$^{76}_{35}$Br$_{41}$

Evaluation of the decay data

Alan L. Nichols

Department of Physics, University of Surrey, Guildford GU2 7XH, United Kingdom

This new evaluation was completed including the literature available by April 2017.

$^{76}_{35}Br_{41}$

1 Decay Scheme

Br-76 ($T_{1/2}$ = 16.1 hours) decays 100% by electron capture/β^+ decay (Q_{EC} = 4963 (9) keV) to various excited nuclear levels and the ground state of Se-76 (stable).

Le brome 76 se désintègre à 100 % par capture électronique/bêta plus vers des niveaux excités et l'état fondamental du sélénium 76 (stable).

2 Nuclear Data

$T_{1/2}(^{76}Kr)$	:	14,8	(1)	h (parent)
$T_{1/2}(^{76}Br)$	:	16,1	(2)	h
$Q^+(^{76}Br)$	:	4963	(9)	keV

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,44}$	342 (9)	0,21 (4)	(1st forbidden non-unique)	6,3	0,8735 (16)	0,1058 (13)	0,0187 (4)
$\epsilon_{0,43}$	357 (9)	0,56 (12)	(1st forbidden non-unique)	5,9	0,8738 (16)	0,1055 (13)	0,0186 (4)
$\epsilon_{0,42}$	471 (10)	0,052 (15)	(non-unique)	7,2	0,8756 (16)	0,1041 (13)	0,0183 (4)
$\epsilon_{0,41}$	508 (10)	0,007 (2)	(non-unique)	8,1	0,8760 (16)	0,1038 (13)	0,0183 (4)
$\epsilon_{0,40}$	526 (9)	0,067 (15)	(non-unique)	7,2	0,8761 (16)	0,1037 (13)	0,0182 (4)
$\epsilon_{0,39}$	547 (9)	0,26 (7)	(1st forbidden non-unique)	6,6	0,8763 (16)	0,1035 (13)	0,0182 (4)
$\epsilon_{0,38}$	634 (9)	0,19 (5)	(1st forbidden non-unique)	6,9	0,8769 (16)	0,1030 (13)	0,0181 (4)
$\epsilon_{0,37}$	748 (9)	0,61 (3)	(1st forbidden non-unique)	6,5	0,8775 (15)	0,1025 (13)	0,0180 (4)
$\epsilon_{0,36}$	753 (9)	0,24 (4)	(1st forbidden non-unique)	6,9	0,8776 (15)	0,1025 (13)	0,0180 (4)
$\epsilon_{0,35}$	763 (9)	0,36 (4)	(1st forbidden non-unique)	6,8	0,8776 (15)	0,1025 (13)	0,0180 (4)
$\epsilon_{0,34}$	790 (9)	0,200 (15)	(1st forbidden non-unique)	7,1	0,8777 (15)	0,1024 (13)	0,0180 (4)
$\epsilon_{0,33}$	879 (9)	0,50 (4)	(1st forbidden non-unique)	6,7	0,8780 (15)	0,1021 (13)	0,0179 (4)
$\epsilon_{0,32}$	899 (10)	0,43 (9)	(1st forbidden non-unique)	6,8	0,8781 (15)	0,1021 (13)	0,0179 (4)
$\epsilon_{0,31}$	944 (9)	0,36 (7)	(1st forbidden non-unique)	7	0,8782 (15)	0,1020 (13)	0,0179 (4)
$\epsilon_{0,30}$	965 (9)	0,42 (4)	(1st forbidden non-unique)	6,9	0,8783 (15)	0,1019 (13)	0,0179 (4)
$\epsilon_{0,29}$	992 (9)	0,64 (5)	(1st forbidden non-unque)	6,7	0,8783 (15)	0,1019 (13)	0,0179 (4)
$\epsilon_{0,28}$	1034 (9)	0,17 (4)	(1st forbidden non-unique)	7,4	0,8784 (15)	0,1018 (13)	0,0179 (4)
$\epsilon_{0,27}$	1050 (9)	0,133 (15)	(1st forbidden non-unique)	7,5	0,8785 (15)	0,1017 (13)	0,0179 (4)

	Energy (keV)	Probability (%)	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,26}$	1294 (9)	0,73 (19)	(1st forbidden non-unique)	6,9	0,8789 (15)	0,1014 (12)	0,0178 (4)
$\epsilon_{0,25}$	1341 (9)	0,36 (11)	(1st forbidden non-unique)	7,3	0,8790 (15)	0,1013 (12)	0,0178 (4)
$\epsilon_{0,24}$	1359 (9)	1,64 (13)	1st forbidden non-unique	6,61	0,8790 (15)	0,1013 (12)	0,0178 (4)
$\epsilon_{0,23}$	1407 (9)	1,53 (8)	(1st forbidden non-unique)	6,67	0,8791 (15)	0,1013 (12)	0,0178 (4)
$\epsilon_{0,22}$	1504 (9)	1,81 (15)	(1st frbidden non-unique)	6,65	0,8792 (15)	0,1012 (12)	0,0177 (4)
$\epsilon_{0,21}$	1522 (9)	0,09 (3)	(1st forbidden non-unique)	8	0,8792 (15)	0,1012 (12)	0,0177 (4)
$\epsilon_{0,20}$	1611 (9)	8,0 (4)	(1st forbidden non-unique)	6,07	0,8793 (15)	0,1011 (12)	0,0177 (4)
$\epsilon_{0,18}$	1803 (9)	3,99 (14)	(1st forbidden non-unique)	6,47	0,8794 (15)	0,1010 (12)	0,0177 (4)
$\epsilon_{0,17}$	1893 (9)	12,7 (2)	(1st forbidden non-unique)	6,01	0,8795 (15)	0,1009 (12)	0,0177 (4)
$\epsilon_{0,16}$	2012 (9)	6,9 (3)	1st forbidden non-unique	6,33	0,8796 (15)	0,1008 (12)	0,0177 (4)
$\epsilon_{0,15}$	2105 (9)	0,14 (3)	(1st forbidden non-unique)	8,1	0,8796 (15)	0,1008 (12)	0,0177 (4)
$\epsilon_{0,14}$	2293 (9)	0,88 (6)	allowed	7,33	0,8797 (15)	0,1007 (12)	0,0176 (4)
$\epsilon_{0,13}$	2308 (9)	0,15 (4)	(allowed)	8,1	0,8797 (15)	0,1007 (12)	0,0176 (4)
$\epsilon_{0,12}$	2332 (9)	0,11 (9)	(1st forbidden non-unique)	8,3	0,8797 (15)	0,1007 (12)	0,0176 (4)
$\epsilon_{0,11}$	2448 (9)	0,11 (7)	(1st forbidden non-unique)	8,3	0,8798 (15)	0,1007 (12)	0,0176 (4)
$\epsilon_{0,10}$	2534 (9)	0,2 (1)	2nd forbidden non-unique	8,1	0,8798 (15)	0,1006 (12)	0,0176 (4)
$\epsilon_{0,9}$	2589 (9)	0,07 (1)	(1st forbidden non-unique)	8,6	0,8798 (15)	0,1006 (12)	0,0176 (4)
$\epsilon_{0,7}$	2836 (9)	0,04 (2)	(1st forbidden non-unique)	8,9	0,8799 (15)	0,1006 (12)	0,0176 (4)
$\epsilon_{0,6}$	3175 (9)	0,10 (4)	1st forbidden non-unique	8,6	0,8800 (15)	0,1005 (12)	0,0176 (4)
$\epsilon_{0,5}$	3274 (9)	0,11 (6)	1st forbidden unique	10	0,8800 (15)	0,1005 (12)	0,0176 (4)
$\epsilon_{0,3}$	3747 (9)	0,10 (5)	1st forbidden non-unique	8,71	0,8801 (15)	0,1004 (12)	0,0176 (4)
$\epsilon_{0,2}$	3841 (9)	0,11 (3)	1st forbidden non-unique	8,71	0,8801 (15)	0,1004 (12)	0,0176 (4)
$\epsilon_{0,1}$	4404 (9)	0,75 (3)	1st forbidden non-unique	7,98	0,8802 (15)	0,1003 (12)	0,0176 (4)
$\epsilon_{0,0}$	4963 (9)	0,10 (2)	1st forbidden non-unique	8,93	0,8803 (15)	0,1003 (12)	0,0176 (4)

2.2 β^+ Transitions

	Energy (keV)	Probability (%)	Nature	lg ft
$\beta^+_{0,26}$	272 (9)	0,005 (1)	(1st forbidden non-unique)	6,9
$\beta^+_{0,25}$	319 (9)	0,005 (2)	(1st forbidden non-unique)	7,3
$\beta^+_{0,24}$	337 (9)	0,026 (3)	1st forbidden non-unique	6,61
$\beta^+_{0,23}$	385 (9)	0,040 (4)	(1st forbidden non-unique)	6,67
$\beta^+_{0,22}$	482 (9)	0,108 (9)	(1st forbidden non-unique)	6,65
$\beta^+_{0,21}$	500 (9)	0,006 (2)	(1st forbidden non-unique)	8
$\beta^+_{0,20}$	589 (9)	1,00 (4)	(1st forbidden non-unique)	6,07
$\beta^+_{0,18}$	781 (9)	1,32 (4)	(1st forbidden non-unique)	6,47
$\beta^+_{0,17}$	871 (9)	6,1 (1)	(1st forbidden non-unique)	6,01
$\beta^+_{0,16}$	990 (9)	5,1 (2)	1st forbidden non-unique	6,33
$\beta^+_{0,15}$	1083 (9)	0,13 (3)	(1st forbidden non-unique)	8,1
$\beta^+_{0,14}$	1271 (9)	1,49 (10)	allowed	7,33
$\beta^+_{0,13}$	1286 (9)	0,26 (8)	(allowed)	8,1
$\beta^+_{0,12}$	1310 (9)	0,20 (15)	(1st forbidden non-unique)	8,3
$\beta^+_{0,11}$	1426 (9)	0,28 (17)	(1st forbidden non-unique)	8,3
$\beta^+_{0,10}$	1512 (9)	0,6 (4)	2nd forbidden non-unique	8,1
$\beta^+_{0,9}$	1567 (9)	0,21 (2)	(1st forbidden non-unique)	8,6
$\beta^+_{0,7}$	1814 (9)	0,19 (11)	(1st forbidden non-unique)	8,9

	Energy (keV)	Probability (%)	Nature	lg ft
$\beta^+_{0,6}$	2153 (9)	0,9 (4)	1st forbidden non-unique	8,6
$\beta^+_{0,5}$	2252 (9)	0,6 (3)	1st forbidden unique	10
$\beta^+_{0,3}$	2725 (9)	1,8 (9)	1st forbidden non-unique	8,71
$\beta^+_{0,2}$	2819 (9)	2,1 (6)	1st forbidden non-unique	8,71
$\beta^+_{0,1}$	3382 (9)	25,7 (9)	1st forbidden non-unique	7,98
$\beta^+_{0,0}$	3941 (9)	5,7 (8)	1st forbidden non-unique	8,93

2.3 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K (10^{-3})	α_L (10^{-4})	α_M (10^{-6})	α_T (10^{-3})	α_π (10^{-4})
$\gamma_{4,3}$(Se)	114,7 (1)	0,50 (17)	E2	434 (6)	573 (9)	8860 (130)	501 (8)	
$\gamma_{26,22}$(Se)	210,1 (10)	0,045 (15)	[M1+50%E2]	30 (4)	34 (5)	530 (70)	34 (5)	
$\gamma_{36,28}$(Se)	281 (1)	0,120 (23)	[M1+50%E2]	11,3 (12)	12,5 (14)	195 (21)	12,8 (14)	
$\gamma_{21,18}$(Se)	281,4 (2)	0,045 (23)	[M1+50%E2]	11,3 (12)	12,5 (14)	194 (21)	12,7 (13)	
$\gamma_{38,31}$(Se)	309,4 (4)	0,14 (5)	[M1+50%E2]	8,3 (8)	9,1 (9)	142 (14)	9,4 (9)	
$\gamma_{26,20}$(Se)	318 (1)	0,13 (5)	[M1+50%E2]	7,6 (7)	8,4 (8)	130 (13)	8,6 (8)	
$\gamma_{5,4}$(Se)	358,102 (11)	0,37 (15)	M1+50%E2	5,3 (5)	5,7 (5)	89 (8)	5,9 (5)	
$\gamma_{17,14}$(Se)	399,87 (6)	0,052 (15)	E1	1,307 (19)	1,363 (19)	21,2 (3)	1,466 (21)	
$\gamma_{20,16}$(Se)	401,01 (9)	0,30 (4)	(M1+50%E2)	3,8 (3)	4,1 (3)	63 (5)	4,2 (3)	
$\gamma_{7,5}$(Se)	438,253 (11)	0,27 (3)	(M1+50%E2)	2,90 (18)	3,11 (21)	48 (4)	3,26 (21)	
$\gamma_{6,4}$(Se)	456,788 (11)	0,067 (15)	E2	3,24 (5)	3,51 (5)	54,6 (8)	3,65 (6)	
$\gamma_{5,3}$(Se)	472,815 (10)	1,93 (8)	M1+50%E2	2,33 (13)	2,50 (15)	38,8 (23)	2,63 (15)	
$\gamma_{18,14}$(Se)	490,19 (7)	0,333 (23)	[E1]	0,778 (11)	0,809 (12)	12,58 (18)	0,872 (13)	
$\gamma_{14,8}$(Se)	499,33 (4)	0,16 (7)	(M2)	5,00 (7)	5,46 (8)	85,3 (12)	5,64 (8)	
$\gamma_{18,13}$(Se)	504,75 (7)	0,229 (15)	[E1]	0,723 (11)	0,753 (11)	11,70 (17)	0,811 (12)	
$\gamma_{(-1,1)}$(Se)	546,5 (5)	0,163 (23)						
$\gamma_{1,0}$(Se)	559,102 (5)	74,1 (7)	E2	1,747 (25)	1,87 (3)	29,1 (4)	1,97 (3)	
$\gamma_{2,1}$(Se)	563,181 (9)	3,5 (6)	E2	1,710 (24)	1,83 (3)	28,5 (4)	1,92 (3)	
$\gamma_{6,3}$(Se)	571,501 (11)	0,44 (23)	M1+1.7%E2	1,15 (3)	1,20 (3)	18,7 (5)	1,29 (3)	
$\gamma_{26,17}$(Se)	599,8 (10)	0,42 (17)	[M1+50%E2]	1,22 (5)	1,29 (6)	20,1 (9)	1,37 (6)	
$\gamma_{32,22}$(Se)	605 (4)	0,22 (8)	[M1+50%E2]	1,20 (5)	1,27 (6)	19,7 (9)	1,34 (6)	
$\gamma_{43,29}$(Se)	635,2 (8)	0,074 (23)	(M1+50%E2)	1,05 (4)	1,11 (5)	17,3 (7)	1,18 (5)	
$\gamma_{10,6}$(Se)	641,447 (14)	0,14 (4)	E1	0,410 (6)	0,426 (6)	6,62 (10)	0,460 (7)	
$\gamma_{3,1}$(Se)	657,045 (9)	16,0 (4)	M1+96.43%E2(+E0)	1,090 (16)	1,159 (17)	18,0 (3)	1,226 (18)	
$\gamma_{6,2}$(Se)	665,365 (11)	0,71 (8)	E2	1,062 (15)	1,128 (16)	17,55 (25)	1,194 (17)	
$\gamma_{20,14}$(Se)	681,66 (8)	0,429 (23)	E1	0,358 (5)	0,371 (6)	5,77 (8)	0,401 (6)	
$\gamma_{20,13}$(Se)	696,22 (8)	0,496 (23)	(E1)	0,342 (5)	0,354 (5)	5,51 (8)	0,383 (6)	
$\gamma_{11,6}$(Se)	727,015 (15)	0,67 (23)	(M1+50%E2)	0,751 (21)	0,790 (24)	12,3 (4)	0,844 (24)	
$\gamma_{18,10}$(Se)	730,98 (6)	0,58 (8)	[E1]	0,307 (5)	0,318 (5)	4,95 (7)	0,344 (5)	
$\gamma_{10,5}$(Se)	740,133 (13)	0,13 (4)	E1+4.2%M2	0,36 (8)	0,37 (9)	5,8 (14)	0,40 (9)	
$\gamma_{4,1}$(Se)	771,758 (10)	0,414 (23)	E2	0,712 (10)	0,752 (11)	11,70 (17)	0,800 (12)	
$\gamma_{22,14}$(Se)	789,52 (9)	0,46 (3)	(E1)	0,261 (4)	0,270 (4)	4,19 (6)	0,292 (4)	
$\gamma_{7,4}$(Se)	796,355 (11)	0,074 (23)	(E2)	0,656 (10)	0,693 (10)	10,77 (15)	0,737 (11)	
$\gamma_{22,13}$(Se)	804,08 (9)	0,53 (4)	(E1)	0,251 (4)	0,260 (4)	4,04 (6)	0,281 (4)	
$\gamma_{39,24}$(Se)	812,1 (8)	0,14 (5)						
$\gamma_{20,11}$(Se)	836,88 (7)	0,45 (4)	(M1+E2)					
$\gamma_{30,18}$(Se)	838,3 (10)	0,318 (23)						
$\gamma_{13,6}$(Se)	867,67 (4)	0,318 (23)	(E1)	0,215 (3)	0,222 (4)	3,45 (5)	0,240 (4)	
$\gamma_{14,6}$(Se)	882,23 (4)	0,40 (2)	E1+6.3%M2	0,26 (7)	0,27 (8)	4,2 (12)	0,29 (8)	
$\gamma_{23,14}$(Se)	886,58 (9)	0,340 (23)						
$\gamma_{17,8}$(Se)	899,20 (4)	0,170 (23)						
$\gamma_{23,13}$(Se)	901,14 (9)	0,17 (5)						
$\gamma_{7,3}$(Se)	911,068 (11)	0,05 (3)	(M1+E2)					
$\gamma_{20,10}$(Se)	922,45 (7)	0,192 (15)						

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K (10^{-3})	α_L (10^{-4})	α_M (10^{-6})	α_T (10^{-3})	α_π (10^{-4})
$\gamma_{24,14}$(Se)	934,20 (9)	0,052 (15)	E1	0,185 (3)	0,191 (3)	2,97 (5)	0,207 (3)	
$\gamma_{42,23}$(Se)	936 (3)	0,044 (15)						
$\gamma_{12,5}$(Se)	941,8 (5)	0,111 (23)						
$\gamma_{17,7}$(Se)	942,54 (4)	0,074 (15)	(M1+E2)					
$\gamma_{14,5}$(Se)	980,92 (4)	0,355 (23)	E1	0,1682 (24)	0,1736 (25)	2,70 (4)	0,189 (3)	
$\gamma_{22,10}$(Se)	1030,31 (8)	0,56 (6)	(E1)	0,1531 (22)	0,1579 (23)	2,45 (4)	0,1716 (24)	
$\gamma_{18,7}$(Se)	1032,86 (6)	0,58 (5)						
$\gamma_{35,18}$(Se)	1039,5 (4)	0,044 (15)						
$\gamma_{38,19}$(Se)	1060 (1)	0,044 (23)						
$\gamma_{2,0}$(Se)	1122,283 (7)	0,00082 (8)	E0					
$\gamma_{5,1}$(Se)	1129,860 (9)	4,59 (23)	M1+53.8%E2	0,275 (4)	0,286 (5)	4,44 (7)	0,309 (5)	0,0157 (4)
$\gamma_{43,22}$(Se)	1146,4 (7)	0,059 (15)	(M1+E2)					
$\gamma_{9,3}$(Se)	1158,1 (5)	0,133 (8)						
$\gamma_{16,6}$(Se)	1162,88 (5)	0,163 (15)	M1+E2					
$\gamma_{20,8}$(Se)	1180,99 (7)	0,111 (15)						
$\gamma_{25,10}$(Se)	1193,1 (20)	0,10 (5)						
$\gamma_{10,3}$(Se)	1212,948 (13)	1,7 (6)	E1	0,1134 (16)	0,1167 (17)	1,81 (3)	0,182 (3)	0,548 (8)
$\gamma_{3,0}$(Se)	1216,147 (7)	8,73 (22)	E2	0,241 (4)	0,251 (4)	3,90 (6)	0,281 (4)	0,1090 (16)
$\gamma_{20,7}$(Se)	1224,33 (7)	0,29 (11)	(M1+E2)					
$\gamma_{6,1}$(Se)	1228,546 (10)	2,13 (10)	M1+20.6%E2	0,226 (4)	0,234 (4)	3,64 (6)	0,264 (4)	0,1041 (18)
$\gamma_{43,20}$(Se)	1254,3 (7)	0,08 (3)	(M1+E2)					
$\gamma_{21,8}$(Se)	1270,9 (20)	0,059 (23)	(M1+E2)					
$\gamma_{17,6}$(Se)	1282,10 (4)	0,07 (3)	(M1+E2)					
$\gamma_{22,8}$(Se)	1288,85 (8)	0,052 (23)	(E2)	0,213 (3)	0,221 (3)	3,44 (5)	0,264 (4)	0,254 (4)
$\gamma_{11,3}$(Se)	1298,516 (15)	0,089 (8)	(M1+E2)					
$\gamma_{29,14}$(Se)	1300,7 (4)	0,155 (15)	(E1)	0,1002 (14)	0,1031 (15)	1,603 (23)	0,226 (4)	1,141 (17)
$\gamma_{10,2}$(Se)	1306,812 (13)	0,185 (23)	E3	0,388 (6)	0,411 (6)	6,39 (9)	0,445 (7)	0,0838 (12)
$\gamma_{29,13}$(Se)	1315,3 (4)	0,052 (15)	(E1)	0,0983 (14)	0,1011 (15)	1,572 (22)	0,234 (4)	1,237 (18)
$\gamma_{13,4}$(Se)	1324,46 (4)	0,044 (23)	(E3)	0,376 (6)	0,397 (6)	6,18 (9)	0,432 (6)	0,0993 (14)
$\gamma_{18,6}$(Se)	1372,42 (6)	0,51 (3)						
$\gamma_{17,5}$(Se)	1380,79 (4)	2,50 (11)	[M1+50%E2]	0,181 (3)	0,187 (3)	2,91 (5)	0,245 (4)	0,422 (14)
$\gamma_{33,13}$(Se)	1429,0 (2)	0,192 (23)						
$\gamma_{23,7}$(Se)	1429,25 (8)	0,06 (3)						
$\gamma_{13,3}$(Se)	1439,17 (4)	0,58 (3)	(E1)	0,0843 (12)	0,0867 (13)	1,347 (19)	0,299 (5)	2,05 (3)
$\gamma_{14,3}$(Se)	1453,73 (4)	0,81 (5)	E1	0,0829 (12)	0,0852 (12)	1,325 (19)	0,308 (5)	2,15 (3)
$\gamma_{44,18}$(Se)	1461,4 (20)	0,13 (3)						
$\gamma_{18,5}$(Se)	1471,11 (6)	2,32 (11)	M1+50%E2	0,1592 (23)	0,1647 (24)	2,56 (4)	0,245 (5)	0,671 (20)
$\gamma_{31,11}$(Se)	1504,6 (5)	0,09 (4)						
$\gamma_{13,2}$(Se)	1533,03 (4)	0,06 (4)	(E1)	0,0760 (11)	0,0780 (11)	1,213 (17)	0,362 (5)	2,77 (4)
$\gamma_{43,17}$(Se)	1536,1 (7)	0,17 (7)	(M1+E2)					
$\gamma_{37,13}$(Se)	1560,2 (2)	0,444 (23)	(E1)	0,0738 (11)	0,0758 (11)	1,178 (17)	0,381 (6)	2,99 (5)
$\gamma_{7,1}$(Se)	1568,113 (10)	0,95 (5)	(M1+50%E2)	0,1404 (20)	0,1451 (21)	2,26 (4)	0,259 (5)	1,01 (3)
$\gamma_{8,1}$(Se)	1611,452 (13)	0,222 (23)	(E2)	0,1348 (19)	0,1394 (20)	2,17 (3)	0,282 (4)	1,309 (19)
$\gamma_{15,3}$(Se)	1642 (2)	0,13 (5)						
$\gamma_{33,10}$(Se)	1655,2 (2)	0,118 (23)						
$\gamma_{20,5}$(Se)	1662,58 (7)	0,14 (6)						
$\gamma_{22,6}$(Se)	1671,75 (8)	0,170 (15)	(M1+E2)					
$\gamma_{27,8}$(Se)	1742,4 (10)	0,118 (15)						
$\gamma_{22,5}$(Se)	1770,44 (8)	0,200 (23)	(M1+E2)					
$\gamma_{35,10}$(Se)	1770,5 (4)	0,044 (15)						
$\gamma_{6,0}$(Se)	1787,648 (8)	0,55 (3)	E2	0,1103 (16)	0,1139 (16)	1,772 (25)	0,333 (5)	2,09 (3)
$\gamma_{28,7}$(Se)	1801,9 (6)	0,030 (15)						
$\gamma_{9,1}$(Se)	1815,1 (6)	0,148 (15)						
$\gamma_{25,6}$(Se)	1834,6 (20)	0,19 (10)						
$\gamma_{17,3}$(Se)	1853,60 (4)	14,6 (8)	(M1+50%E2)	0,1022 (15)	0,1053 (15)	1,638 (24)	0,334 (7)	2,19 (6)
$\gamma_{10,1}$(Se)	1869,993 (12)	0,141 (15)	E1	0,0555 (8)	0,0568 (8)	0,884 (13)	0,597 (9)	5,35 (8)
$\gamma_{26,6}$(Se)	1881,9 (10)	0,13 (5)						
$\gamma_{39,11}$(Se)	1901 (2)	0,12 (5)						
$\gamma_{18,3}$(Se)	1943,92 (6)	0,47 (9)						
$\gamma_{11,1}$(Se)	1955,561 (14)	0,30 (6)	(M1+E2)					

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K (10^{-3})	α_L (10^{-4})	α_M (10^{-6})	α_T (10^{-3})	α_π (10^{-4})
$\gamma_{43,12}$(Se)	1975,0 (9)	0,11 (9)						
$\gamma_{44,12}$(Se)	1990,7 (21)	0,08 (3)						
$\gamma_{34,7}$(Se)	2045,9 (9)	0,178 (15)						
$\gamma_{12,1}$(Se)	2071,7 (5)	0,27 (23)						
$\gamma_{36,7}$(Se)	2082 (1)	0,12 (4)						
$\gamma_{13,1}$(Se)	2096,22 (4)	1,35 (8)	(E1)	0,0467 (7)	0,0478 (7)	0,743 (11)	0,749 (11)	6,97 (10)
$\gamma_{14,1}$(Se)	2110,78 (4)	2,46 (12)	E1	0,0462 (7)	0,0473 (7)	0,736 (11)	0,759 (11)	7,07 (10)
$\gamma_{7,0}$(Se)	2127,215 (8)	0,21 (7)	(E2)	0,0800 (12)	0,0824 (12)	1,282 (18)	0,461 (7)	3,72 (6)
$\gamma_{20,3}$(Se)	2135,39 (7)	0,93 (6)	(M1+50%E2)	0,0789 (12)	0,0812 (12)	1,262 (18)	0,438 (9)	3,49 (8)
$\gamma_{(-1,2)}$(Se)	2170 (2)	0,10 (4)						
$\gamma_{8,0}$(Se)	2170,554 (12)	0,45 (8)	(E0)					
$\gamma_{29,6}$(Se)	2183,0 (4)	0,13 (3)	(M1+E2)					
$\gamma_{20,2}$(Se)	2229,26 (7)	0,10 (7)						
$\gamma_{(-1,3)}$(Se)	2235 (2)	0,13 (6)						
$\gamma_{15,1}$(Se)	2299 (2)	0,14 (5)						
$\gamma_{30,5}$(Se)	2309,4 (10)	0,10 (3)						
$\gamma_{23,3}$(Se)	2340,31 (8)	0,09 (4)						
$\gamma_{16,1}$(Se)	2391,43 (5)	4,7 (3)	M1+50%E2	0,0646 (10)	0,0663 (10)	1,032 (15)	0,541 (11)	4,69 (10)
$\gamma_{35,6}$(Se)	2412,0 (4)	0,030 (8)						
$\gamma_{10,0}$(Se)	2429,095 (11)	0,10 (5)	E3	0,0991 (14)	0,1026 (15)	1,596 (23)	0,437 (7)	3,26 (5)
$\gamma_{24,2}$(Se)	2481,80 (8)	0,133 (23)						
$\gamma_{17,1}$(Se)	2510,65 (4)	1,92 (12)	(M1+50%E2)	0,0593 (9)	0,0609 (9)	0,948 (14)	0,590 (11)	5,24 (11)
$\gamma_{26,2}$(Se)	2547,2 (10)	0,006 (4)						
$\gamma_{18,1}$(Se)	2600,97 (6)	0,69 (3)						
$\gamma_{12,0}$(Se)	2630,8 (5)	0,13 (4)						
$\gamma_{13,0}$(Se)	2655,32 (4)	0,170 (15)	(E1)	0,0333 (5)	0,0340 (5)	0,529 (8)	1,087 (16)	10,49 (15)
$\gamma_{31,4}$(Se)	2688,3 (5)	0,36 (4)						
$\gamma_{28,3}$(Se)	2713,0 (6)	0,074 (23)						
$\gamma_{29,3}$(Se)	2754,5 (4)	0,074 (23)	(M1+E2)					
$\gamma_{20,1}$(Se)	2792,44 (7)	5,6 (3)	(M1+50%E2)	0,0495 (7)	0,0508 (8)	0,790 (12)	0,706 (13)	6,51 (13)
$\gamma_{(-1,4)}$(Se)	2837,1 (30)	0,11 (5)						
$\gamma_{32,3}$(Se)	2848 (4)	0,15 (5)						
$\gamma_{22,1}$(Se)	2900,30 (8)	0,27 (10)	(M1+E2)					
$\gamma_{16,0}$(Se)	2950,53 (5)	7,4 (4)	[M1+50%E2]	0,0452 (7)	0,0463 (7)	0,720 (11)	0,770 (14)	7,19 (13)
$\gamma_{35,3}$(Se)	2983,5 (4)	0,09 (3)						
$\gamma_{23,1}$(Se)	2997,36 (8)	0,956 (24)	[M1+50%E2]	0,0440 (7)	0,0451 (7)	0,701 (10)	0,789 (14)	7,39 (14)
$\gamma_{24,1}$(Se)	3044,98 (8)	0,022 (8)	(M1+E2)					
$\gamma_{25,1}$(Se)	3063,1 (20)	0,074 (23)						
$\gamma_{17,0}$(Se)	3069,75 (4)	0,044 (15)						
$\gamma_{37,2}$(Se)	3093,2 (2)	0,163 (15)						
$\gamma_{18,0}$(Se)	3160,07 (6)	0,141 (15)						
$\gamma_{20,0}$(Se)	3351,54 (7)	0,252 (15)						
$\gamma_{28,1}$(Se)	3370,0 (6)	0,096 (8)						
$\gamma_{29,1}$(Se)	3411,5 (4)	0,296 (15)	(M1+E2)					
$\gamma_{32,1}$(Se)	3505 (4)	0,037 (15)						
$\gamma_{33,1}$(Se)	3525,2 (2)	0,178 (15)						
$\gamma_{24,0}$(Se)	3604,08 (8)	1,60 (11)	[M1+50%E2]	0,0326 (5)	0,0334 (5)	0,520 (8)	1,018 (17)	9,81 (17)
$\gamma_{35,1}$(Se)	3640,5 (4)	0,155 (15)						
$\gamma_{40,1}$(Se)	3877,8 (10)	0,015 (8)						
$\gamma_{(-1,5)}$(Se)	3892,1 (20)	0,030 (15)						
$\gamma_{27,0}$(Se)	3913 (1)	0,015 (8)						
$\gamma_{28,0}$(Se)	3929,1 (6)	0,089 (15)						
$\gamma_{(-1,6)}$(Se)	3963,6 (10)	0,022 (8)						
$\gamma_{29,0}$(Se)	3970,6 (4)	0,010 (5)						
$\gamma_{31,0}$(Se)	4019,3 (5)	0,059 (15)						
$\gamma_{43,1}$(Se)	4046,7 (7)	0,044 (15)	(M1+E2)					
$\gamma_{32,0}$(Se)	4064 (4)	0,022 (8)						
$\gamma_{33,0}$(Se)	4084,3 (2)	0,015 (8)						
$\gamma_{34,0}$(Se)	4173,1 (9)	0,021 (8)						
$\gamma_{40,0}$(Se)	4436,9 (10)	0,052 (15)						

	Energy (keV)	$P_{\gamma+ce}$ (%)	Multipolarity	α_K (10^{-3})	α_L (10^{-4})	α_M (10^{-6})	α_T (10^{-3})	α_π (10^{-4})
$\gamma_{41,0}$(Se)	4455 (3)	0,0067 (23)						
$\gamma_{42,0}$(Se)	4492 (3)	0,0059 (23)						
$\gamma_{43,0}$(Se)	4605,8 (7)	0,015 (8)						

3 Atomic Data

3.1 Se

ω_K	:	0,602	(4)
$\bar{\omega}_L$	:	0,0175	(5)
n_{KL}	:	1,202	(4)

3.1.1 X Radiations

		Energy (keV)	Relative probability
X_K			
	$K\alpha_2$	11,1815	51,6
	$K\alpha_1$	11,2225	100
	$K\beta_3$	12,4897	}
	$K\beta_1$	12,496	} 23,4
	$K\beta_5''$	12,596	}
	$K\beta_2$	12,6523	1,31
X_L			
	$L\ell$	1,204	
	$L\alpha$	1,379	
	$L\eta$	1,245	
	$L\beta$	1,42 - 1,492	
	$L\gamma$	1,648	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	9,280 - 9,712	100
KLX	10,749 - 11,216	32,5
KXY	12,195 - 12,647	2,64
Auger L	0,956 - 1,312	439

4 Electron Emissions

		Energy (keV)		Electrons (per 100 disint.)
e_{AL}	(Se)	0,956 - 1,312		52,9 (7)
e_{AK}	(Se)			16,3 (3)
	KLL	9,280 - 9,712		
	KLX	10,749 - 11,216		
	KXY	12,195 - 12,647		
$\beta^+_{0,0}$	max:	3941	(9)	5,7 (8)
	avg:	1803	(4)	
$\beta^+_{0,1}$	max:	3382	(9)	25,7 (9)
	avg:	1535	(4)	
$\beta^+_{0,2}$	max:	2819	(9)	2,1 (6)
	avg:	1268	(4)	
$\beta^+_{0,3}$	max:	2725	(9)	1,8 (9)
	avg:	1224	(4)	
$\beta^+_{0,5}$	max:	2252	(9)	0,6 (3)
	avg:	1026	(4)	
$\beta^+_{0,6}$	max:	2153	(9)	0,9 (4)
	avg:	957	(4)	
$\beta^+_{0,7}$	max:	1814	(9)	0,19 (11)
	avg:	800	(4)	
$\beta^+_{0,9}$	max:	1567	(9)	0,21 (2)
	avg:	688	(4)	
$\beta^+_{0,10}$	max:	1512	(9)	0,6 (4)
	avg:	663	(4)	
$\beta^+_{0,11}$	max:	1426	(9)	0,28 (17)
	avg:	624	(4)	
$\beta^+_{0,12}$	max:	1310	(9)	0,20 (15)
	avg:	572	(4)	
$\beta^+_{0,13}$	max:	1286	(9)	0,26 (8)
	avg:	561	(4)	
$\beta^+_{0,14}$	max:	1271	(9)	1,49 (10)
	avg:	554	(4)	
$\beta^+_{0,15}$	max:	1083	(9)	0,13 (3)
	avg:	471	(4)	
$\beta^+_{0,16}$	max:	990	(9)	5,1 (2)
	avg:	430	(4)	
$\beta^+_{0,17}$	max:	871	(9)	6,1 (1)
	avg:	378	(4)	
$\beta^+_{0,18}$	max:	781	(9)	1,32 (4)
	avg:	339	(4)	
$\beta^+_{0,20}$	max:	589	(9)	1,00 (4)
	avg:	256	(4)	

		Energy (keV)		Electrons (per 100 disint.)
$\beta^+_{0,21}$	max:	500	(9)	0,006 (2)
	avg:	218	(4)	
$\beta^+_{0,22}$	max:	482	(9)	0,108 (9)
	avg:	210	(4)	
$\beta^+_{0,23}$	max:	385	(9)	0,040 (4)
	avg:	169	(4)	
$\beta^+_{0,24}$	max:	337	(9)	0,026 (3)
	avg:	149	(4)	
$\beta^+_{0,25}$	max:	319	(9)	0,005 (2)
	avg:	142	(4)	
$\beta^+_{0,26}$	max:	272	(9)	0,005 (1)
	avg:	122	(4)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)	
XL	(Se)	1,204 - 1,648	0,968 (20)	
XKα_2	(Se)	11,1815	7,20 (13)	Kα
XKα_1	(Se)	11,2225	13,96 (25)	
XKβ_3	(Se)	12,4897	3,26 (7)	K$'\beta_1$
XKβ_1	(Se)	12,496		
XKβ''_5	(Se)	12,596		
XKβ_2	(Se)	12,6523	0,183 (7)	K$'\beta_2$

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{4,3}$(Se)	114,7 (1)	0,33 (11)
$\gamma_{26,22}$(Se)	210,1 (10)	0,044 (15)
$\gamma_{36,28}$(Se)	281 (1)	0,118 (23)
$\gamma_{21,18}$(Se)	281,4 (2)	0,044 (23)
$\gamma_{38,31}$(Se)	309,4 (4)	0,14 (5)
$\gamma_{26,20}$(Se)	318 (1)	0,13 (5)
$\gamma_{5,4}$(Se)	358,101 (11)	0,37 (15)
$\gamma_{17,14}$(Se)	399,87 (6)	0,052 (15)

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{20,16}$(Se)	401,01 (9)	0,30 (4)
$\gamma_{7,5}$(Se)	438,252 (11)	0,27 (3)
$\gamma_{6,4}$(Se)	456,787 (11)	0,067 (15)
$\gamma_{5,3}$(Se)	472,813 (10)	1,92 (8)
$\gamma_{18,14}$(Se)	490,19 (7)	0,333 (23)
$\gamma_{14,8}$(Se)	499,33 (4)	0,16 (7)
$\gamma_{18,13}$(Se)	504,75 (7)	0,229 (15)
$\gamma^{\pm}$	511	108 (4)
$\gamma_{(-1,1)}$(Se)	546,5 (5)	0,163 (23)
$\gamma_{1,0}$(Se)	559,100 (5)	74,0 (7)
$\gamma_{2,1}$(Se)	563,179 (9)	3,5 (6)
$\gamma_{6,3}$(Se)	571,499 (11)	0,44 (23)
$\gamma_{26,17}$(Se)	599,8 (10)	0,42 (17)
$\gamma_{32,22}$(Se)	605 (4)	0,22 (8)
$\gamma_{43,29}$(Se)	635,2 (8)	0,074 (23)
$\gamma_{10,6}$(Se)	641,444 (14)	0,14 (4)
$\gamma_{3,1}$(Se)	657,042 (9)	16,0 (4)
$\gamma_{6,2}$(Se)	665,362 (11)	0,71 (8)
$\gamma_{20,14}$(Se)	681,66 (8)	0,429 (23)
$\gamma_{20,13}$(Se)	696,22 (8)	0,496 (23)
$\gamma_{11,6}$(Se)	727,011 (15)	0,67 (23)
$\gamma_{18,10}$(Se)	730,98 (6)	0,58 (8)
$\gamma_{10,5}$(Se)	740,129 (13)	0,13 (4)
$\gamma_{4,1}$(Se)	771,754 (10)	0,414 (23)
$\gamma_{22,14}$(Se)	789,52 (9)	0,46 (3)
$\gamma_{7,4}$(Se)	796,351 (11)	0,074 (23)
$\gamma_{22,13}$(Se)	804,08 (9)	0,53 (4)
$\gamma_{39,24}$(Se)	812,1 (8)	0,14 (5)
$\gamma_{20,11}$(Se)	836,88 (7)	0,45 (4)
$\gamma_{30,18}$(Se)	838,3 (10)	0,318 (23)
$\gamma_{13,6}$(Se)	867,66 (4)	0,318 (23)
$\gamma_{14,6}$(Se)	882,22 (4)	0,40 (2)
$\gamma_{23,14}$(Se)	886,57 (9)	0,340 (23)
$\gamma_{17,8}$(Se)	899,19 (4)	0,170 (23)
$\gamma_{23,13}$(Se)	901,13 (9)	0,17 (5)
$\gamma_{7,3}$(Se)	911,062 (11)	0,05 (3)
$\gamma_{20,10}$(Se)	922,44 (7)	0,192 (15)
$\gamma_{24,14}$(Se)	934,19 (9)	0,052 (15)
$\gamma_{42,23}$(Se)	936 (3)	0,044 (15)
$\gamma_{12,5}$(Se)	941,8 (5)	0,111 (23)
$\gamma_{17,7}$(Se)	942,53 (4)	0,074 (15)
$\gamma_{14,5}$(Se)	980,91 (4)	0,355 (23)
$\gamma_{22,10}$(Se)	1030,30 (8)	0,56 (6)
$\gamma_{18,7}$(Se)	1032,85 (6)	0,58 (5)
$\gamma_{35,18}$(Se)	1039,5 (4)	0,044 (15)
$\gamma_{38,19}$(Se)	1060 (1)	0,044 (23)
$\gamma_{5,1}$(Se)	1129,851 (9)	4,59 (23)
$\gamma_{43,22}$(Se)	1146,4 (7)	0,059 (15)

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{9,3}$(Se)	1158,1 (5)	0,133 (8)
$\gamma_{16,6}$(Se)	1162,87 (5)	0,163 (15)
$\gamma_{20,8}$(Se)	1180,98 (7)	0,111 (15)
$\gamma_{25,10}$(Se)	1193,1 (20)	0,10 (5)
$\gamma_{10,3}$(Se)	1212,938 (13)	1,7 (6)
$\gamma_{3,0}$(Se)	1216,137 (7)	8,73 (22)
$\gamma_{20,7}$(Se)	1224,32 (7)	0,29 (11)
$\gamma_{6,1}$(Se)	1228,535 (10)	2,13 (10)
$\gamma_{43,20}$(Se)	1254,3 (7)	0,08 (3)
$\gamma_{21,8}$(Se)	1270,9 (20)	0,059 (23)
$\gamma_{17,6}$(Se)	1282,09 (4)	0,07 (3)
$\gamma_{22,8}$(Se)	1288,84 (8)	0,052 (23)
$\gamma_{11,3}$(Se)	1298,504 (15)	0,089 (8)
$\gamma_{29,14}$(Se)	1300,7 (4)	0,155 (15)
$\gamma_{10,2}$(Se)	1306,800 (13)	0,185 (23)
$\gamma_{29,13}$(Se)	1315,3 (4)	0,052 (15)
$\gamma_{13,4}$(Se)	1324,45 (4)	0,044 (23)
$\gamma_{18,6}$(Se)	1372,41 (6)	0,51 (3)
$\gamma_{17,5}$(Se)	1380,78 (4)	2,50 (11)
$\gamma_{33,13}$(Se)	1429,0 (2)	0,192 (23)
$\gamma_{23,7}$(Se)	1429,24 (8)	0,06 (3)
$\gamma_{13,3}$(Se)	1439,16 (4)	0,58 (3)
$\gamma_{14,3}$(Se)	1453,72 (4)	0,81 (5)
$\gamma_{44,18}$(Se)	1461,4 (20)	0,13 (3)
$\gamma_{18,5}$(Se)	1471,09 (6)	2,32 (11)
$\gamma_{31,11}$(Se)	1504,6 (5)	0,09 (4)
$\gamma_{13,2}$(Se)	1533,01 (4)	0,06 (4)
$\gamma_{43,17}$(Se)	1536,1 (7)	0,17 (7)
$\gamma_{37,13}$(Se)	1560,2 (2)	0,444 (23)
$\gamma_{7,1}$(Se)	1568,096 (10)	0,95 (5)
$\gamma_{8,1}$(Se)	1611,434 (13)	0,222 (23)
$\gamma_{15,3}$(Se)	1642 (2)	0,13 (5)
$\gamma_{33,10}$(Se)	1655,2 (2)	0,118 (23)
$\gamma_{20,5}$(Se)	1662,56 (7)	0,14 (6)
$\gamma_{22,6}$(Se)	1671,73 (8)	0,170 (15)
$\gamma_{27,8}$(Se)	1742,4 (10)	0,118 (15)
$\gamma_{22,5}$(Se)	1770,42 (8)	0,200 (23)
$\gamma_{35,10}$(Se)	1770,5 (4)	0,044 (15)
$\gamma_{6,0}$(Se)	1787,625 (8)	0,55 (3)
$\gamma_{28,7}$(Se)	1801,9 (6)	0,030 (15)
$\gamma_{9,1}$(Se)	1815,1 (6)	0,148 (15)
$\gamma_{25,6}$(Se)	1834,6 (20)	0,19 (10)
$\gamma_{17,3}$(Se)	1853,58 (4)	14,6 (8)
$\gamma_{10,1}$(Se)	1869,968 (12)	0,141 (15)
$\gamma_{26,6}$(Se)	1881,9 (10)	0,13 (5)
$\gamma_{39,11}$(Se)	1901 (2)	0,12 (5)
$\gamma_{18,3}$(Se)	1943,89 (6)	0,47 (9)
$\gamma_{11,1}$(Se)	1955,534 (14)	0,30 (6)

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{43,12}$(Se)	1975,0 (9)	0,11 (9)
$\gamma_{44,12}$(Se)	1990,7 (21)	0,08 (3)
$\gamma_{34,7}$(Se)	2045,9 (9)	0,178 (15)
$\gamma_{12,1}$(Se)	2071,7 (5)	0,27 (23)
$\gamma_{36,7}$(Se)	2082 (1)	0,12 (4)
$\gamma_{13,1}$(Se)	2096,19 (4)	1,35 (8)
$\gamma_{14,1}$(Se)	2110,75 (4)	2,46 (12)
$\gamma_{7,0}$(Se)	2127,183 (8)	0,21 (7)
$\gamma_{20,3}$(Se)	2135,36 (7)	0,93 (6)
$\gamma_{(-1,2)}$(Se)	2170 (2)	0,10 (4)
$\gamma_{29,6}$(Se)	2183,0 (4)	0,13 (3)
$\gamma_{20,2}$(Se)	2229,22 (7)	0,10 (7)
$\gamma_{(-1,3)}$(Se)	2235 (2)	0,13 (6)
$\gamma_{15,1}$(Se)	2299 (2)	0,14 (5)
$\gamma_{30,5}$(Se)	2309,4 (10)	0,10 (3)
$\gamma_{23,3}$(Se)	2340,27 (8)	0,09 (4)
$\gamma_{16,1}$(Se)	2391,39 (5)	4,7 (3)
$\gamma_{35,6}$(Se)	2412,0 (4)	0,030 (8)
$\gamma_{10,0}$(Se)	2429,053 (11)	0,10 (5)
$\gamma_{24,2}$(Se)	2481,76 (8)	0,133 (23)
$\gamma_{17,1}$(Se)	2510,61 (4)	1,92 (12)
$\gamma_{26,2}$(Se)	2547,2 (10)	0,006 (4)
$\gamma_{18,1}$(Se)	2600,92 (6)	0,69 (3)
$\gamma_{12,0}$(Se)	2630,8 (5)	0,13 (4)
$\gamma_{13,0}$(Se)	2655,27 (4)	0,170 (15)
$\gamma_{31,4}$(Se)	2688,3 (5)	0,36 (4)
$\gamma_{28,3}$(Se)	2712,9 (6)	0,074 (23)
$\gamma_{29,3}$(Se)	2754,4 (4)	0,074 (23)
$\gamma_{20,1}$(Se)	2792,38 (7)	5,6 (3)
$\gamma_{(-1,4)}$(Se)	2837 (3)	0,11 (5)
$\gamma_{32,3}$(Se)	2848 (4)	0,15 (5)
$\gamma_{22,1}$(Se)	2900,24 (8)	0,27 (10)
$\gamma_{16,0}$(Se)	2950,47 (5)	7,4 (4)
$\gamma_{35,3}$(Se)	2983,4 (4)	0,09 (3)
$\gamma_{23,1}$(Se)	2997,30 (8)	0,955 (24)
$\gamma_{24,1}$(Se)	3044,91 (8)	0,022 (8)
$\gamma_{25,1}$(Se)	3063 (2)	0,074 (23)
$\gamma_{17,0}$(Se)	3069,68 (4)	0,044 (15)
$\gamma_{37,2}$(Se)	3093,1 (2)	0,163 (15)
$\gamma_{18,0}$(Se)	3160,00 (6)	0,141 (15)
$\gamma_{20,0}$(Se)	3351,46 (7)	0,252 (15)
$\gamma_{28,1}$(Se)	3369,9 (6)	0,096 (8)
$\gamma_{29,1}$(Se)	3411,4 (4)	0,296 (15)
$\gamma_{32,1}$(Se)	3505 (4)	0,037 (15)
$\gamma_{33,1}$(Se)	3525,1 (2)	0,178 (15)
$\gamma_{24,0}$(Se)	3603,99 (8)	1,60 (11)
$\gamma_{35,1}$(Se)	3640,4 (4)	0,155 (15)
$\gamma_{40,1}$(Se)	3877,7 (10)	0,015 (8)

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{(-1,5)}$(Se)	3892 (2)	0,030 (15)
$\gamma_{27,0}$(Se)	3912,9 (10)	0,015 (8)
$\gamma_{28,0}$(Se)	3929,0 (6)	0,089 (15)
$\gamma_{(-1,6)}$(Se)	3963,5 (10)	0,022 (8)
$\gamma_{29,0}$(Se)	3970,5 (4)	0,010 (5)
$\gamma_{31,0}$(Se)	4019,2 (5)	0,059 (15)
$\gamma_{43,1}$(Se)	4046,6 (7)	0,044 (15)
$\gamma_{32,0}$(Se)	4064 (4)	0,022 (8)
$\gamma_{33,0}$(Se)	4084,2 (2)	0,015 (8)
$\gamma_{34,0}$(Se)	4173,0 (9)	0,021 (8)
$\gamma_{40,0}$(Se)	4436,8 (10)	0,052 (15)
$\gamma_{41,0}$(Se)	4454,9 (30)	0,0067 (23)
$\gamma_{42,0}$(Se)	4492 (3)	0,0059 (23)
$\gamma_{43,0}$(Se)	4605,7 (7)	0,015 (8)

6 Main Production Modes

Se – 76(p,n)Br – 76

Se – 77(p,2n)Br – 76

Se – nat(p,xn)Br – 76

As – 75(α,3n)Br – 76

Br – nat(p,x)Br – 76

Sr – nat(p,x)Br – 76

Y – 89(p,x)Br – 76

Br – 79(p,4n)Kr – 76

Cu – nat(N – 14,3n)Kr – 76

Cu – 65(N – 14,3n)Kr – 76

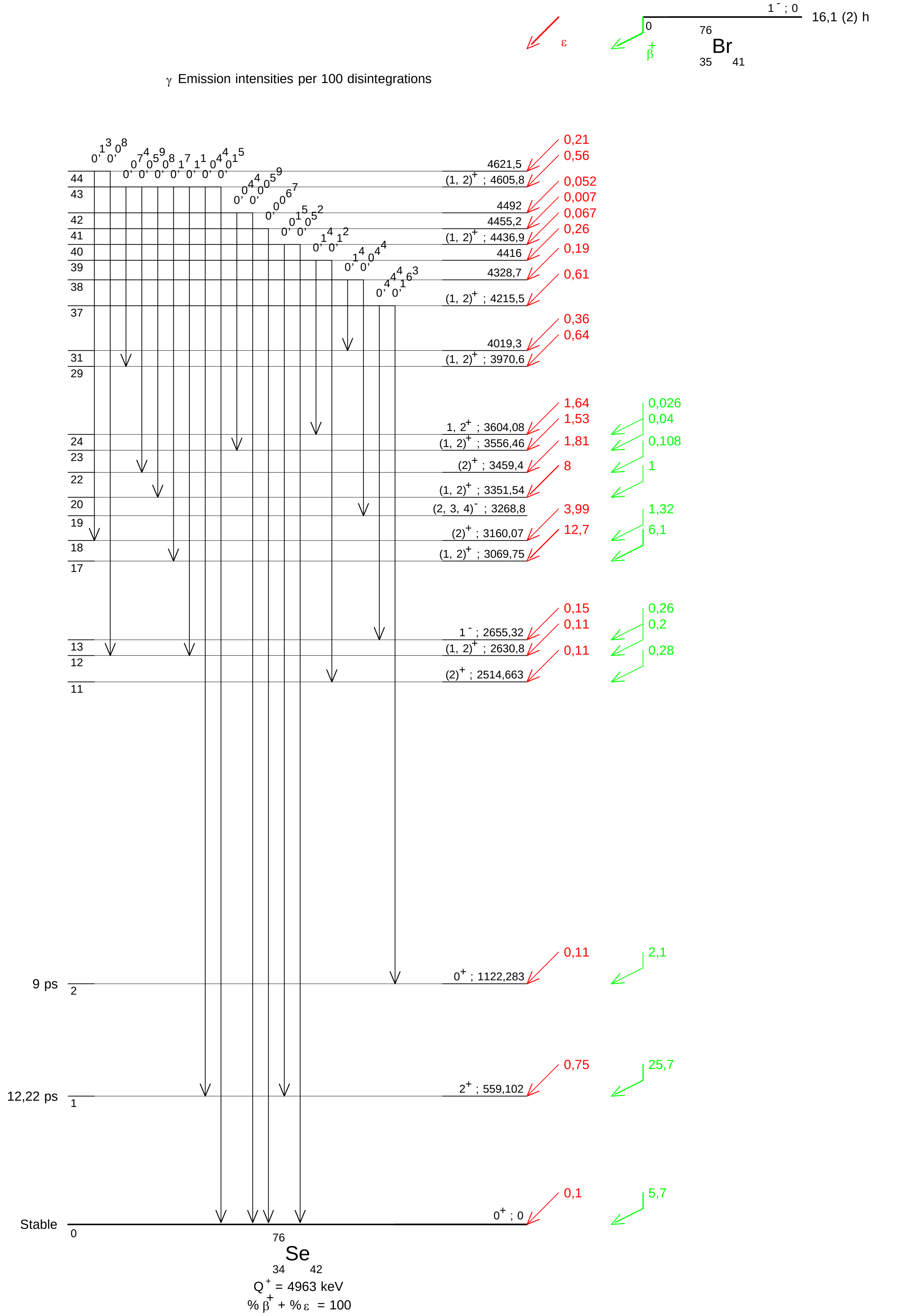
Kr – 76(EC)Br – 76

7 References

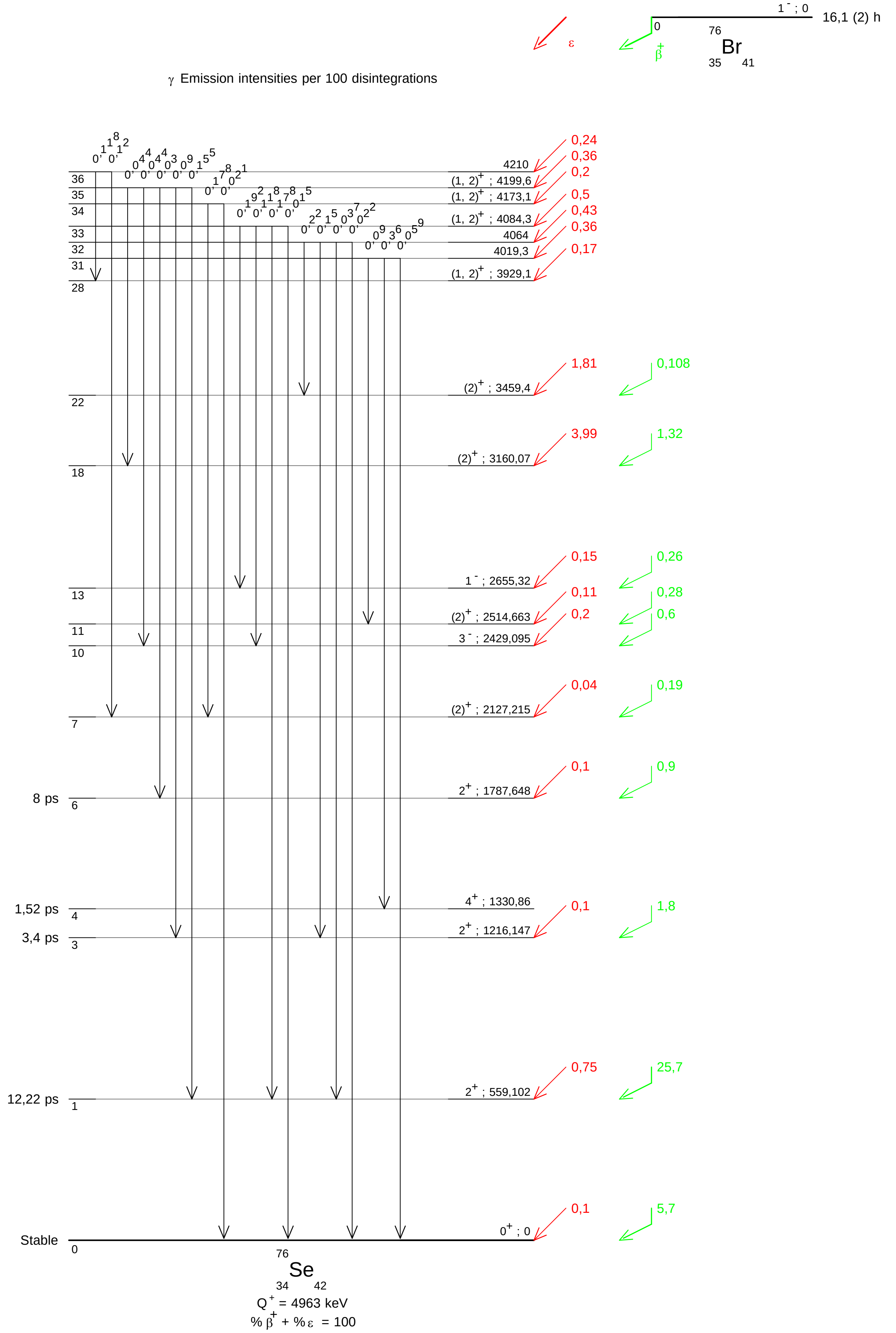
- S.C. Fultz, M.L. Pool. Phys. Rev. 86 (1952) 347
  (Half-life, Beta+ emission energies, Beta+ emission probabilities, Gamma-ray energies)
- A.A. Caretto Jr., E.O. Wiig. Phys. Rev. 93 (1954) 175
  (Kr-76 half-life)
- S. Thulin. Ark. Fysik 9, no. 11 (1955) 137
  (Kr-76 and Br-76 half-lives, Gamma-ray energies)
- G.M. Temmer, N.P. Heydenburg. Phys. Rev. 104 (1956) 967
  (B(E2))
- R.K. Girgis, R.A. Ricci, R. van Lieshout, J. Konijn. Nucl. Phys. 13 (1959) 473
  (Half-life, Gamma-ray energies, Gamma-ray emission probabilities, Beta+ emission energies, Beta+ emission probabilities)
- F.D.S. Butement, G.G.J. Boswell. J. Inorg. Nucl. Chem. 16 (1960) 10
  (Half-life)

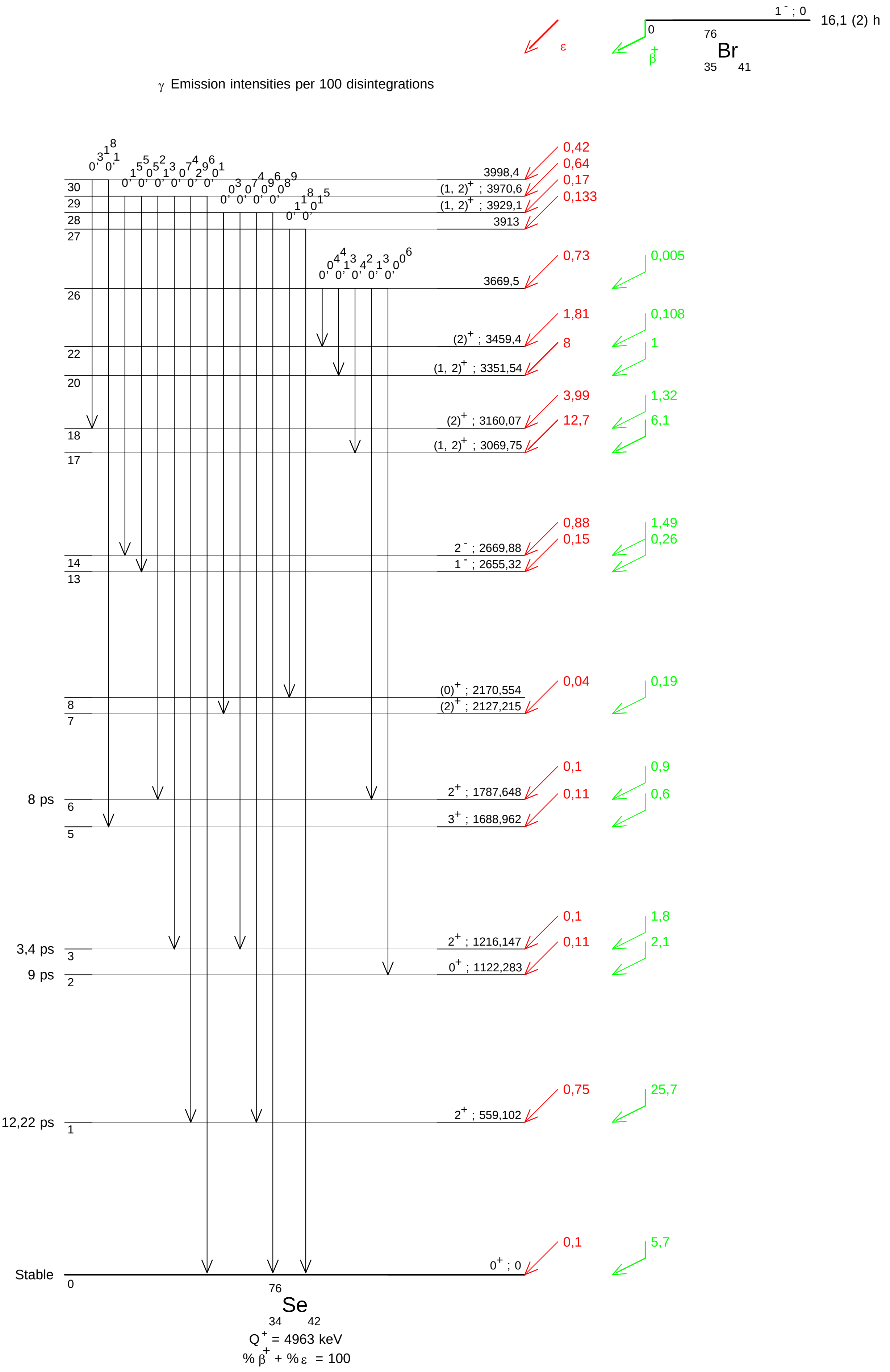
- J.D. Kurbatov, H.J Sathoff, J.R. Comerford. Bull. Amer. Phys. Soc. 7, no. 7 (1962) 462, IA8
  (Nuclear levels, Beta+ emission energies, Beta+ emission probabilities)
- Yu.P. Gangrskii, I.Kh. Lemberg. Izvest. Akad. Nauk SSSR, Ser. Fiz. 26 (1962) 1001
  (B(E2))
- P.H. Stelson, F.K. McGowan. Nucl. Phys. 32 (1962) 652
  (B(E2))
- J.R. Comerford Jr., H.J. Sathoff, T. Hayashi, M.H. Kurbatov, J.D. Kurbatov. Ohio State Univ. Research Foundation report TID-18567 Appendix II (1963) 1
  (Gamma-ray energies, Gamma-ray emission probabilities, Beta+ emission energies, Beta+ emission probabilities, Total EC/total beta+ ratio)
- I. Dostrovsky, R.E. Stoenner. Nucl. Phys. 43 (1963) 348
  (Kr-76 half-life)
- W. Bygrave, D. Eccleshall, M.J.L. Yates. Nucl. Phys. 53 (1964) 385
  (B(E2) ratios)
- B.S. Dzhelepov, A.G. Dmitriev, N.N. Zhukovskii. Bull. Acad. Sci. USSR, Phys. Ser. 33 (1970) 14
  (Gamma-ray energies, Gamma-ray emission probabilities)
- A.P. Agnihotry, K.P. Gopinathan, M.C. Joshi, K.G. Prasad. Proc. Nucl. Phys. and Solid State Phys. Symp., Nucl. Phys., Madurai (1970) 161
  (B(E2))
- B.S. Dzhelepov, A.G. Dmitriev, Zh. Zhelev, N.N. Zhukovskii, L.N. Moskvin, V.I. Fominykh. Bull. Acad. Sci. USSR, Phys. Ser. 34 (1971) 1838
  (Conversion-electron emission energies, ICC(K), Gamma-gamma coincidence)
- I.M. Ladenbauer-Bellis, H. Bakhru, R. Bakhru. Can. J. Phys. 49 (1971) 54
  (Half-life, Gamma-ray energies, Gamma-ray emission probabilities)
- N.B. Gove, M.J. Martin. Nucl. Data Tables 10 (1971) 205
  (EC/Beta+ ratios)
- G. Funel. PhD thesis, Faculté des Sciences de l'Université de Nice (1971)
  (Nuclear levels, Gamma-ray emission energies)
- B.S. Dzhelepov, A.G. Dmitriev, N.N. Zhikovskii. Bull. Acad. Sci. USSR, Phys. Ser 35 (1972) 2043
  (Gamma-ray energies, Gamma-ray emission probabilities, Beta+ (0 keV level)/Beta+ (559 keV level) ratio)
- T. Paradellis, A. Houdayer, S.K. Mark. Nucl. Phys. A201 (1973) 113
  (Kr-76 half-life)
- T. Nagahara, J. Ruan, H. Nakayama, Y. Ishizuka, M. Okano. J. Phys. Soc. Japan 37 (1974) 1
  (Gamma-ray energies, Gamma-ray emission probabilities)
- R.L. Heath. Aerojet Nuclear Corporation report ANCR-1000-2 (1974) (updated 1998)
  (Evaluated half-life, Evaluated gamma-ray energies, Evaluated gamma-ray emission probabilities)
- H. Müller, D. Wohlfarth, E. Hentschel. Dresden report ZfK-273 (1974)
  (Nuclear levels, Gamma-ray energies, Gamma-ray emission probabilities)
- J. Barrette, M. Barrette, G. Lamoureux, S. Monaro, S. Markiza. Nucl. Phys. A235 (1974) 154
  (B(E2))
- T.S. Vylov, B.S. Dzhelepov, A.G. Dmitriev, N.N. Zhukovskii, A.V. Mozzhukhin, L.G. Tsaritsyna. Proc. 25th Ann. Conf. Nucl. Spectrosc. Struct. At. Nuclei, Leningrad (1975) 66
  (Gamma-ray energies, Gamma-ray emission probabilities)
- B.A. Nemashkalo, V.E. Storizhko, G.A. Krivonosov, O.I. Ekhichev, V.K. Chirt, Kh.M. Khysein, I.I. Zalyubovsky. Program and thesis, Proc. 25th Ann. Conf. Nucl. Spectrosc. Struct. At. Nuclei, Leningrad (1975) 334
  (B(E2))
- J.A. Barclay, S.S. Rosenblum, W.A. Steyert, K.S. Krane. Phys. Rev. C13 (1976) 1991
  (Mixing ratio (657.0 and 1228.5 keV))
- R. Lecomte, P. Paradis, J. Barrette, M. Barrette, G. Lamoureux, S. Monaro. Nucl. Phys. A284 (1977) 123
  (B(E2))
- F.P. Larkins. At. Data Nucl. Data Tables 20 (1977) 311
  (Auger-electron energies)
- R. Kaur, A.K. Sharma, S.S. Sooch, H.R. Verma, P.N. Trehan. J. Phys. Soc. Japan 49 (1980) 1214
  (Multipolarity)
- A. Muminov, I.K. Kuldzhanov, B. Ibragimov, R. Razhabbaev. Proc. 32nd Ann. Conf. Nucl. Spectrosc. Struct. At. Nuclei, Kiev (1982) 67
  (Multipolarity)

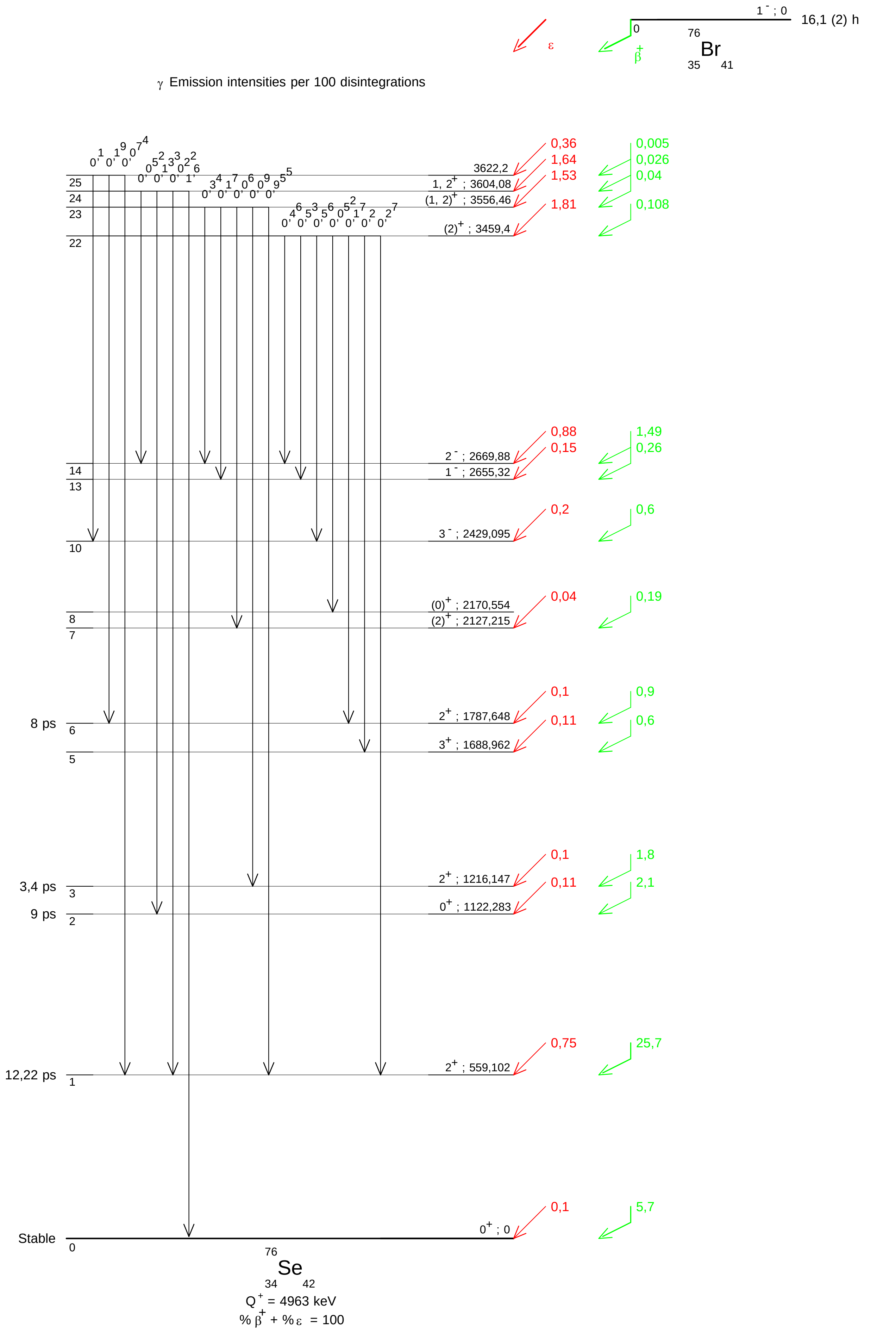
- A. Passoja, M. Vergnes, J. Kantele, M. Luontama. Physica Scripta T5 (1983) 147
(P(K)(E0)/Pgamma(E2) ratio for 0+ state)
- A. Giannatiempo, A. Nannini, A. Passeri, A. Perego, P. Sona. Z. Phys. A325 (1986) 157
(ICC(K) (657, 1130 keV), P(K)(563 keV), P(K)(E0(1122 keV))/P(K)(E2(563 keV)) ratio)
- A.R.H. Subber, S.J. Robinson, P. Hungerford, W.D. Hamilton, P. Van Isaker, K. Kumar, P. Park, K. Schreckenbach, G. Colvin. J. Phys. G13 (1987) 807
(Mixing ratio)
- J.P. White, N.J. Stone, C.J. Ashworth. Hyperfine Interactions 43 (1988) 205
(Electric quadrupole moment)
- A.G. Griffiths, C.J. Ashworth, I.S. Grant, J. Rikovska, N.J. Stone, P.M. Walker, W.B. Walters, J.P White. Hyperfine Interactions 43 (1988) 481
(Magnetic dipole moment)
- C.B. Zamboni, R.N. Saxena. Phys. Rev. C39 (1989) 2379
(Mixing ratio)
- A.G. Griffiths, C.J. Ashworth, J. Rikovska, N.J. Stone, J.P. White, I.S. Grant, P.M. Walker, W.B. Walters. Phys. Rev. C46 (1992) 2228
(Magnetic diploe moment)
- S. Ohya, S. Muto, K. Heiguchi. Hyperfine Interactions 78 (1993) 485
(Resonance in hyperfine field)
- E. Schönfeld. PTB report PTB-6.33-95-2 (1995)
(P(K), P(L), P(M), P(N), P(O))
- B. Singh. Nucl. Data Sheets 74 (1995) 63
(Nuclear levels)
- E. Schönfeld, H. Janssen. Nucl. Instrum. Methods Phys. Res. A369 (1996) 527
(Fluorescence yields, X-ray emission probability ratios, Auger-electron emission probability ratios)
- E. Schönfeld, G. Rodloff. PTB report PTB-6.11-98-1 (1998)
(Auger electrons)
- E. Schönfeld. Appl. Radiat. Isot. 49 (1998) 1353
(P(K), P(L), P(M), P(N), P(O))
- E. Schönfeld, G. Rodloff. PTB report PTB-6.11-1999-1 (1999)
(X(K))
- E. Schönfeld, H. Janssen. Appl. Radiat. Isot. 52 (2000) 595
(X-ray emission probabilities, Auger-electron emission probabilities)
- I.M. Band, M.B. Trzhaskovskaya, C.W. Nestor Jr., P.O. Tikkanen, S. Raman. At. Data Nucl. Data Tables 81 (2002) 1
(Theoretical ICC)
- S. Raman, C.W. Nestor Jr., A. Ichihara, M.B. Trzhaskovskaya. Phys. Rev. C66 (2002) 044312
(Theoretical ICC)
- S.M. Qaim, T. Bisinger, K. Hilgers, D. Nayak, H.H. Coenen. Radiochim. Acta 95 (2007) 67
(Total beta+ emission probability)
- T. Kibedi, T.W. Burrows, M.B. Trzhaskovskaya, P.M. Davidson, C.W. Nestor Jr. Nucl. Instrum. Methods Phys. Res. A589 (2008) 202
(Theoretical ICC, Internal-pair formation coefficients)
- N. Cooper, F. Reichel, V. Werner, L. Bettermann, B. Alikhani, S, Aslanidou, C. Bauer, L. Coquard, M. Fritzsche, Y. Fritzsche, J. Glorius, P.M. Goddard, et al. Phys. Rev. C86 (2012) 034313
(Nuclear structure)
- M. Wang, G. Audi, A.H. Wapstra, F.G. Kondev, M. MacCormick, X. Xu, B. Pfeiffer. Chin. Phys. C36 (2012) 1603
(Q-value)
- P.M. Goddard, N. Cooper, V. Werner, G. Rusev, P. Stevenson, A. Rios, C. Bernards, A. Chakraborty, B.P. Crider, J. Glorius, R.S. Ilieva, J.H. Kelley, E. Kwan, E.E. Peters, N. Pietralla, R. Raut, C. Romig, D. Savran, et al.. Phys. Rev. C88 (2013) 064308
(Nuclear structure)
- N.J. Stone. IAEA report INDC(NDS)-0658 (2014)
(Spin-parity, Magnetic dipole moment, Electric quadrupole moment)

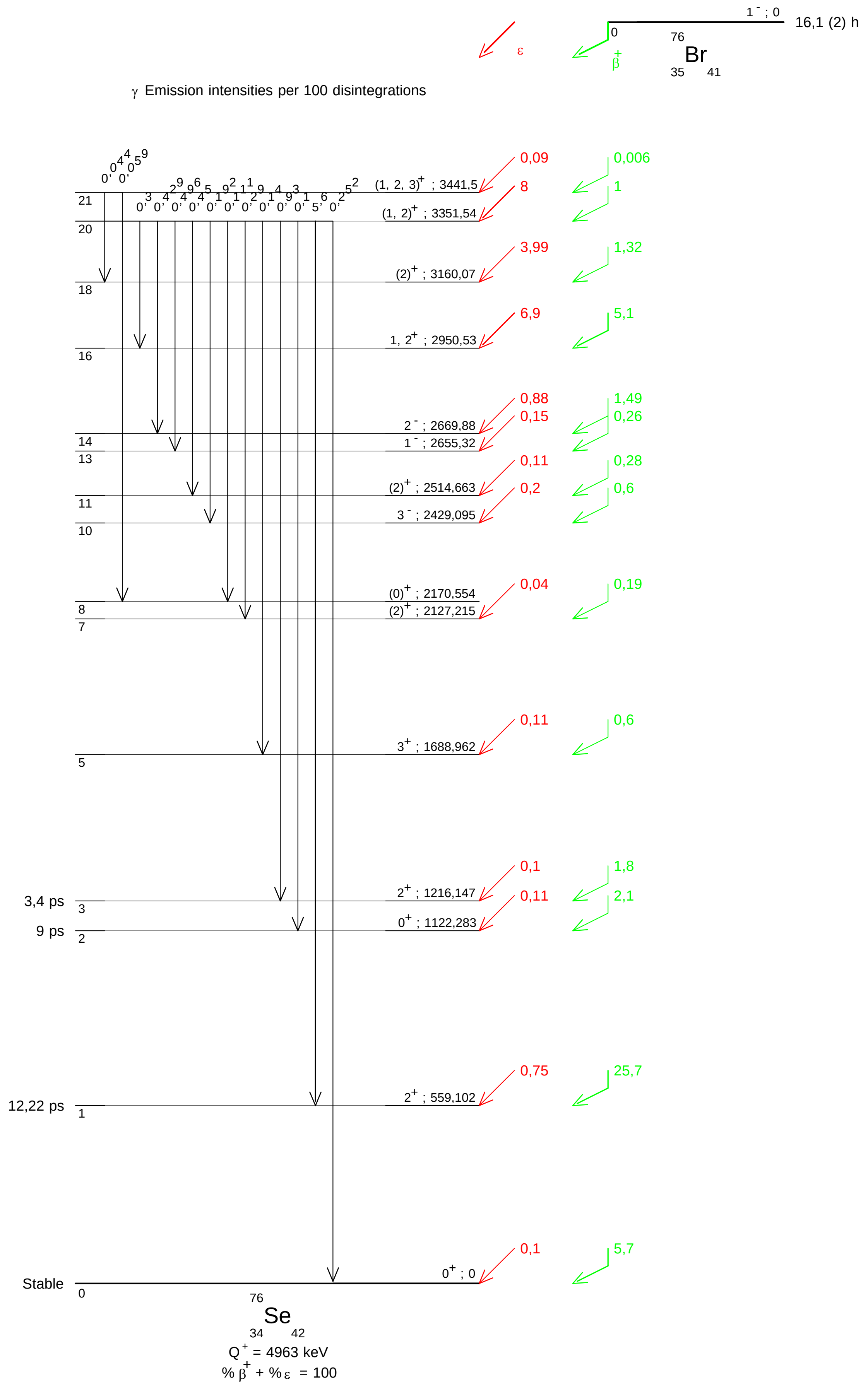


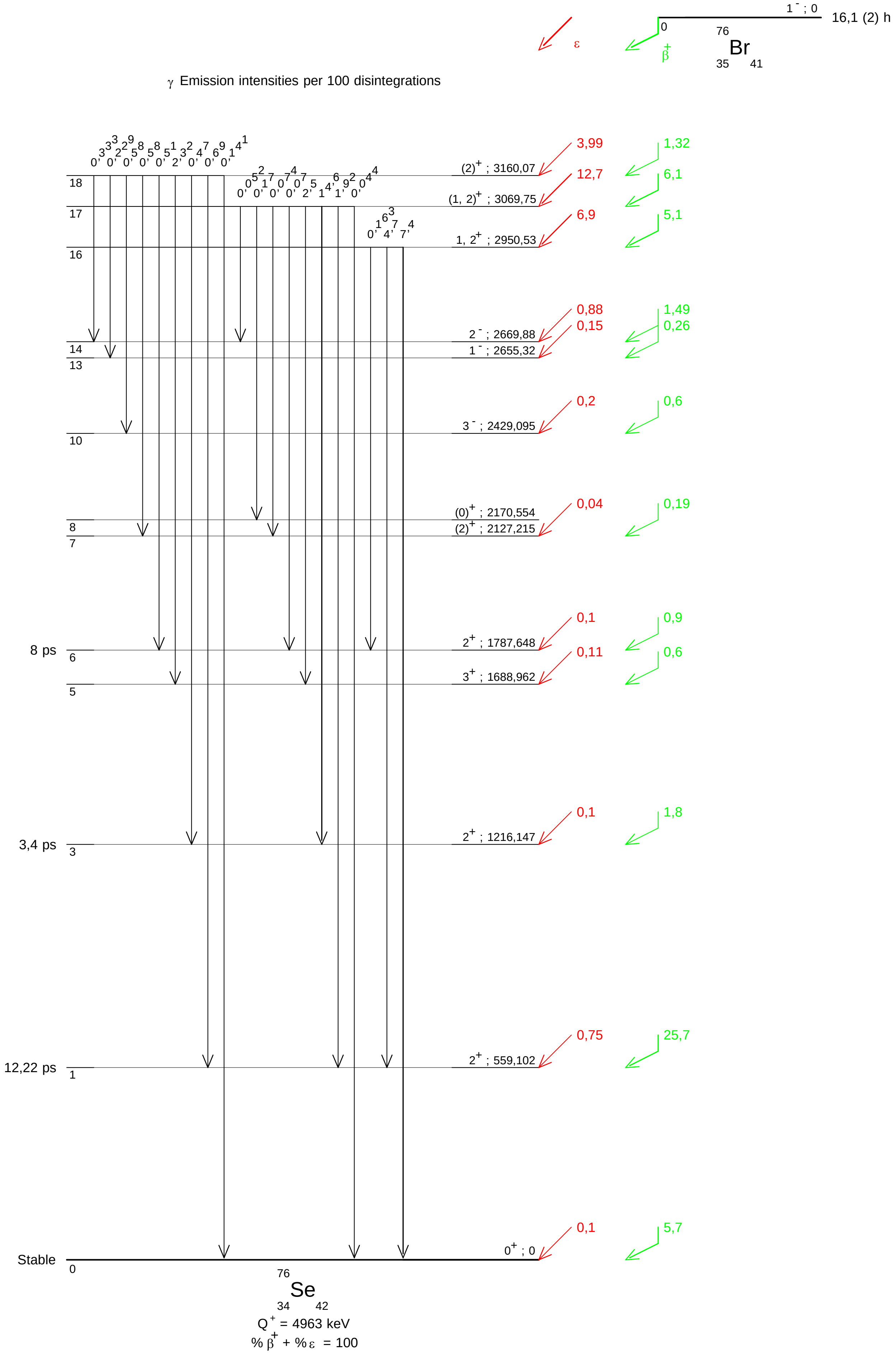
1 - ; 0
16,1 (2) h
76 Br 35 41
ε
β+
γ Emission intensities per 100 disintegrations
4621,5
(1, 2)+ ; 4605,8
4492
4455,2
(1, 2)+ ; 4436,9
4416
4328,7
(1, 2)+ ; 4215,5
4019,3
(1, 2)+ ; 3970,6
1, 2+ ; 3604,08
(1, 2)+ ; 3556,46
(2)+ ; 3459,4
(1, 2)+ ; 3351,54
(2, 3, 4)- ; 3268,8
(2)+ ; 3160,07
(1, 2)+ ; 3069,75
1 - ; 2655,32
(1, 2)+ ; 2630,8
(2)+ ; 2514,663
0+ ; 1122,283
2+ ; 559,102
0+ ; 0
0,21
0,56
0,052
0,007
0,067
0,26
0,19
0,61
0,36
0,64
1,64
1,53
1,81
8
3,99
12,7
0,15
0,11
0,11
0,11
0,75
0,1
0,026
0,04
0,108
1
1,32
6,1
0,26
0,2
0,28
2,1
25,7
5,7
44
43
42
41
40
39
38
37
31
29
24
23
22
20
19
18
17
13
12
11
9 ps
2
12,22 ps
1
Stable
0
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100


1 - ; 0
16,1 (2) h
ε
β+
76 Br 35 41
γ Emission intensities per 100 disintegrations
4210
(1, 2)+ ; 4199,6
(1, 2)+ ; 4173,1
(1, 2)+ ; 4084,3
4064
4019,3
(1, 2)+ ; 3929,1
(2)+ ; 3459,4
(2)+ ; 3160,07
1 - ; 2655,32
(2)+ ; 2514,663
3 - ; 2429,095
(2)+ ; 2127,215
2+ ; 1787,648
4+ ; 1330,86
2+ ; 1216,147
2+ ; 559,102
0+ ; 0
0,24
0,36
0,2
0,5
0,43
0,36
0,17
1,81
0,108
3,99
1,32
0,15
0,26
0,11
0,28
0,2
0,6
0,04
0,19
0,1
0,9
0,1
1,8
0,75
25,7
0,1
5,7
8 ps
1,52 ps
3,4 ps
12,22 ps
Stable
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100

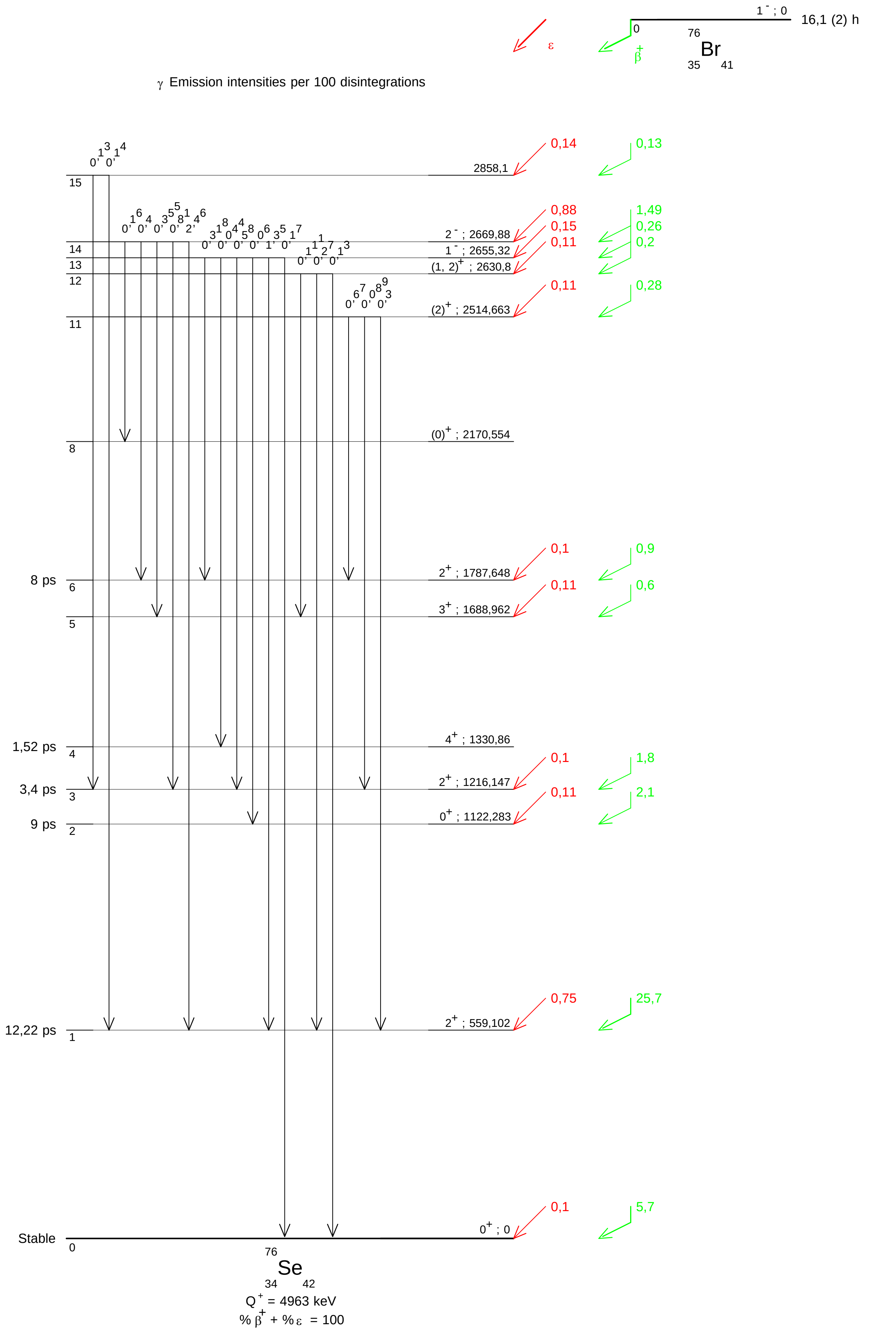

1 - ; 0
16,1 (2) h
76 Br 35 41
ε
β+
γ Emission intensities per 100 disintegrations
3998,4
(1, 2)+ ; 3970,6
(1, 2)+ ; 3929,1
3913
3669,5
(2)+ ; 3459,4
(1, 2)+ ; 3351,54
(2)+ ; 3160,07
(1, 2)+ ; 3069,75
2 - ; 2669,88
1 - ; 2655,32
(0)+ ; 2170,554
(2)+ ; 2127,215
2+ ; 1787,648
3+ ; 1688,962
2+ ; 1216,147
0+ ; 1122,283
2+ ; 559,102
0+ ; 0
0,42
0,64
0,17
0,133
0,73
0,005
1,81
0,108
8
1
3,99
1,32
12,7
6,1
0,88
1,49
0,15
0,26
0,04
0,19
0,1
0,9
0,11
0,6
0,1
1,8
0,11
2,1
0,75
25,7
0,1
5,7
8 ps
3,4 ps
9 ps
12,22 ps
Stable
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100

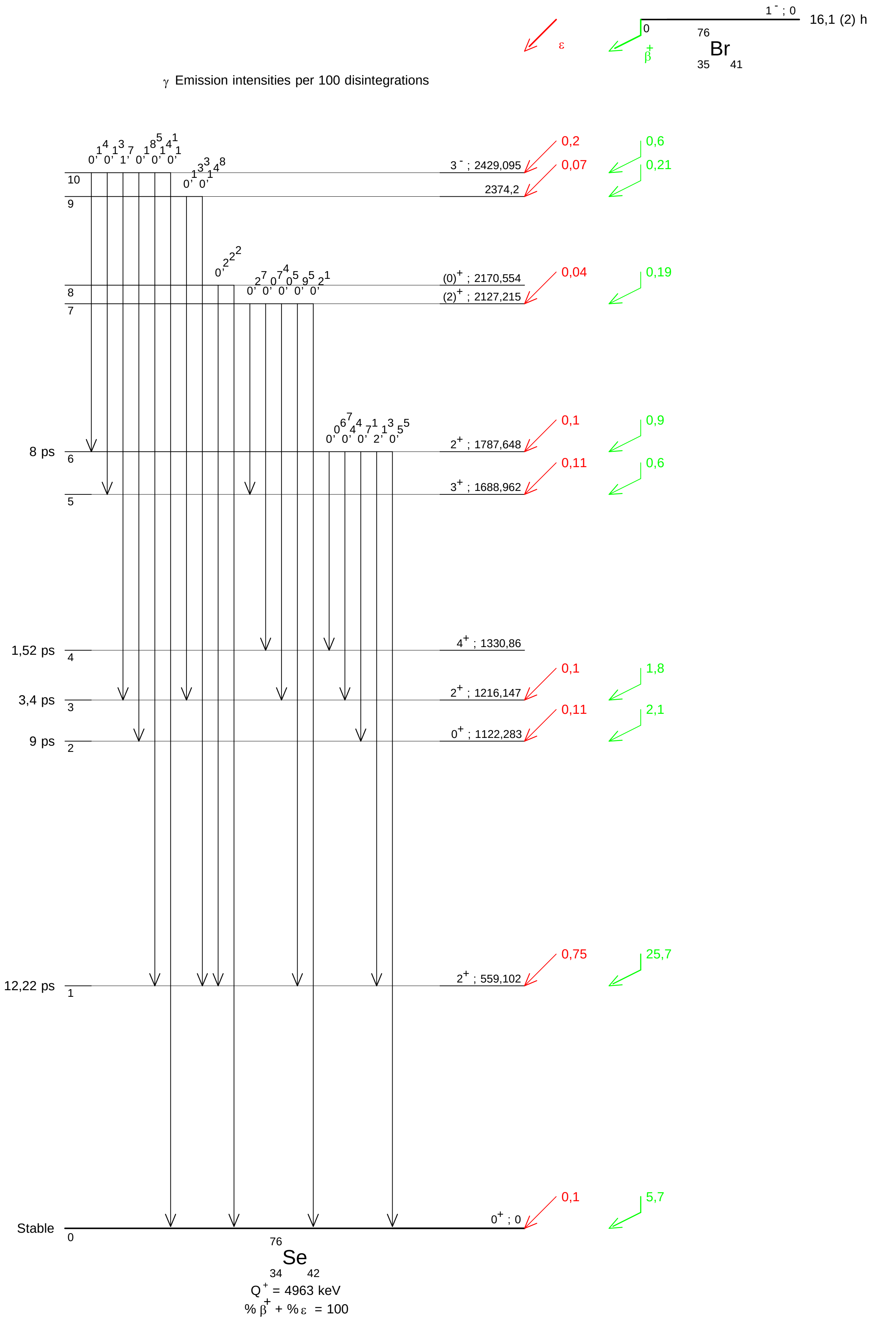

γ Emission intensities per 100 disintegrations
1 - ; 0
16,1 (2) h
76 Br 35 41
ε
β+
3622,2
1, 2+ ; 3604,08
(1, 2)+ ; 3556,46
(2)+ ; 3459,4
2 - ; 2669,88
1 - ; 2655,32
3 - ; 2429,095
(0)+ ; 2170,554
(2)+ ; 2127,215
2+ ; 1787,648
3+ ; 1688,962
2+ ; 1216,147
0+ ; 1122,283
2+ ; 559,102
0+ ; 0
8 ps
3,4 ps
9 ps
12,22 ps
Stable
0,36
1,64
1,53
1,81
0,88
0,15
0,2
0,04
0,1
0,11
0,1
0,11
0,75
0,1
0,005
0,026
0,04
0,108
1,49
0,26
0,6
0,19
0,9
0,6
1,8
2,1
25,7
5,7
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100

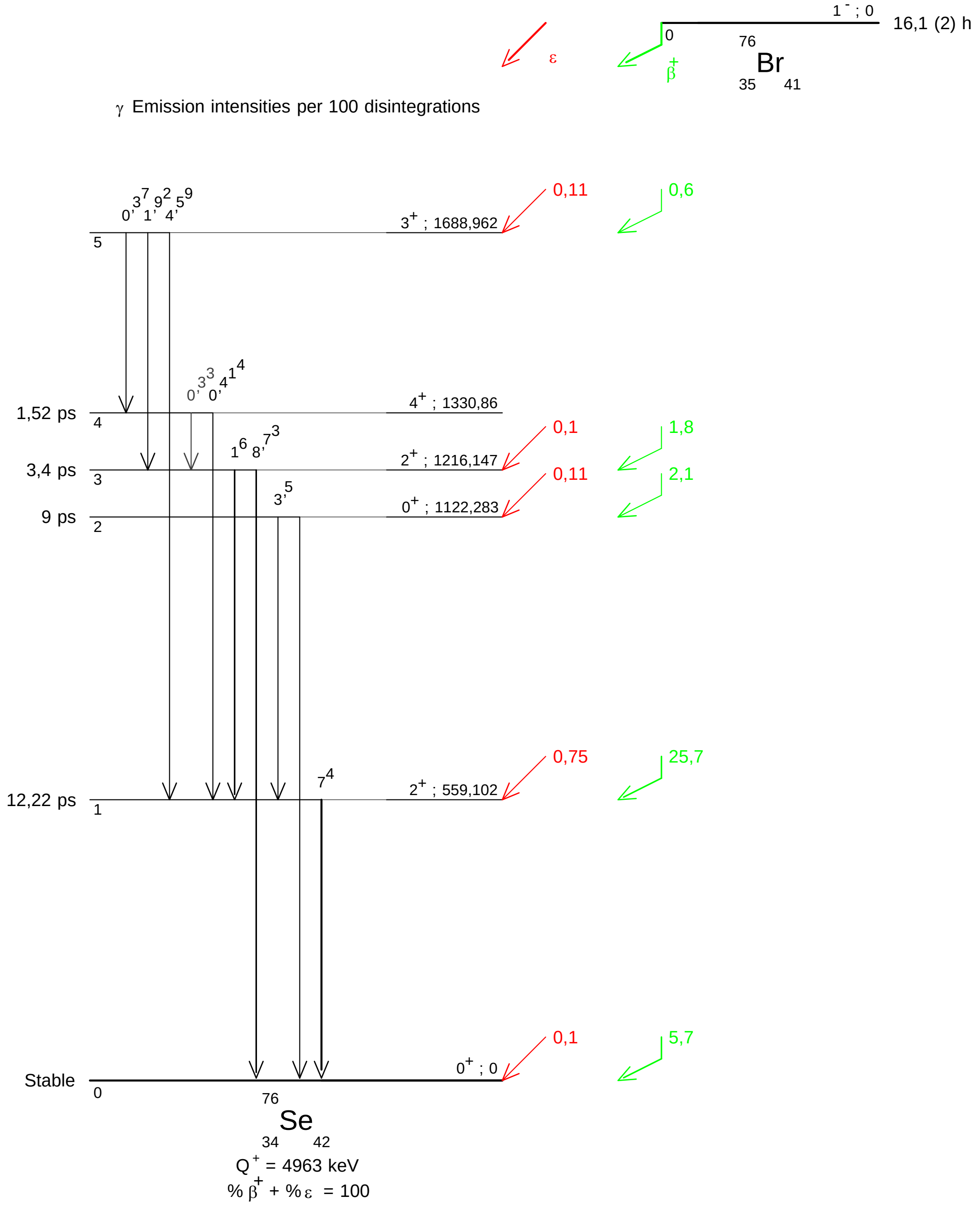

γ Emission intensities per 100 disintegrations
1⁻ ; 0
16,1 (2) h
76 Br 35 41
ε
β+
(1, 2, 3)+ ; 3441,5
(1, 2)+ ; 3351,54
(2)+ ; 3160,07
1, 2+ ; 2950,53
2⁻ ; 2669,88
1⁻ ; 2655,32
(2)+ ; 2514,663
3⁻ ; 2429,095
(0)+ ; 2170,554
(2)+ ; 2127,215
3+ ; 1688,962
2+ ; 1216,147
0+ ; 1122,283
2+ ; 559,102
0+ ; 0
3,4 ps
9 ps
12,22 ps
Stable
0,09
8
3,99
6,9
0,88
0,15
0,11
0,2
0,04
0,11
0,1
0,11
0,75
0,1
0,006
1
1,32
5,1
1,49
0,26
0,28
0,6
0,19
0,6
1,8
2,1
25,7
5,7
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100



1⁻ ; 0
16,1 (2) h
76 Br 35 41
γ Emission intensities per 100 disintegrations
(2)+ ; 3160,07
(1, 2)+ ; 3069,75
1, 2+ ; 2950,53
2⁻ ; 2669,88
1⁻ ; 2655,32
3⁻ ; 2429,095
(0)+ ; 2170,554
(2)+ ; 2127,215
2+ ; 1787,648
3+ ; 1688,962
2+ ; 1216,147
2+ ; 559,102
0+ ; 0
8 ps
3,4 ps
12,22 ps
Stable
3,99
12,7
6,9
0,88
0,15
0,2
0,04
0,1
0,11
0,1
0,75
0,1
1,32
6,1
5,1
1,49
0,26
0,6
0,19
0,9
0,6
1,8
25,7
5,7
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100


1⁻ ; 0
16,1 (2) h
76
Br
35 41
ε
β+
γ Emission intensities per 100 disintegrations
2858,1
2⁻ ; 2669,88
1⁻ ; 2655,32
(1, 2)+ ; 2630,8
(2)+ ; 2514,663
(0)+ ; 2170,554
2+ ; 1787,648
3+ ; 1688,962
4+ ; 1330,86
2+ ; 1216,147
0+ ; 1122,283
2+ ; 559,102
0+ ; 0
8 ps
1,52 ps
3,4 ps
9 ps
12,22 ps
Stable
76
Se
34 42
Q+ = 4963 keV
% β+ + % ε = 100


1 - ; 0
16,1 (2) h
ε
β+
76 Br 35 41
γ Emission intensities per 100 disintegrations
3 - ; 2429,095
2374,2
(0)+ ; 2170,554
(2)+ ; 2127,215
8 ps
2+ ; 1787,648
3+ ; 1688,962
1,52 ps
4+ ; 1330,86
3,4 ps
2+ ; 1216,147
9 ps
0+ ; 1122,283
12,22 ps
2+ ; 559,102
Stable
0+ ; 0
0,2
0,07
0,04
0,1
0,11
0,1
0,11
0,75
0,1
0,6
0,21
0,19
0,9
0,6
1,8
2,1
25,7
5,7
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100


1⁻ ; 0
16,1 (2) h
76 Br 35 41
ε
β+
γ Emission intensities per 100 disintegrations
3+ ; 1688,962
4+ ; 1330,86
2+ ; 1216,147
0+ ; 1122,283
2+ ; 559,102
0+ ; 0
1,52 ps
3,4 ps
9 ps
12,22 ps
Stable
0,11
0,6
0,1
1,8
0,11
2,1
0,75
25,7
0,1
5,7
76 Se 34 42
Q+ = 4963 keV
% β+ + % ε = 100

^{76}Br – Comments on evaluation of decay data by A. L. Nichols

Evaluated: April - November 2015

Erratum (April 2017): As a consequence of an unfortunate oversight, a number of references originating from the same laboratory were not considered during the course of the 2015 evaluation: 2004Li62, 2004Sh17, 2005Sh59, 2007Ch89 and 2013Sh07. See the Addendum at the end of this document for further details.

Evaluation Procedures

Limitation of Relative Statistical Weight Method (LWM) and other analytical techniques were applied to obtain averaged data throughout the evaluation. The uncertainty assigned to the average value was always greater than or equal to the smallest uncertainty of the *values* used to calculate the average.

Decay Scheme

^{76}Br ($T_{½}$ = 16.1 hours) decays 100% by electron capture/β^+ decay (Q(EC) = 4963 (9) keV) to various excited nuclear levels and the ground state of ^{76}Se (stable). A reasonably well-defined decay scheme was derived from the gamma-ray measurements of 1969Dz01, 1971Dz08, 1974Na17 and 1975VyZX consisting of 42 EC/24 β^+ transitions and 161 gamma-ray transitions (along with 511-keV annihilation radiation and six unplaced gamma-ray emissions). Weighted mean relative emission probabilities were calculated for a significant number of the gamma rays, while equivalent data for the remaining gamma transitions were adopted primarily from the more comprehensive measurements of 1969Dz01 or 1974Na17. All relative emission probabilities were defined in terms of the 559.10-keV gamma ray (100%).

Nuclear Data

^{76}Br is viewed as a potentially suitable β^+ emitter for application in positron emission tomography (PET).

Half-life

The experimental results of 1959Gi46, 1960Bu22 and 1971La01 were adopted to give a weighted-mean half-life of 16.1 (2) hours based on the limitation of relative statistical weight method (LWM), with the uncertainty adjusted from ± 0.13 to ± 0.2 to align with the smallest uncertainty of the values used in the weighted-mean calculations.

Reference	Half-life (h)
1952Fu04	17.2*
1955Th01	17.5*
1959Gi46	16.1 ± 0.2
1960Bu22	16.3 ± 0.3
1963Sa26	15.7 ± 0.2†
1971La01	16.1 ± 0.2
Recommended value	16.1 ± 0.2‡

* Uncertainty not specified – not included in weighted mean analysis of the data set.
† Assignment to decay of 585- and 1745-keV β^+ emissions by 1963Sa26 judged to be inappropriate, and excluded from the weighted analysis.
‡ Recommended uncertainty adjusted from ± 0.13 to ± 0.2 to align with the smallest uncertainty of the values used to calculate the weighted-mean value.

Limitation of relative statistical weight method (LWM), normalised residual method (NRM), Rajeval technique and bootstrap method were considered in the analysis of the data set.

Analytical method	Half-life (h)	$\chi^2/(N-1)$	$\chi^2/(N-1)_{critical}$
LWM	16.14 (13) → 16.1 (2)	0.18	4.61
NRM	16.14 (13)	0.18	3.00
Rajeval	16.14 (13)	0.18	–
Bootstrap	16.15 (9)	0.19	–

A half-life value of (16.1 ± 0.2) hours is recommended, as quantified by the LWM-NRM-Rajeval analytical procedures, with the uncertainty defined on the basis of the smallest experimental uncertainty.

Half-life of parent ^{76}Kr

The ^{79}Br(p,4n)^{76}Kr reaction and 100% EC/β^+ decay of ^{76}Kr is a major production route for ^{76}Br. Therefore, the half-life of parent ^{76}Kr has also been evaluated on the basis of the measurements of 1954Ca03, 1955Th01, 1963Da04 and 1973Pa02. Only the measured half-lives and uncertainties of 1963Da04 and 1973Pa02 were adopted to give a weighted mean half-life of 14.8 (1) hours based on the limitation of relative statistical weight method (LWM).

Reference	Half-life (h)	
1954Ca03	9.7 ± 0.5†	From decay curve over three to four half-lives.
	10.0 ± 0.5†	^{76}Br yield curve over 120 hours.
1955Th01	~ 10.5*	Decay curve of electromagnetically-separated mixture of ^{76}Kr + ^{76}Br.
	~ 19*	Decay rate of 511-, 560- and 660-keV γ rays.
	~ 30*	Decay rate of 1860-keV γ ray.
1963Do04	14.8 ± 0.1	Periodic parent-daughter separations – decay curve over six half-lives.
1973Pa02	14.6 ± 0.2	Decay rates of most prominent γ rays.
Recommended value	14.8 ± 0.1	

* Uncertainty not specified – not included in the weighted mean analysis.

† Judged to be an outlier, and therefore excluded from the weighted analysis.

Limitation of relative statistical weight method (LWM) and normalised residual method (NRM) were considered in the analysis of the data set.

Analytical method	Half-life (h)	$\chi^2/(N-1)$	$\chi^2/(N-1)_{critical}$
LWM	14.76 (9)	0.80	6.63
NRM	14.76 (9)	0.80	3.84

A half-life value of (14.8 ± 0.1) hours for the half-life of ^{76}Kr is recommended, as quantified by the LWM-NRM analytical procedures, with the uncertainty defined on the basis of the smallest experimental uncertainty.

Q value

Q_{EC}-value for ^{76}Br EC decay of 4963 (9) keV was adopted from Wang *et al*. (2012Wa38).

Gamma-ray energies and emission probabilities

Energies

The well-defined nuclear level energies of 1995Si03 were used to calculate the gamma transition energies and their uncertainties, and these data were adjusted to account for gamma recoil in the formulation of recommended gamma-ray emission energies and uncertainties. Greater confidence was placed on this approach because of the more wide-ranging origins of the gamma transition data even though the energies of a significant number of gamma-ray emissions have been directly measured by 1974MuZB and 1974Na17, and 1969Dz01, 1971Dz08 and 1971Lao01 to a lesser extent. The spectral compilation of 1974HeYW originates from ENDSF as defined in 1998, and has been included for direct comparison rather than as part of the overall evaluation process.

The half-life for the 559.10-keV nuclear level was determined from a weighted-mean analysis of B(E2) measurements by 1956Te26, 1962St02, 1968Ga13, 1970AgZV, 1974Ba80, 1975NeZR and 1977Le11, and further calculation. Half-lives for the 1216.15-, 1330.86- and 1787.65-keV nuclear levels were adopted directly from 1974Ba80. Significant doubts arose when attempting to allocate half-lives to the 1122.28-, 1688.96- and 2429.09-keV nuclear levels: a somewhat inexact half-life was calculated for the 1122.28-keV 0^+ nuclear level based on the $B(E2(2_1^+ \rightarrow 0_2^+))/B(E2(0_1^+ \rightarrow 2_1^+))$ ratio derived by 1964By02, while no numerical values were assigned to the 1688.96- and 2429.09-keV levels.

Adopted energies, spins and parities for the nuclear levels of ^{76}Se (1995Si03).

Nuclear level number	Nuclear level energy (keV)	Spin and parity	Half-life
0	0.0	0 +	stable
1	559.102 (5)	2 +	12.22 (17) ps
2	1122.283 (7)	0 +	9 (4) ps
3	1216.147 (7)	2 +	3.4 (1) ps
4	1330.860 (8)	4 +	1.52 (4) ps
5	1688.962 (7)	3 +	
6	1787.648 (8)	2 +	8^{+7}_{-3} ps
7	2127.215 (8)	(2) +	
8	2170.554 (12)	(0 +)	
9	2374.2 (6)*		
10	2429.095 (11)	3 −	
11	2514.663 (13)	(2) +	
12	2630.8 (5)	(1, 2)	
13	2655.32 (4)	1 (−)§	
14	2669.88 (4)	2 −	
15	2858.1 (20)*		
16	2950.53 (5)	1 +, 2 +	
17	3069.75 (4)	(1, 2) +	
18	3160.07 (6)	(2)	
19	3268.8 (4)‡	(2 −, 3 −, 4 −)	
20	3351.54 (7)	(1, 2) +	
21	3441.5 (2)‡	(1 +, 2 +, 3 +)	
22	3459.40 (8)	(2 +)	
23	3556.46 (8)	(1, 2)	
24	3604.08 (8)	1 +, 2 +	
25	3622.2 (20)*		
26	3669.5 (10)*		
27	3913.0 (10)*		
28	3929.1 (6)	(1, 2)	
29	3970.6 (4)	(1 +, 2 +)	
30	3998.4 (10)*		
31	4019.3 (5)		
32	4064 (4)*		
33	4084.3 (2)	(1, 2)	
34	4173.1 (9)	(1, 2)	
35	4199.6 (4)	(1, 2)	
36	4210 (1)*		
37	4215.5 (2)	(1 +, 2 +)	
38	4328.7 (10)*		
39	4416 (2)*		
40	4436.9 (10)	(1, 2)	
41	4455.2 (30)*		
42	4492 (3)*		
43	4605.8 (7)	(1 +, 2 +)	
44	4621.5 (20)*		

* Energy of nuclear level derived from proposed incorporation of previously unplaced gamma-ray emissions into the extended decay scheme.
‡ Nuclear level assignment based originally on studies of other related nuclear processes, and introduced in the proposed ^{76}Br decay scheme to explain observation of specific previously unplaced gamma-ray emissions.
§ Spin and parity of 1(–) adopted directly from the γ-γ angular correlation and nuclear orientation studies of 1976Ba15, 1980Ka36, 1987Su05 and 1989Za03.

Emission probabilities

While all of the main gamma-ray emissions have been consistently detected and quantified over the years from 1969 to 1975 (1969Dz01, 1971Dz08, 1971La01, 1974MuZB, 1974Na17 and 1975VyZX), significant difficulties were posed by the disparate nature of many of the lower-intensity gamma rays, particularly those observed by some laboratories but not by others. Whenever possible, weighted-mean relative gamma-ray emission probabilities have been determined from these studies, with the greater emphasis placed on the gamma-ray measurements and resulting decay schemes proposed by 1971Dz01, 1971Dz08, 1974Na17 and 1975VyZX, backed-up by 1974MuZB and the confirmatory nature of the equivalent At-76 decay-data studies of 1971FuZP. All of the relative emission probabilities were suitably refined and quantified in terms of the emission probability of the 559.10-keV gamma ray fixed arbitrarily to 100 (100%).

Considerable effort has been expended to incorporate many previously unplaced γ-ray transitions in the proposed decay scheme. A rather large number of gamma-ray emissions were effectively tabulated as unobserved by 1971La01 when expressed as possessing relative emission probabilities of < 0.3 (i.e. < 0.3%). While such gamma rays were individually considered for possible placement in the proposed decay scheme, many of these higher-energy emissions were rejected as a consequence of their lack of detection by others (1050 (10), 1074 (1), 1088 (1), 1689.5 (10), 1873 (1), 1997 (1), 2555 (2), 3625 (5), 3860 (5), 3940 (5), 4010 (5), 4030 (5), 4140 (5), 4420 (5) and 4570 (5) keV). Issues associated with a lack of compatibility with other equivalent studies also resulted in setting aside gamma-ray emissions with energies of 984, 1457, 1566 (1), 1585, 1946, 2389 and 2947 (2) keV observed by 1969Dz01 and/or 1971Dz08; 1342 (1), 1489 (1), 2890 (2) and 2990 (2) keV observed by 1971La01; and 575.1 (2), 1069.1 (8) and 3356 (3) keV observed by 1974MuZB. Two specific gamma-ray emissions can be attributed to a sum peak (559.1 + 511 = 1070.1 keV (1069.1 keV)) and a single escape peak (1853.6 – 511 = 1342.6 keV (1342 keV)), although both transitions can also be discarded from the proposed decay scheme for other reasons.

A number of gamma-ray emissions observed in various spectroscopic studies of the EC/β^+ decay of ^{76}Br have been identified as doublets: 399.87 (6) and 401.01 (9) keV, 941.8 (5) and 942.53 (4), 1429.0 (2) and 1429.24 (8) keV, and 1770.42 (8) and 1770.5 (4) keV. Individual relative emission probabilities for these gamma rays were determined from consideration of the relative emission probabilities of the other gamma rays depopulating the same nuclear level, along with the fractional relative emission probabilities of equivalent depopulating gamma rays from adjacent nuclear levels with similar decay properties. As evolved, the proposed decay scheme implies the existence of two E0 gamma transitions and one E2+M1(+E0) gamma transition: 657.045 (9)-keV E2+M1(+E0) gamma transition depopulates the 1216.147 (7)-keV level → 559.102 (5)-keV level ($2^+ \rightarrow 2^+$); 1122.283 (7)-keV E0 gamma transition depopulates the 1122.283 (7)-keV level → 0.0-keV level ($0^+ \rightarrow 0^+$); and 2170.554 (12)-keV (E0) gamma transition depopulates the 2170.554-keV level → 0.0-keV level ($(0^+) \rightarrow 0^+$). Corresponding gamma-ray emissions for these three transitions would be 657.042, 1122.274 and 2170.521 keV, respectively. However, all three emissions involve high degrees of internal conversion that pose problems in quantifying and locating these data correctly in the existing DDEP data file.

Problems were experienced in attempting to achieve population-depopulation balance of the 1330.86-keV nuclear level of ^{76}Se. This difficulty was alleviated in a reasonable manner by assuming zero EC/β^+ decay to this level on the basis of spin-parity considerations ($1^- \rightarrow 4^+$), and introducing an unobserved 114.7-keV E2 gamma emission with the necessary relative emission probability to ensure complete depopulation of the 1330.860-keV level to the 1216.147-keV level ($4^+ \rightarrow 2^+$). A noteworthy number of the lower-energy gamma-ray emissions observed satisfactorily by 1974MuZB were judged to merit inclusion within the proposed ^{76}Br decay scheme, although the uncertainties in their relative emission probabilities had not been quantified: 210.1, 281/281.4, 309.4 and 318.0 keV. While their relative emission probabilities were adopted directly from the measurements of 1974MuZB, the recommended uncertainties constitute only considered estimates.

Gamma transition energies, and measured and recommended gamma-ray energies.

	E_{GT}(keV)#	E_γ (keV)								
		1952Fu04	**1955Th01**	**1959Gi46**	**1963Sa26**	**1969Dz01**	**1971Dz08**	**1971La01**	**1974HeYW 1998 ENSDF**	**1974MuZB**
$\gamma_{4,3}$	114.7 (1)	–	–	–	–	–	–	–	–	–
$\gamma_{26,22}$	210.1 (10)	) 250 (12)	–	–	220	–	–	–	209.7 (2)	209.7 (2)
$\gamma_{36,28}$	281 (1)	)	–	–	–	–	–	–	–	–
$\gamma_{21,18}$	281.4 (2)	)	–	–	290	–	–	–	281.4 (2)	281.4 (2)
$\gamma_{38,31}$	309.4 (4)	) 330 (15)	–	–	–	–	–	–	309.2 (2)	309.2 (2)
$\gamma_{26,20}$	318.0 (10)	)	–	–	–	–	–	–	318.4 (2)	318.4 (2)
$\gamma_{5,4}$	358.102 (11)	) 370 (20)	–	–	340	–	357 (1)	–	358.0 (3)	357.9 (3)
$\gamma_{17,14}$	399.87 (6)	)	) 400	–	–	) 400 (2)	) 400	–	) 399.5 (2)	) 399.4 (2)
$\gamma_{20,16}$	401.01 (9)	)	)	–	–	)	)	–	)	)
$\gamma_{7,5}$	438.253 (11)	420 (20)	)	–	–	–	–	440.0 (5)	438.0 (3)	438.0 (5)
$\gamma_{6,4}$	456.788 (11)	–	–	–	–	–	–	–	457.3 (5)	–
$\gamma_{5,3}$	472.815 (10)	–	–	–	–	472 (1)	–	473.0 (5)	472.89 (6)	472.8 (2)
$\gamma_{18,14}$	490.19 (7)	–	–	–	–	490 (2)	490	487.0 (5)	489.9 (2)	490.1 (2)
$\gamma_{14,8}$	499.33 (4)	–	–	–	–	–	498 (1)	–	498.0 (10)	–
$\gamma_{18,13}$	504.75 (7)	–	–	–	–	–	504 (1)	–	505.0 (5)	–
–	annihilation radiation	–	–	511	–	511	511	–	511.006	–
$\gamma_{-1,1}$	546.5 (5)$^{\Delta}$	–	–	–	–	–	–	–	546.5 (5)	–
$\gamma_{1,0}$	559.102 (5)	–	560	560 (10)	560	559 (1)	559.2 (5)	559.5 (5)	559.09 (5)	559.0 (1)
$\gamma_{2,1}$	563.181 (9)	–	–	–	–	–	563 (1)	–	563.20 (5)	563.0 (2)
$\gamma_{6,3}$	571.501 (11)	–	–	–	–	–	572 (1)	572.0 (5)	571.4 (5)	571.0 (5)
–	–	–	–	–	–	–	–	–	–	575.1 (2)
$\gamma_{26,17}$	599.8 (10)	–	–	–	–	599 (1)	–	600.0 (5)	598.9 (2)	598.7 (2)
$\gamma_{32,22}$	605 (4)	–	–	–	–	605 (1)	605	–	604.5 (3)	604.4 (8)
$\gamma_{43,29}$	635.2 (8)	–	–	–	–	636 (2)	636	–	636.0 (10)	–
$\gamma_{10,6}$	641.447 (14)	–	–	) 650 (5)	–	–	641 (1)	–	641.0 (10)	–
$\gamma_{3,1}$	657.045 (9)	–	) 660	)	660	657 (1)	657.0 (5)	657.0 (5)	657.02 (5)	657.2 (2)
$\gamma_{6,2}$	665.365 (11)	–	)	–	–	665 (2)	–	666.0 (5)	665.1 (1)	665.6 (5)
$\gamma_{20,14}$	681.66 (8)	680 (35)	–	–	–	682 (1)	682	683.0 (5)	681.4 (2)	681.3 (5)
$\gamma_{20,13}$	696.22 (8)	–	–	–	–	698 (2)	697	696.0 (5)	695.9 (9)	[695 (2)]
$\gamma_{11,6}$	727.015 (15)	–	–	–	–	727 (2)	728	726.0 (5)	727.40 (10)	727.1 (3)
$\gamma_{18,10}$	730.98 (6)	–	–	–	–	730 (2)	731	–	730.5 (2)	730.6 (3)
$\gamma_{10,5}$	740.133 (13)	) 750 (40)	–	) 750 (20)	–	740 (1)	740	–	740.3 (8)	–
$\gamma_{4,1}$	771.758 (10)	)	–	)	770	773 (2)	773	773.0 (5)	771.8 (2)	771.8 (2)
$\gamma_{22,14}$	789.52 (9)	–	–	–	–	790 (1)	790	788.0 (5)	789.1 (2)	790.4 (10)

	E_{GT}(keV)#	E_γ (keV)								
		1952Fu04	1955Th01	1959Gi46	1963Sa26	1969Dz01	1971Dz08	1971La01	1974HeYW 1998 ENSDF	1974MuZB
$\gamma_{7,4}$	796.355 (11)	–	–	–	–	797 (2)	–	–	797.0 (20)	–
$\gamma_{22,13}$	804.08 (9)	–	–	–	–	804 (1)	804	802.0 (5)	803.5 (2)	803.5 (5)
$\gamma_{39,24}$	812.1 (8)	–	–	–	–	–	–	–	812.5 (5)	–
$\gamma_{20,11}$	836.88 (7)	–	–	)	) 830	) 838 (2)	837	832.0 (5)	836.4 (2)	836.1 (3)
$\gamma_{30,18}$	838.3 (10)	–	–	) 850 (20)	)	)	838	–	–	–
$\gamma_{13,6}$	867.67 (4)	–	–	)	860	867 (1)	–	868.0 (5)	867.6 (2)	–
$\gamma_{14,6}$	882.23 (4)	–	–	–	–	882 (2)	882 (1)	883.0 (5)	882.3 (2)	882.3 (8)
$\gamma_{23,14}$	886.58 (9)	–	–	–	–	886 (2)	885 (1)	–	886.2 (2)	885.7 (10)
$\gamma_{17,8}$	899.20 (4)	–	–	–	–	–	897 (1)	–	897.0 (10)	[898.0 (10)]
$\gamma_{23,13}$	901.14 (9)	–	–	–	–	903 (1)	903	–	901.0 (7)	–
$\gamma_{7,3}$	911.068 (11)	–	–	–	–	913 (2)	912	–	913.0 (20)	–
$\gamma_{20,10}$	922.45 (7)	–	–	–	–	–	923	–	–	–
$\gamma_{24,14}$	934.20 (9)	–	–	–	–	937 (2)	–	–	934.2 (10)	–
$\gamma_{42,23}$	936 (3)	–	–	–	–	–	–	–	–	–
$\gamma_{12,5}$	941.8 (5)	)	–	–	–	) 943 (1)	) 943	–	) 942.3 (5) D	) 942.2 (8)
$\gamma_{17,7}$	942.54 (4)	) 960 (50)	–	–	–	)	)	–	)	)
$\gamma_{14,5}$	980.92 (4)	)	–	–	990	981 (1)	981	982.0 (5)	980.9 (2)	980.8 (6)
–	–	–	–	–	–	–	984	–	–	–
$\gamma_{22,10}$	1030.31 (8)	–	–	–	–	1030 (2)	1030 (1)	1026 (1)	1029.9 (5)	1029.5 (5)
$\gamma_{18,7}$	1032.86 (6)	–	–	–	–	1033 (2)	1033 (1)	–	1032.6 (5)	1032.3 (5)
$\gamma_{35,18}$	1039.5 (4)	–	–	–	–	1040 (2)	1040	–	1040.7 (10)	–
–	–	–	–	–	–	–	–	1050 (1)	–	–
$\gamma_{38,19}$	1060 (1)	–	–	–	–	1060 (2)	–	–	1060.0 (20)	–
–	–	–	–	–	–	–	–	–	–	1069.1 (8)
–	–	–	–	–	–	–	–	1074 (1)	–	–
–	–	–	–	–	–	–	–	1088 (1)	–	–
$\gamma_{2,0}$	1122.283 (7)	–	–	–	–	–	–	–	1122.3 (3)	–
$\gamma_{5,1}$	1129.860 (9)	–	–	) 1140 (30)	) 1140	1130 (1)	1130	1130 (1)	1129.85 (6)	1129.7 (3)
$\gamma_{43,22}$	1146.4 (7)	–	–	)	)	1145 (2)	1145	–	1145.0 (20)	–
$\gamma_{9,3}$	1158.1 (6)	–	–	–	–	1158 (2)	–	–	1158.2 (5)	–
$\gamma_{16,6}$	1162.88 (5)	–	–	–	–	1161 (2)	1161	1161 (1)	1161.0 (20)	–
$\gamma_{20,8}$	1180.99 (7)	–	–	–	–	1180 (2)	1180	–	1179.0 (10)	1180.1 (10)
$\gamma_{25,10}$	1193.1 (20)	)	–	–	–	1193 (2)	–	–	1193.0 (20)	–
$\gamma_{10,3}$	1212.948 (13)	) 1210 (60)	) 1220	) 1210 (10)	) 1220	1213 (2)	1213 (1)	–	1213.1 (1)	1212.8 (4)
$\gamma_{3,0}$	1216.147 (7)	)	)	)	)	1216 (1)	1216 (1)	1216.5 (10)	1216.10 (5)	1216.0 (3)

	E_{GT}(keV)#	E_γ (keV)								
		1952Fu04	1955Th01	1959Gi46	1963Sa26	1969Dz01	1971Dz08	1971La01	1974HeYW 1998 ENSDF	1974MuZB
$\gamma_{20,7}$	1224.33 (7)	–	)	–	)	–	–	–	1224.3 (5)	–
$\gamma_{6,1}$	1228.546 (10)	–	)	–	)	1229 (1)	1229	1229 (1)	1228.65 (6)	1228.4 (3)
$\gamma_{43,20}$	1254.3 (7)	–	–	–	–	1253 (2)	1253	–	1253.0 (20)	–
$\gamma_{21,8}$	1270.9 (20)	–	–	–	–	1271 (2)	–	–	1271.0 (20)	1270.8 (10)
$\gamma_{17,6}$	1282.10 (4)	–	–	–	–	1280 (2)	1280	–	1280.0 (20)	–
$\gamma_{22,8}$	1288.85 (8)	–	–	–	–	1288 (1)	1288	–	1288.0 (10)	–
$\gamma_{11,3}$	1298.516 (15)	–	–	–	–	1298 (2)	–	–	1298.0 (20)	–
$\gamma_{29,14}$	1300.7 (4)	–	–	–	) 1320	1302 (2)	1301 (1)	–	1300.5 (8)	–
$\gamma_{10,2}$	1306.812 (13)	–	–	–	)	–	1308 (1)	–	1308..0 (10)	–
$\gamma_{29,13}$	1315.3 (4)	–	–	–	)	–	–	–	1315.0 (10)	–
$\gamma_{13,4}$	1324.46 (4)	–	–	–	)	1324 (2)	1324	–	1324.0 (20)	–
–	–	–	–	–	–	–	–	1342 (1)	–	–
$\gamma_{18,6}$	1372.42 (6)	–	–	1370 (20)	–	1372 (2)	1372	) 1379 +	1372.1 (2)	1371.7 (8)
$\gamma_{17,5}$	1380.79 (4)	–	–	–	–	1381 (1)	1381	) 1383	1380.53 (8)	1380.2 (5)
$\gamma_{33,13}$	1429.0 (2)	–	–	–	) 1420	) 1428 (1)	) 1430	–	) 1429.1 (2) D	–
$\gamma_{23,7}$	1429.25 (8)	–	–	–	)	)	)	–	)	–
$\gamma_{13,3}$	1439.17 (4)	–	–	–	)	1439 (1)	1440	1440 (1)	1439.4 (2)	1439.2 (5)
$\gamma_{14,3}$	1453.73 (4)	–	–	–	–	1454 (1)	1454	1455 (1)	1454.08 (10)	1453.6 (5)
–	–	–	–	–	–	–	1457	–	–	–
$\gamma_{44,18}$	1461.4 (20)	–	–	–	–	1461 (2)	–	–	1461.0 (20)	–
$\gamma_{18,5}$	1471.11 (6)	–	–	1470 (20)	1480	1471 (1)	1471	1472 (1)	1471.13 (7)	1470.9 (5)
–	–	–	–	–	–	–	–	1489 (1)	–	–
$\gamma_{31,11}$	1504.6 (5)	–	–	–	–	1503 (2)	1503	–	1504.1 (5)	–
$\gamma_{13,2}$	1533.03 (4)	–	–	) 1530?	–	1532 (2)	1533	–	1532.0 (20)	–
$\gamma_{43,17}$	1536.1 (7)	–	–	)	–	1538 (2)	1538	–	1538.0 (20)	–
$\gamma_{37,13}$	1560.2 (2)	–	–	–	1550	1559 (1)	–	1561 (1)	1560.0 (5)	1559.6 (10)
–	–	–	–	–	–	–	1566 (1)	) 1571 (1)	–	–
$\gamma_{7,1}$	1568.113 (10)	–	–	–	–	1568 (1)	1569 (1)	)	1568.47 (8)	1568.1 (5)
–	–	–	–	–	–	–	1585	–	–	–
$\gamma_{8,1}$	1611.452 (13)	–	–	–	–	1613 (2)	1613	–	1611.9 (5)	1611.7 (5)
$\gamma_{15,3}$	1642.0 (20)	–	–	1630?	1640	1642 (3)	–	–	1642.0 (30)	–
$\gamma_{33,10}$	1655.2 (2)	–	–	–	–	–	–	–	1654.7 (5)	–
$\gamma_{20,5}$	1662.58 (7)	–	–	–	–	1661 (2)	1663	1660 (1)	1661.0 (20)	–
$\gamma_{22,6}$	1671.75 (8)	–	–	–	–	1672 (1)	1672	1674 (1)	1672.4 (5)	–
–	–	–	–	–	–	–	–	1689.5 (10)	–	–

	E_{GT}(keV)[#]	E_γ (keV) 1952Fu04	1955Th01	1959Gi46	1963Sa26	1969Dz01	1971Dz08	1971La01	1974HeYW 1998 ENSDF	1974MuZB
$\gamma_{27,8}$	1742.4 (10)	–	–	–	–	1743 (2)	–	–	1741.9 (10)	–
$\gamma_{22,5}$	1770.44 (8)	–	–	) 1760?	–	) 1770 (2)	) 1771	) 1772 (1)	) 1769.9 (5) D	) 1770 (2)
$\gamma_{35,10}$	1770.5 (4)	–	–	)	–	)	)	)	)	)
$\gamma_{6,0}$	1787.648 (8)	–	–	–	1780	1788 (1)	–	1788 (1)	1787.8 (5)	1787.7 (5)
$\gamma_{28,7}$	1801.9 (6)	–	–	–	–	–	–	–	1802.0 (20)	–
$\gamma_{9,1}$	1815.1 (6)	–	–	–	–	–	–	–	1815.0 (20)	–
$\gamma_{25,6}$	1834.6 (20)	–	–	–	) 1840	1834 (1)	–	–	1833.8 (8)	–
$\gamma_{17,3}$	1853.60 (4)	–	) 1860	1860 (10)	)	1853 (1)	1853	1852 (1)	1853.67 (5)	1853.0 (5)
$\gamma_{10,1}$	1869.993 (12)	–	)	–	–	1868 (1)	1868	–	1868.4 (10)	1870.5 (20)
–	–	–	–	–	–	–	–	1873 (1)	–	–
$\gamma_{26,6}$	1881.9 (10)	–	–	–	–	1883 (2)	–	1883 (1)	1883.0 (20)	–
$\gamma_{39,11}$	1901 (2)	–	–	–	–	1901 (2)	–	–	1901.0 (20)	1902.9 (10)
$\gamma_{18,3}$	1943.92 (6)	–	–	–	–	1944 (1)	1944	1942 (1)	1944.2 (5)	1944.0 (8)
–	–	–	–	–	–	–	1946	–	–	–
$\gamma_{11,1}$	1955.561 (14)	–	–	–	–	1956 (1)	1957	1958 (1)	1956.1 (5)	1956.0 (8)
$\gamma_{43,12}$	1975.0 (9)	–	–	–	–	1976 (1)	1978	–	1976.0 (10)	–
$\gamma_{44,12}$	1990.7 (21)	–	–	–	–	1991 (2)	–	–	1991.0 (20)	–
–	–	–	–	–	–	–	–	1997 (1)	–	–
$\gamma_{34,7}$	2045.9 (9)	–	–	–	–	–	–	–	2046.1 (10)	–
$\gamma_{12,1}$	2071.7 (5)	–	–	–	) 2100	2071 (2)	2071	–	2071.3 (15)	2073.0 (15)
$\gamma_{36,7}$	2082 (1)	–	–	–	)	2082 (2)	–	–	2082.0 (20)	2080.0 (15)
$\gamma_{13,1}$	2096.22 (4)	–	–	2100 (20)	)	2096 (1)	2096	2097 (2)	2096.73 (11)	2095.8 (5)
$\gamma_{14,1}$	2110.78 (4)	–	–	–	)	2111 (1)	2111	2112 (2)	2111.23 (11)	2110.2 (5)
$\gamma_{7,0}$	2127.215 (8)	–	–	–	)	2127 (2)	2127	–	2127.2 (8)	2126.8 (10)
$\gamma_{20,3}$	2135.39 (7)	–	–	–	)	2135 (1)	2138	2130 + 2133 (2)	2135.60 (10)	2134.5 (10)
$\gamma_{-1,2}$	2170.0 (20)$^{\Delta}$	–	–	–	–	2170 (2)	2172	–	2170.0 (20)	–
$\gamma_{8,0}$	2170.554 (12)	–	–	–	–	–	–	–	–	–
$\gamma_{29,6}$	2183.0 (4)	–	–	–	–	2184 (1)	2184	2183 (2)	2183.5 (10)	–
$\gamma_{20,2}$	2229.26 (7)	–	–	–	–	2228 (2)	2229	–	2227.7 (20)	–
$\gamma_{-1,3}$	2235.0 (20)$^{\Delta}$	–	–	–	–	2235 (2)	–	–	2235.0 (20)	–
$\gamma_{15,1}$	2299.0 (20)	–	–	–	–	2299 (2)		–	2299.0 (20)	2298.0 (15)
$\gamma_{30,5}$	2309.4 (10)	–	–	–	–	2308 (2)	–	–	2309.6 (10)	2309.0 (10)
$\gamma_{23,3}$	2340.31 (8)	–	–	–	2340	2338 (2)	2338	–	2338.0 (20)	–
–	–	–	–	–	–	–	2389	–	–	–
$\gamma_{16,1}$	2391.43 (5)	–	–	2390 (20)	–	2392 (1)	2391	2389 (2)	2391.25 (10)	2390.6 (5)

	E_{GT}(keV)#	E_γ (keV)								
		1952Fu04	**1955Th01**	**1959Gi46**	**1963Sa26**	**1969Dz01**	**1971Dz08**	**1971La01**	**1974HeYW 1998 ENSDF**	**1974MuZB**
$\gamma_{35,6}$	2412.0 (4)	–	–	–	–	–	–	–	2411.8 (20)	–
$\gamma_{10,0}$	2429.095 (11)	–	–	–	2420	2428 (2)	2429	2432 (2)	2429.0 (20)	–
$\gamma_{24,2}$	2481.80 (8)	–	–	–	–	2480 (2)	2480	–	2483.0 (12)	–
$\gamma_{17,1}$	2510.65 (4)	–	–	–	2500	2508 (1)	2510	2509 (2)	2510.79 (16)	2509.8 (5)
$\gamma_{26,2}$	2547.2 (10)	–	–	–	–	–	–	–	2546.7 (20)	–
–	–	–	–	–	–	–	–	2555 (2)	–	–
$\gamma_{18,1}$	2600.97 (6)	–	–	2600 (50)	–	2599 (1)	2602	–	2601.25 (15)	2601.0 (6)
$\gamma_{12,0}$	2630.8 (5)	–	–	–	) 2640	2627 (2)	2627	–	2627.0 (20)	–
$\gamma_{13,0}$	2655.32 (4)	–	–	–	)	2655 (3)	2655	2656 (2)	2658.0 (20)	–
$\gamma_{31,4}$	2688.4 (5)	–	–	–	–	–	–	–	2690.0 (15)	–
$\gamma_{28,3}$	2713.0 (6)	–	–	–	–	2714 (3)	2714	–	2714.0 (30)	–
$\gamma_{29,3}$	2754.5 (4)	–	–	–	–	2757 (3)	2757	–	2757.0 (30)	–
$\gamma_{20,1}$	2792.44 (7)	–	–	2780 (20)	2780	2793 (1)	2793	2790 (2)	2792.69 (8)	2792.9 (10)
$\gamma_{-1,4}$	2837.0 (30)$^{\Delta}$	–	–	–	–	2837 (3)	–	–	2837.0 (30)	–
$\gamma_{32,3}$	2848 (4)	–	–	–	–	2844 (3)	2849	–	2844.0 (30)	–
–	–	–	–	–	–	–	–	2890 (2)	–	–
$\gamma_{22,1}$	2900.30 (8)	–	–	–	) 2920	2900 (2)	2901	–	2900.50 (10)	2901.5 (15)
–	–	–	–	–	)	2947 (2)	–	–	–	–
$\gamma_{16,0}$	2950.53 (5)	–	–	) 2970 (20)	)	2949 (2)	2951	2949 (2)	2950.53 (6)	2950.7 (10)
$\gamma_{35,3}$	2983.5 (4)	–	–	)	–	2982 (3)	2982	–	2981.5 (30)	[2981 (3)]
–	–	–	–	–	–	–	–	2990 (2)	–	–
$\gamma_{23,1}$	2997.36 (8)	–	–	–	–	2997 (2)	2998	–	2997.34 (9)	2997.0 (15)
$\gamma_{24,1}$	3044.98 (8)	–	–	–	)	–	3047	–	3045.0 (10)	–
$\gamma_{25,1}$	3063.1 (20)	–	–	–	) 3060	3064 (2)	–	–	3064.0 (20)	–
$\gamma_{17,0}$	3069.75 (4)	–	–	–	)	3072 (3)	3069	–	3072.0 (30)	–
$\gamma_{37,2}$	3093.2 (2)	–	–	–	–	–	–	3090 (2)	3093.2 (2)	–
$\gamma_{18,0}$	3160.07 (6)	–	–	–	) 3250 +	3158 (2)	3160	3154 (2)	3159.0 (2)	–
$\gamma_{20,0}$	3351.54 (7)	–	–	–	) 3320	3351 (2)	3352	3349 (2)	3351.8 (10)	3350.0 (15)
–	–	–	–	–	–	–	–	–	–	3356 (3)
$\gamma_{28,1}$	3370.0 (6)	–	–	–	3360	3368 (2)	3368	–	3370.0 (10)	–
$\gamma_{29,1}$	3411.5 (4)	–	–	–	–	3410 (3)	3414	–	3411.3 (5)	3410.0 (20)
$\gamma_{32,1}$	3505 (4)	–	–	–	–	3508 (3)	3506	–	3508.0 (30)	–
$\gamma_{33,1}$	3525.2 (2)	–	–	) 3570 (30)	) 3560	3525 (2)	–	–	3525.2 (5)	3525.0 (20)
$\gamma_{24,0}$	3604.08 (8)	–	–	)	)	3604 (3)	3606	3600 (5)	3603.98 (8)	3604.0 (15)
–	–	–	–	–	–	–	–	3625 (5)	–	–

	E_{GT}(keV)[#]	E_γ (keV)								
		1952Fu04	1955Th01	1959Gi46	1963Sa26	1969Dz01	1971Dz08	1971La01	1974HeYW 1998 ENSDF	1974MuZB
$\gamma_{35,1}$	3640.5 (4)	–	–	–	–	3638 (2)	3639	–	3638.7 (5)	3637.6 (20)
–	–	–	–	–	–	–	–	3860 (5)	–	–
$\gamma_{40,1}$	3877.8 (10)	–	–	–	3850	3881 (3)	3881	3873 (5)	3881.0 (30)	–
$\gamma_{-1,5}$	3892.0 (20)[Δ]	–	–	–	–	3893 (3)	–	–	3892.0 (20)	–
$\gamma_{27,0}$	3913.0 (10)	–	–	–	) 3920	–	–	3910 (5)	3913.5 (10)	–
$\gamma_{28,0}$	3929.1 (6)	–	–	–	)	3930 (3)	3932	–	3929.2 (7)	[3930 (5)]
–	–	–	–	–	–	–	–	3940 (5)	–	–
$\gamma_{-1,6}$	3963.5 (10)[Δ]	–	–	) 3970 (30)	–	3964 (3)	–	–	3963.5 (10)	–
$\gamma_{29,0}$	3970.6 (4)	–	–	)	–	3971 (3)	3973	–	3971.0 (20)	–
–	–	–	–	–	–	–	–	4010 (5)	–	–
$\gamma_{31,0}$	4019.3 (5)	–	–	–	–	4023 (3)	–	–	4020.3 (10)	–
–	–	–	–	–	–	–	–	4030 (5)	–	–
$\gamma_{43,1}$	4046.7 (7)	–	–	–	–	4045 (3)	4050	–	4044.0 (20)D	[4045 (3)]
$\gamma_{32,0}$	4064 (4)	–	–	–	–	4065 (3)	4065	–	4065.0 (30)	–
$\gamma_{33,0}$	4084.3 (2)	–	–	–	–	–	–	–	4084.0 (30)	–
–	–	–	–	–	–	–	–	4140 (5)	–	–
$\gamma_{34,0}$	4173.1 (9)	–	–	–	4270	–	–	–	4172.0 (20)	–
–	–	–	–	–	–	–	–	4420 (5)	–	–
$\gamma_{40,0}$	4436.9 (10)	–	–	4420 (40)	4410	4440 (3)	4440	–	4436.4 (10)	[4439 (3)]
$\gamma_{41,0}$	4455.0 (30)	–	–	–	–	–	–	–	4455.0 (30)	–
$\gamma_{42,0}$	4492 (3)	–	–	–	4490	–	–	–	4492.0 (30)	–
–	–	–	–	–	–	–	–	4570 (5)	–	–
$\gamma_{43,0}$	4605.8 (7)	–	–	–	–	4603 (3)	4610	–	4600.0 (40)	–

Gamma transition energies, and measured and recommended gamma-ray energies (continued).

	E_{GT} (keV)[#]	E_γ (keV)			
		1974Na17	1975VyZX		Recommended[§]
$\gamma_{4,3}$	114.7 (1)	–	–	$\gamma_{4,3}$	114.7 (1)[Φ]
$\gamma_{26,22}$	210.1 (10)	–	–	$\gamma_{26,22}$	210.1 (10)
$\gamma_{36,28}$	281 (1)	–	–	$\gamma_{36,28}$	281 (1)
$\gamma_{21,18}$	281.4 (2)	–	–	$\gamma_{21,18}$	281.4 (2)
$\gamma_{38,31}$	309.4 (4)	–	–	$\gamma_{38,31}$	309.4 (4)
$\gamma_{26,20}$	318.0 (10)	–	–	$\gamma_{26,20}$	318.0 (10)
$\gamma_{5,4}$	358.102 (11)	–	–	$\gamma_{5,4}$	358.101 (11)
$\gamma_{17,14}$	399.87 (6)	) 400.0 (5)	–	$\gamma_{17,14}$	399.87 (6)
$\gamma_{20,16}$	401.01 (9)	)	–	$\gamma_{20,16}$	401.01 (9)

	E_{GT} (keV)#	E_γ (keV)			
		1974Na17	1975VyZX		Recommended§
$\gamma_{7,5}$	438.253 (11)	–	–	$\gamma_{7,5}$	438.252 (11)
$\gamma_{6,4}$	456.788 (11)	457.3 (5)	–	$\gamma_{6,4}$	456.787 (11)
$\gamma_{5,3}$	472.815 (10)	472.91 (6)	–	$\gamma_{5,3}$	472.813 (10)
$\gamma_{18,14}$	490.19 (7)	489.7 (2)	–	$\gamma_{18,14}$	490.19 (7)
$\gamma_{14,8}$	499.33 (4)	–	–	$\gamma_{14,8}$	499.33 (4)
$\gamma_{18,13}$	504.75 (7)	–	505.0	$\gamma_{18,13}$	504.75 (7)
–	annihilation radiation	–	–	–	annihilation radiation
$\gamma_{-1,1}$	546.5 (5)$^{\Delta}$	–	546.5	$\gamma_{-1,1}$	546.5 (5)$^{\Delta}$
$\gamma_{1,0}$	559.102 (5)	559.11 (5)	559.5	$\gamma_{1,0}$	559.100 (5)
$\gamma_{2,1}$	563.181 (9)	563.22 (5)	563.1	$\gamma_{2,1}$	563.179 (9)
$\gamma_{6,3}$	571.501 (11)	571.7 (5)	571.0	$\gamma_{6,3}$	571.499 (11)
–	–	–	–	–	–
$\gamma_{26,17}$	599.8 (10)	599.2 (3)	599.4	$\gamma_{26,17}$	599.8 (10)
$\gamma_{32,22}$	605 (4)	604.4 (4)	605.2	$\gamma_{32,22}$	605 (4)
$\gamma_{43,29}$	635.2 (8)	–	–	$\gamma_{43,29}$	635.2 (8)
$\gamma_{10,6}$	641.447 (14)	–	–	$\gamma_{10,6}$	641.444 (14)
$\gamma_{3,1}$	657.045 (9)	657.00 (5)	657.2	$\gamma_{3,1}$	657.042 (9)
$\gamma_{6,2}$	665.365 (11)	665.1 (1)	665.0	$\gamma_{6,2}$	665.362 (11)
$\gamma_{20,14}$	681.66 (8)	681.4 (2)	681.3	$\gamma_{20,14}$	681.66 (8)
$\gamma_{20,13}$	696.22 (8)	695.8 (2)	696.1	$\gamma_{20,13}$	696.22 (8)
$\gamma_{11,6}$	727.015 (15)	727.5 (1)	727.1	$\gamma_{11,6}$	727.011 (15)
$\gamma_{18,10}$	730.98 (6)	730.4 (2)	731.0	$\gamma_{18,10}$	730.98 (6)
$\gamma_{10,5}$	740.133 (13)	740 0 (8)	740.6	$\gamma_{10,5}$	740.129 (13)
$\gamma_{4,1}$	771.758 (10)	771.8 (2)	772.2	$\gamma_{4,1}$	771.754 (10)
$\gamma_{22,14}$	789.52 (9)	789.1 (2)	789.1	$\gamma_{22,14}$	789.52 (9)
$\gamma_{7,4}$	796.355 (11)	–	–	$\gamma_{7,4}$	796.351 (11)
$\gamma_{22,13}$	804.08 (9)	803.5 (2)	804.0	$\gamma_{22,13}$	804.08 (9)
$\gamma_{39,24}$	812.1 (8)	–	812.5	$\gamma_{39,24}$	812.1 (8)
$\gamma_{20,11}$	836.88 (7)	836.5 (2)	) 838.1	$\gamma_{20,11}$	836.88 (7)
$\gamma_{30,18}$	838.3 (10)	–	)	$\gamma_{30,18}$	838.3 (10)
$\gamma_{13,6}$	867.67 (4)	867.5 (2)	868.4	$\gamma_{13,6}$	867.66 (4)
$\gamma_{14,6}$	882.23 (4)	882.3 (2)	882.0	$\gamma_{14,6}$	882.22 (4)
$\gamma_{23,14}$	886.58 (9)	886.1 (2)	886.3	$\gamma_{23,14}$	886.57 (9)
$\gamma_{17,8}$	899.20 (4)	–	–	$\gamma_{17,8}$	899.19 (4)
$\gamma_{23,13}$	901.14 (9)	900.6 (8)	902.0	$\gamma_{23,13}$	901.13 (9)
$\gamma_{7,3}$	911.068 (11)	–	–	$\gamma_{7,3}$	911.062 (11)

	E_{GT} (keV)[#]	E_γ (keV)			
		1974Na17	1975VyZX		Recommended[§]
$\gamma_{20,10}$	922.45 (7)	–	–	$\gamma_{20,10}$	922.44 (7)
$\gamma_{24,14}$	934.20 (9)	934.2 (10)	933.5	$\gamma_{24,14}$	934.19 (9)
$\gamma_{42,23}$	936 (3)	–	935.5	$\gamma_{42,23}$	936 (3)
$\gamma_{12,5}$	941.8 (5)	) 942.3 (8)	) 942.0	$\gamma_{12,5}$	941.8 (5)
$\gamma_{17,7}$	942.54 (4)	)	)	$\gamma_{17,7}$	942.53 (4)
$\gamma_{14,5}$	980.92 (4)	980.8 (2)	981.4	$\gamma_{14,5}$	980.91 (4)
–	–	–	–	–	–
$\gamma_{22,10}$	1030.31 (8)	1030.3 (5)	1030.0	$\gamma_{22,10}$	1030.30 (8)
$\gamma_{18,7}$	1032.86 (6)	1032.5 (5)	1033.4	$\gamma_{18,7}$	1032.85 (6)
$\gamma_{35,18}$	1039.5 (4)	1040.9 (10)	–	$\gamma_{35,18}$	1039.5 (4)
–	–	–	–	–	–
$\gamma_{38,19}$	1060 (1)	–	–	$\gamma_{38,19}$	1060 (1)
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
$\gamma_{2,0}$	1122.283 (7)	–	–	$\gamma_{2,0}$	1122.274 (7)
$\gamma_{5,1}$	1129.860 (9)	1129.85 (6)	1129.5	$\gamma_{5,1}$	1129.851 (9)
$\gamma_{43,22}$	1146.4 (7)	–	1145.0	$\gamma_{43,22}$	1146.4 (7)
$\gamma_{9,3}$	1158.1 (6)	1158.2 (5)	–	$\gamma_{9,3}$	1158.1 (5)
$\gamma_{16,6}$	1162.88 (5)	–	–	$\gamma_{16,6}$	1162.87 (5)
$\gamma_{20,8}$	1180.99 (7)	1178.0 (8)	–	$\gamma_{20,8}$	1180.98 (7)
$\gamma_{25,10}$	1193.1 (20)	–	–	$\gamma_{25,10}$	1193.1 (20)
$\gamma_{10,3}$	1212.948 (13)	1213.1 (1)	1212.8	$\gamma_{10,3}$	1212.938 (13)
$\gamma_{3,0}$	1216.147 (7)	1216.10 (5)	1216 .2	$\gamma_{3,0}$	1216.137 (7)
$\gamma_{20,7}$	1224.33 (7)	1224.3 (5)	1224.2	$\gamma_{20,7}$	1224.32 (7)
$\gamma_{6,1}$	1228.546 (10)	1228.65 (6)	1228.7	$\gamma_{6,1}$	1228.535 (10)
$\gamma_{43,20}$	1254.3 (7)	–	–	$\gamma_{43,20}$	1254.3 (7)
$\gamma_{21,8}$	1270.9 (20)	–	–	$\gamma_{21,8}$	1270.9 (20)
$\gamma_{17,6}$	1282.10 (4)	–	–	$\gamma_{17,6}$	1282.09 (4)
$\gamma_{22,8}$	1288.85 (8)	–	–	$\gamma_{22,8}$	1288.84 (8)
$\gamma_{11,3}$	1298.516 (15)	–	–	$\gamma_{11,3}$	1298.504 (15)
$\gamma_{29,14}$	1300.7 (4)	1300.0 (8)	–	$\gamma_{29,14}$	1300.7 (4)
$\gamma_{10,2}$	1306.812 (13)	–	–	$\gamma_{10,2}$	1306.800 (13)
$\gamma_{29,13}$	1315.3 (4)	1315.0 (10)	–	$\gamma_{29,13}$	1315.3 (4)
$\gamma_{13,4}$	1324.46 (4)	–	–	$\gamma_{13,4}$	1324.45 (4)
–	–	–	–	–	–

	E_{GT} (keV)#	E_γ (keV)			
		1974Na17	1975VyZX		Recommended§
$\gamma_{18,6}$	1372.42 (6)	1372.1 (2)	–	$\gamma_{18,6}$	1372.41 (6)
$\gamma_{17,5}$	1380.79 (4)	1380.56 (8)	–	$\gamma_{17,5}$	1380.78 (4)
$\gamma_{33,13}$	1429.0 (2)	) 1429.2 (2)	–	$\gamma_{33,13}$	1429.0 (2)
$\gamma_{23,7}$	1429.25 (8)	)		$\gamma_{23,7}$	1429.24 (8)
$\gamma_{13,3}$	1439.17 (4)	1439.5 (2)	–	$\gamma_{13,3}$	1439.16 (4)
$\gamma_{14,3}$	1453.73 (4)	1454.10 (8)	–	$\gamma_{14,3}$	1453.72 (4)
–	–	–	–	–	–
$\gamma_{44,18}$	1461.4 (20)	–	–	$\gamma_{44,18}$	1461.4 (20)
$\gamma_{18,5}$	1471.11 (6)	1471.14 (7)	–	$\gamma_{18,5}$	1471.09 (6)
–	–	–	–	–	–
$\gamma_{31,11}$	1504.6 (5)	1504.2 (5)	–	$\gamma_{31,11}$	1504.6 (5)
$\gamma_{13,2}$	1533.03 (4)	–	–	$\gamma_{13,2}$	1533.01 (4)
$\gamma_{43,17}$	1536.1 (7)	–	–	$\gamma_{43,17}$	1536.1 (7)
$\gamma_{37,13}$	1560.2 (2)	1560.2 (5)	–	$\gamma_{37,13}$	1560.2 (5)
–	–	–	–	–	–
$\gamma_{7,1}$	1568.113 (10)	1568.49 (8)	–	$\gamma_{7,1}$	1568.096 (10)
–	–	–	–	–	–
$\gamma_{8,1}$	1611.452 (13)	1612.0 (5)	–	$\gamma_{8,1}$	1611.434 (13)
$\gamma_{15,3}$	1642.0 (20)	–	–	$\gamma_{15,3}$	1642.0 (20)
$\gamma_{33,10}$	1655.2 (2)	1654.7 (5)	–	$\gamma_{33,10}$	1655.2 (2)
$\gamma_{20,5}$	1662.58 (7)	–	–	$\gamma_{20,5}$	1662.56 (7)
$\gamma_{22,6}$	1671.75 (8)	1672.5 (5)	–	$\gamma_{22,6}$	1671.73 (8)
–	–	–	–	–	–
$\gamma_{27,8}$	1742.4 (10)	1741.7 (10)	–	$\gamma_{27,8}$	1742.4 (10)
$\gamma_{22,5}$	1770.44 (8)	) 1769.9 (5)	–	$\gamma_{22,5}$	1770.42 (8)
$\gamma_{35,10}$	1770.5 (4)	)	–	$\gamma_{35,10}$	1770.5 (4)
$\gamma_{6,0}$	1787.648 (8)	1788.1 (5)	–	$\gamma_{6,0}$	1787.625 (8)
$\gamma_{28,7}$	1801.9 (6)	1802.0 (20)	–	$\gamma_{28,7}$	1801.9 (6)
$\gamma_{9,1}$	1815.1 (6)	1815.0 (20)	–	$\gamma_{9,1}$	1815.1 (6)
$\gamma_{25,6}$	1834.6 (20)	1833.6 (8)	–	$\gamma_{25,6}$	1834.6 (20)
$\gamma_{17,3}$	1853.60 (4)	1853.68 (5)	–	$\gamma_{17,3}$	1853.58 (4)
$\gamma_{10,1}$	1869.993 (12)	1868.3 (8)	–	$\gamma_{10,1}$	1869.968 (12)
–	–	–	–	–	–
$\gamma_{26,6}$	1881.9 (10)	–	–	$\gamma_{26,6}$	1881.9 (10)
$\gamma_{39,11}$	1901 (2)	–	–	$\gamma_{39,11}$	1901 (2)
$\gamma_{18,3}$	1943.92 (6)	1944.3 (5)	–	$\gamma_{18,3}$	1943.89 (6)

	E$_{GT}$ (keV)#	E$_\gamma$ (keV)			
		1974Na17	1975VyZX	Recommended§	
–	–	–	–	–	–
$\gamma_{11,1}$	1955.561 (14)	1956.2 (5)	–	$\gamma_{11,1}$	1955.534 (14)
$\gamma_{43,12}$	1975.0 (9)	1976.0 (10)	–	$\gamma_{43,12}$	1975.0 (9)
$\gamma_{44,12}$	1990.7 (21)	–	–	$\gamma_{44,12}$	1990.7 (21)
–	–	–	–	–	–
$\gamma_{34,7}$	2045.9 (9)	2046.1 (10)	–	$\gamma_{34,7}$	2045.9 (9)
$\gamma_{12,1}$	2071.7 (5)	2070.0 (20)	–	$\gamma_{12,1}$	2071.7 (5)
$\gamma_{36,7}$	2082 (1)	–	–	$\gamma_{36,7}$	2082 (1)
$\gamma_{13,1}$	2096.22 (4)	2096.78 (8)	–	$\gamma_{13,1}$	2096.19 (4)
$\gamma_{14,1}$	2110.78 (4)	2111.27 (8)	–	$\gamma_{14,1}$	2110.75 (4)
$\gamma_{7,0}$	2127.215 (8)	2127.4 (8)	–	$\gamma_{7,0}$	2127.183 (8)
$\gamma_{20,3}$	2135.39 (7)	2135.64 (8)	–	$\gamma_{20,3}$	2135.36 (7)
$\gamma_{-1,2}$	2170.0 (20)$^{\Delta}$	–	–	$\gamma_{-1,2}$	2170.0 (20)$^{\Delta}$
$\gamma_{8,0}$	2170.554 (12)	–	–	$\gamma_{8,0}$	2170.521 (12)
$\gamma_{29,6}$	2183.0 (4)	2183.1 (10)	–	$\gamma_{29,6}$	2183.0 (4)
$\gamma_{20,2}$	2229.26 (7)	2227.4 (20)	–	$\gamma_{20,2}$	2229.22 (7)
$\gamma_{-1,3}$	2235.0 (20)$^{\Delta}$	–	–	$\gamma_{-1,3}$	2235.0 (20)$^{\Delta}$
$\gamma_{15,1}$	2299.0 (20)	–	–	$\gamma_{15,1}$	2299.0 (20)
$\gamma_{30,5}$	2309.4 (10)	2310.7 (10)	–	$\gamma_{30,5}$	2309.4 (10)
$\gamma_{23,3}$	2340.31 (8)	–	–	$\gamma_{23,3}$	2340.27 (8)
–	–	–	–	–	–
$\gamma_{16,1}$	2391.43 (5)	2391.29 (6)	–	$\gamma_{16,1}$	2391.39 (5)
$\gamma_{35,6}$	2412.0 (4)	2411.8 (20)	–	$\gamma_{35,6}$	2412.0 (4)
$\gamma_{10,0}$	2429.095 (11)	2430.0 (20)	–	$\gamma_{10,0}$	2429.053 (11)
$\gamma_{24,2}$	2481.80 (8)	2483.5 (8)	–	$\gamma_{24,2}$	2481.76 (8)
$\gamma_{17,1}$	2510.65 (4)	2510.85 (8)	–	$\gamma_{17,1}$	2510.61 (4)
$\gamma_{26,2}$	2547.2 (10)	2546.7 (20)	–	$\gamma_{26,2}$	2547.2 (10)
–	–	–	–	–	–
$\gamma_{18,1}$	2600.97 (6)	2601.3 (1)	–	$\gamma_{18,1}$	2600.92 (6)
$\gamma_{12,0}$	2630.8 (5)	–	–	$\gamma_{12,0}$	2630.8 (5)
$\gamma_{13,0}$	2655.32 (4)	2658.4 (10)	–	$\gamma_{13,0}$	2655.27 (4)
$\gamma_{31,4}$	2688.4 (5)	2690.0 (15)	–	$\gamma_{31,4}$	2688.3 (5)
$\gamma_{28,3}$	2713.0 (6)	–	–	$\gamma_{28,3}$	2712.9 (6)
$\gamma_{29,3}$	2754.5 (4)	–	–	$\gamma_{29,3}$	2754.4 (4)
$\gamma_{20,1}$	2792.44 (7)	2792.72 (6)	–	$\gamma_{20,1}$	2792.38 (7)
$\gamma_{-1,4}$	2837.1 (30)$^{\Delta}$	–	–	$\gamma_{-1,4}$	2837.0 (30)$^{\Delta}$

	E_{GT} (keV)[#]	E_γ (keV)			
		1974Na17	1975VyZX		Recommended[§]
$\gamma_{32,3}$	2848 (4)	–	–	$\gamma_{32,3}$	2848 (4)
–	–	–	–	–	–
$\gamma_{22,1}$	2900.30 (8)	2900.5 (1)	–	$\gamma_{22,1}$	2900.24 (8)
–	–	–	–	–	–
$\gamma_{16,0}$	2950.53 (5)	2950.55 (5)	–	$\gamma_{16,0}$	2950.47 (5)
$\gamma_{35,3}$	2983.5 (4)	–	–	$\gamma_{35,3}$	2983.4 (4)
–	–	–	–	–	–
$\gamma_{23,1}$	2997.36 (8)	2997.38 (8)	2997	$\gamma_{23,1}$	2997.30 (8)
$\gamma_{24,1}$	3044.98 (8)	3045.0 (10)	–	$\gamma_{24,1}$	3044.91 (8)
$\gamma_{25,1}$	3063.1 (20)	–	–	$\gamma_{25,1}$	3063.0 (20)
$\gamma_{17,0}$	3069.75 (4)	–	–	$\gamma_{17,0}$	3069.68 (4)
$\gamma_{37,2}$	3093.2 (2)	3093.3 (2)	–	$\gamma_{37,2}$	3093.1 (2)
$\gamma_{18,0}$	3160.07 (6)	3159.0 (2)	3158	$\gamma_{18,0}$	3160.00 (6)
$\gamma_{20,0}$	3351.54 (7)	3352.8 (10)	3351	$\gamma_{20,0}$	3351.46 (7)
–	–	–	–	–	–
$\gamma_{28,1}$	3370.0 (6)	3370.5 (10)	3368	$\gamma_{28,1}$	3369.9 (6)
$\gamma_{29,1}$	3411.5 (4)	3411.4 (5)	3410	$\gamma_{29,1}$	3411.4 (4)
$\gamma_{32,1}$	3505 (4)	–	3508	$\gamma_{32,1}$	3505 (4)
$\gamma_{33,1}$	3525.2 (2)	3525.2 (5)	3525	$\gamma_{33,1}$	3525.1 (2)
$\gamma_{24,0}$	3604.08 (8)	3603.99 (8)	3604	$\gamma_{24,0}$	3603.99 (8)
–	–	–	–	–	–
$\gamma_{35,1}$	3640.5 (4)	3638.8 (5)	3638	$\gamma_{35,1}$	3640.4 (4)
–	–	–	–	–	–
$\gamma_{40,1}$	3877.8 (10)	–	–	$\gamma_{40,1}$	3877.7 (10)
$\gamma_{-1,5}$	3892.1 (20)[Δ]	3892.0 (20)	–	$\gamma_{-1,5}$	3892.0 (20)[Δ]
$\gamma_{27,0}$	3913.0 (10)	3913.5 (10)	–	$\gamma_{27,0}$	3912.9 (10)
$\gamma_{28,0}$	3929.1 (6)	3928.3 (10)	3930	$\gamma_{28,0}$	3929.0 (6)
–	–	–	–	–	–
$\gamma_{-1,6}$	3963.6 (10)[Δ]	3963.1 (10)	3964	$\gamma_{-1,6}$	3963.5 (10)[Δ]
$\gamma_{29,0}$	3970.6 (4)	3971.0 (20)	–	$\gamma_{29,0}$	3970.5 (4)
–	–	–	–	–	–
$\gamma_{31,0}$	4019.3 (5)	4020.0 (10)	4023	$\gamma_{31,0}$	4019.2 (5)
–	–	–	–	–	–
$\gamma_{43,1}$	4046.7 (7)	4044.0 (20)	4043	$\gamma_{43,1}$	4046.6 (7)
$\gamma_{32,0}$	4064 (4)	–	–	$\gamma_{32,0}$	4064 (4)
$\gamma_{33,0}$	4084.3 (2)	–	4084	$\gamma_{33,0}$	4084.2 (2)

	E_{GT} (keV)#	E_γ (keV) 1974Na17	1975VyZX		Recommended§
–	–	–	–	–	–
$\gamma_{34,0}$	4173.1 (9)	4172.0 (20)	4172	$\gamma_{34,0}$	4173.0 (9)
–	–	–	–	–	–
$\gamma_{40,0}$	4436.9 (10)	4432.0 (20)	4440	$\gamma_{40,0}$	4436.8 (10)
$\gamma_{41,0}$	4455.0 (30)	–	4455	$\gamma_{41,0}$	4454.9 (30)
$\gamma_{42,0}$	4492 (3)	4490	4492	$\gamma_{42,0}$	4492 (3)
–	–	–	–	–	–
$\gamma_{43,0}$	4605.8 (7)	4596.0 (20)	4604	$\gamma_{43,0}$	4605.7 (7)

Determined from the nuclear level energies of 1995Si03, and nuclear levels derived directly from various previously unplaced gamma-ray emissions.

§ Calculated by subtracting gamma recoil from gamma transition energy (E_{GT} (keV)).

Δ Unplaced in proposed decay scheme.

Φ Unobserved – introduced to ensure necessary and complete depopulation of the 1330.860-keV level to the 1216.147-keV level ($4^+ \rightarrow 2^+$).

Published gamma-ray emission probabilities expressed relative to P_γ^{rel}(559.10 keV) fixed to 100, unless stated otherwise.

	E_γ (keV)	P_γ 1959Gi46	1963Sa26‡	1969Dz01 Table	1969Dz01 Fig. 2	1971Dz08 Table 2	1971Dz08 Fig. 4	1971La01	1974HeYW#	1998ENSDF	1974MuZB
		P_γ^{rel} †	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *
$\gamma_{4,3}$	114.7 (1)	–	–	–	–	–	–	–	–	–	–
$\gamma_{26,22}$	210.1 (10)	–	15.9	–	–	–	–	–	–	0.0592 (16)	**0.06**
$\gamma_{36,28}$	281 (1)	–	) 10.4	–	–	–	–	–	–	) 0.163 (4)	) **0.22**
$\gamma_{21,18}$	281.4 (2)	–	)	–	–	–	–	–	–	)	)
$\gamma_{38,31}$	309.4 (4)	–	–	–	–	–	–	–	–	0.141 (4)	**0.19**
$\gamma_{26,20}$	318.0 (10)	–	–	–	–	–	–	–	–	0.133 (4)	**0.18**
$\gamma_{5,4}$	358.101 (11)	–	8.7	–	–	**0.5 (2)**	0.38	–	1.3	0.37 (15)	0.44
$\gamma_{17,14}$	399.87 (6)	–	–	) **0.48 (5)**	) 0.3	–	) 0.37	–	) 4.3	) 0.34 (4)	) **0.31**
$\gamma_{20,16}$	401.01 (9)	–	–	)	)	–	)	–	)	)	)
$\gamma_{7,5}$	438.252 (11)	–	–	–	–	–	–	< 0.3	–	0.274 (7)	**0.37**
$\gamma_{6,4}$	456.787 (11)	–	–	–	–	–	–	–	–	0.067 (15)	–
$\gamma_{5,3}$	472.813 (10)	–	–	**2.4 (3)**	1.6	–	1.85	1.8	3.6	1.86 (10)	**2.4**
$\gamma_{18,14}$	490.19 (7)	–	–	**0.55 (7)**	0.4	–	0.42	< 0.3	0.36	0.36 (5)	**0.47**
$\gamma_{14,8}$	499.33 (4)	–	–	–	–	**0.22 (9)**	0.17	–	–	0.16 (7)	–
$\gamma_{18,13}$	504.75 (7)	–	–	–	–	**0.30 (6)**	0.23	–	–	0.229 (16)	–
–	annihilation radiation	200	–	146 (7)	–	145.2 (50)	–	–	–	109 (6)	–
$\gamma_{-1,1}$	546.5 (5)Δ	–	–	–	–	–	–	–	–	0.163 (23)	–
$\gamma_{1,0}$	559.100 (5)	95 (8)	100	100	67.5	100	73.38	100.0	100	74.0 (20)	100

	E_γ (keV)	P_γ									
		1959Gi46	1963Sa26‡	1969Dz01		1971Dz08		1971La01	1974HeYW# 1998ENSDF		1974MuZB
				Table	Fig. 2	Table 2	Fig. 4				
		P_γ^{rel} †	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *
$\gamma_{2,1}$	563.179 (9)	–	–	–	0.4**	**5.3 (4)**	3.85 (29)	–	12.0	3.6 (6)	**6.5**
$\gamma_{6,3}$	571.499 (11)	–	–	–	–	**0.92 (15)**	0.71	0.5	–	0.44 (22)	0.4
	575.1 (2) ¶	–	–	–	–	–	–	–	–	–	1.3
$\gamma_{26,17}$	599.8 (10)	–	–	**0.81 (7)**	–	–	–	0.7	1.1	0.41 (16)	0.76
$\gamma_{32,22}$	605 (4)	–	–	**0.39 (5)**	0.3	–	0.29	–	–	0.22 (7)	**0.34**
$\gamma_{43,29}$	635.2 (8)	–	–	**0.10 (3)**	0.07	–	0.08	–	–	0.074 (22)	–
$\gamma_{10,6}$	641.444 (14)	) 28 (2)	–	–	–	**0.19 (5)**	0.15	–	–	0.14 (4)	–
$\gamma_{3,1}$	657.042 (9)	)	43.1	**20.3 (15)**	13.9	**21.7 (9)**	16.72	22.7	23.0	15.9 (9)	23.7
$\gamma_{6,2}$	665.362 (11)	–	–	0.46 (12)	0.3	–	0.35	< 0.3	1.4	0.70 (4)	1.1
$\gamma_{20,14}$	681.66 (8)	–	–	**0.61 (4)**	0.4	–	0.47	0.9	0.67	0.422 (25)	0.69
$\gamma_{20,13}$	696.22 (8)	–	–	**0.60 (20)**	0.4	–	0.46	< 0.3	1.2	0.49 (3)	[0.9]
$\gamma_{11,6}$	727.011 (15)	–	–	**0.70 (6)**	0.5	–	0.36	1.3	1.0	0.67 (15)	0.72
$\gamma_{18,10}$	730.98 (6)	–	–	**0.87 (7)**	0.6	–	0.67	–	1.3	0.58 (8)	1.0
$\gamma_{10,5}$	740.129 (13)	) 9 (1)	–	**0.16 (3)**	0.1	–	0.12	–	–	0.16 (5)	–
$\gamma_{4,1}$	771.754 (10)	)	5.9	**0.56 (10)**	0.4	–	0.43	< 0.3	–	0.414 (25)	0.54
$\gamma_{22,14}$	789.52 (9)	–	–	**0.60 (4)**	0.4	–	0.46	< 0.3	0.83	0.47 (3)	0.70
$\gamma_{7,4}$	796.351 (11)	–	–	**0.10 (3)**	0.06	–	–	–	–	0.074 (22)	–
$\gamma_{22,13}$	804.08 (9)	–	–	**0.74 (7)**	0.5	–	0.57	< 0.3	0.76	0.53 (4)	0.73
$\gamma_{39,24}$	812.1 (8)	–	–	–	–	–	–	–	–	0.14 (4)	–
$\gamma_{20,11}$	836.88 (7)	) 10 (1)	) 2.91	–	–	–	0.06	4.5	4.5	0.38 (7)	0.88
$\gamma_{30,18}$	838.3 (10)	)	)	**0.45 (9)**	0.3	–	0.38	–	–	–	–
$\gamma_{13,6}$	867.66 (4)	)	10.1	**0.45 (3)**	0.3	–	0.35	0.6	0.64	0.30 (3)	–
$\gamma_{14,6}$	882.22 (4)	–	–	0.26 (3)	0.2	**0.48 (7)**	0.37	1.3	–	0.407 (24)	0.56
$\gamma_{23,14}$	886.57 (9)	–	–	0.71 (6)	0.5	**0.49 (7)**	0.38	–	–	0.333 (24)	0.25
$\gamma_{17,8}$	899.19 (4)	–	–	–	–	**0.23 (3)**	0.18	–	–	0.170 (23)	[0.15]
$\gamma_{23,13}$	901.13 (9)	–	–	**0.27 (2)**	0.2	–	0.21	–	–	0.155 (15)	–
$\gamma_{7,3}$	911.062 (11)	–	–	**0.07 (4)**	0.04	–	0.05	–	–	0.05 (3)	–
$\gamma_{20,10}$	922.44 (7)	–	–	–	–	–	0.19	–	–	–	–
$\gamma_{24,14}$	934.19 (9)	–	–	**0.07 (3)**	–	–	–	–	–	0.074 (15)	–
$\gamma_{42,23}$	936 (3)	–	–	–	–	–	–	–	–	–	–
$\gamma_{12,5}$	941.8 (5)	–	–	) **0.26 (4)**	0.05	–	–	–	) 0.63	) 0.37 (1)	) < 0.3
$\gamma_{17,7}$	942.53 (4)	–	–	)	0.2	–	0.20	–	)	)	)
$\gamma_{14,5}$	980.91 (4)	–	14.0	**0.50 (3)**	0.3	–	0.23	0.8	–	0.33 (3)	0.4
–	984 ᶲ	–	–	–	–	–	0.15	–	–	–	–

	Eγ (keV)	Pγ									
		1959Gi46	**1963Sa26‡**	**1969Dz01**		**1971Dz08**		**1971La01**	**1974HeYW# 1998ENSDF**		**1974MuZB**
				Table	**Fig. 2**	**Table 2**	**Fig. 4**				
		P_γ^{rel} †	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *
$\gamma_{22,10}$	1030.30 (8)	–	–	**0.79 (7)**	0.5	**0.67 (9)**	0.51	1.6	) 2.9	0.57 (6)	1.1
$\gamma_{18,7}$	1032.85 (6)	–	–	**0.75 (6)**	0.5	**0.87 (9)**	0.67	–	)	0.58 (6)	1.2
$\gamma_{35,18}$	1039.5 (4)	–	–	**0.16 (8)**	0.1	–	0.12	–	–	0.07 (4)	–
–	1050 (10) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{38,19}$	1060 (1)	–	–	**0.06 (3)**	–	–	–	–	–	0.044 (22)	–
–	1069.1 (8) ¶ SP	–	–	–	–	–	–	–	–	–	0.42
–	1074 (1) θ	–	–	–	–	–	–	< 0.3	–	–	–
–	1088 (1) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{2,0}$	1122.274 (7)	–	–	–	–	–	–	–	–	–	–
$\gamma_{5,1}$	1129.851 (9)	) 4 (4)	) 14.0	**6.23 (36)**	4.2	–	4.80	9.6	7.1	4.59 (25)	6.2
$\gamma_{43,22}$	1146.4 (7)	)	)	**0.07 (4)**	–	–	0.05	–	–	0.059 (15)	–
$\gamma_{9,3}$	1158.1 (5)	–	–	**0.18 (1)**	–	–	–	–	–	0.148 (15)	–
$\gamma_{16,6}$	1162.87 (5)	–	–	**0.22 (2)**	0.1	–	0.17	0.4	–	0.163 (23)	–
$\gamma_{20,8}$	1180.98 (7)	–	–	**0.07 (4)**	0.09	–	0.05	–	–	0.09 (4)	0.33
$\gamma_{25,10}$	1193.1 (20)	–	–	**0.14 (6)**	–	–	–	–	–	0.10 (4)	–
$\gamma_{10,3}$	1212.938 (13)	) 19 (2)	) 33.8	0.95 (5)	0.6	**2.9 (9)**	2.24	–	) 16.0	1.7 (5)	3.2
$\gamma_{3,0}$	1216.137 (7)	)	)	13.0 (7)	8.9	**11.8 (9)**	9.10	)	)	8.8 (5)	13.1
$\gamma_{20,7}$	1224.32 (7)	–	)	–	–	–	–	) 29.6	–	0.28 (10)	–
$\gamma_{6,1}$	1228.535 (10)	–	)	**3.05 (16)**	2.1	–	2.35	)	3.8	2.09 (11)	2.5
$\gamma_{43,20}$	1254.3 (7)	–	–	**0.11 (4)**	0.08	–	0.08	–	–	0.08 (3)	–
$\gamma_{21,8}$	1270.9 (20)	–	–	**0.08 (3)**	0.05	–	–	–	–	0.059 (22)	< 0.3
$\gamma_{17,6}$	1282.09 (4)	–	–	**0.10 (4)**	0.07	–	0.08	–	–	0.07 (3)	–
$\gamma_{22,8}$	1288.84 (8)	–	–	**0.07 (3)**	0.1	–	0.05	–	–	0.052 (22)	–
$\gamma_{11,3}$	1298.504 (15)	–	–	**0.12 (1)**	0.08	–	–	–	–	0.089 (15)	–
$\gamma_{29,14}$	1300.7 (4)	–	) 2.07	**0.23 (2)**	0.08	**0.23 (4)**	0.18	–	–	0.155 (15)	–
$\gamma_{10,2}$	1306.800 (13)	–	)	–	–	**0.25 (3)**	0.19	–	–	0.185 (23)	–
$\gamma_{29,13}$	1315.3 (4)	–	)	–	–	–	–	–	–	0.052 (15)	–
$\gamma_{13,4}$	1324.45 (4)	–	)	**0.06 (3)**	0.04	–	0.05	–	–	0.044 (22)	–
–	1342 (1) § SE	–	–	–	–	–	–	0.8	–	–	–
$\gamma_{18,6}$	1372.41 (6)	7.0 (15)	–	**0.79 (15)**	0.5	–	0.61	) 8.8	–	0.55 (5)	0.97
$\gamma_{17,5}$	1380.78 (4)	–	–	**3.45 (17)**	2.3	–	2.66	)	4.3	2.52 (14)	3.7
$\gamma_{33,13}$	1429.0 (2)	–	)	) **0.40 (3)**	) 0.3	–	0.21	–	) 0.64	) 0.532 (10)	–
$\gamma_{23,7}$	1429.24 (8)	–	) 11.0	)	)	–	–	–	)	)	–
$\gamma_{13,3}$	1439.16 (4)	–	)	**0.81 (5)**	0.55	–	0.82	1.1	1.1	0.58 (3)	1.0

E_γ (keV)		P_γ									
		1959Gi46	1963Sa26[‡]	1969Dz01		1971Dz08		1971La01	1974HeYW[#] 1998ENSDF		1974MuZB
				Table	Fig. 2	Table 2	Fig. 4				
		P_γ^{rel} †	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *
$\gamma_{14,3}$	1453.72 (4)	–	–	**1.02 (6)**	0.6	–	0.79	1.9	1.4	0.80 (5)	1.3
–	1457 $^{\phi}$	–	–	–	–	–	0.79	–	–	–	–
$\gamma_{44,18}$	1461.4 (20)	–	–	**0.18 (4)**	–	–	–	–	–	0.13 (3)	–
$\gamma_{18,5}$	1471.09 (6)	10 (2)	4.48	**3.03 (19)**	2.1	–	2.34	< 0.3	3.7	2.31 (13)	3.4
–	1489 (1) §	–	–	–	–	–	–	3.9	–	–	–
$\gamma_{31,11}$	1504.6 (5)	–	–	**0.11 (5)**	0.07	–	0.08	–	–	0.09 (4)	–
$\gamma_{13,2}$	1533.01 (4)	) < 3	–	**0.08 (5)**	0.05	–	0.08	–	–	0.06 (4)	–
$\gamma_{43,17}$	1536.1 (7)	)	–	**0.23 (9)**	0.05	–	0.18	–	–	0.17 (7)	–
$\gamma_{37,13}$	1560.2 (5)	–	8.09	**0.65 (8)**	–	–	–	1.9	0.7	0.459 (25)	0.78
–	1566 (1) $^{\phi}$	–	–	–	–	0.75 (15)	–	) < 0.3	–	–	–
$\gamma_{7,1}$	1568.096 (10)	–	–	**1.40 (8)**	1.0	0.65 (10)	0.50	)	1.6	0.96 (8)	1.5
–	1585 $^{\phi}$	–	–	–	–	–	0.58	–	–	–	–
$\gamma_{8,1}$	1611.434 (13)	–	–	**0.46 (30)**	0.3	–	0.35	–	–	0.28 (6)	< 0.3
$\gamma_{15,3}$	1642.0 (20)	< 3	5.07	**0.18 (6)**	–	–	–	–	–	0.13 (5)	–
$\gamma_{33,10}$	1655.2 (2)	–	–	–	–	–	–	–	–	0.118 (22)	–
$\gamma_{20,5}$	1662.56 (7)	–	–	**0.19 (7)**	0.1	–	0.14	< 0.3	–	0.14 (5)	–
$\gamma_{22,6}$	1671.73 (8)	–	–	**0.32 (9)**	0.2	–	0.24	< 0.3	–	0.24 (7)	–
–	1689.5 (10) $^{\theta}$	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{27,8}$	1742.4 (10)	–	–	**0.16 (5)**	–	–	–	–	–	0.118 (15)	–
$\gamma_{22,5}$	1770.42 (8)	) < 3	–	) **0.81(25)**	) 0.55	–	) 0.62	) 4.5	–	) 0.422 (11)	) 0.6
$\gamma_{35,10}$	1770.5 (4)	)	–	)	)	–	)	)	–	)	)
$\gamma_{6,0}$	1787.625 (8)	–	3.89	**0.84 (6)**	0.6	–	0.65	1.2	1.1	0.57 (6)	0.88
$\gamma_{28,7}$	1801.9 (6)	–	–	–	–	–	–	–	–	0.030 (15)	–
$\gamma_{9,1}$	1815.1 (6)	–	–	–	–	–	–	–	–	0.148 (15)	–
$\gamma_{25,6}$	1834.6 (20)	–	) 23.2	**0.13 (5)**	–	–	–	–	–	0.19 (10)	–
$\gamma_{17,3}$	1853.58 (4)	17 (2)	)	**20.2 (11)**	13.7	–	15.57	26.1	22.0	14.7 (8)	20.6
$\gamma_{10,1}$	1869.968 (12)	–	–	**0.20 (3)**	0.1	–	0.15	–	–	0.141 (22)	0.26
–	1873 (1) $^{\theta}$	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{26,6}$	1881.9 (10)	–	–	**0.18 (6)**	–	–	–	< 0.3	–	0.13 (4)	–
$\gamma_{39,11}$	1901 (2)	–	–	**0.16 (6)**	–	–	–	–	–	0.12 (4)	0.29
$\gamma_{18,3}$	1943.89 (6)	–	–	**0.74 (5)**	0.5	–	0.57	< 0.3	–	0.47 (8)	0.55
–	1946 $^{\phi}$	–	–	–	–	–	0.57	–	–	–	–
$\gamma_{11,1}$	1955.534 (14)	–	–	**0.47 (4)**	0.3	–	0.36	< 0.3	–	0.30 (5)	0.48
$\gamma_{43,12}$	1975.0 (9)	–	–	**0.26 (8)**	0.2	–	0.20	–	–	0.10 (8)	–

Eγ (keV)		**Pγ**									
		1959Gi46	**1963Sa26‡**	**1969Dz01**		**1971Dz08**		**1971La01**	**1974HeYW# 1998ENSDF**		**1974MuZB**
				Table	**Fig. 2**	**Table 2**	**Fig. 4**				
		P_{γ}^{rel} †	P_{γ}^{rel} *	P_{γ}^{rel} *	P_{γ}^{abs}	P_{γ}^{rel} *	P_{γ}^{abs}	P_{γ}^{rel} *	P_{γ}^{rel} *	P_{γ}^{abs}	P_{γ}^{rel} *
$\gamma_{44,12}$	1990.7 (21)	–	–	**0.11 (4)**	0.07	–	–	–	–	0.08 (3)	–
–	1997 (1) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{34,7}$	2045.9 (9)	–	–	–	–	–	–	–	–	0.178 (16)	–
$\gamma_{12,1}$	2071.7 (5)	–	) 13.4	**0.65 (16)**	0.4	–	0.50	–	–	0.27 (22)	< 0.3
$\gamma_{36,7}$	2082 (1)	–	)	**0.16 (5)**	–	–	–	–	–	0.12 (4)	< 0.3
$\gamma_{13,1}$	2096.19 (4)	10 (1)	)	**1.91 (12)**	1.3	–	1.47	) 5.9	2.0	1.36 (8)	2.0
$\gamma_{14,1}$	2110.75 (4)	–	)	**3.52 (19)**	2.4	–	2.71	)	4.2	2.49 (14)	3.8
$\gamma_{7,0}$	2127.183 (8)	–	)	**0.36 (9)**	0.2	–	0.28	–	–	0.20 (6)	0.38
$\gamma_{20,3}$	2135.36 (7)	–	)	**1.36 (8)**	0.9	–	1.05	1.1	2.4	0.94 (8)	1.8
$\gamma_{-1,2}$	2170.0 (20)Δ			**0.13 (5)**	0.08		0.10			0.10 (4)	
$\gamma_{8,0}$	2170.521 (12)	–	–	–	–	–	–	–	–	–	–
$\gamma_{29,6}$	2183.0 (4)	–	–	**0.15 (4)**	0.1	–	0.11	< 0.3	–	0.13 (4)	–
$\gamma_{20,2}$	2229.22 (7)	–	–	**0.22 (8)**	0.1	–	0.17	–	–	0.10 (6)	–
$\gamma_{-1,3}$	2235.0 (20)Δ	–	–	**0.18 (8)**	–	–	–	–	–	0.13 (6)	–
$\gamma_{15,1}$	2299.0 (20)	–	–	**0.19 (6)**	–	–	–	–	–	0.14 (4)	–
$\gamma_{30,5}$	2309.4 (10)	–	–	**0.18 (6)**	–	–	–	–	–	0.10 (3)	0.31
$\gamma_{23,3}$	2340.27 (8)	–	6.83	**0.12 (5)**	0.08	–	0.09	–	–	0.09 (4)	–
–	2389 ϕ	–	–	–	–	–	1.03	–	–	–	–
$\gamma_{16,1}$	2391.39 (5)	6 (1)	–	**6.7 (4)**	4.5	–	4.13	8.8	9.1	4.7 (3)	7.0
$\gamma_{35,6}$	2412.0 (4)	–	–	–	–	–		–	–	0.06 (3)	–
$\gamma_{10,0}$	2429.053 (11)	–	5.46	**0.20 (10)**	0.2	–	0.15	2.8	–	0.10 (4)	–
$\gamma_{24,2}$	2481.76 (8)	–	–	**0.21 (9)**	0.1	–	0.16	–	–	0.133 (22)	–
$\gamma_{17,1}$	2510.61 (4)	–	2.06	**2.77 (19)**	1.8	–	8.14	2.4	3.2	1.95 (12)	2.2
$\gamma_{26,2}$	2547.2 (10)	–	–	–	–	–	–	–	–	0.006 (4)	–
–	2555 (2) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{18,1}$	2600.92 (6)	3 (3)	–	**0.96 (7)**	0.65	–	0.74	–	1.2	0.70 (4)	0.92
$\gamma_{12,0}$	2630.8 (5)	–	) 4.73	**0.17 (5)**	0.1	–	0.13	–	–	0.13 (4)	–
$\gamma_{13,0}$	2655.27 (4)	–	)	**0.12 (6)**	0.08	–	0.09	< 0.3	–	0.13 (4)	–
$\gamma_{31,4}$	2688.3 (5)	–	–	–	–	–	–	–	–	0.36 (4)	–
$\gamma_{28,3}$	2712.9 (6)	–	–	**0.10 (3)**	0.3	–	0.08	–	–	0.074 (22)	–
$\gamma_{29,3}$	2754.4 (4)	–	–	**0.10 (3)**	0.07	–	0.08	–	–	0.074 (22)	–
$\gamma_{20,1}$	2792.38 (7)	8.0 (15)	11.5	**7.99 (55)**	5.4	–	8.16	10.2	8.9	5.6 (3)	7.6
$\gamma_{-1,4}$	2837.0 (30)Δ	–	–	**0.15 (6)**	–	–	–	–	–	0.11 (4)	–
$\gamma_{32,3}$	2848 (4)	–	–	**0.20 (6)**	0.15	–	0.15	–	–	0.15 (4)	–

	E_γ (keV)	P_γ									
		1959Gi46	1963Sa26[‡]	1969Dz01		1971Dz08		1971La01	1974HeYW[#] 1998ENSDF		1974MuZB
				Table	Fig. 2	Table 2	Fig. 4				
		P_γ^{rel} †	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *
–	2890 (2) §	–	–	–	–	–	–	0.7	–	–	–
$\gamma_{22,1}$	2900.24 (8)	–	) 14.7	**0.24 (9)**	0.16	–	0.18	–	–	0.27 (10)	0.65
–	2947 (2) ϕ	) 12 (2)	)	1.47 (44)	1.0	–	–	–	–	–	–
$\gamma_{16,0}$	2950.47 (5)	)	)	**9.40 (60)**	6.5	–	8.38	15.2	13.9	7.4 (4)	11.2
$\gamma_{35,3}$	2983.4 (4)	)	–	**0.12 (4)**	0.08	–	0.09	–	–	0.09 (3)	[–]
–	2990 (2) §	–	–	–	–	–	–	1.71	–	–	–
$\gamma_{23,1}$	2997.30 (8)	–	–	**1.30 (9)**	0.9	–	1.00	–	3.0	0.96 (8)	1.5
$\gamma_{24,1}$	3044.91 (8)	–	) 4.33	–	–	–	0.05	–	–	0.022 (7)	–
$\gamma_{25,1}$	3063.0 (20)	–	)	**0.10 (3)**	–	–	–	–	–	0.074 (22)	–
$\gamma_{17,0}$	3069.68 (4)	–	)	**0.06 (2)**	0.04	–	0.05	–	–	0.044 (15)	–
$\gamma_{37,2}$	3093.1 (2)	–	–	–	–	–	–	< 0.3	1.6	0.163 (15)	–
$\gamma_{18,0}$	3160.00 (6)	–	) 0.79 +	0.37 (7)	0.3	–	0.28	< 0.3	–	0.148 (15)	–
$\gamma_{20,0}$	3351.46 (7)	–	) 0.49	**0.26 (6)**	0.2	–	0.16	< 0.3	–	0.252 (23)	0.34
–	3356 (3) ¶	–		–	–	–	–	–	–	–	[–]
$\gamma_{28,1}$	3369.9 (6)	–	1.91	**0.16 (6)**	0.1	–	0.12	–	–	0.089 (15)	–
$\gamma_{29,1}$	3411.4 (4)	–	–	**0.43 (12)**	0.3	–	0.33	–	–	0.289 (17)	0.43
$\gamma_{32,1}$	3505 (4)	–	–	**0.08 (3)**	0.05	–	0.06	–	–	0.059 (22)	–
$\gamma_{33,1}$	3525.1 (2)	) 3.0 (7)	) 7.13	**0.24 (2)**	0.16	–	–	–	–	0.178 (16)	–
$\gamma_{24,0}$	3603.99 (8)	)	)	**2.25 (18)**	1.5	–	1.73	3.8	–	1.55 (12)	2.2
–	3625 (5) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{35,1}$	3640.4 (4)	–	–	**0.16 (7)**	0.1	–	0.12	–	–	0.148 (15)	< 0.3
–	3860 (5) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{40,1}$	3877.7 (10)	–	0.46	**0.02 (1)**	0.02	–	0.02	–	–	0.15 (7)	–
$\gamma_{-1,5}$	3892.0 (20)Δ	–	–	**0.06 (3)**	–	–	–	–	–	0.030 (15)	–
$\gamma_{27,0}$	3912.9 (10)	–	) 0.61	–	–	–	–	< 0.3	–	0.015 (7)	–
$\gamma_{28,0}$	3929.0 (6)	–	)	**0.11 (5)**	0.08	–	0.08	–	–	0.089 (15)	[< 0.4]
–	3940 (5) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{-1,6}$	3963.5 (10)Δ	) 0.2 (1)	–	**0.04 (2)**	–	–	–	–	–	0.022 (7)	–
$\gamma_{29,0}$	3970.5 (4)	)	–	**0.02 (1)**	0.01		0.01	–	–	0.010 (4)	–
–	4010 (5) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{31,0}$	4019.2 (5)	–	–	**0.09 (3)**	–	–	–	–	–	0.059 (15)	–
–	4030 (5) θ	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{43,1}$	4046.6 (7)	–	–	**0.05 (2)**	0.04	–	0.04	–	–	0.104 (20) D?	[< 0.2]

	E_γ (keV)	P_γ									
		1959Gi46	1963Sa26‡	1969Dz01		1971Dz08		1971La01	1974HeYW# 1998ENSDF		1974MuZB
				Table	Fig. 2	Table 2	Fig. 4				
		P_γ^{rel} †	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *	P_γ^{rel} *	P_γ^{abs}	P_γ^{rel} *
$\gamma_{32,0}$	4064 (4)	–	–	**0.03 (1)**	0.02	–	0.02	–	–	0.022 (7)	–
$\gamma_{33,0}$	4084.2 (2)	–	–	–	–	–	–	–	–	0.015 (7)	–
–	4140 (5) $^{\theta}$	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{34,0}$	4173.0 (9)	–	0.05	–	–	–	–	–	–	0.022 (7)	–
–	4420 (5) $^{\theta}$	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{40,0}$	4436.8 (10)	0.07 (4)	0.16	**0.08 (3)**	0.07	–	0.06	–	–	0.052 (15)	[< 0.2]
$\gamma_{41,0}$	4454.9 (30)	–	–	–	–	–	–	–	–	0.0067 (22)	–
$\gamma_{42,0}$	4492 (3)	–	0.13	–	–	–	–	–	–	0.0059 (22)	–
–	4570 (5) $^{\theta}$	–	–	–	–	–	–	< 0.3	–	–	–
$\gamma_{43,0}$	4605.7 (7)	–	–	**0.02 (1)**	0.02	–	0.02	–	–	0.022 (7)	–

Published gamma-ray emission probabilities expressed relative to P_γ^{rel}(559.10 keV) fixed to 100, unless stated otherwise (continued).

	E_γ (keV)	P_γ (keV)			
		1974Na17	1975VyZX	Recommended	
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *	
$\gamma_{4,3}$	114.7 (1)	–	–	0.45 (14)▲	
$\gamma_{26,22}$	210.1 (10)	–	–	0.06 (2)■	
$\gamma_{36,28}$	281 (1)	–	–	) 0.22 (4)■	0.16 (3)◊
$\gamma_{21,18}$	281.4 (2)	–	–	)	0.06 (3)◊
$\gamma_{38,31}$	309.4 (4)	–	–	0.19 (6)■	
$\gamma_{26,20}$	318.0 (10)	–	–	0.18 (6)■	
$\gamma_{5,4}$	358.101 (11)	–	–	0.5 (2)	
$\gamma_{17,14}$	399.87 (6)	) 0.14 (3)	–	) 0.48 (5)	0.07 (2)◊
$\gamma_{20,16}$	401.01 (9)	)	–	)	0.41 (5)◊
$\gamma_{7,5}$	438.252 (11)	–	–	0.37 (4)	
$\gamma_{6,4}$	456.787 (11)	**0.09 (2)**	–	0.09 (2)	
$\gamma_{5,3}$	472.813 (10)	**2.61 (11)**	–	2.59 (10)$^{+}$	
$\gamma_{18,14}$	490.19 (7)	**0.43 (3)**	–	0.45 (3)$^{+}$	
$\gamma_{14,8}$	499.33 (4)	–	–	0.22 (9)	
$\gamma_{18,13}$	504.75 (7)	–	**0.31 (2)**	0.31 (2)$^{+}$	
–	annihilation radiation	–	–	145.2 (50)	
$\gamma_{-1,1}$	546.5 (5)$^{\Delta}$	–	**0.22 (3)**	0.22 (3)	
$\gamma_{1,0}$	559.100 (5)	100	100	100	
$\gamma_{2,1}$	563.179 (9)	**3.90 (20)**	**5.6 (3)**	4.7 (8)$^{+}$	

	E_γ (keV)	**P_γ (keV)**		
		1974Na17	**1975VyZX**	**Recommended**
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *
$\gamma_{6,3}$	571.499 (11)	**0.25 (2)**	**0.89 (7)**	0.6 (3)$^{+}$
–	575.1 (2) ¶	–	–	–
$\gamma_{26,17}$	599.8 (10)	**0.34 (2)**	**0.78 (5)**	0.57 (23)$^{+}$
$\gamma_{32,22}$	605 (4)	**0.20 (2)**	**0.41 (4)**	0.30 (10)$^{+}$
$\gamma_{43,29}$	635.2 (8)	–	–	0.10 (3)
$\gamma_{10,6}$	641.444 (14)	–	–	0.19 (5)
$\gamma_{3,1}$	657.042 (9)	**21.4 (11)**	**21.9 (6)**	21.6 (4)$^{+}$
$\gamma_{6,2}$	665.362 (11)	**0.86 (4)**	**1.05 (5)**	0.96 (10)$^{+}$
$\gamma_{20,14}$	681.66 (8)	**0.56 (3)**	**0.59 (5)**	0.58 (3)$^{+}$
$\gamma_{20,13}$	696.22 (8)	**0.68 (3)**	**0.63 (5)**	0.67 (3)$^{+}$
$\gamma_{11,6}$	727.011 (15)	**1.18 (4)**	**0.66 (5)**	0.9 (3)$^{+}$
$\gamma_{18,10}$	730.98 (6)	**0.68 (3)**	**0.89 (5)**	0.78 (10)$^{+}$
$\gamma_{10,5}$	740.129 (13)	**0.14 (2)**	**0.29 (3)**	0.18 (5)$^{+}$
$\gamma_{4,1}$	771.754 (10)	**0.56 (3)**	**0.55 (4)**	0.56 (3)$^{+}$
$\gamma_{22,14}$	789.52 (9)	**0.65 (4)**	**0.60 (5)**	0.62 (4)$^{+}$
$\gamma_{7,4}$	796.351 (11)	–	–	0.10 (3)
$\gamma_{22,13}$	804.08 (9)	**0.67 (5)**	**0.76 (6)**	0.72 (5)$^{+}$
$\gamma_{39,24}$	812.1 (8)	–	**0.19 (6)**	0.19 (6)
$\gamma_{20,11}$	836.88 (7)	**0.61 (5)**	–	0.61 (5)
$\gamma_{30,18}$	838.3 (10)	–	**0.43 (3)**	0.43 (3)$^{+}$
$\gamma_{13,6}$	867.66 (4)	**0.37 (3)**	**0.46 (3)**	0.43 (3)$^{+}$
$\gamma_{14,6}$	882.22 (4)	**0.55 (3)**	**0.55 (4)**	0.54 (3)$^{+}$
$\gamma_{23,14}$	886.57 (9)	**0.47 (3)**	**0.42 (5)**	0.46 (3)$^{+}$
$\gamma_{17,8}$	899.19 (4)	–	–	0.23 (3)
$\gamma_{23,13}$	901.13 (9)	**0.17 (2)**	**0.25 (2)**	0.23 (6)$^{+}$
$\gamma_{7,3}$	911.062 (11)	–	–	0.07 (4)
$\gamma_{20,10}$	922.44 (7)	–	–	0.26 (2)$^{\times}$
$\gamma_{24,14}$	934.19 (9)	**0.09 (2)**	**0.05 (2)**	0.07 (2)$^{+}$
$\gamma_{42,23}$	936 (3)	–	0.06 (2)	0.06 (2)
$\gamma_{12,5}$	941.8 (5)	) **0.23 (2)**	) **0.27 (2)**	) 0.25 (2)$^{+}$; 0.15 (3)$^{\Diamond}$
$\gamma_{17,7}$	942.53 (4)	)	)	) ; 0.10 (2)$^{\Diamond}$
$\gamma_{14,5}$	980.91 (4)	**0.41 (4)**	**0.49 (3)**	0.48 (3)$^{+}$
–	984 ϕ	–	–	–
$\gamma_{22,10}$	1030.30 (8)	**0.84 (8)**	**0.69 (7)**	0.75 (7)$^{+}$
$\gamma_{18,7}$	1032.85 (6)	**0.85 (8)**	**0.72 (7)**	0.78 (6)$^{+}$

	E_γ (keV)	P_γ (keV)		
		1974Na17	**1975VyZX**	**Recommended**
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *
$\gamma_{35,18}$	1039.5 (4)	**0.05 (2)**	–	0.06 (2)[+]
–	1050 (10) [θ]	–	–	–
$\gamma_{38,19}$	1060 (1)	–	–	0.06 (3)
–	1069.1 (8) [¶] SP	–	–	–
–	1074 (1) [θ]	–	–	–
–	1088 (1) [θ]	–	–	–
$\gamma_{2,0}$	1122.274 (7)	–	–	E0 transition
$\gamma_{5,1}$	1129.851 (9)	**5.97 (30)**	**6.4 (3)**	6.2 (3)[+]
$\gamma_{43,22}$	1146.4 (7)	–	**0.08 (2)**	0.08 (2)[+]
$\gamma_{9,3}$	1158.1 (5)	**0.20 (2)**	–	0.18 (1)[+]
$\gamma_{16,6}$	1162.87 (5)	–	–	0.22 (2)
$\gamma_{20,8}$	1180.98 (7)	**0.17 (2)**	–	0.15 (2)[+]
$\gamma_{25,10}$	1193.1 (20)	–	–	0.14 (6)
$\gamma_{10,3}$	1212.938 (13)	**1.60 (10)**	**3.0 (2)**	2.3 (7)[+]
$\gamma_{3,0}$	1216.137 (7)	**12.0 (6)**	**11.7 (3)**	11.8 (3)[+]
$\gamma_{20,7}$	1224.32 (7)	**0.24 (2)**	**0.53 (8)**	0.39 (15)[+]
$\gamma_{6,1}$	1228.535 (10)	**2.79 (12)**	**2.85 (20)**	2.88 (12)[+]
$\gamma_{43,20}$	1254.3 (7)	–	–	0.11 (4)
$\gamma_{21,8}$	1270.9 (20)	–	–	0.08 (3)
$\gamma_{17,6}$	1282.09 (4)	–	–	0.10 (4)
$\gamma_{22,8}$	1288.84 (8)	–	–	0.07 (3)
$\gamma_{11,3}$	1298.504 (15)	–	–	0.12 (1)
$\gamma_{29,14}$	1300.7 (4)	**0.19 (2)**	–	0.21 (2)[+]
$\gamma_{10,2}$	1306.800 (13)	–	–	0.25 (3)
$\gamma_{29,13}$	1315.3 (4)	**0.07 (2)**	–	0.07 (2)
$\gamma_{13,4}$	1324.45 (4)	–	–	0.06 (3)
–	1342 (1) [§] SE	–	–	–
$\gamma_{18,6}$	1372.41 (6)	**0.68 (4)**	–	0.69 (4)[+]
$\gamma_{17,5}$	1380.78 (4)	**3.34 (14)**	–	3.38 (14)[+]
$\gamma_{33,13}$	1429.0 (2)	) **0.32 (2)**	–	) 0.34 (2)[+] ; 0.26 (3)[◊]
$\gamma_{23,7}$	1429.24 (8)	)	–	) ; 0.08 (4)[◊]
$\gamma_{13,3}$	1439.16 (4)	**0.76 (4)**	–	0.78 (4)[+]
$\gamma_{14,3}$	1453.72 (4)	**1.15 (6)**	–	1.09 (6)[+]
–	1457 [ϕ]	–	–	–
$\gamma_{44,18}$	1461.4 (20)	–	–	0.18 (4)

	E$_\gamma$ (keV)	**P$_\gamma$ (keV)**		
		1974Na17	**1975VyZX**	**Recommended**
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *
$\gamma_{18,5}$	1471.09 (6)	**3.20 (14)**	–	3.14 (14)$^{+}$
–	1489 (1) [§]	–	–	–
$\gamma_{31,11}$	1504.6 (5)	**0.13 (8)**	–	0.12 (5)$^{+}$
$\gamma_{13,2}$	1533.01 (4)	–	–	0.08 (5)
$\gamma_{43,17}$	1536.1 (7)	–	–	0.23 (9)
$\gamma_{37,13}$	1560.2 (5)	**0.59 (3)**	–	0.60 (3)$^{+}$
–	1566 (1) [ϕ]	–	–	–
$\gamma_{7,1}$	1568.096 (10)	**1.21 (6)**	–	1.28 (6)$^{+}$
–	1585 [ϕ]	–	–	–
$\gamma_{8,1}$	1611.434 (13)	**0.30 (3)**	–	0.30 (3)$^{+}$
$\gamma_{15,3}$	1642.0 (20)	–	–	0.18 (6)
$\gamma_{33,10}$	1655.2 (2)	**0.16 (3)**	–	0.16 (3)
$\gamma_{20,5}$	1662.56 (7)	–	–	0.19 (7)
$\gamma_{22,6}$	1671.73 (8)	**0.23 (2)**	–	0.23 (2)$^{+}$
–	1689.5 (10) [θ]	–	–	–
$\gamma_{27,8}$	1742.4 (10)	**0.16 (2)**	–	0.16 (2)$^{+}$
$\gamma_{22,5}$	1770.42 (8)	) **0.32 (3)**	–	) 0.33 (3)$^{+}$ | 0.27 (3)$^{◊}$
$\gamma_{35,10}$	1770.5 (4)	)	–	) | 0.06 (2)$^{◊}$
$\gamma_{6,0}$	1787.625 (8)	**0.69 (4)**	–	0.74 (4)$^{+}$
$\gamma_{28,7}$	1801.9 (6)	**0.04 (2)**	–	0.04 (2)
$\gamma_{9,1}$	1815.1 (6)	**0.20 (2)**	–	0.20 (2)
$\gamma_{25,6}$	1834.6 (20)	**0.39 (2)**	–	0.26 (13)$^{+}$
$\gamma_{17,3}$	1853.58 (4)	**19.3 (10)**	–	19.7 (10)$^{+}$
$\gamma_{10,1}$	1869.968 (12)	**0.19 (2)**	–	0.19 (2)$^{+}$
–	1873 (1) [θ]	–	–	–
$\gamma_{26,6}$	1881.9 (10)	–	–	0.18 (6)
$\gamma_{39,11}$	1901 (2)	–	–	0.16 (6)
$\gamma_{18,3}$	1943.89 (6)	**0.53 (3)**	–	0.64 (11)$^{+}$
–	1946 [ϕ]	–	–	–
$\gamma_{11,1}$	1955.534 (14)	**0.33 (3)**	–	0.40 (7)$^{+}$
$\gamma_{43,12}$	1975.0 (9)	**0.03 (1)**	–	0.15 (12)$^{+}$
$\gamma_{44,12}$	1990.7 (21)	–	–	0.11 (4)
–	1997 (1) [θ]	–	–	–
$\gamma_{34,7}$	2045.9 (9)	**0.24 (2)**	–	0.24 (2)
$\gamma_{12,1}$	2071.7 (5)	**0.07 (4)**	–	0.36 (30)$^{+}$

	E_γ (keV)	P_γ (keV)		
		1974Na17	1975VyZX	Recommended
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *
$\gamma_{36,7}$	2082 (1)	–	–	0.16 (5)
$\gamma_{13,1}$	2096.19 (4)	**1.77 (10)**	–	1.83 (10)$^+$
$\gamma_{14,1}$	2110.75 (4)	**3.20 (16)**	–	3.33 (16)$^+$
$\gamma_{7,0}$	2127.183 (8)	**0.19 (2)**	–	0.28 (9)$^{\neq}$
$\gamma_{20,3}$	2135.36 (7)	**1.17 (7)**	–	1.25 (7)$^+$
$\gamma_{-1,2}$	2170.0 (20)$^{\Delta}$	–	–	0.13 (5)
$\gamma_{8,0}$	2170.521 (12)	–	–	E0 transition
$\gamma_{29,6}$	2183.0 (4)	0.19 (5)	–	0.17 (4)$^+$
$\gamma_{20,2}$	2229.22 (7)	0.05 (1)	–	0.14 (9)$^{\neq}$
$\gamma_{-1,3}$	2235.0 (20)$^{\Delta}$	–	–	0.18 (8)
$\gamma_{15,1}$	2299.0 (20)	–	–	0.19 (6)
$\gamma_{30,5}$	2309.4 (10)	**0.10.(1)**	–	0.14 (4)$^{\neq}$
$\gamma_{23,3}$	2340.27 (8)	–	–	0.12 (5)
–	2389 $^{\phi}$	–	–	–
$\gamma_{16,1}$	2391.39 (5)	**6.18 (35)**	–	6.4 (4)$^+$
$\gamma_{35,6}$	2412.0 (4)	**0.04 (1)**	–	0.04 (1)
$\gamma_{10,0}$	2429.053 (11)	**0.08 (4)**	–	0.14 (6)$^{\neq}$
$\gamma_{24,2}$	2481.76 (8)	**0.15 (2)**	–	0.18 (3)$^{\neq}$
$\gamma_{17,1}$	2510.61 (4)	**2.49 (15)**	–	2.60 (15)$^+$
$\gamma_{26,2}$	2547.2 (10)	**0.008 (5)**	–	0.008 (5)
–	2555 (2)$^{\theta}$	–	–	–
$\gamma_{18,1}$	2600.92 (6)	**0.92 (4)**	–	0.93 (4)$^+$
$\gamma_{12,0}$	2630.8 (5)	–	–	0.17 (5)
$\gamma_{13,0}$	2655.27 (4)	**0.24 (2)**	–	0.23 (2)$^+$
$\gamma_{31,4}$	2688.3 (5)	**0.48 (5)**	–	0.48 (5)
$\gamma_{28,3}$	2712.9 (6)	–	–	0.10 (3)
$\gamma_{29,3}$	2754.4 (4)	–	–	0.10 (3)
$\gamma_{20,1}$	2792.38 (7)	**7.30 (36)**	–	7.5 (4)$^+$
$\gamma_{-1,4}$	2837.0 (30)$^{\Delta}$	–	–	0.15 (6)
$\gamma_{32,3}$	2848 (4)	–	–	0.20 (6)
–	2890 (2)§	–	–	–
$\gamma_{22,1}$	2900.24 (8)	**0.50 (3)**	–	0.37 (13)$^+$
–	2947 (2)$^{\phi}$	–	–	–
$\gamma_{16,0}$	2950.47 (5)	**10.50 (51)**	–	10.0 (5)$^+$
$\gamma_{35,3}$	2983.4 (4)	–	–	0.12 (4)

	E$_\gamma$ (keV)	P$_\gamma$ (keV)		
		1974Na17	**1975VyZX**	**Recommended**
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *
–	2990 (2) §	–	–	–
$\gamma_{23,1}$	2997.30 (8)	**1.31 (3)**	**1.1 (1)**	1.29 (3)$^+$
$\gamma_{24,1}$	3044.91 (8)	**0.03 (1)**	–	0.03 (1)
$\gamma_{25,1}$	3063.0 (20)	–	–	0.10 (3)
$\gamma_{17,0}$	3069.68 (4)	–	–	0.06 (2)
$\gamma_{37,2}$	3093.1 (2)	**0.22 (2)**	–	0.22 (2)
$\gamma_{18,0}$	3160.00 (6)	**0.19 (2)**	**0.21 (8)**	0.19 (2)$^+$
$\gamma_{20,0}$	3351.46 (7)	**0.35 (2)**	**0.33 (5)**	0.34 (2)$^+$
–	3356 (3)¶	–	–	–
$\gamma_{28,1}$	3369.9 (6)	**0.14 (1)**	**0.09 (2)**	0.13 (1)$^+$
$\gamma_{29,1}$	3411.4 (4)	**0.40 (2)**	**0.37 (8)**	0.40 (2)$^+$
$\gamma_{32,1}$	3505 (4)	–	**0.04 (2)**	0.05 (2)$^+$
$\gamma_{33,1}$	3525.1 (2)	**0.25 (2)**	**0.23 (2)**	0.24 (2)$^+$
$\gamma_{24,0}$	3603.99 (8)	**2.18 (15)**	**2.0 (2)**	2.16 (15)$^+$
–	3625 (5)$^\theta$	–	–	–
$\gamma_{35,1}$	3640.4 (4)	**0.23 (2)**	**0.16 (4)**	0.21 (2)$^+$
–	3860 (5)$^\theta$	–	–	–
$\gamma_{40,1}$	3877.7 (10)	–	–	0.02 (1)
$\gamma_{-1,5}$	3892.0 (20)$^\Delta$	**0.02 (1)**	–	0.04 (2)$^\neq$
$\gamma_{27,0}$	3912.9 (10)	**0.02 (1)**	–	0.02 (1)
$\gamma_{28,0}$	3929.0 (6)	**0.12 (2)**	**0.12 (3)**	0.12 (2)$^+$
–	3940 (5)$^\theta$	–	–	–
$\gamma_{-1,6}$	3963.5 (10)$^\Delta$	**0.03 (1)**	**0.04 (2)**	0.03 (1)$^+$
$\gamma_{29,0}$	3970.5 (4)	**0.008 (3)**	–	0.014 (6)$^\neq$
–	4010 (5) $^\theta$	–	–	–
$\gamma_{31,0}$	4019.2 (5)	**0.09 (2)**	**0.07 (2)**	0.08 (2)$^+$
–	4030 (5) $^\theta$	–	–	–
$\gamma_{43,1}$	4046.6 (7)	**0.06 (2)**	**0.08 (2)**	0.06 (2)$^+$
$\gamma_{32,0}$	4064 (4)	–	–	0.03 (1)
$\gamma_{33,0}$	4084.2 (2)	–	**0.02 (1)**	0.02 (1)
–	4140 (5)$^\theta$	–	–	–
$\gamma_{34,0}$	4173.0 (9)	**0.03 (1)**	**0.025 (10)**	0.028 (10)$^+$
–	4420 (5)$^\theta$	–	–	–
$\gamma_{40,0}$	4436.8 (10)	**0.08 (5)**	**0.06 (2)**	0.07 (2)$^+$
$\gamma_{41,0}$	4454.9 (30)	–	**0.009 (3)**	0.009 (3)

E_γ (keV)		P_γ (keV)		
		1974Na17	1975VyZX	Recommended
		P_γ^{rel} *	P_γ^{rel} *	P_γ^{rel} *
$\gamma_{42,0}$	4492 (3)	–	**0.008 (3)**	0.008 (3)
–	4570 (5)$^{\theta}$	–	–	–
$\gamma_{43,0}$	4605.7 (7)	**0.03 (1)**	**0.02 (1)**	0.02 (1)$^{+}$

† Emission probabilities expressed relative to P_γ for 511-keV annihilation radiation of 200%.
‡ Emission probabilities listed as a combination of individual and groups of gamma rays.
# Relative and absolute gamma-ray emission probabilities adopted from ENSDF (1998) when updated by 1974HeYW in 1998.
* Emission probabilities expressed relative to P_γ (559.10 keV) defined as 100.
▲ Unobserved, but introduced to ensure necessary and complete depopulation of the 1330.860-keV level to the 1216.147-keV level ($4^+ \rightarrow 2^+$).
▪ Relative emission probabilities adopted from the measurements of 1974MuZB with only estimated uncertainties assigned.
+ Weighted-mean analysis of selected relative emission probabilities – when necessary, the recommended uncertainty has been adjusted to be in alignment with the smallest uncertainty of the values used to calculate the weighted mean.
≠ Unweighted-mean analysis of selected relative emission probabilities.
¶ Rejected although observed by 1974MuZB – no evidence of such an emission found in any of the other spectroscopic studies.
ɸ Rejected although observed by 1969Dz01 and/or 1971Dz08 – no evidence of such an emission found in any of the other spectroscopic studies.
θ Judged to be unobserved from the gamma-ray measurements of 1971La01 (< 0.3% relative emission probability) and all of the other spectroscopic studies.
§ Rejected although observed by 1971La01 – no evidence of such an emission found in any of the other spectroscopic studies.
◊ Determined by calculation of the ratios of the relative emission probabilities of equivalent depopulating gammas within neighbouring nuclear levels.
× P_γ(922.44 keV) of 0.19 adopted from measurements of 1971Dz08, with an uncertainty of ± 0.02 corresponding to that determined for the relative P_γ(563.18 keV) of 5.3 (4) by 1971Dz08; relative P_γ (922.44 keV) re-defined as 0.26 (2) relative to P_γ (559.10 keV) defined as 100.
Δ Unplaced in proposed decay scheme.
SP Possible sum peak of 559.1 + 511 = 1070.1 keV
SE Possible single escape peak of 1853.6 – 511 = 1342.6 keV.

Weighted-mean analyses of the measured relative emission probabilities were carried out when judged appropriate. Considerably more detail can be found within the gamma-ray measurements of Dzhelepov *et al.* (1969Dz01, 1971Dz08), Nagahara *et al.* (1974Na17) and Vylov, Dzhelepov *et al.* (1975VyZX), with some additional guidance taken from the studies of Müller *et al.* (1974MuZB) to which no uncertainties had originally been assigned.

Multipolarities, Internal Conversion and Internal-Pair Coefficients

The nuclear level scheme specified by Balraj Singh was used to define the multipolarities of the gamma transitions on the basis of known spins-parities (1995Si03). Studies of the γ-γ angular correlation coefficients, nuclear orientation and mixing ratios for specific gamma-ray emissions in the β^- decay of ^{76}As to particular nuclear levels of ^{76}Se support the proposed transition types for the 571.50-, 657.04-, 740.13-, 771.75-, 867.66-, 882.22-, 1129.85-, 1212.94-, 1228.54-, 1439.16-, 1453.72-, 1869.97-, 2096.19- and 2110.7-keV gamma rays (1976Ba15, 1980Ka36, 1987Su05 and 1989Za03). These measurements also provided evidence for the spins and parities of various nuclear levels of ^{76}Se, most notably for the 2655.32- and 2669.88-keV levels of $1^{(-)}$ and 2^-, respectively. A number of definitive and possible (M1 + E2) gamma transitions judged to be of reasonable importance in the derivation of the ^{76}Br decay scheme were arbitrarily assigned multipolarities of (50% M1 + 50% E2) – i.e. gamma rays with energies of 210.1, 281, 281.4, 309.4, 318.0, 358.10, 401.01, 438.25, 472.81, 599.8, 605, 635.2, 727.01, 1380.78, 1471.09, 1568.10, 1853.58, 2135.36, 2391.39, 2510.61, 2792.38, 2950.47, 2997.30 and 3603.99 keV.

E0 and E2 + M1 (+ E0) gamma transitions were assigned within the proposed decay scheme:

E_γ (keV)	Transition type	Comments
657.042 (9)	E2 + M1 (+ E0)	δ = + 5.2 (2) as determined by (1976Ba15, 1989Za03) → defined as (96.43% M1 + 3.57% E2), with α_{total} = 0.001 226 (18) and relative TP of 21.6 (4) % that depopulates the 1216.147-keV nuclear level of ^{76}Se (2+)
1122.274 (7)	E0	absolute γ transition probability of 0.000 82% (1986Gi12) originating the 1122.283-keV nuclear level of ^{76}Se (0+)
2170.521 (12)	(E0)	2170.0(20)-keV γ ray observed with relative P_γ = 0.13 (5) % cannot be an E0 transition – defined as unplaced; therefore, an additional 2170.521 (12)-keV γ proposed as an E0 transition with relative TPγ of 0.61 (10) % to balance population-depopulation of the 2170.554-keV nuclear level of ^{76}Se ((0+))

Measured mixing ratios and multipolarities of gamma-ray emissions of ^{76}As β^- decay to equivalent nuclear levels of ^{76}Se.

E_γ (keV)	δ				
	1976Ba15	1980Ka36	1987Su05	1989Za03	Adopted
571.50	–	–	> 1.37 or – 0.13 (34)	+ 0.13 (12)	+ 0.13 (12) → 98.3% M1 + 1.7% E2
657.04	+ 5.2 (2)	4.4 (5)	+ 4.15 (20)	+ 5.3 (5)	+ 5.2 (2) → 96.43% M1 + 3.57% E2 (+ E0)
740.13	–	–	+ 0.08 (16)	– 0.21 (12)	– 0.21 (12) → 95.8% E1 + 4.2% M2
771.75	–	–	–	+ 0.01 (1)	E2
867.66	–	–	$0.38^{+0.57}_{-0.28}$	+ 0.08 (7)	+ 0.08 (7) → (E1)
882.22	–	–	– 0.24 < δ < 5.3	+ 0.26 (15)	+ 0.26 (15) → 93.7% E1 + 6.3% M2
980.91	–	–	+ 0.24 > δ > + 16.4	–	E1
1129.85	–	–	+ 0.57 < δ < + 3.55	+ 1.08 (10)	+ 1.08 (10) → 53.8% E2 + 46.2% M1
1212.94	–	–	+ 0.11 (10)	+ 0.025 (20)	E1
1228.54	**– 0.49 (5)**	0.43 (6)	**– 0.53 (8)**	**– 0.54 (10)**	– 0.51 (5)[§] → 79.4% M1 + 20.6% E2
1439.16	–	0.12 (16)	– 0.02 (10)	+ 0.01 (3)	(E1)
1453.72	–	–	– 0.11 (12)	+ 0.05 (2)	E1
1869.97	–	–	+ 0.002 (76)	–	E1
2096.19	–	pure E1	0.00 (8)	+ 0.02 (6)	(E1)
2110.75	–	0.05 (5)	– 0.02 (16)	– 0.09 (2)	E1

[§] Weighted mean of 1976Ba15, 1987Su05 and 1989Za03, with an uncertainty adjusted from ± 0.04 to ± 0.05 to align with the smallest uncertainty of the values used to calculate the weighted mean value.

Recommended internal conversion coefficients have been determined from the frozen orbital approximation of Kibédi *et al.* (2008Ki07), based on the theoretical model of Band *et al.* (2002Ba85, 2002Ra45). A significant number of gamma transitions undergo decay via internal-pair formation, and the coefficient for this process has also been quantified in a few cases from the tabulations of 2008Ki07.

Gamma-ray emissions: multipolarities, and theoretical internal-conversion and internal-pair formation coefficients (frozen orbital approximation).

E_γ (keV)	Multipolarity	α_K	α_L	α_{M+}	$\alpha_{totalICC}$	α_{IPF}	α_{total}
114.7 (1)	E2	0.434 (7)	0.0573 (9)	0.0097	0.501 (8)	–	0.501 (8)
210.1 (10)	[50% M1 + 50% E2] δ = 1.0 (2)	0.030 (4)	0.0034 (5)	0.00060	0.034 (5)	–	0.034 (5)
281 (1)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0113 (12)	0.00125 (14)	0.00021	0.0128 (14)	–	0.0128 (14)
281.4 (2)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0113 (12)	0.00125 (14)	0.00019	0.0127 (13)	–	0.0127 (13)
309.4 (4)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0083 (8)	0.00091 (9)	0.00016	0.0094 (9)	–	0.0094 (9)
318.0 (10)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0076 (7)	0.00084 (8)	0.00014	0.0086 (8)	–	0.0086 (8)
358.101 (11)	50% M1 + 50% E2 δ = 1.0 (2)	0.0053 (5)	0.00057 (5)	0.00013	0.0059 (5)	–	0.0059 (5)
399.87 (6)	E1	0.001307 (19)	0.0001363 (19)	0.0000227	0.001466 (21)	–	0.001466 (21)
401.01 (9)	(50% M1 + 50% E2) δ = 1.0 (2)	0.0038 (3)	0.00041 (3)	0.00006	0.0042 (3)	–	0.0042 (3)
438.252 (11)	(50% M1 + 50% E2) δ = 1.0 (2)	0.00290 (18)	0.000311 (21)	0.000052	0.00326 (21)	–	0.00326 (21)
456.787 (11)	E2	0.00324 (5)	0.000351 (5)	0.000059	0.00365 (6)	–	0.00365 (6)
472.813 (10)	50% M1 + 50% E2 δ = 1.0 (2)	0.00233 (13)	0.000250 (15)	0.000050	0.00263 (15)	–	0.00263 (15)
490.19 (7)	[E1]	0.000778 (11)	0.0000809 (12)	0.000013	0.000872 (13)	–	0.000872 (13)
499.33 (4)	(M2)	0.00500 (7)	0.000546 (8)	0.000094	0.00564 (8)	–	0.00564 (8)
504.75 (8)	[E1]	0.000723 (11)	0.0000753 (11)	0.0000127	0.000811 (12)	–	0.000811 (12)
546.5 (5)						–	
559.100 (5)	E2	0.001747 (25)	0.000187 (3)	0.000036	0.00197 (3)	–	0.00197 (3)
563.179 (9)	E2	0.001710 (24)	0.000183 (3)	0.000027	0.00192 (3)	–	0.00192 (3)
571.499 (11)	98.3% M1 + 1.7% E2 δ = + 0.13 (12)	0.00115 (3)	0.000120 (3)	0.000020	0.00129 (3)	–	0.00129 (3)
599.8 (10)	[50% M1 + 50% E2] δ = 1.0 (2)	0.00122 (5)	0.000129 (6)	0.000022	0.00137 (6)	–	0.00137 (6)
605 (4)	[50% M1 + 50% E2] δ = 1.0 (2)	0.00120 (5)	0.000127 (6)	0.000021	0.00134 (6)	–	0.00134 (6)
635.2 (8)	(50% M1 + 50% E2) δ = 1.0 (2)	0.00105 (4)	0.000111 (5)	0.000019	0.00118 (5)	–	0.00118 (5)
641.444 (14)	E1	0.000410 (6)	0.0000426 (6)	0.0000074	0.000460 (7)	–	0.000460 (7)

657.042 (9)	96.43% E2 + 3.57% M1 (+ E0) δ = + 5.2 (2)	0.001090 (16)	0.0001159 (17)	0.0000201	0.001226 (18)	–	0.001226 (18)
665.362 (11)	E2	0.001062 (15)	0.0001128 (16)	0.000019	0.001194 (17)	–	0.001194 (17)
681.66 (8)	E1	0.000358 (5)	0.0000371 (6)	0.0000059	0.000401 (6)	–	0.000401 (6)
696.22 (8)	(E1)	0.000342 (5)	0.0000354 (5)	0.0000056	0.000383 (6)	–	0.000383 (6)
727.011 (15)	(50% M1 + 50% E2) δ = 1.0 (2)	0.000751 (21)	0.0000790 (24)	0.000014	0.000844 (24)	–	0.000844 (24)
730.98 (6)	[E1]	0.000307 (5)	0.0000318 (5)	0.0000052	0.000344 (5)	–	0.000344 (5)
740.129 (13)	95.8% E1 + 4.2% M2 δ = – 0.21 (12)	0.00036 (8)	0.000037 (9)	0.0000030	0.00040 (9)	–	0.00040 (9)
771.754 (10)	E2	0.000712 (10)	0.0000752 (11)	0.000013	0.000800 (12)	–	0.000800 (12)
789.52 (9)	(E1)	0.000261 (4)	0.0000270 (4)	0.0000040	0.000292 (4)	–	0.000292 (4)
796.351 (11)	(E2)	0.000656 (10)	0.0000693 (10)	0.000012	0.000737 (11)	–	0.000737 (11)
804.08 (9)	(E1)	0.000251 (4)	0.0000260 (4)	0.0000040	0.000281 (4)	–	0.000281 (4)
812.1 (8)						–	
836.88 (7)	(M1 + E2)					–	
838.3 (10)						–	
867.66 (4)	(E1)	0.000215 (3)	0.0000222 (4)	0.0000028	0.000240 (4)	–	0.000240 (4)
882.22 (4)	93.7% E1 + 6.3% M2 δ = + 0.26 (15)	0.00026 (7)	0.000027 (8)	0.0000030	0.00029 (8)	–	0.00029 (8)
886.57 (9)						–	
899.19 (4)						–	
901.13 (9)						–	
911.062 (11)	(M1 + E2)					–	
922.44 (7)						–	
934.19 (9)	E1	0.000185 (3)	0.0000191 (3)	0.0000032	0.000207 (3)	–	0.000207 (3)
936 (3)						–	
941.8 (5)						–	
942.53 (4)	(M1 +E2)					–	
980.91 (4)	E1	0.0001682 (24)	0.00001736 (25)	0.0000030	0.000189 (3)	–	0.000189 (3)
1030.30 (8)	(E1)	0.0001531 (22)	0.00001579 (23)	0.0000027	0.0001716 (24)	–	0.0001716 (24)
1032.85 (6)							
1039.5 (4)							
1060 (1)							
1122.274 (7)	E0						
1129.851 (9)	53.8% E2 + 46.2% M1 δ = + 1.08 (10)	0.000275 (4)	0.0000286 (5)	0.0000044	0.000308 (4)	0.00000157 (4)	0.000309 (5)
1146.4 (7)	(M1 +E2)						
1158.1 (5)							

1162.87 (5)	M1 + E2						
1180.98 (7)							
1193.1 (20)							
1212.938 (13)	E1	0.0001134 (16)	0.00001167 (17)	0.0000019	0.0001270 (16)	0.0000548 (8)	0.000182 (3)
1216.137 (7)	E2	0.000241 (4)	0.0000251 (4)	0.0000039	0.000270 (4)	0.00001090 (16)	0.000281 (4)
1224.32 (7)	(M1 + E2)						
1228.535 (10)	79.4% M1 + 20.6% E2 δ = – 0.51 (5)	0.000226 (4)	0.0000234 (4)	0.0000036	0.000253 (4)	0.00001041 (18)	0.000264 (4)
1254.3 (7)	(M1 +E2)						
1270.9 (20)	(M1 + E2)						
1282.09 (4)	(M1 + E2)						
1288.84 (8)	(E2)	0.000213 (3)	0.0000221 (3)	0.0000029	0.000238 (3)	0.0000254 (4)	0.000264 (4)
1298.504 (15)	(M1 + E2)						
1300.7 (4)	(E1)	0.0001002 (14)	0.00001031 (15)	0.0000018	0.0001123 (15)	0.0001141 (17)	0.000226 (4)
1306.800 (13)	E3	0.000388 (6)	0.0000411 (6)	0.0000069	0.000436 (6)	0.00000838 (12)	0.000445 (7)
1315.3 (4)	(E1)	0.0000983 (14)	0.00001011 (15)	0.0000017	0.0001101 (14)	0.0001237 (18)	0.000234 (4)
1324.45 (4)	(E3)	0.000376 (6)	0.0000397 (6)	0.0000066	0.000422 (6)	0.00000993 (14)	0.000432 (6)
1372.41 (6)							
1380.78 (4)	[50% M1 + 50% E2] δ = 1.0 (2)	0.000181 (3)	0.0000187 (3)	0.0000033	0.000203 (3)	0.0000422 (14)	0.000245 (4)
1429.0 (2)							
1429.24 (8)							
1439.16 (4)	(E1)	0.0000843 (12)	0.00000867 (13)	0.0000016	0.0000945 (12)	0.000205 (3)	0.000299 (5)
1453.72 (4)	E1	0.0000829 (12)	0.00000852 (12)	0.0000015	0.0000929 (12)	0.000215 (3)	0.000308 (5)
1461.4 (20)							
1471.09 (6)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0001592 (23)	0.00001647 (24)	0.0000028	0.0001784 (23)	0.0000671 (20)	0.000245 (5)
1504.6 (5)							
1533.01 (4)	(E1)	0.0000760 (11)	0.00000780 (11)	0.0000013	0.0000851 (11)	0.000277 (4)	0.000362 (5)
1536.1 (7)	(M1 + E2)						
1560.2 (5)	(E1)	0.0000738 (11)	0.00000758 (11)	0.0000013	0.0000827 (11)	0.000299 (5)	0.000381 (6)
1568.096 (10)	(50% M1 + 50% E2) δ = 1.0 (2)	0.0001404 (20)	0.00001451 (21)	0.0000025	0.0001574 (21)	0.000101 (3)	0.000259 (5)
1611.434 (13)	(E2)	0.0001348 (19)	0.00001394 (20)	0.0000024	0.0001511 (19)	0.0001309 (19)	0.000282 (4)
1642.0 (20)							
1655.2 (2)							
1662.56 (7)							
1671.73 (8)	(M1 + E2)						

1742.4 (10)							
1770.42 (8)	(M1 + E2)						
1770.5 (4)							
1787.625 (8)	E2	0.0001103 (16)	0.00001139 (16)	0.0000019	0.0001236 (16)	0.000209 (3)	0.000333 (5)
1801.9 (6)							
1815.1 (6)							
1834.6 (20)							
1853.58 (4)	(50% M1 + 50% E2) δ = 1.0 (2)	0.0001022 (15)	0.00001053 (15)	0.0000018	0.0001145 (15)	0.000219 (6)	0.000334 (7)
1869.968 (12)	E1	0.0000555 (8)	0.00000568 (8)	0.0000009	0.0000621 (8)	0.000535 (8)	0.000597 (9)
1881.9 (10)							
1901 (2)							
1943.89 (6)							
1955.534 (14)	(M1 + E2)						
1975.0 (9)							
1990.7 (21)							
2045.9 (9)							
2071.7 (5)							
2082 (1)							
2096.19 (4)	(E1)	0.0000467 (7)	0.00000478 (7)	0.0000009	0.0000523 (7)	0.000697 (10)	0.000749 (11)
2110.75 (4)	E1	0.0000462 (7)	0.00000473 (7)	0.0000008	0.0000517 (7)	0.000707 (10)	0.000759 (11)
2127.183 (8)	(E2)	0.0000800 (12)	0.00000824 (12)	0.0000014	0.0000897 (12)	0.000372 (6)	0.000461 (7)
2135.36 (7)	(50% M1 + 50% E2) δ = 1.0 (2)	0.0000789 (12)	0.00000812 (12)	0.0000014	0.0000884 (12)	0.000349 (8)	0.000438 (9)
2170.0 (20)							
2170.521 (12)	(E0)						
2183.0 (4)	(M1 + E2)						
2229.22 (7)							
2235.0 (20)							
2299.0 (20)							
2309.4 (10)							
2340.27 (8)							
2391.39 (5)	50% M1 + 50% E2 δ = 1.0 (2)	0.0000646 (10)	0.00000663 (10)	0.0000011	0.0000723 (10)	0.000469 (10)	0.000541 (11)
2412.0 (4)							
2429.053 (11)	E3	0.0000991 (14)	0.00001026 (15)	0.0000017	0.0001111 (14)	0.000326 (5)	0.000437 (7)
2481.76 (8)							
2510.61 (4)	(50% M1 + 50% E2) δ = 1.0 (2)	0.0000593 (9)	0.00000609 (9)	0.0000011	0.0000665 (9)	0.000524 (11)	0.000590 (11)

2547.2 (10)							
2600.92 (6)							
2630.8 (5)							
2655.27 (4)	(E1)	0.0000333 (5)	0.00000340 (5)	0.0000005	0.0000372 (5)	0.001049 (15)	0.001087 (16)
2688.3 (5)							
2712.9 (6)							
2754.4 (4)	(M1 + E2)						
2792.38 (7)	(50% M1 + 50% E2) δ = 1.0 (2)	0.0000495 (7)	0.00000508 (8)	0.0000008	0.0000554 (7)	0.000651 (13)	0.000706 (13)
2837.0 (30)							
2848 (4)							
2900.24 (8)	(M1 + E2)						
2950.47 (5)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0000452 (7)	0.00000463 (7)	0.0000008	0.0000506 (7)	0.000719 (13)	0.000770 (14)
2983.4 (4)							
2997.30 (8)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0000440 (7)	0.00000451 (7)	0.0000008	0.0000493 (7)	0.000739 (14)	0.000789 (14)
3044.91 (8)	(M1 + E2)						
3063.0 (20)							
3069.68 (4)							
3093.1 (2)							
3160.00 (6)							
3351.46 (7)							
3369.9 (6)							
3411.4 (4)	(M1 + E2)						
3505 (4)							
3525.1 (2)							
3603.99 (8)	[50% M1 + 50% E2] δ = 1.0 (2)	0.0000326 (5)	0.00000334 (5)	0.0000007	0.0000366 (5)	0.000981 (17)	0.001018 (17)
3640.4 (4)							
3877.7 (10)							
3892.0 (20)							
3912.9 (10)							
3929.0 (6)							
3963.5 (10)							
3970.5 (4)							
4019.2 (5)							
4046.6 (7)	(M1 + E2)						
4064 (4)							

4084.2 (2)							
4173.0 (9)							
4436.8 (10)							
4454.9 (30)							
4492 (3)							
4605.7 (7)							

Measured conversion-electron emission probabilities |(1970Dz09).

	P_{ce}^{rel} (%)
K (559 keV)	100
K (657 keV)	18 (1)
L (657 keV)	4.3 (8)
K (1213 + 1216 keV)	3.3 (5)
L (1213 + 1216 keV)	1.2 (3)
K (1853 keV)	1.1 (2)
K (2392 keV)	0.27 (9)
K (2508 keV)	0.13 (3)
K (2792 keV)	0.25 (6)
K (2949 keV)	0.36 (7)

Knowing the relative P_{EC}(total) that populates each nuclear level by a combination of EC and β^+ decay, and their theoretical capture-to-positron ratios (1971Go40), relative $P_{\beta+}$ values can be determined:

Relative positron emission probabilities calculated from P_{EC}(total) and ϵ/β^+ ratios.

	Nuclear level energy (keV)	Calculated relative P_{EC}(total)	ϵ/β^+ (1971Go40)	Relative $P_{\beta+}$
44	4621.5 (20)	0.29 (6)	–	–
43	4605.8 (7)	0.75 (16)	–	–
42	4492 (3)	0.07 (2)	–	–
41	4455.2 (30)	0.009 (3)	–	–
40	4436.9 (10)	0.09 (2)	–	–
39	4416 (2)	0.35 (9)	–	–
38	4328.7 (10)	0.25 (7)	–	–
37	4215.5 (2)	0.82 (4)	–	–
36	4210 (1)	0.32 (6)	–	–
35	4199.6 (4)	0.49 (5)	–	–
34	4173.1 (9)	0.27 (2)	–	–
33	4084.3 (2)	0.68 (5)	–	–
32	4064 (4)	0.58 (12)	–	–
31	4019.3 (5)	0.49 (9)	–	–
30	3998.4 (10)	0.57 (5)	–	–
29	3970.6 (4)	0.86 (7)	–	–
28	3929.1 (6)	0.23 (5)	–	–
27	3913.0 (10)	0.18 (2)	–	–
26	3669.5 (10)	1.00 (25)	147.2	0.0067 (17)
25	3622.2 (20)	0.50 (15)	78.5	0.0063 (19)
24	3604.08 (8)	2.25 (17)	63.8	0.0347 (26)
23	3556.46 (8)	2.12 (10)	38.0	0.0544 (26)
22	3459.40 (8)	2.59 (20)	16.7	0.146 (11)
21	3441.5 (2)	0.14 (4)	14.5	0.009 (3)
20	3351.54 (7)	12.2 (5)	8.00	1.36 (6)
18	3160.07 (6)	7.18 (23)	3.01	1.79 (6)
17	3069.75 (4)	25.4 (4)	2.10	8.19 (13)
16	2950.53 (5)	16.2 (7)	1.37	6.8 (3)
15	2858.1 (20)	0.37 (8)	1.009	0.18 (4)
14	2669.88 (4)	3.20 (21)	0.595	2.01 (13)
13	2655.32 (4)	0.55 (16)	0.571	0.35 (10)
12	2630.8 (5)	0.4 (3)	0.537	0.26 (20)
11	2514.663 (13)	0.5 (3)	0.414	0.35 (21)
10	2429.095 (11)	1.1 (7)	0.346	0.8 (5)
9	2374.2 (6)	0.38 (2)	0.309	0.29 (2)
7	2127.215 (8)	0.31 (17)	0.194	0.26 (14)
6	1787.648 (8)	1.3 (5)	0.114	1.2 (5)
5	1688.962 (7)	1.0 (5)	0.188	0.8 (4)
3	1216.147 (7)	2.6 (14)	0.0559	2.5 (13)
2	1122.283 (7)	2.9 (8)	0.0502	2.8 (8)
1	559.102 (5)	35.8 (12)	0.0292	34.8 (12)
		∑ 127.3 (26)		∑ 65.0 (22)
0	0.0	7.8 (11)	0.01835	7.7 (11)
		∑ 135.1 (28)		∑ 72.7 (25)

The common normalisation factor for the relative transition and emission probabilities of the EC, positron and γ-ray transitions and emissions can be determined via a number of alternative routes:

(a). 1971Dz08: adoption of a relative emission probability of 145.2 (50) % for the $\gamma^{\pm}$ annihilation radiation as determined from the measurements by Dzhelepov *et al*. of 146 (7) % (1969Dz01) and 145.2 (50) % (1971Dz08). Consider all EC/β^+ transitions that can be identified with β^+ decay:

since $X_i = EC_i + \beta_i^+ = \beta_i^+(1 + r_i)$

and $\beta_i^+ = X_i/(1 + r_i)$

$$2\left[X_0/(1 + r_0) + \sum X_i/(1 + r_i) \right] = P_{\gamma\pm} \qquad (1)$$

where X_0 and X_i are the total EC/β^+ transition probability balances populating the ground and all other i levels, respectively $((\gamma + ce)_{out} - (\gamma + ce)_{in})$, and r_0 and r_i are the EC_i/β_i^+ theoretical ratios to the ground and i^{th} levels respectively. Defining X_0 and all other X_i as total relative transition probabilities, and $P_{\gamma\pm}$ as the relative emission probability of the annihilation radiation:

$$2\,[\,X_0/1.01835 + 65.0\ (22)] = 145.2\ (50)$$

$$relative\ X_0 = P_{EC_0}^{rel} + P_{\beta_0^+}^{rel} = (72.6\ (25) - 65.0\ (22))\ x\ 1.01835 = 7.7 \pm 3.3$$

and $P_{\beta_0^+}^{rel} = X_0/1.01835 = 7.6 \pm 3.3$

Another route can be adopted to determine $P_{\beta_0^+}^{rel}$ via the positron emission probability ratio $P_{\beta+}$(populating 0.0 keV-level)/$P_{\beta+}$(populating 559.102-keV level) = 0.22 (3), as measured by 1971Dz08. Relative $P_{\beta+}$(populating 559.102-keV level) and all other recommended relative $P_{\beta+}$ values other than $P_{\beta+}$(populating 0.0-keV ground state) have been determined by balancing the relative total EC transition probability against the relative transition probabilities of the γ rays populating-depopulating the many nuclear levels of ^{76}Se, and applying the theoretical capture-to-positron ratio (ϵ/β^+) to the EC branch derived (1971Go40):

relative $P_{\beta+}$(populating 559.102-keV level) = 34.8 (12)

where *NF* is the normalisation factor to be applied to the relative EC(total), β^+ and γ-ray emission probabilities.

Therefore, relative $P_{\beta+}$(populating 0.0-keV level) = $P_{\beta_0^+}^{rel}$ = 0.22 (3) x 34.8 (12) = 7.7 ± 1.1

and $P_{EC}^{rel} + P_{\beta_0^+}^{rel} = 7.7(11)\ x\ 1.01835 = 7.8 \pm 1.1$

The $P_{\beta_0^+}^{rel}$ and $(P_{EC}^{rel} + P_{\beta_0^+}^{rel})$ values possessing the lower uncertainties have been adopted.

Consider direct relative EC/β^+ and γ population of the ground state of ^{76}Se:

$$\left[X_0 + \sum P_{\gamma i}(\gamma + ce)\ directly\ to\ ground\ state\right] \text{x}\ NF = 100 \qquad (2)$$

where $P_{\gamma i}$ is the relative γ transition probability of the i^{th} gamma ray directly populating the ground state of ^{76}Se, and *NF* is the common normalization factor for the relative transition and emission probabilities of all EC, positrons and γ rays. Thus:

$$\left[7.8\ (11) + 127.3\ (6)\right] \text{x}\ NF = 100$$

$$NF = 100/135.1\ (13) = 0.740 \pm 0.007$$

These data exhibit excellent agreement with the relative emission probabilities of the 511-keV annihilation radiation and 559.100-keV γ ray as measured by Dzhelepov *et al*. (1971Dz08):

P_γ(511 keV) / P_γ(559.100 keV) = 1452 (50) / 1000 = 1.45 (5) from 1971Dz08

Equivalent value derived with *NF* of 0.740 (7):

P_γ(511 keV) = 108 (4), and P_γ(559.100 keV) = 100 x 0.740 (7) = 74.0 (7)

Therefore, P_γ(511 keV) / P_γ(559.100 keV) = 108 (4) / 74.0 (7) = 1.46 (6)

(b). Summation of all absolute EC/β^+ transition probabilities to equal 100% – resulting normalisation factor is in agreement with the value determined above ((a)), but is approximately 8% lower than the value determined via route (c):

$$\sum(total\ EC/\beta^+\ transition\ probabilities\ populating\ all\ nuclear\ levels\ of\ ^{76}Se) = 100$$

135 (4) x *NF* = 100

NF = 100 / 135.1 (28) = 0.740 ± 0.015

(c). Measurements of the positron emission probability ratio $P_{\beta+}$(0.0 keV)/$P_{\beta+}$(559.102 keV) by Dzhelepov *et al*. (1971Dz08) and total absolute positron branch determined by Qaim *et al*. (2007Qa02):

Positron emission probability ratio $P_{\beta+}$(populating 0.0 keV-level)/$P_{\beta+}$(populating 559.102-keV level) = 0.22 (3), as measured by 1971Dz08. Relative $P_{\beta+}$(populating 559.102-keV level) and all other recommended relative $P_{\beta+}$ values other than $P_{\beta+}$(populating 0.0-keV ground state) have been determined by balancing the relative total EC transition probability against the relative transition probabilities of the γ rays populating-depopulating the many nuclear levels of ^{76}Se, and applying the theoretical capture-to-positron ratio (ϵ/β^+) to the EC branch derived (1971Go40):

$P_{\beta+}$(populating 559.102-keV level) = 34.8 (12) x *NF*

where *NF* is the normalisation factor to be applied to the relative EC(total), β^+ and γ-ray emission probabilities.

Therefore $P_{\beta+}$(populating 0.0-keV level) = 0.22 (3) x 34.8 (12) x *NF* = 7.7 (11) *NF*

[$P_{\beta+}$(populating 0.0-keV level) was determined to be 7.6 (33) *NF* from the measured annihilation radiation (see (a), above).]

All evaluated relative positron emission probabilities sum to 72.7 (25) *NF*, and should be directly equivalent to the weighted-average of 58.2 (19) % for the absolute total positron branch, as determined by Qaim *et al*. (2007Qa02) from β^+ counting, X-ray spectroscopy and γ-ray spectroscopy studies:

$$\sum relative\ P_{\beta+} = 72.7\ (25)\ NF = 58.2\ (19)$$

and therefore *NF* = 58.2 (19) / 72.7 (25) = 0.80 ± 0.04

Adoption of this value for the normalisation factor results in excellent agreement with the relative emission probabilities of the 511-keV annihilation radiation and 559.100-keV γ ray as measured by Dzhelepov et al. (1971Dz08):

P_γ(511 keV) / P_γ(559.100 keV) = 1452 (50) / 1000 = 1.45 (5)

This ratio agrees with the equivalent value derived with *NF* of 0.80 (4):

P_γ(511 keV) = 2 x 58.2 (19) = 116 (4), and P_γ(559.100 keV) = 100 x 0.80 (4) = 80 (4)

P_γ(511 keV) / P_γ(559.100 keV) = 116 (4) / 80 (4) = 1.45 (9)

When coupled with the relative γ-ray emission probability data of Dzhelepov *et al*. (1971Dz08), a normalisation factor of 0.740 (7) can be determined that generates an absolute P_γ(511-keV) emission probability of 108 (4) %. Such annihilation radiation represents a total positron branch of only 54 (2) % that compares with a directly measured value of 58.2 (19) % by Qaim *et al*. (2007Qa02). These values are sufficiently different and unresolvable to necessitate an arbitrary and somewhat unsatisfactory adoption of one particular value for the total positron branch. Under these circumstances, a value of 54 (2) % has been selected for the total positron branch on the supportive basis of the comprehensive nature of the discrete gamma-ray emission probabilities and total (EC+β^+) transition probabilities as determined primarily from the studies of Dzhelepov *et al*. (1969Dz09, 1971Dz08). A value of 0.740 (7) was adopted as the normalisation factor in order to maintain consistency between the large number of discrete γ-ray emission probabilities and EC/β+ transition/emission probabilities, and in this manner determine the absolute transition and emission probabilities of the EC, β^+ particles and γ rays from the relative transition and emission probabilities. This situation is regrettable. Further extensive studies are merited to resolve the existing discrepancy between the various γ-ray measurements and the total positron branch determined by Qaim *et al*. (2007Qa02). Both in-depth γ singles and γ-γ coincidence studies would be beneficial along with measurements of the absolute γ-ray emission probabilities to lead on to a more confident determination of the detail of the rather complex decay scheme of ^{76}Br.

Thirty-five previously unplaced γ rays have been introduced into the recommended decay scheme which constitutes 42 EC transitions, 24 β+ emissions and 161 γ-ray transitions. A further six γ rays are judged to be valid, but remain unplaced as far as the proposed decay scheme is concerned (546.5 (5), 2170.0 (20), 2235.0 (20), 2837.0 (30), 3892.0 (20) and 3963.5 (10) keV).

Recommended gamma-ray energies, relative and absolute emission probabilities, and transition probabilities.

	E_γ (keV)	P_γ^{rel} (%)‡		P_γ^{abs} (%)	Transition probability (%)
$\gamma_{4,3}$	114.7 (1)	0.45 (14)		**0.33 (11)**	0.50 (17)
$\gamma_{26,22}$	210.1 (10)	0.06 (2)		**0.044 (15)**	0.045 (15)
$\gamma_{36,28}$	281 (1)	) 0.22 (4)	0.16 (3)	**0.118 (23)**	0.120 (23)
$\gamma_{21,18}$	281.4 (2)	)	0.06 (3)	**0.044 (23)**	0.045 (23)
$\gamma_{38,31}$	309.4 (4)	0.19 (6)		**0.14 (5)**	0.14 (5)
$\gamma_{26,20}$	318.0 (10)	0.18 (6)		**0.13 (5)**	0.13 (5)
$\gamma_{5,4}$	358.101 (11)	0.5 (2)		**0.37 (15)**	0.37 (15)
$\gamma_{17,14}$	399.87 (6)	) 0.48 (5)	0.07 (2)	**0.052 (15)**	0.052 (15)
$\gamma_{20,16}$	401.01 (9)	)	0.41 (5)	**0.30 (4)**	0.30 (4)
$\gamma_{7,5}$	438.252 (11)	0.37 (4)		**0.27 (3)**	0.27 (3)
$\gamma_{6,4}$	456.787 (11)	0.09 (2)		**0.067 (15)**	0.067 (15)
$\gamma_{5,3}$	472.813 (10)	2.59 (10)$^+$		**1.92 (8)**	1.93 (8)
$\gamma_{18,14}$	490.19 (7)	0.45 (3)$^+$		**0.333 (23)**	0.333 (23)
$\gamma_{14,8}$	499.33 (4)	0.22 (9)		**0.16 (7)**	0.16 (7)
$\gamma_{18,13}$	504.75 (7)	0.31 (2)$^+$		**0.229 (15)**	0.229 (15)
–	annihilation radiation	145.2 (50)§		**108(4)**	–
$\gamma_{-1,1}$	546.5 (5)$^\Delta$	0.22 (3)		**0.163 (23)**	0.163 (23)
$\gamma_{1,0}$	559.100 (5)	100		**74.0(7)**	74.1 (7)
$\gamma_{2,1}$	563.179 (9)	4.7 (8)$^+$		**3.5 (6)**	3.5 (6)
$\gamma_{6,3}$	571.499 (11)	0.6 (3)$^+$		**0.44 (23)**	0.44 (23)
$\gamma_{26,17}$	599.8 (10)	0.57 (23)$^+$		**0.42 (17)**	0.42 (17)
$\gamma_{32,22}$	605 (4)	0.30 (10)$^+$		**0.22 (8)**	0.22 (8)
$\gamma_{43,29}$	635.2 (8)	0.10 (3)		**0.074 (23)**	0.074 (23)
$\gamma_{10,6}$	641.444 (14)	0.19 (5)		**0.14 (4)**	0.14 (4)
$\gamma_{3,1}$	657.042 (9)	21.6 (4)$^+$		**16.0 (4)**	16.0 (4)
$\gamma_{6,2}$	665.362 (11)	0.96 (10)$^+$		**0.71 (8)**	0.71 (8)
$\gamma_{20,14}$	681.66 (8)	0.58 (3)$^+$		**0.429 (23)**	0.429 (23)
$\gamma_{20,13}$	696.22 (8)	0.67 (3)$^+$		**0.496 (23)**	0.496 (23)
$\gamma_{11,6}$	727.011 (15)	0.9 (3)$^+$		**0.67 (23)**	0.67 (23)
$\gamma_{18,10}$	730.98 (6)	0.78 (10)$^+$		**0.58 (8)**	0.58 (8)
$\gamma_{10,5}$	740.129 (13)	0.18 (5)$^+$		**0.13 (4)**	0.13 (4)
$\gamma_{4,1}$	771.754 (10)	0.56 (3)$^+$		**0.414 (23)**	0.414 (23)
$\gamma_{22,14}$	789.52 (9)	0.62 (4)$^+$		**0.46 (3)**	0.46 (3)
$\gamma_{7,4}$	796.351 (11)	0.10 (3)		**0.074 (23)**	0.074 (23)
$\gamma_{22,13}$	804.08 (9)	0.72 (5)$^+$		**0.53 (4)**	0.53 (4)
$\gamma_{39,24}$	812.1 (8)	0.19 (6)		**0.14 (5)**	0.14 (5)
$\gamma_{20,11}$	836.88 (7)	0.61 (5)		**0.45 (4)**	0.45 (4)
$\gamma_{30,18}$	838.3 (10)	0.43 (3)$^+$		**0.318 (23)**	0.318 (23)
$\gamma_{13,6}$	867.66 (4)	0.43 (3)$^+$		**0.318 (23)**	0.318 (23)
$\gamma_{14,6}$	882.22 (4)	0.54 (3)$^+$		**0.40 (2)**	0.40 (2)
$\gamma_{23,14}$	886.57 (9)	0.46 (3)$^+$		**0.340 (23)**	0.340 (23)
$\gamma_{17,8}$	899.19 (4)	0.23 (3)		**0.170 (23)**	0.170 (23)
$\gamma_{23,13}$	901.13 (9)	0.23 (6)$^+$		**0.17 (5)**	0.17 (5)
$\gamma_{7,3}$	911.062 (11)	0.07 (4)		**0.05 (3)**	0.05 (3)
$\gamma_{20,10}$	922.44 (7)	0.26 (2)		**0.192 (15)**	0.192 (15)
$\gamma_{24,14}$	934.19 (9)	0.07 (2)$^+$		**0.052 (15)**	0.052 (15)
$\gamma_{42,23}$	936 (3)	0.06 (2)		**0.044 (15)**	0.044 (15)
$\gamma_{12,5}$	941.8 (5)	) 0.25 (2)$^+$	0.15 (3)	**0.111 (23)**	0.111 (23)
$\gamma_{17,7}$	942.53 (4)	)	0.10 (2)	**0.074 (15)**	0.074 (15)
$\gamma_{14,5}$	980.91 (4)	0.48 (3)$^+$		**0.355 (23)**	0.355 (23)
$\gamma_{22,10}$	1030.30 (8)	0.75 (7)$^+$		**0.56 (6)**	0.56 (6)
$\gamma_{18,7}$	1032.85 (6)	0.78 (6)$^+$		**0.58 (5)**	0.58 (5)
$\gamma_{35,18}$	1039.5 (4)	0.06 (2)$^+$		**0.044 (15)**	0.044 (15)
$\gamma_{38,19}$	1060 (1)	0.06 (3)		**0.044 (23)**	0.044 (23)
$\gamma_{2,0}$	1122.274 (7)	E0 transition		–	0.00082 (8)†
$\gamma_{5,1}$	1129.851 (9)	6.2 (3)$^+$		**4.59 (23)**	4.59 (23)
$\gamma_{43,22}$	1146.4 (7)	0.08 (2)$^+$		**0.059 (15)**	0.059 (15)
$\gamma_{9,3}$	1158.1 (5)	0.18 (1)$^+$		**0.133 (8)**	0.133 (8)

	E$_\gamma$ (keV)	P_γ^{rel} (%)‡	P_γ^{abs} (%)	Transition probability (%)
$\gamma_{16,6}$	1162.87 (5)	0.22 (2)	**0.163 (15)**	0.163 (15)
$\gamma_{20,8}$	1180.98 (7)	0.15 (2)$^{+}$	**0.111 (15)**	0.111 (15)
$\gamma_{25,10}$	1193.1 (20)	0.14 (6)	**0.10 (5)**	0.10 (5)
$\gamma_{10,3}$	1212.938 (13)	2.3 (7)$^{+}$	**1.7 (6)**	1.7 (6)
$\gamma_{3,0}$	1216.137 (7)	11.8 (3)$^{+}$	**8.73 (22)**	8.73 (22)
$\gamma_{20,7}$	1224.32 (7)	0.39 (15)$^{+}$	**0.29 (11)**	0.29 (11)
$\gamma_{6,1}$	1228.535 (10)	2.88 (12)$^{+}$	**2.13 (10)**	2.13 (10)
$\gamma_{43,20}$	1254.3 (7)	0.11 (4)	**0.08 (3)**	0.08 (3)
$\gamma_{21,8}$	1270.9 (20)	0.08 (3)	**0.059 (23)**	0.059 (23)
$\gamma_{17,6}$	1282.09 (4)	0.10 (4)	**0.07 (3)**	0.07 (3)
$\gamma_{22,8}$	1288.84 (8)	0.07 (3)	**0.052 (23)**	0.052 (23)
$\gamma_{11,3}$	1298.504 (15)	0.12 (1)	**0.089 (8)**	0.089 (8)
$\gamma_{29,14}$	1300.7 (4)	0.21 (2)$^{+}$	**0.155 (15)**	0.155 (15)
$\gamma_{10,2}$	1306.800 (13)	0.25 (3)	**0.185 (23)**	0.185 (23)
$\gamma_{29,13}$	1315.3 (4)	0.07 (2)	**0.052 (15)**	0.052 (15)
$\gamma_{13,4}$	1324.45 (4)	0.06 (3)	**0.044 (23)**	0.044 (23)
$\gamma_{18,6}$	1372.41 (6)	0.69 (4)$^{+}$	**0.51 (3)**	0.51 (3)
$\gamma_{17,5}$	1380.78 (4)	3.38 (14)$^{+}$	**2.50 (11)**	2.50 (11)
$\gamma_{33,13}$	1429.0 (2)	) 0.34 (2)$^{+}$ 0.26 (3)	**0.192 (23)**	0.192 (23)
$\gamma_{23,7}$	1429.24 (8)	) 0.08 (4)	**0.06 (3)**	0.06 (3)
$\gamma_{13,3}$	1439.16 (4)	0.78 (4)$^{+}$	**0.58 (3)**	0.58 (3)
$\gamma_{14,3}$	1453.72 (4)	1.09 (6)$^{+}$	**0.81 (5)**	0.81 (5)
$\gamma_{44,18}$	1461.4 (20)	0.18 (4)	**0.13 (3)**	0.13 (3)
$\gamma_{18,5}$	1471.09 (6)	3.14 (14)$^{+}$	**2.32 (11)**	2.32 (11)
$\gamma_{31,11}$	1504.6 (5)	0.12 (5)$^{+}$	**0.09 (4)**	0.09 (4)
$\gamma_{13,2}$	1533.01 (4)	0.08 (5)	**0.06 (4)**	0.06 (4)
$\gamma_{43,17}$	1536.1 (7)	0.23 (9)	**0.17 (7)**	0.17 (7)
$\gamma_{37,13}$	1560.2 (5)	0.60 (3)$^{+}$	**0.444 (23)**	0.444 (23)
$\gamma_{7,1}$	1568.096 (10)	1.28 (6)$^{+}$	**0.95 (5)**	0.95 (5)
$\gamma_{8,1}$	1611.434 (13)	0.30 (3)$^{+}$	**0.222 (23)**	0.222 (23)
$\gamma_{15,3}$	1642.0 (20)	0.18 (6)	**0.13 (5)**	0.13 (5)
$\gamma_{33,10}$	1655.2 (2)	0.16 (3)	**0.118 (23)**	0.118 (23)
$\gamma_{20,5}$	1662.56 (7)	0.19 (7)	**0.14 (6)**	0.14 (6)
$\gamma_{22,6}$	1671.73 (8)	0.23 (2)$^{+}$	**0.170 (15)**	0.170 (15)
$\gamma_{27,8}$	1742.4 (10)	0.16 (2)$^{+}$	**0.118 (15)**	0.118 (15)
$\gamma_{22,5}$	1770.42 (8)	) 0.33 (3)$^{+}$ 0.27 (3)	**0.200 (23)**	0.200 (23)
$\gamma_{35,10}$	1770.5 (4)	) 0.06 (2)	**0.044 (15)**	0.044 (15)
$\gamma_{6,0}$	1787.625 (8)	0.74 (4)$^{+}$	**0.55 (3)**	0.55 (3)
$\gamma_{28,7}$	1801.9 (6)	0.04 (2)	**0.030 (15)**	0.030 (15)
$\gamma_{9,1}$	1815.1 (6)	0.20 (2)	**0.148 (15)**	0.148 (15)
$\gamma_{25,6}$	1834.6 (20)	0.26 (13)$^{+}$	**0.19 (10)**	0.19 (10)
$\gamma_{17,3}$	1853.58 (4)	19.7 (10)$^{+}$	**14.6 (8)**	14.6 (8)
$\gamma_{10,1}$	1869.968 (12)	0.19 (2)$^{+}$	**0.141 (15)**	0.141 (15)
$\gamma_{26,6}$	1881.9 (10)	0.18 (6)	**0.13 (5)**	0.13 (5)
$\gamma_{39,11}$	1901 (2)	0.16 (6)	**0.12 (5)**	0.12 (5)
$\gamma_{18,3}$	1943.89 (6)	0.64 (11)$^{+}$	**0.47 (9)**	0.47 (9)
$\gamma_{11,1}$	1955.534 (14)	0.40 (7)$^{+}$	**0.30 (6)**	0.30 (6)
$\gamma_{43,12}$	1975.0 (9)	0.15 (12)$^{+}$	**0.11 (9)**	0.11 (9)
$\gamma_{44,12}$	1990.7 (21)	0.11 (4)	**0.08 (3)**	0.08 (3)
$\gamma_{34,7}$	2045.9 (9)	0.24 (2)	**0.178 (15)**	0.178 (15)
$\gamma_{12,1}$	2071.7 (5)	0.36 (30)$^{+}$	**0.27 (23)**	0.27 (23)
$\gamma_{36,7}$	2082 (1)	0.16 (5)	**0.12 (4)**	0.12 (4)
$\gamma_{13,1}$	2096.19 (4)	1.83 (10)$^{+}$	**1.35 (8)**	1.35 (8)
$\gamma_{14,1}$	2110.75 (4)	3.33 (16)$^{+}$	**2.46 (12)**	2.46 (12)
$\gamma_{7,0}$	2127.183 (8)	0.28 (9)≠	**0.21 (7)**	0.21 (7)
$\gamma_{20,3}$	2135.36 (7)	1.25 (7)$^{+}$	**0.93 (6)**	0.93 (6)
$\gamma_{-1,2}$	2170.0 (20)$^{\Delta}$	0.13 (5)	**0.10 (4)**	0.10 (4)
$\gamma_{8,0}$	2170.521 (12)	(E0) transition	–	0.45 (8)¶
$\gamma_{29,6}$	2183.0 (4)	0.17 (4)$^{+}$	**0.13 (3)**	0.13 (3)

	Eγ (keV)	P_γ^{rel} (%)‡	P_γ^{abs} (%)	Transition probability (%)
$\gamma_{20,2}$	2229.22 (7)	0.14 (9)≠	**0.10 (7)**	0.10 (7)
$\gamma_{-1,3}$	2235.0 (20)$^{\Delta}$	0.18 (8)	**0.13 (6)**	0.13 (6)
$\gamma_{15,1}$	2299.0 (20)	0.19 (6)	**0.14 (5)**	0.14 (5)
$\gamma_{30,5}$	2309.4 (10)	0.14 (4)≠	**0.10 (3)**	0.10 (3)
$\gamma_{23,3}$	2340.27 (8)	0.12 (5)	**0.09 (4)**	0.09 (4)
$\gamma_{16,1}$	2391.39 (5)	6.4 (4)+	**4.7 (3)**	4.7 (3)
$\gamma_{35,6}$	2412.0 (4)	0.04 (1)	**0.030 (8)**	0.030 (8)
$\gamma_{10,0}$	2429.053 (11)	0.14 (6)≠	**0.10 (5)**	0.10 (5)
$\gamma_{24,2}$	2481.76 (8)	0.18 (3)≠	**0.133 (23)**	0.133 (23)
$\gamma_{17,1}$	2510.61 (4)	2.60 (15)+	**1.92 (12)**	1.92 (12)
$\gamma_{26,2}$	2547.2 (10)	0.008 (5)	**0.006 (4)**	0.006 (4)
$\gamma_{18,1}$	2600.92 (6)	0.93 (4)+	**0.69 (3)**	0.69 (3)
$\gamma_{12,0}$	2630.8 (5)	0.17 (5)	**0.13 (4)**	0.13 (4)
$\gamma_{13,0}$	2655.27 (4)	0.23 (2)+	**0.170 (15)**	0.170 (15)
$\gamma_{31,4}$	2688.3 (5)	0.48 (5)	**0.36 (4)**	0.36 (4)
$\gamma_{28,3}$	2712.9 (6)	0.10 (3)	**0.074 (23)**	0.074 (23)
$\gamma_{29,3}$	2754.4 (4)	0.10 (3)	**0.074 (23)**	0.074 (23)
$\gamma_{20,1}$	2792.38 (7)	7.5 (4)+	**5.6 (3)**	5.6 (3)
$\gamma_{-1,4}$	2837.0 (30)$^{\Delta}$	0.15 (6)	**0.11 (5)**	0.11 (5)
$\gamma_{32,3}$	2848 (4)	0.20 (6)	**0.15 (5)**	0.15 (5)
$\gamma_{22,1}$	2900.24 (8)	0.37 (13)+	**0.27 (10)**	0.27 (10)
$\gamma_{16,0}$	2950.47 (5)	10.0 (5)+	**7.4 (4)**	7.4 (4)
$\gamma_{35,3}$	2983.4 (4)	0.12 (4)	**0.09 (3)**	0.09 (3)
$\gamma_{23,1}$	2997.30 (8)	1.29 (3)+	**0.955 (24)**	0.955 (24)
$\gamma_{24,1}$	3044.91 (8)	0.03 (1)	**0.022 (8)**	0.022 (8)
$\gamma_{25,1}$	3063.0 (20)	0.10 (3)	**0.074 (23)**	0.074 (23)
$\gamma_{17,0}$	3069.68 (4)	0.06 (2)	**0.044 (15)**	0.044 (15)
$\gamma_{37,2}$	3093.1 (2)	0.22 (2)	**0.163 (15)**	0.163 (15)
$\gamma_{18,0}$	3160.00 (6)	0.19 (2)+	**0.141 (15)**	0.141 (15)
$\gamma_{20,0}$	3351.46 (7)	0.34 (2)+	**0.252 (15)**	0.252 (15)
$\gamma_{28,1}$	3369.9 (6)	0.13 (1)+	**0.096 (8)**	0.096 (8)
$\gamma_{29,1}$	3411.4 (4)	0.40 (2)+	**0.296 (15)**	0.296 (15)
$\gamma_{32,1}$	3505 (4)	0.05 (2)+	**0.037 (15)**	0.037 (15)
$\gamma_{33,1}$	3525.1 (2)	0.24 (2)+	**0.178 (15)**	0.178 (15)
$\gamma_{24,0}$	3603.99 (8)	2.16 (15)+	**1.60 (11)**	1.60 (11)
$\gamma_{35,1}$	3640.4 (4)	0.21 (2)+	**0.155 (15)**	0.155 (15)
$\gamma_{40,1}$	3877.7 (10)	0.02 (1)	**0.015 (8)**	0.015 (8)
$\gamma_{-1,5}$	3892.0 (20)$^{\Delta}$	0.04 (2)≠	**0.030 (15)**	0.030 (15)
$\gamma_{27,0}$	3912.9 (10)	0.02 (1)	**0.015 (8)**	0.015 (8)
$\gamma_{28,0}$	3929.0 (6)	0.12 (2)+	**0.089 (15)**	0.089 (15)
$\gamma_{-1,6}$	3963.5 (10)$^{\Delta}$	0.03 (1)+	**0.022 (8)**	0.022 (8)
$\gamma_{29,0}$	3970.5 (4)	0.014 (6)≠	**0.010 (5)**	0.010 (5)
$\gamma_{31,0}$	4019.2 (5)	0.08 (2)+	**0.059 (15)**	0.059 (15)
$\gamma_{43,1}$	4046.6 (7)	0.06 (2)+	**0.044 (15)**	0.044 (15)
$\gamma_{32,0}$	4064 (4)	0.03 (1)	**0.022 (8)**	0.022 (8)
$\gamma_{33,0}$	4084.2 (2)	0.02 (1)	**0.015 (8)**	0.015 (8)
$\gamma_{34,0}$	4173.0 (9)	0.028 (10)+	**0.021 (8)**	0.021 (8)
$\gamma_{40,0}$	4436.8 (10)	0.07 (2)+	**0.052 (15)**	0.052 (15)
$\gamma_{41,0}$	4454.9 (30)	0.009 (3)	**0.0067 (23)**	0.0067 (23)
$\gamma_{42,0}$	4492 (3)	0.008 (3)	**0.0059 (23)**	0.0059 (23)
$\gamma_{43,0}$	4605.7 (7)	0.02 (1)+	**0.015 (8)**	0.015 (8)

‡ Gamma-ray emission probabilities expressed relative to P_γ(559.10 keV) of 100.

$^{\Delta}$ Unplaced in proposed decay scheme.

+ Weighted-mean analysis of selected relative emission probabilities – when necessary, the recommended uncertainty has been adjusted to be in alignment with the smallest uncertainty of the values used to calculate the weighted mean.

§ Adopted from the measurements of Dzhelepov *et al*. (1971Dz08).

≠ Unweighted-mean analysis of selected relative emission probabilities.

† Absolute transition probability for the 1122.27-keV E0 gamma ray of 0.00082% determined by Giannatiempo *et al*. (1986Gi12), and assigned an arbitrary uncertainty of ± 0.00008%.

¶ Absolute transition probability for the 2170.52-keV E0 gamma ray of 0.45 (7) % derived from population-depopulation balance of the 2170.55-keV nuclear level with a total P_{EC} of zero.

EC/β+ Transitions

Energies

All EC/β^+ energies were derived from the structural details of the proposed decay scheme. The nuclear level energies of 1995Si03 and evaluated Q_{EC}-value of 4963 (9) keV (2012Wa38) were used to determine the recommended energies and uncertainties of the EC transitions and β^+ emissions.

Transition and Emission Probabilities

Both β^+ and γ-ray spectral measurement have been undertaken in order to study and understand the decay-scheme characteristics of ^{76}Br. β^+ studies provide data of direct relevance to the primary EC/β+ decay process, whereas γ-ray spectroscopic data are used to calculate the population and depopulation on nuclear levels in order to derive EC/β^+ transition probabilities.

Total EC transition probabilities were derived for the population-depopulation imbalances of the relative emission probabilities of the gamma rays, their theoretical internal conversion and internal-pair formation coefficients, and a normalisation factor of 0.741 (19) for the gamma-ray emissions as calculated above. Component EC and β^+ transition and emission probabilities were determined from EC/β^+ ratios (1971Go40), and log*ft* values and average $E_{\beta+}$ energies were derived by means of the LOGFT code. Fractional EC probabilities P_K, P_L, P_M and P_N were calculated by means of the EC-CAPTURE code (1998Sc28) as developed from the data tabulations of 1995ScZY.

A value of (108 ± 4)% for the absolute emission probability of the 511-keV annihilation radiation can be determined from the γ-ray measurements of Dzhelepov *et al*. (1971Dz08) with a relative $P_\gamma^\pm$ of 145.2 (50) % and normalization factor of 0.740 (7). The absolute emission probability for the 511-keV annihilation radiation can also be derived from the recommended total absolute positron emission probability of 72.7 (25) x 0.740 (7) = 53.8 (19) %:

$$P_\gamma^\pm \;=\; 2 \;\text{x}\; 53.8\,(19) \;=\; (108 \pm 4)\%$$

These consistent values can be compared with a $P_\gamma^\pm$ of (116 ± 4)% derived from a total positron branch of 58.2 (19) %, as measured by Qaim *et al*. (2007Qa02).

A consistent decay scheme was derived that consists of 42 EC / 24 β^+ transitions and 161 gamma-ray emissions, of which only 7.8 (11) % of the EC/β^+ decay occurs directly to the ground state of ^{76}Se. There is substantial 511-keV positron-annihilation radiation. After significant efforts, only six observed gamma-ray emissions could not be placed in the proposed decay scheme. However, further extensive spectroscopic studies are required to resolve the existing modest discrepancy between the absolute emission probability of the 511-keV annihilation radiation of (108 ± 4)% as determined from the total absolute positron emission probability derived from the evaluated decay scheme, and a value of (116 ± 4)% measured in the positron emission studies of Qaim *et al*. (2007Qa02).

All of the experimental evidence shows the decay scheme of Br-76 to be reasonably complex, and that significant uncertainties remain as to the nature of the EC/β+ population and γ depopulation of the many nuclear levels of Se-76 and associated detail therein. Overall, further γ singles and γ-γ coincidence measurements are merited to improve the definition of the recommended decay scheme, along with total absorption gamma-ray spectroscopy (TAGS) to ensure a more confident and correct treatment of the high-energy γ emissions and associated higher-energy nuclear levels involved in the EC/β+ decay of Br–76.

Directly measured and calculated EC and β^+ decay data of ^{76}Br.

Nuclear level energy (keV)	E_{EC} (keV)		1952Fu04# measured	1959Gi46* γ calculation	1962Ku06* measured	1963Sa26† measured	1969Dz01* γ calculation	1971Dz08* γ calculation	1971La01* γ calculation	1974HeYW+ 1998 ENSDF	1974Na17* γ calculation
4605.8 (7)	357 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	0.5	0.65	–	–	0.06
		log *ft*	–	–	–	–	–	5.8	–	–	6.3
4570?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	0.5	–	–
		log *ft*	–	–	–	–	–	–	–	–	–
4436.9 (10)	526 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	0.044 (25)	–	–	0.1	0.08	–	0.067	
		log *ft*	–	7.0 (4)	–	–	6.0	7.2	–	–	–
4420?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	< 0.3	–	–
		log *ft*	–	–	–	–	–	–	5.6	–	–
4215.5 (2)	748 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	–	0.62	0.51
		log *ft*	–	–	–	–	–	–	–	–	5.8
4199.6 (4)	763 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	0.3	0.34	–	–	0.41
		log *ft*	–	–	–	–	6.4	6.7	–	–	6.0
4173.1 (9)	790 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	–	–	0.17
		log *ft*	–	–	–	–	–	–	–	–	6.5
4163?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	2.8	–	–	–	–
		log *ft*	–	–	–	–	5.3	–	–	–	–
4140?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	4.4 (10)	–	–	–	–	< 0.3	–	–
		log *ft*	–	5.7 (1)	–	–	–	–	6.4	–	–
4084.3 (2)	879 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	1.4	0.53	–	0.56	0.46
		log *ft*	–	–	–	–	6.5	6.6	–	–	6.2

Nuclear level energy (keV)	E_{EC} (keV)		1952Fu04[#] measured	1959Gi46[*] γ calculation	1962Ku06[*] measured	1963Sa26[†] measured	1969Dz01[*] γ calculation	1971Dz08[*] γ calculation	1971La01[*] γ calculation	1974HeYW[+] 1998 ENSDF	1974Na17[*] γ calculation
4065?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	0.2	–	–	–	–
		log *ft*	–	–	–	–	8.0	–	–	–	–
4030?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	0.1	–	–
		log *ft*	–	–	–	–	–	–	6.6	–	–
4019.3 (5)	944 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	–	–	0.48
		log *ft*	–	–	–	–	–	–	–	–	6.4
3970.6 (4)	992 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	0.13 (6)	–	–	0.5	1.40	–	0.63	0.54
		log *ft*	–	7.2 (4)	–	–	6.3	6.9	–	–	6.3
3929.1 (6)	1034 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	0.7	0.37	–	0.28	0.11
		log *ft*	–	–	–	–	6.5	6.9	–	–	7.1
3913.1?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	0.6	–	0.11
		log *ft*	–	–	–	–	–	–	6.4	–	7.1
3669.0?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	–
		P_{EC} (%)	–	–	–	–	–	–	–	–	0.14
		log *ft*	–	–	–	–	–	–	–	–	7.3
3604.08 (8)	1359 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	0.09	–	–	–
		P_{EC} (%)	–	–	–	–	–	2.94	–	1.78	1.5
		log *ft*	–	–	–	–	–	6.3	–	–	6.3
3556.46 (8)	1407 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	0.16	–	–	–
		P_{EC} (%)	–	20 (2)	–	–	1.4	1.73	–	1.81	1.2
		log *ft*	–	5.5 (1)	–	–	6.4	6.2	–	–	6.4
3459.40 (8)	1504 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	0.19	–	) 2.5	0.008
		P_{EC} (%)	–	–	–	–	2.4	2.12	2.2	)	1.8
		log *ft*	–	–	–	–	6.2	6.6	6.2	–	6.3
3351.54 (7)	1611 (9)	$P_{\beta+}$ (%)	–	–	~ 1	0.01/1	0.1	1.61	–	) 8.6	0.36
		P_{EC} (%)	–	–	–	–	7.1	7.76	7.7	)	6.9
		log *ft*	–	–	–	–	5.7	6.0	5.7	–	5.8

Nuclear level energy (keV)	E_{EC} (keV)		1952Fu04[#] measured	1959Gi46[*] γ calculation	1962Ku06[*] measured	1963Sa26[†] measured	1969Dz01[*] γ calculation	1971Dz08[*] γ calculation	1971La01[*] γ calculation	1974HeYW[+] 1998 ENSDF	1974Na17[*] γ calculation
3160.07 (6)	1803 (9)	$P_{\beta+}$ (%)	–	–	–	–	0.2	2.17	–	) 5.9	0.23
		P_{EC} (%)	–	–	–	–	4.8	4.24	–	)	4.4
		log *ft*	–	–	–	–	6.2	6.4	–	–	6.2
3069.75 (4)	1893 (9)	$P_{\beta+}$ (%)	–	–	5	0.08/5	1.6	9.23	) 20	–	1.4
		P_{EC} (%)	–	–	–	–	15.4	12.16	)	–	14.0
		log *ft*	–	–	–	–	5.7	5.9	4.6	–	5.7
2990?		$P_{\beta+}$ (%)	–	–	–	–	–	–	) 4.3	–	–
		P_{EC} (%)	–	–	–	–	–	–	)	–	–
		log *ft*	–	–	–	–	–	–	5.5	–	–
2950.53 (5)	2012 (9)	$P_{\beta+}$ (%)	19	2.2 (3)	–	–	2.0	6.73	) 14.1	) 12.3	1.7
		P_{EC} (%)	–	4.8 (7)	–	–	8.6	5.87	)	)	8.5
		log *ft*	5.8	6.4 (1)	–	–	6.0	6.4	5.1	–	6.0
2690?		$P_{\beta+}$ (%)	–	–	–	–	–	–	) 0.6	–	–
		P_{EC} (%)	–	–	–	–	–	–	)	–	–
		log *ft*	–	–	–	–	–	–	6.6	–	–
2669.88 (4)	2293 (9)	$P_{\beta+}$ (%)	14	–	)	)	1.0	1.49	) 4.0	) 2.0	0.77
		P_{EC} (%)	–	–	)	)	1.5	0.62	)	)	1.1
		log *ft*	6.1	–	)	)	6.9	7.4	6.2	–	7.0
2655.32 (4)	2308 (9)	$P_{\beta+}$ (%)	–	–	) 15	) 0.23/15	0.6	0.84	) 2.8	) 0.31	0.17
		P_{EC} (%)	–	–	)	)	0.7	0.33	)	)	0.23
		log *ft*	–	–	)	)	7.3	7.6	6.4	–	7.5
2630.8 (5)	2332 (9)	$P_{\beta+}$ (%)	–	–	)	)	0.15	0.71	–	) 0.47	0.02
		P_{EC} (%)	–	–	)	)	0.15	0.27	–	)	0.03
		log *ft*	–	–	)	)	8.2	7.8	–	–	8.7
2514.663 (13)	2448 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	0.08	–	) 0.49	0.26
		P_{EC} (%)	–	–	–	–	–	0.03	–	)	0.22
		log *ft*	–	–	–	–	–	8.9	–	–	7.7
2429.095 (11)	2534 (9)	$P_{\beta+}$ (%)	11	~ 2	–	–	–	1.24	2.9	) < 1.3	0.01
		P_{EC} (%)	–	~1	–	–	–	0.30	1.7	)	0.006
		log *ft*	6.5	~ 7	–	–	–	7.8	6.7	–	9.3
2374.0?		$P_{\beta+}$ (%)	–	–	–	–	–	–	–	–	0.17
		P_{EC} (%)	–	–	–	–	–	–	–	–	0.08
		log *ft*	–	–	–	–	–	–	–	–	8.3

Nuclear level energy (keV)	E_{EC} (keV)		1952Fu04[#] measured	1959Gi46[*] γ calculation	1962Ku06[*] measured	1963Sa26[†] measured	1969Dz01[*] γ calculation	1971Dz08[*] γ calculation	1971La01[*] γ calculation	1974HeYW[+] 1998 ENSDF	1974Na17[*] γ calculation
2170.554 (12)		$P_{\beta+}$ (%)	–	–	–	–	0.3	–	–	–	–
		P_{EC} (%)	–	–	–	–	0.1	–	–	–	–
		log *ft*	–	–	–	–	8.2	–	–	–	–
2127.215 (8)	2836 (9)	$P_{\beta+}$ (%)	–	–	–	–	0.15	–	1.7	) < 0.12	0.20
		P_{EC} (%)	–	–	–	–	0.05	–	0.6	)	0.006
		log *ft*	–	–	–	–	8.7	–	7.4	–	9.1
2048?		$P_{\beta+}$ (%)	–	~ 1.5	–	–	–	–	3.8	–	–
		P_{EC} (%)	–	~ 0.5	–	–	–	–	1.1	–	–
		log *ft*	–	~ 8	–	–	–	–	7.1	–	–
1942?		$P_{\beta+}$ (%)	–	–	–	–	–	–	4	–	–
		P_{EC} (%)	–	–	–	–	–	–	1	–	–
		log *ft*	–	–	–	–	–	–	7.3	–	–
1883?		$P_{\beta+}$ (%)	–	–	–	–	–	–	0.8	–	–
		P_{EC} (%)	–	–	–	–	–	–	0.2	–	–
		log *ft*	–	–	–	–	–	–	8.0	–	–
1787.648 (8)[‡]	3175 (9)	$P_{\beta+}$ (%)	10	8.5 (10)	8	0.13/8	1.3	0.62	1.2	) 1.1	0.80
		P_{EC} (%)	–	1.5 (3)	–	–	0.2	0.05	0.3	)	0.11
		log *ft*	7.1	7.3 (2)	–	–	8.2	8.8	8.1	–	8.3
1688.962 (7)	3274 (9)	$P_{\beta+}$ (%)	–	–	–	–	0.27	0.67	2.6	) < 0.9	0.84
		P_{EC} (%)	–	–	–	–	0.03	0.05	0.4	)	0.11
		log *ft*	–	–	–	–	8.9	9.1	7.9	–	8.3
1330.860 (8)		–	–	–	–	–	–	–	–	–	–
1216.147 (7)	3747 (9)	$P_{\beta+}$ (%)	–	11.5 (40)	–	–	2.2	0.64	1.9	) 2.9	3.5
		P_{EC} (%)	–	1.1 (7)	–	–	0.1	0.03	0.1	)	0.20
		log *ft*	–	7.9 (2)	–	–	8.3	9.1	8.4	–	8.2
1122.283 (7)	3841 (9)	$P_{\beta+}$ (%)	–	–	–	–	–	2.26	–	) 2.2	1.5
		P_{EC} (%)	–	–	–	–	–	0.09	–	)	0.07
		log *ft*	–	–	–	–	–	8.7	–	–	8.7
559.102 (5)	4404 (9)	$P_{\beta+}$ (%)	–	33 (6)	–	–	25.1	23.19	10	) 26.6	23.3
		P_{EC} (%)	–	–	–	–	0.8	0.83	–	)	0.72
		log *ft*	–	7.8 (1)	–	–	7.8	8.0	8.1	–	7.8

Nuclear level energy (keV)	E_{EC} (keV)		1952Fu04# measured	1959Gi46* γ calculation	1962Ku06* measured	1963Sa26† measured	1969Dz01* γ calculation	1971Dz08* γ calculation	1971La01* γ calculation	1974HeYW+ 1998 ENSDF	1974Na17* γ calculation
0.0	4963 (9)	$P_{\beta+}$ (%)	46	8 (8)	35	0.55/35	14.8	5.22	20	) 6	19.9
		P_{EC} (%)	–	–	–	–	0.3	0.09	–	)	0.36
		log *ft*	7.85	≥ 8.3	–	–	8.3	9.0	8.3	–	8.2

Relative positron emission probabilities.
* Absolute positron emission and EC transition probabilities.
† Emission probability expressed initially as relative intensity, and secondly as percentage total decay.
+ Only 79.4% EC/β^+ decay compiled by 1974HeYW in 1998 update (1998 ENSDF).
‡ Identified as ~ 1860-keV nuclear level in some measurements, but assumed to be 1790 keV as assigned by a majority of other more recent studies.

Recommended energies, transition/emission probabilities, transition type and log *ft* values for the EC/β⁺ decay of ^{76}Br.

	E_{EC} (keV)*	$E_{\beta+}$ (keV)	Av. $E_{\beta+}$ (keV)	P_{EC}(total)	ϵ/β⁺ (theory)	P_{EC}	$P_{\beta+}$	^{76}Br	^{76}Se	transition type	log *ft*
$EC_{0,44}$	342 (9)	–	–	0.21 (4)	–	0.21 (4)	–	1 –		[first forbidden non-unique]	6.3
$EC_{0,43}$	357 (9)	–	–	0.56 (12)	–	0.56 (12)	–	1 –	(1 +, 2 +)	(first forbidden non-unique)	5.9
$EC_{0,42}$	471 (10)	–	–	0.052 (15)	–	0.052 (15)	–	1 –		[non-unique]	7.2
$EC_{0,41}$	508 (10)	–	–	0.007 (2)	–	0.007 (2)	–	1 –		[non-unique]	8.1
$EC_{0,40}$	526 (9)	–	–	0.067 (15)	–	0.067 (15)	–	1 –	(1, 2)	[non-unique]	7.2
$EC_{0,39}$	547 (9)	–	–	0.26 (7)	–	0.26 (7)	–	1 –		[first forbidden non-unique]	6.6
$EC_{0,38}$	634 (9)	–	–	0.19 (5)	–	0.19 (5)	–	1 –		[first forbidden non-unique]	6.9
$EC_{0,37}$	748 (9)	–	–	0.61 (3)	–	0.61 (3)	–	1 –	(1 +, 2 +)	(first forbidden non-unique)	6.5
$EC_{0,36}$	753 (9)	–	–	0.24 (4)	–	0.24 (4)	–	1 –		[first forbidden non-unique]	6.9
$EC_{0,35}$	763 (9)	–	–	0.36 (4)	–	0.36 (4)	–	1 –	(1, 2)	[first forbidden non-unique]	6.8
$EC_{0,34}$	790 (9)	–	–	0.200 (15)	–	0.200 (15)	–	1 –	(1, 2)	[first forbidden non-unique]	7.1
$EC_{0,33}$	879 (9)	–	–	0.50 (4)	–	0.50 (4)	–	1 –	(1, 2)	[first forbidden non-unique]	6.7
$EC_{0,32}$	899 (10)	–	–	0.43 (9)	–	0.43 (9)	–	1 –		[first forbidden non-unique]	6.8
$EC_{0,31}$	944 (9)	–	–	0.36 (7)	–	0.36 (7)	–	1 –		[first forbidden non-unique]	7.0
$EC_{0,30}$	965 (9)	–	–	0.42 (4)	–	0.42 (4)	–	1 –		[first forbidden non-unique]	6.9
$EC_{0,29}$	992 (9)	–	–	0.64 (5)	–	0.64 (5)	–	1 –	(1 +, 2 +)	(first forbidden non-unique)	6.7
$EC_{0,28}$	1034 (9)	–	–	0.17 (4)	–	0.17 (4)	–	1 –	(1, 2)	[first forbidden non-unique]	7.4
$EC_{0,27}$	1050 (9)	–	–	0.133 (15)	–	0.133 (15)	–	1 –		[first forbidden non-unique]	7.5
$EC_{0,26}$	1294 (9)	272 (9)	122 (4)	0.74 (19)	147.2	0.73 (19)	0.005 (1)	1 –		[first forbidden non-unique]	6.9
$EC_{0,25}$	1341 (9)	319 (9)	142 (4)	0.37 (11)	78.5	0.36 (11)	0.005 (2)	1 –		[first forbidden non-unique]	7.3
$EC_{0,24}$	1359 (9)	337 (9)	149 (4)	1.67 (13)	63.8	1.64 (13)	0.026 (3)	1 –	1 +, 2 +	first forbidden non-unique	6.61
$EC_{0,23}$	1407 (9)	385 (9)	169 (4)	1.57 (8)	38.0	1.53 (8)	0.040 (4)	1 –	(1, 2)	[first forbidden non-unique]	6.67
$EC_{0,22}$	1504 (9)	482 (9)	210 (4)	1.92 (16)	16.7	1.81 (15)	0.108 (9)	1 –	(2 +)	(first forbidden non-unique)	6.65
$EC_{0,21}$	1522 (9)	500 (9)	218 (4)	0.10 (3)	14.5	0.09 (3)	0.006 (2)	1 –	(1 +, 2 +, 3 +)	(first forbidden non-unique)	8.0
$EC_{0,20}$	1611 (9)	589 (9)	256 (4)	9.0 (4)	8.00	8.0 (4)	1.00 (4)	1 –	(1, 2) +	(first forbidden non-unique)	6.07
$EC_{0,19}$	1694 (9)	–	–	(zero)	–	–	–	1 –		–	–
$EC_{0,18}$	1803 (9)	781 (9)	339 (4)	5.31 (18)	3.01	3.99 (14)	1.32 (4)	1 –	(2)	[first forbidden non-unique]	6.47
$EC_{0,17}$	1893 (9)	871 (9)	378 (4)	18.8 (3)	2.10	12.7 (2)	6.1 (1)	1 –	(1, 2) +	(first forbidden non-unique)	6.01
$EC_{0,16}$	2012 (9)	990 (9)	430 (4)	12.0 (5)	1.37	6.9 (3)	5.1 (2)	1 –	1 +, 2 +	first forbidden non-unique	6.33

$EC_{0,15}$	2105 (9)	1083 (9)	471 (4)	0.27 (6)	1.009	0.14 (3)	0.13 (3)	1 −		[first forbidden non-unique]	8.1
$EC_{0,14}$	2293 (9)	1271 (9)	554 (4)	2.37 (16)	0.595	0.88 (6)	1.49 (10)	1 −	2 −	allowed	7.33
$EC_{0,13}$	2308 (9)	1286 (9)	561 (4)	0.41 (12)	0.571	0.15 (4)	0.26 (8)	1 −	1 (–)	(allowed)	8.1
$EC_{0,12}$	2332 (9)	1310 (9)	572 (4)	0.31 (24)	0.537	0.11 (9)	0.20 (15)	1 −	(1, 2)	[first forbidden non-unique]	8.3
$EC_{0,11}$	2448 (9)	1426 (9)	624 (4)	0.39 (24)	0.414	0.11 (7)	0.28 (17)	1 −	(2) +	(first forbidden non-unique)	8.3
$EC_{0,10}$	2534 (9)	1512 (9)	663 (4)	0.8 (5)	0.346	0.2 (1)	0.6 (4)	1 −	3 –	second forbidden non-unique	8.1
$EC_{0,9}$	2589 (9)	1567 (9)	688 (4)	0.28 (2)	0.309	0.07 (1)	0.21 (2)	1 −		[first forbidden non-unique]	8.6
$EC_{0,8}$	2792 (9)	–	–	zero	0.211	–	–	1 −	(0 +)	(first forbidden non-unique)	–
$EC_{0,7}$	2836 (9)	1814 (9)	800 (4)	0.23 (13)	0.194	0.04 (2)	0.19 (11)	1 −	(2) +	(first forbidden non-unique)	8.9
$EC_{0,6}$	3175 (9)	2153 (9)	957 (4)	1.0 (4)	0.114	0.10 (4)	0.9 (4)	1 −	2 +	first forbidden non-unique	8.6
$EC_{0,5}$	3274 (9)	2252 (9)	1026 (4)	0.7 (4)	0.188†	0.11 (6)	0.6 (3)	1 −	3 +	first forbidden unique	10.0[1u]
$EC_{0,4}$	3632 (9)	–	–	zero	–	–	–	1 −	4 +	third forbidden non-unique	–
$EC_{0,3}$	3747 (9)	2725 (9)	1224 (4)	1.9 (10)	0.0559	0.10 (5)	1.8 (9)	1 −	2 +	first forbidden non-unique	8.71
$EC_{0,2}$	3841 (9)	2819 (9)	1268 (4)	2.2 (6)	0.0502	0.11 (3)	2.1 (6)	1 −	0 +	first forbidden non-unique	8.71
$EC_{0,1}$	4404 (9)	3382 (9)	1535 (4)	26.5 (9)	0.0292	0.75 (3)	25.7 (9)	1 −	2 +	first forbidden non-unique	7.98
$EC_{0,0}$	4963 (9)	3941 (9)	1803 (4)	5.8 (8)	0.01835	0.10 (2)	5.7 (8)	1 −	0 +	first forbidden non-unique	8.93
				Σ 100.049			Σ 53.9 (18)				
				100.0 (20)							

* Determined from the nuclear level energies of 1995Si03 and Q-value of 4963 (9) keV (2012Wa38).
† ε/$β^+$ ratio calculated on the basis of log-based allowed and first forbidden unique ratios as extracted from the relevant tables of 1971Go40.

Recommended energies and fractional electron-capture probabilities for the EC decay of ^{76}Br.

	E_{EC} (keV)*	P_K	P_L	P_M	P_N
$EC_{0,44}$	342 (9)	0.8735 (16)	0.1058 (13)	0.0187 (4)	0.0020 (2)
$EC_{0,43}$	357 (9)	0.8738 (16)	0.1055 (13)	0.0186 (4)	0.0020 (2)
$EC_{0,42}$	471 (10)	0.8756 (16)	0.1041 (13)	0.0183 (4)	0.0020 (2)
$EC_{0,41}$	508 (10)	0.8760 (16)	0.1038 (13)	0.0183 (4)	0.0020 (2)
$EC_{0,40}$	526 (9)	0.8761 (16)	0.1037 (13)	0.0182 (4)	0.0020 (2)
$EC_{0,39}$	547 (9)	0.8763 (16)	0.1035 (13)	0.0182 (4)	0.0020 (2)
$EC_{0,38}$	634 (9)	0.8769 (16)	0.1030 (13)	0.0181 (4)	0.0020 (2)
$EC_{0,37}$	748 (9)	0.8775 (15)	0.1025 (13)	0.0180 (4)	0.0019 (2)
$EC_{0,36}$	753 (9)	0.8776 (15)	0.1025 (13)	0.0180 (4)	0.0019 (2)
$EC_{0,35}$	763 (9)	0.8776 (15)	0.1025 (13)	0.0180 (4)	0.0019 (2)
$EC_{0,34}$	790 (9)	0.8777 (15)	0.1024 (13)	0.0180 (4)	0.0019 (2)
$EC_{0,33}$	879 (9)	0.8780 (15)	0.1021 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,32}$	899 (10)	0.8781 (15)	0.1021 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,31}$	944 (9)	0.8782 (15)	0.1020 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,30}$	965 (9)	0.8783 (15)	0.1019 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,29}$	992 (9)	0.8783 (15)	0.1019 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,28}$	1034 (9)	0.8784 (15)	0.1018 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,27}$	1050 (9)	0.8785 (15)	0.1017 (13)	0.0179 (4)	0.0019 (2)
$EC_{0,26}$	1294 (9)	0.8789 (15)	0.1014 (12)	0.0178 (4)	0.0019 (2)
$EC_{0,25}$	1341 (9)	0.8790 (15)	0.1013 (12)	0.0178 (4)	0.0019 (2)
$EC_{0,24}$	1359 (9)	0.8790 (15)	0.1013 (12)	0.0178 (4)	0.0019 (2)
$EC_{0,23}$	1407 (9)	0.8791 (15)	0.1013 (12)	0.0178 (4)	0.0019 (2)
$EC_{0,22}$	1504 (9)	0.8792 (15)	0.1012 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,21}$	1522 (9)	0.8792 (15)	0.1012 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,20}$	1611 (9)	0.8793 (15)	0.1011 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,19}$	1694 (9)	–	–	–	–
$EC_{0,18}$	1803 (9)	0.8794 (15)	0.1010 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,17}$	1893 (9)	0.8795 (15)	0.1009 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,16}$	2012 (9)	0.8796 (15)	0.1008 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,15}$	2105 (9)	0.8796 (15)	0.1008 (12)	0.0177 (4)	0.0019 (2)
$EC_{0,14}$	2293 (9)	0.8797 (15)	0.1007 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,13}$	2308 (9)	0.8797 (15)	0.1007 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,12}$	2332 (9)	0.8797 (15)	0.1007 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,11}$	2448 (9)	0.8798 (15)	0.1007 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,10}$	2534 (9)	0.8798 (15)	0.1006 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,9}$	2589 (9)	0.8798 (15)	0.1006 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,8}$	2792 (9)	–	–	–	–
$EC_{0,7}$	2836 (9)	0.8799 (15)	0.1006 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,6}$	3175 (9)	0.8800 (15)	0.1005 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,5}$	3274 (9)	0.8800 (15)	0.1005 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,4}$	3632 (9)	–	–	–	–
$EC_{0,3}$	3747 (9)	0.8801 (15)	0.1004 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,2}$	3841 (9)	0.8801 (15)	0.1004 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,1}$	4404 (9)	0.8802 (15)	0.1003 (12)	0.0176 (4)	0.0019 (2)
$EC_{0,0}$	4963 (9)	0.8803 (15)	0.1003 (12)	0.0176 (4)	0.0019 (2)

* Determined from the nuclear level energies of 1995Si03 and Q-value of 4963 (9) keV (2012Wa38).

Atomic Data

The X-ray and Auger-electron data have been calculated using the evaluated gamma-ray data, and atomic data from 1996Sc06, 1998ScZM and 1999ScZX. Both the X-ray and Auger-electron emission probabilities were determined by means of the EMISSION computer program (version 4.02, 28 February 2012), as described in 2000Sc47. This program incorporates atomic data from 1996Sc06 and the evaluated gamma-ray data.

K and L X-ray energies and emission probabilities of ^{76}Br.

			Energy (keV)	Photons per 100 disint.	Relative probability
XL		(Se)	1.204 – 1.648	0.968 (20)	6.93
	XL_l	(Se)	1.204	0.0242 (8)	
	XL_α	(Se)	1.379	0.569 (16)	
	XL_η	(Se)	1.245	0.0131 (4)	
	XL_β	(Se)	1.420 – 1.492	0.360 (11)	
	XL_γ	(Se)	1.648	0.00245 (7)	
XK_α	$XK_{\alpha2}$	(Se)	11.1815 (2)	7.20 (13)	51.6
	$XK_{\alpha1}$	(Se)	11.2225 (2)	13.96 (25)	100
$XK'_{\beta1}$	$XK_{\beta3}$	(Se)	12.4897 (7)	)	
	$XK_{\beta1}$	(Se)	12.4960 (4)	) 3.26 (7)	23.4
	$XK_{\beta5}''$	(Se)	12.596 (1)	)	
$XK'_{\beta2}$	$XK_{\beta2}$	(Se)	12.6523 (6)	0.183 (7)	1.31

Auger-electron energies and emission probabilities of ^{76}Br.

		Energy (keV)	Electrons per 100 disint.	Relative probability
e_{AK}	(Se)		16.3 (3)	
	KLL	9.280 – 9.712	12.04 (23)	100
	KLX	10.749 – 11.216	3.91 (9)	32.5
	KXY	12.195 – 12.647	0.318 (9)	2.64
e_{AL}	(Se)	0.956 – 1.312	52.9 (7)	439

Se: ω_K = 0.602 (4); ϖ_L = 0.0175 (5); n_{KL} = 1.202 (4) were taken from 1996Sc06.

Electron energies were determined from electron binding energies tabulated by Larkins (1977La19) and the evaluated gamma-ray energies. Absolute electron emission probabilities were calculated from the evaluated absolute gamma-ray emission probabilities and associated internal conversion coefficients.

Main Production Modes

^{76}Se(p,n)^{76}Br, ^{77}Se(p,2n)^{76}Br, ^{nat}Se(p,xn)^{76}Br, ^{75}As(α,3n)^{76}Br, ^{nat}Br(p,x)^{76}Br, ^{nat}Sr(p,x)^{76}Br, ^{89}Y(p,x)^{76}Br, ^{79}Br(p,4n)^{76}Kr(EC)^{76}Br, ^{nat}Cu(^{14}N,3n)^{76}Kr(EC)^{76}Br, ^{65}Cu(^{14}N,3n)^{76}Kr(EC)^{76}Br

Data Consistency

A Q_{EC}-value of 4963 (9) keV has been adopted from the atomic mass evaluation of Wang *et al.* (2012Wa38) while in the course of formulating the decay scheme of ^{76}Br. This value has subsequently been compared with the Q-value calculated by summing the contributions of the individual emissions to the ^{76}Br EC-decay process (i.e. EC/β^+, electron, γ, etc., including handling of pure E0 transitions by adoption of the calculated absolute gamma transition probabilities as absolute gamma-ray emission probabilities prior to re-definition of the latter as negligible (zero) in the final form of the database):

calculated Q-value = 4960 (60) keV

Percentage deviation from the Q-value of Wang *et al.* is (0.06 ± 1.21)%, which supports the derivation of a consistent decay scheme with a significant variant.

References

1952Fu04 S.C. Fultz, M.L. Pool, Radioisotopes of Bromine, Phys. Rev. 86 (1952) 347-350. [Half-life, $E_{\beta+}$, $P_{\beta+}$, E_γ]

1954Ca03 A.A. Caretto Jr., E.O. Wiig, A New Neutron-deficient Isotope of Krypton, Phys. Rev. 93 (1954) 175-176. [^{76}Kr half-life]

1955Th01 S. Thulin, Studies in Nuclear Spectroscopy with Electromagnetically Separated Gaseous Isotopes, II. Disintegration of Some Krypton and Xenon Isotopes, Arkiv Fysik 9, no. 11 (1955) 137-195. [^{76}Kr and ^{76}Br half-lives, E_γ]

1956Te26 G.M. Temmer, N.P. Heydenburg, Coulomb Excitation of Medium-Weight Nuclei, Phys. Rev. 104 (1956) 967-980. [B(E2)]

1959Gi46 R.K. Girgis, R.A. Ricci, R. van Lieshout, J. Konijn, The Decay of ^{76}Br, Nucl. Phys. 13 (1959) 473-484. [Half-life, E_γ, P_γ, $E_{\beta+}$, $P_{\beta+}$]

1960Bu22 F.D.S. Butement, G.G.J. Boswell, New Neutron Deficient Isotopes of Krypton, J. Inorg. Nucl. Chem. 16 (1960) 10-15. [Half-life]

1962Ga13 Yu.P. Gangrskii, I.Kh. Lemberg, Coulomb Excitation of the Second Levels of Spherical Even-Even Nuclei, Izvest. Akad. Nauk SSSR, Ser. Fiz. 26 (1962) 1001-1014; Columbia Tech. Transl. 26 (1963) 1009-1022. [B(E2)]

1962Ku06 J.D. Kurbatov, H.J. Sathoff, J.R. Comerford, Decay of Isobars of As^{76} and Br^{76}, Bull. Amer. Phys. Soc. 7, no. 7 (1962) 462, IA8. [Nuclear levels, $E_{\beta+}$, $P_{\beta+}$]

1962St02 P.H. Stelson, F.K. McGowan, Coulomb Excitation of the First 2^+ State of Even Nuclei with $58 \leq A \geq 82$, Nucl. Phys. 32 (1962) 652-668. [B(E2)]

1963Do04 I. Dostrovsky, R.W. Stoenner, The Half-life and Radiations of Kr^{76}, Nucl. Phys. 43 (1963) 348-352. [^{76}Kr half-life]

1963Sa26 J.R. Comerford Jr., H.J. Sathoff, T. Hayashi, M.H. Kurbatov, J.D. Kurbatov, Experimental Data on Emission of Positrons and Gamma Rays in the Decay of Bromine-76, TID Report TID-18567, Appendix II (1963) 1-19. [E_γ, P_γ, $E_{\beta+}$, $P_{\beta+}$, total EC/total β^+ ratio]

1964By02 W. Bygrave, D. Eccleshall, M.J.L. Yates, The Coulomb Excitation of Se^{76} and Se^{78} Using Oxygen Ions, Nucl. Phys. 53 (1964) 385-396. [B(E2) ratios]

1969Dz01 B.S. Dzhelepov, A.G. Dmitriev, N.N. Zhukovskii, Decay of ^{76}Br, Bull. Acad. Sci. USSR, Phys. Ser. 33 (1970) 14-26. [E_γ, P_γ]

1970AgZV A.P. Agnihotry, K.P. Gopinathan, M.C. Joshi, K.G. Prasad, Coulomb Excitation of Selenium Isotopes, Proc. Nucl. Phys. and Solid State Phys. Symp., Nucl. Phys., Madurai (1970) 161-165. [B(E2)]

1970Dz09 B.S. Dzhelepov, A.G. Dmitriev, Zh. Zhelev, N.N. Zhukovskii, L.N. Moskvin, V.I. Fominykh, Levels of ^{76}Se Excited in the Decay of ^{76}Br, Bull. Acad. Sci. USSR, Phys. Ser. 34 (1971) 1838-1844. [P_{ce}, α_K, γ-γ coincidence]

1971Dz08 B.S. Dzhelepov, A.G. Dmitriev, N.N. Zhukovskii, Decay of ^{76}Br, Bull. Acad. Sci. USSR, Phys. Ser. 35 (1972) 2043-2047. [E_γ, P_γ, $P_{\beta 0}/P_{\beta(559)}$ ratio]

1971FuZP G. Funel, Étude de la Désintegration de l'Arsenic-76 et des Niveaux Excités du Sélénium-76, PhD thesis, Faculté des Sciences de l'Université de Nice (1971).

[Nuclear levels, E_γ]

1971Go40 N.B. Gove, M.J. Martin, Log-*f* Tables for Beta Decay, Nucl. Data Tables 10 (1971) 205-237. [ϵ/β^+ ratios]

1971La01 I.M. Ladenbauer-Bellis, H. Bakhru, R. Bakhru, Decay Study of ^{76}Br, Can. J. Phys. 49 (1971) 54-60. [Half-life, E_γ, P_γ]

1973Pa02 T. Paradellis, A. Houdayer, S.K. Mark, States of ^{76}Br Observed in the Decay of ^{76}Kr, Nucl. Phys. A201 (1973) 113-125. [^{76}Kr half-life]

1974Ba80 J. Barrette, M. Barrette, G. Lamoureux, S. Monaro, S. Markiza, Coulomb Excitation of the Even-Mass Selenium Nuclei, Nucl. Phys. A235 (1974) 154-170. [B(E2)]

1974HeYW R.L. Heath, Gamma-ray Spectrum Catalogue, Ge and Si Detector Spectra, 4th edition, Aerojet Nuclear Corporation report ANCR-1000-2 (1974); updated as taken from ENSDF in 1998, and available at www4vip.inl.gov/gammaray/catalogs/ge/catalog_ge.shtml [Half-life, E_γ, P_γ]

1974MuZB H. Müller, D. Wohlfarth, E. Hentschel, Experimentelle Ergebnisse Kernspektroskopischer Untersuchungen der Isotope ^{76,78,80,82}Se, Zentralinstitut für Kernforschung Rossendorf bei Dresden Report ZfK-273 (1974). [Nuclear levels, E_γ, P_γ]

1974Na17 T. Nagahara, J. Ruan, H. Nakayama, Y. Ishizuka, M. Okano, The Decay of ^{76}Br, J. Phys. Soc. Japan 37 (1974) 1-9. [E_γ, P_γ]

1975NeZR B.A. Nemashkalo, V.E. Storizhko, G.A. Krivonosov, O.I. Ekhichev, V.K. Chirt, Kh.M. Khysein, I.I. Zalyubovsky, Inelastic Proton Scattering on Medium Weight Nuclei, Program and thesis, Proc. 25th Ann. Conf. Nucl. Spectrosc. Struct. At. Nuclei, Leningrad (1975) 334. [B(E2)]

1975VyZX T.S. Vylov, B.S. Dzhelepov, A.G. Dmitriev, N.N. Zhukovskii, A.V. Mozzhukhin, L.G. Tsaritsyna, Gamma Rays of ^{76}Br in the Energy Regions 0.50 – 1.25 and 3.0 – 5.5 MeV, Program and Thesis, Proc. 25th Annual Conf. Nucl. Spectrosc. Struct. At. Nuclei, Leningrad (1975) 66-67. [E_γ, P_γ]

1976Ba15 J.A. Barclay, S.S. Rosenblum. W.A. Steyert, K.S. Krane, Nuclear Orientation of ^{76}As, Phys. Rev. C13 (1976) 1991-1995. [δ (657.0 and 1228.5 keV)]

1977La19 F.P. Larkins, Semiempirical Auger-electron Energies for Elements $10 \leq Z \leq 100$, At. Data Nucl. Data Tables 20 (1977) 311-387. [Auger-electron energies]

1977Le11 R. Lecomte, P. Paradis, J. Barratte, M. Barrette, G. Lamoureux, S. Monaro, Measurement of the Static Quadrupole moments of the First 2^+ States in ^{76}Se, ^{78}Se, ^{80}Se and ^{82}Se, Nucl. Phys. A284 (1977) 123-134. [B(E2)]

1980Ka36 R. Kaur, A.K. Sharma, S.S. Sooch, H.R. Verma, P.N. Trehan, Level Structure Studies in ^{76}Se, J. Phys. Soc. Japan 49 (1980) 1214-1221. [Multipolarity]

1982MuZV A. Muminov, I.K. Kuldzhanov. B. Ibragimov, R. Razhabbaev, Mulitipole Components of γ Transitions in ^{76}Se, Program and Thesis, Proc. 32nd Annual Conf. Nucl. Spectrosc. Struct. At. Nuclei, Kiev (1982) 67. [Multipolarity]

1983Pa10 A. Passoja, M. Vergnes, J. Kantele, M. Luontama, Electric Monopole Strengths in Even-mass Ge and Se Isotopes, Physica Scripta T5 (1983) 147-148. [$P_K(E0)/P_\gamma(E2)$ ratio for 0_2^+ state]

1986Gi12 A. Giannatiempo, A. Nannini, A. Passeri, A. Perego, P. Sona, Electric Monopole Transitions in ^{76}Se, Z. Phys. A – Atomic Nuclei 325 (1986) 157-161.
[α_K(657, 1130 keV), P_K(563 keV), P_K(E0(1122 keV))/P_K(E2(563 keV)) ratio]

1987Su05 A.R.H. Subber, S.J. Robinson, P. Hungerford, W.D. Hamilton, P. Van Isaker, K. Kumar. P. Park, K. Schreckenbach, G. Colvin, The Level Structure of ^{76}Se and ^{78}Se and the Systematics of Selenium Isotopes Within the Framework of the DDM, J. Phys. G – Nucl. Phys. 13 (1987) 807-837. [δ]

1988Gr26 A.G. Griffiths, C.J. Ashworth, I.S. Grant, J. Rikovska, N.J. Stone, P.M. Walker, W.B. Walters, J.P. White, Deformation in the Light Br Isotopes, Hyperfine Interactions 43 (1988) 481-488. [Magnetic dipole moment]

1988Wh03 J.P. White, N.J. Stone, C.J. Ashworth, Electric Quadrupole Orientation in Zinc: the Variation of Electric Field Gradient with Atomic Number Through the 4sp Series, Hyperfine Interactions 43 (1988) 205-208. [Electric quadrupole orientation]

1989Za03 C.B. Zamboni, R.N. Saxena, Gamma-gamma Angular Correlations in the Decay of ^{76}As, Phys. Rev. C39 (1989) 2379-2384. [δ]

1992Gr20 A.G. Griffiths, C.J. Ashworth, J. Rikovska, N.J. Stone, J.P. White, I.S. Grant, P.M. Walker, W.B. Walters, Magnetic Moments and Shape Coexistence in the Light Br Isotopes, Phys. Rev. C46 (1992) 2228-2240. [Magnetic dipole moment]

1993Oh09 S.Ohya, S. Muto, K. Heiguchi, Nuclear Magnetic Resonance on Oriented $^{76, 77,82}$Br in Fe, Hyperfine Interactions 78 (1993) 485-489. [Resonance in hyperfine field]

1995Si03 Balraj Singh, Nuclear Data Sheets for A = 76, Nucl. Data Sheets 74 (1995) 63-164.
[Nuclear levels]

1995ScZY E. Schönfeld, Tables for the Calculation of Electron Capture Probabilities, PTB Report PTB-6.33-95-2, 1995. [P_K, P_L, P_M, P_N, P_O]

1996Sc06 E. Schönfeld, H. Janβen, Evaluation of Atomic Shell Data, Nucl. Instrum. Methods Phys. Res. A369 (1996) 527-533. [ω_K, ϖ_L, K_β/K_α, $K_{\alpha2}/K_{\alpha1}$, KLX/KLL, KXY/KLL]

1998Sc28 E. Schönfeld, Calculation of Fractional Electron Capture Probabilities, Appl. Radiat. Isot. 49 (1998) 1353-1357. [P_K, P_L, P_M, P_N, P_O]

1998ScZM E. Schönfeld, G. Rodloff, Tables of the Energies of K-Auger Electrons for Elements with Atomic Numbers in the Range from Z = 11 to Z = 100, PTB Report PTB-6.11-98-1, October 1998. [Auger electrons]

1999ScZX E. Schönfeld, G. Rodloff, Energies and Relative Emission Probabilities of K X-rays for Elements with Atomic Numbers in the Range from Z = 5 to Z = 100, PTB Report PTB-6.11-1999-1, February 1999. [X_K]

2000Sc47 E. Schönfeld, H. Janβen, Calculation of Emission Probabilities of X-rays and Auger Electrons Emitted in Radioactive Disintegration Processes, Appl. Radiat. Isot. 52 (2000) 595-600. [P_X, P_{Ae}]

2002Ba85 I.M. Band, M.B. Trzhaskovskaya, C.W. Nestor, Jr., P.O. Tikkanen, S. Raman, Dirac–Fock Internal Conversion Coefficients, At. Data Nucl. Data Tables 81 (2002) 1-334. [ICC]

2002Ra45 S. Raman, C.W. Nestor, Jr., A. Ichihara, M.B. Trzhaskovskaya, How Good are the Internal Conversion Coefficients Now? Phys. Rev. C66 (2002) 044312, 1-23. [ICC]

2007Qa02 S.M. Qaim, T. Bisinger, K. Hilgers, D. Nayak, H.H. Coenen, Positron Emission Intensities in the Decay of ^{64}Cu, ^{76}Br and ^{124}I, Radiochim. Acta 95 (2007) 67-73. [total $P_{\beta+}$]

2008Ki07 T. Kibédi, T.W. Burrows, M.B. Trzhaskovskaya, P.M. Davidson, C.W. Nestor, Jr., Evaluation of Theoretical Conversion Coefficients using BrIcc, Nucl. Instrum. Methods Phys. Res. A589 (2008) 202-229. [ICC]

2012Co17 N. Cooper, F. Reichel, V. Werner, L. Bettermann, B. Alikhani, S. Aslanidou, C. Bauer, L. Coquard, M. Fritzsche, Y. Fritzsche, J. Glorius, P.M. Goddard, T. Möller, N. Pietralla, M. Reese, C. Romig, D. Savran, L. Schnorrenberger, F. Siebenhühner, V.V. Simon, K. Sonnabend, M.K. Smith, C. Walz, S.W. Yates, O. Yevetska, M. Zweidinger, Photoresponse of ^{76}Se below 9 MeV, Phys. Rev. C86 (2012) 034313. [Nuclear structure]

2012Wa38 M. Wang, G. Audi, A.H. Wapstra, F.G. Kondev, M. MacCormick, X. Xu, B. Pfeiffer, The AME2012 Atomic Mass Evaluation, (I). Tables, Graphs and References, Chin. Phys. C36 (2012) 1603-2014. [Q-value]

2013Go19 P.M. Goddard, N. Cooper, V. Werner, G. Rusev, P. Stevenson, A. Rios, C. Bernards, A. Chakraborty, B.P. Crider, J. Glorius, R.S. Ilieva, J.H. Kelley, E. Kwan, E.E. Peters, N. Pietralla, R. Raut, C. Romig, D. Savran, L. Schnorrenberger, M.K. Smith, K. Sonnabend, A.P. Tonchev, W. Tornow, S.W. Yates, Dipole Response of ^{76}Se Above 4 MeV, Phys. Rev. C88 (2013) 064308. [Nuclear structure]

2014StZZ N.J. Stone, Table of Nuclear Magnetic Dipole and Electric Quadrupole Moments, IAEA Report INDC(NDS)-0658, IAEA, Vienna, Austria (2014). [Spin-parity, Magnetic dipole moment, Electric quadrupole moment]

Addendum (April 2017): As a consequence of an unfortunate oversight, a number of references originating from the same laboratory were not considered during the course of the 2015 evaluation:

2004Li62 Y. Li, S. Shen, W. Huang, S. Shi, J. Gu, J. Liu, H. Xu, Low-spin States of ^{76}Se Excited in ^{76}Br(β^+ + EC)^{76}Se Decay, Int. J. Mod. Phys. E13 (2004) 933-947. [E_γ, P_γ, γ–γ coincidence]

2004Sh17 S. Shen, Y. Li, W. Huang, S. Shi, J. Gu, J. Liu, H. Xu, Decay of ^{76}Br and its Daughter's Level Structure, J. Phys. Soc. Japan 73 (2004) 1180-1190. [E_γ, P_γ, γ–γ coincidence]

2005Sh59 S.-F. Shen, Y. Li, J.-H. Gu, New Low-Spin Levels in ^{76}Se and Discussion of its Yrast Band Structure, High Energy Phys. Nucl. Phys. 29 (2005) 139-146. [E_γ, P_γ, γ–γ coincidence]

2007Ch89 Y.-B. Chen, S.-F. Shen, F.-R. Xu, S.-J. Zheng, Newly Discovered Candidate of the Member of Three-Phonon Multiplet in ^{76}Se, High Energy Phys. Nucl. Phys. 31 (2007) 642-646. [limited E_γ, P_γ, γ–γ coincidence, 1791.31-keV three-phonon nuclear level]

2013Sh07 S. Shen, Y. Chen, Candidate of the Member of Three-phonon Multiplet Observed in the β^+ + EC Decay of ^{76}Br, Pramana 80 (2013) 69-80. [E_γ, P_γ, γ–γ coincidence, 1791.31-keV three-phonon nuclear level]

These γ singles and γ–γ coincidence studies have the potential to impact upon the assignment and identity of a significant number of nuclear levels, along with adjustments in the recommended location of various populating and depopulating γ-ray emissions.

Highly-relevant γ singles and γ–γ coincidence measurements are also known to be underway involving the Brookhaven Linear Isotope Producer (BLIP) and Gammasphere facilities at the Argonne National Laboratory, and led by US National Nuclear Data Center staff (E. Ricard-McCutchan, A.A. Sonzogni *et al.*).