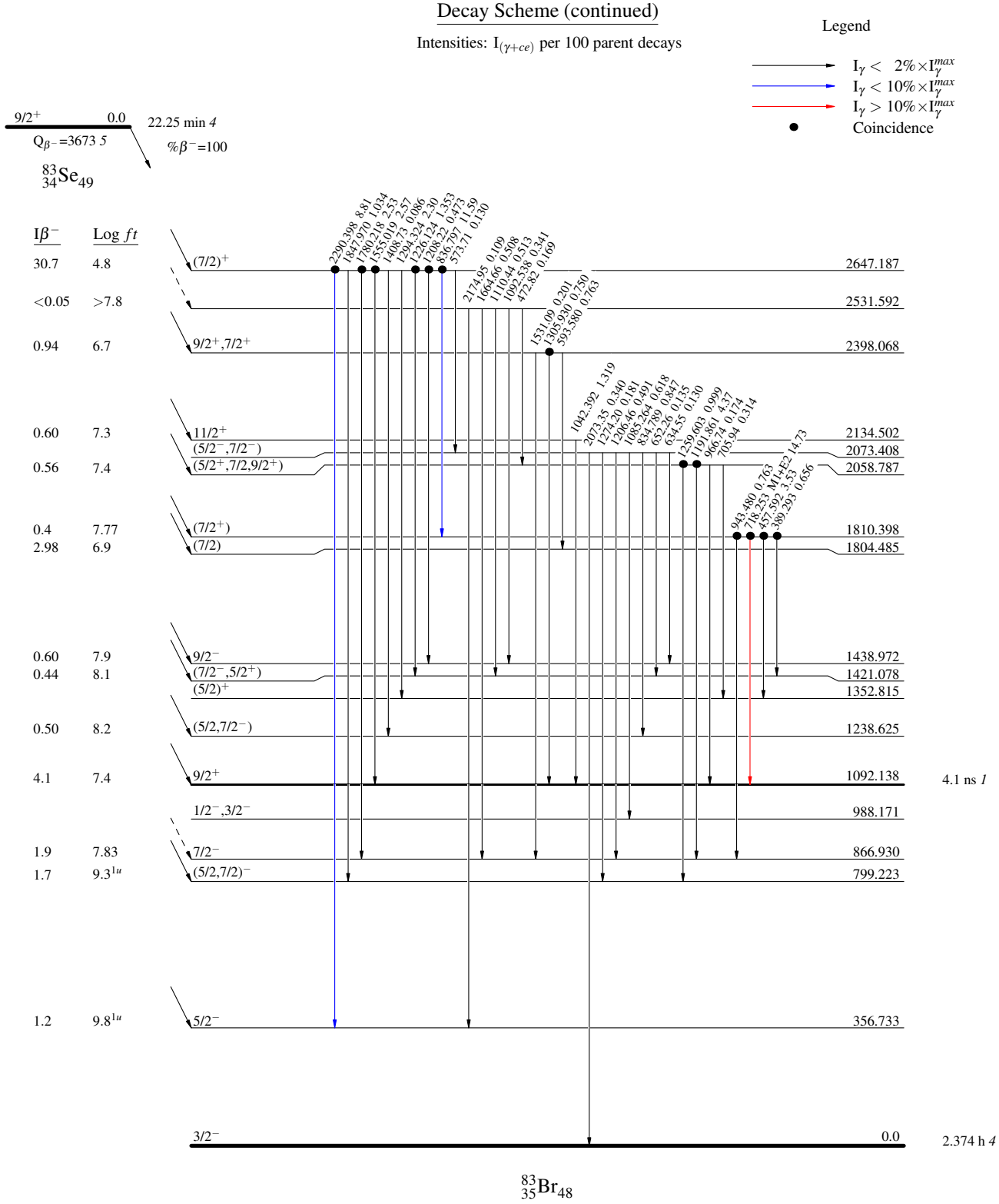
Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08

Decay Scheme (continued)

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



^{83}Se β^- decay (22.25 min) 2015Kr02,1974Kr27,1973Fe08

Decay Scheme (continued)

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