^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh	NDS 110, 1917 (2009)	30-Jun-2009

1987Su05: measured Eγ, Iγ, $\gamma\gamma(\theta)$, ce, oriented nuclei, BILL ce spectrometer; secondary γ's only are reported here.
1981En07:three-crystal-pair spectrometer was used, measured primary and secondary γ's. None of the E0 transitions from 0^+ to 0^+ have been seen by 1981En07, only limits are given from ce spectra from which X(E0/E2) values have been deduced.
1979BrZE: primary and secondary γ-ray data.
Others:
1971Ra07, 1973Ak03, 1974McZR: primary, secondary γ and $\gamma\gamma$ data have been reported.
1971Kn06: E=slow, deduced spins of several levels from γ-(circ pol) measurements.
The γ-ray energies and cross section data have been measured at Budapest reactor facility with very low (neutron) background during 1999-2003. Detailed reports of this work are available on the following (IAEA and LBNL) websites: www-nds.iaea.org/pgaa/pgaa7/index.html and ie.lbl.gov/pgaadatabase/pgaa.htm. See also IAEA publication 2007ChZX and a book by G. Molnar: Handbook of Prompt Gamma Activation Analysis. In this work 49 secondary and 25 primary γ rays seem to have been measured for absolute γ-ray cross sections for capture in ^{77}Se. The values are given in terms elemental (Se) capture cross sections, these can be multiplied by a factor of 13.11 to obtain cross sections for capture in ^{78}Se.

^{78}Se Levels

The level scheme is that proposed by 1979BrZE. The evaluators adopt the criterion of these authors for assigning transitions As primary. Transitions with Eγ greater than S(n)/2 adopts the criterion of these authors for assigning transitions as are assigned As primaries if At least one transition can Be placed from the resulting intermediate level to a well-established lower level.

E(level)†	J$^\pi$‡	Comments
0.0	0^+	
613.727 *3*	2^+	
1308.643 *5*	2^+	J$^\pi$: $\gamma\gamma(\theta)$ and γ(circ pol) are consistent only with J=2.
1498.597 *9*	0^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=0.
1502.826 *13*	4^+	
1758.690 *17*	0^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=0.
1853.930 *12*	3^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=3 or 2.
1995.896 *7*	2^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=2. γ(circ pol) is consistent with J=2 or, less likely, with J=1.
2266.93 *11*		
2327.329 *19*	2^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=2.
2335.22 *5*	0^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=0.
2361.85 *14*	(0^+)	
2507.24 *6*	3^-	
2536.93 *4*	2^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent with J=3 or 2.
2546.3 *4*		
2647.463 *13*	$(1,2)^+$	
2682.110 *16*	4^+	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=2 or 4. J=4 is inconsistent with possible primary transition. See comment In Adopted Levels.
2753.85 *13*	2^+	E(level): from primary transition. The deexciting transitions placed by 1987Su05 give excitation energies of 2754.6 *3* and 2755.2 *4*, and label the level with E=2754.6. One or more of these transitions May Be misplaced, or there May Be more than one level involved. The transitions from this level are not included In the least-squares fit for determining the energies of the other levels. J$^\pi$: γ(circ pol) is consistent only with J=2.
2838.40 *8*	(2^+)	
2864.13 *7*		
2898.14 *6*	2	J$^\pi$: $\gamma\gamma(\theta)$ is consistent only with J=2.
3005.66 *12*	$1,2^+$	
3039.81 *6*		
3089.73 *11*	(0^+)	

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^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE (continued)

^{78}Se Levels (continued)

E(level)†	J$^\pi$‡	Comments
3186.47 *11*	2$^+$	
3242.65 *7*	2$^+$	E(level): from primary transition. Deexciting transitions with energies 3241.8 *4* and 2627.87 (doubly placed) are placed by 1979BrZE. The additional transitions are reported and placed by 1987Su05 and lead to excitation energies of 3242.8 *3*, 3242.8 *2*, 3241.5 *2*, 3243.3 *3*, and 3243.4 *1*. The spread In excitation energies suggests either that one or more transitions are misplaced, or that there is more than level At this energy. Transitions of energy 2629 and 3243 are reported also In (n,n′γ) and placed from a 3242 level. The 1484γ is not reported In (n,n′γ). Transitions from this level are not used In the least-squares fit for determining the energies of the other levels.
3254.39 *12*	(0,1,2)$^+$	
3288.23 *7*	1$^-$	
3383.64 *10*		
3439.46 *14*	(1)	
3450.84 *10*	0$^+$	
3494.33 *8*	1,2$^{(+)}$	
3523.82 *14*	1,2$^{(+)}$	
3591.67 *11*	(1$^-$)	
3624.10 *14*	1,2$^{(+)}$	
3628.1 *5*		
3686.52 *16*	3$^-$	
3735.16 *12*		
3894.58 *12*	2$^+$	
3959.85 *16*	1,2$^{(+)}$	
3999.15 *12*	1$^-$	
4037.03 *12*		
4079.87 *13*	1,2$^{(+)}$	
4153.11 *16*	(1)	
4182.02 *11*	0$^+$	
4253.29 *10*	(2$^+$)	
4297.49 *12*	2$^+$	
4341.53 *11*	1,2$^{(+)}$	
4366.56 *11*	(1)$^-$	
4386.92 *11*	(1,2$^+$)	
4448.46 *12*	1,2$^{(+)}$	
4469.01 *17*	1,2$^{(+)}$	
4528.77 *18*		
4672.51 *18*		
4684.30 *14*		
4690.32 *19*	1,2$^{(+)}$	
4697.00 *12*	2$^+$	
4723.03 *14*	2$^+$	
4787.94 *16*	(1)$^-$	
4791.2 *4*	0$^+$	
4811.97 *18*	2$^+$	
4957.22 *24*	1,2$^{(+)}$	
4972.36 *22*	1$^-$	
4998.3 *3*		
5004.72 *18*	1,2$^{(+)}$	
5022.29 *15*		
5029.91 *19*	2$^+$	
5090.86 *22*		
5101.3 *3*		
5126.64 *15*	(2,3,4)	
5164.20 *14*		
5180.59 *18*	1$^{(+)}$,2$^{(+)}$	
5290.17 *17*	1,2$^{(+)}$	

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^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE (continued)

^{78}Se Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
5295.3 *3*	3^-	5356.55 *15*	(2^+)	5440.2 *3*		5513.22 *16*	$1,2^{(+)}$
5339.74 *25*	$1,2^{(+)}$	5390.8 *3*		5451.38 *25*	$1,2^{(+)}$	(10497.76@ *4*)	$0^-,1^-$#

† From least-squares fit to Eγ′s. Normalized χ^2=3.2 as compared to critical χ^2=1.3. A few of the transitions are poorly fitted as noted under comments.

‡ From Adopted Levels. Values determined In this reaction are given In comments. Conclusions based on $\gamma\gamma(\theta)$ are from 1987Su05, and those from γ(circ pol) are from 1971Kn06.

For s-wave capture on a $1/2^-$ target.

@ S(n)=10497.73 *17* (2009AuZZ), 10497.81 *16* (2003Au03).

γ(^{78}Se)

Iγ normalization: 1981En07 give γ-ray intensities as per 100 neutron captures. This factor is consistent with absolute measured cross section of 28.0 *6* for 613.7γ (first 2$^+$ to 0$^+$) in Budapest-Berkeley PGAA data (2007ChZX) which gives Iγ=67 *7* for 613.7γ for 100 neutron captures in ^{77}Se, if σ_n(capture)=42 b *4* for ^{77}Se (2006MuZX). Cross sections for some other strong γ rays from Budapest data also give gamma-ray intensities consistent with the values given here. However, intensity in-out balance given by GTOL code gives normalization factor of 1.15 *8*, which seems to imply that about 13% of the gamma-ray feeding to g.s. is still unaccounted.

The γγ(θ) correlation coefficients are from 1987Su05.

A_2, A_4 and ce data are from 1987Su05.

E_γ[†]	I_γ[‡x]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[e]	Comments
[x]126.7[b] *4*	0.04[b] *1*						
[x]140.0[b] *3*	0.40[b] *8*						
[x]162.6[b] *2*	0.65[b] *18*						
175.5[b] *5*	0.09[b] *2*	2682.110	4$^+$	2507.24	3$^-$		
[x]197.9[b] *2*	0.44[b] *9*						
203.3[b] *5*	0.08[b] *2*	2536.93	2$^+$	2335.22	0$^+$		
[x]212.7[b] *2*	0.14[b] *3*						
[x]231.9[b] *5*	0.06[b] *2*						
[x]239.5[b] *2*	1.5[b] *3*						
246.6[z] *7*	0.73 *6*	3288.23	1$^-$	3039.81			E_γ: shown In authors level scheme As connecting the 3288 and a 3143 level. The final level should perhaps Be the 3039 level, the energy difference required is 248.6. A 246.6 γ is also reported by 1974McZR.
[x]250.2[b] *2*	0.36[b] *7*						
260.1[z]		1758.690	0$^+$	1498.597	0$^+$	[E0]	X(E0/E2)≤1.36 (1987Su05).
271.1 *8*	0.06 *2*	2266.93		1995.896	2$^+$		
279.0 *8*	0.41 *7*	2546.3		2266.93			
[x]281.9[b] *5*	0.08[b] *2*						
286.4 *4*	0.16 *5*	2647.463	(1,2)$^+$	2361.85	(0$^+$)		
[x]314.8[b] *4*	0.12[b] *3*						
320.3[b] *3*	0.12[b] *4*	2647.463	(1,2)$^+$	2327.329	2$^+$		
331.2[b] *3*	0.11[b] *3*	2327.329	2$^+$	1995.896	2$^+$		
[x]344.2[b] *3*	0.08[b] *2*						
351.49 *14*	0.14 *4*	1853.930	3$^+$	1502.826	4$^+$		
354.735[&] *25*	0.20 *4*	2682.110	4$^+$	2327.329	2$^+$		
[x]369.6[b] *5*	0.04[b] *1*						
[x]385.8[b] *6*	0.11[b] *3*						
391.3[b] *5*	0.06[b] *2*	2898.14	2	2507.24	3$^-$		

From ENSDF

γ(^{78}Se) (continued)

E_γ[†]	I_γ[‡x]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[e]	δ[f]	Comments
^{x}439.8[b] *3*	0.18[b] *4*							Additional information 1.
^{x}442.2[b] *6*	0.05[b] *1*							
449.94 *6*	0.068 *21*	1758.690	0^+	1308.643	2^+			
497.294[&] *7*	0.36 *4*	1995.896	2^+	1498.597	0^+			
504.4[b] *2*	0.18[b] *4*	2864.13		2361.85	(0^+)			E_γ: very poor fit in level scheme. Level-energy difference=502.3. Placement is suspect.
^{x}518.3[b] *2*	0.20[b] *4*							
^{x}521.0[b] *2*	0.77[b] *16*							
545.300[&] *13*	2.11 *12*	1853.930	3^+	1308.643	2^+			(545γ)[695γ](614γ)(θ): B_2=−0.5 *12*, B_4=+0.37 *8*.
^{x}552.6[b] *2*	0.11[b] *3*							
^{x}558.9[b] *2*	0.12[b] *3*							
568.7 *4*	0.136 *21*	2327.329	2^+	1758.690	0^+			
575.0[c] *10*	<1.0	2335.22	0^+	1758.690	0^+			
^{x}579.3[b] *2*	0.18[b] *4*							
^{x}585.6[b] *4*	0.04[b] *1*							
595.89[s] *10*	0.136 *14*	3242.65	2^+	2647.463	$(1,2)^+$			
613.725[&] *3*	68 *6*	613.727	2^+	0.0	0^+	E2		Mult.: from Adopted Gammas. Additional information 4.
631.9[bz]	0.1[b]	2898.14	2	2266.93				
^{x}646.2[b] *3*	0.08[b] *2*							
^{x}649.2[b] *4*	0.08[b] *2*							
651.573[&] *11*	0.46 *3*	2647.463	$(1,2)^+$	1995.896	2^+			
655.90 *7*	0.184 *14*	3494.33	$1,2^{(+)}$	2838.40	(2^+)			
686	0.11 *2*	2682.110	4^+	1995.896	2^+			E_γ: from the level energies. Major component of the 686 transition deexcites the 1995 level. I_γ: from Iγ/Iγ(828γ)=0.113 *15* In β^- decay.
687.254[&] *6*	2.05 *15*	1995.896	2^+	1308.643	2^+	M1+E2(+E0)	−0.30 *19*	α(K)exp=0.00084 *9* (687γ)[645γ](614γ)(θ): B_2=−1.2 *7*, B_4=+0.5 *5*. X(E0/E2)=0.26 to 9.5 (1987Su05). Additional information 9. δ: 0.12 to 0.49, sign=negative. I_γ: from Iγ=2.16 *15* for the observed 687γ, and Iγ=0.11 *2* for the component from the 2682 level.
694.916[&] *4*	13.9 *8*	1308.643	2^+	613.727	2^+	E0+M1+E2	+3.5 *5*	α(K)exp=0.00107 *6* X(E0/E2)=0.10 1 (1987Su05). Additional information 5. (695γ)(614γ)(θ): B_2=+0.43 *4*, B_4=−0.25 *5*.
^{x}733.7[#] *3*	0.58 *21*							

From ENSDF

γ(^{78}Se) (continued)

E_γ[†]	I_γ[‡x]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[e]	δ[f]	Comments
[x]743.6[@] *6*	0.21 *6*							
[x]755.7[b] *2*	0.18[b] *4*							
793.5 *3*	0.150 *21*	2647.463	(1,2)$^+$	1853.930	3$^+$			
[x]818.1[b] *3*	0.09[b] *2*							
824.8 *4*	0.12 *3*	2327.329	2$^+$	1502.826	4$^+$			
828.189[&] *13*	0.94 *7*	2682.110	4$^+$	1853.930	3$^+$	D+Q	+1.0 *7*	δ: +0.32 to +1.63. (828γ)[1240γ](614γ)(θ): B_2=+1.2 *3*, B_4=+0.2 *8*.
[x]840.5[#] *5*	0.4 *2*							observed by both 1971Ra07 and 1973Ak03.
842.36 *19*	0.38 *4*	2838.40	(2$^+$)	1995.896	2$^+$			
[x]846.8[b] *2*	0.67[b] *13*							
[x]882.0[b] *2*	0.70[b] *14*							
884.861[&] *15*	3.15 *17*	1498.597	0$^+$	613.727	2$^+$	E2		α(K)exp=0.00053 *5* Additional information 7. (885γ)(614γ)(θ): B_2=−0.41 *15*, B_4=−1.22 *15*. (885γ)(614γ)(θ): A_2=+0.25 *9*, A_4=+1.29 *16*.
889.099[&] *12*	3.05 *17*	1502.826	4$^+$	613.727	2$^+$	E2		α(K)exp=0.00048 *3* (889γ)(614γ)(θ): B_2=−0.13 *9*, B_4=−0.09 *10*. Additional information 8.
902.3[b] *3*	0.13[b] *3*	2898.14	2	1995.896	2$^+$			
[x]912.0[c] *10*	<0.4							
[x]943.0[c] *10*	<0.3							
958.37 *19*	0.102 *14*	2266.93		1308.643	2$^+$			
[x]968.5[b] *3*	0.12[b] *3*							
[x]973.9[b] *5*	0.28[b] *6*							
976.31 *23*	0.075 *14*	3242.65	2$^+$	2266.93				
[x]982.9[b] *2*	0.24[b] *6*							
1004.73 *20*	0.56 *3*	2507.24	3$^-$	1502.826	4$^+$			
1010.19 *6*	0.42 *4*	2864.13		1853.930	3$^+$			
[x]1014.0[b] *2*	0.27[b] *5*							
1018.65 *5*	0.374 *21*	2327.329	2$^+$	1308.643	2$^+$			
1026.59 *20*	0.265 *21*	2335.22	0$^+$	1308.643	2$^+$			
1039.3[p] *3*	0.054 *21*	2536.93	2$^+$	1498.597	0$^+$			
1043.6[y] *4*	0.041[y] *14*	2546.3		1502.826	4$^+$			
1043.6[y] *4*	0.041[y] *14*	3039.81		1995.896	2$^+$			
1079.67 *22*	0.54 *4*	2838.40	(2$^+$)	1758.690	0$^+$			
1144.959[&] *17*	2.37 *13*	1758.690	0$^+$	613.727	2$^+$	Q		(1145γ)(614γ)(θ): B_2=−0.56 *8*, B_4=−1.31 *15*. (1145γ)(614γ)(θ): A_2=+0.34 *11*, A_4=+1.40 *16*.
1159.09 *10*	0.15 *4*	3494.33	1,2$^{(+)}$	2335.22	0$^+$			
[x]1160.7[b] *6*	0.22[b] *4*							

γ(^{78}Se) (continued)

E_γ[†]	I_γ[‡x]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[e]	δ[f]	Comments
[x]1164.1[b] 5	0.09[b] 2							
1186.02 12	0.150 21	3039.81		1853.930	3^+			
[x]1198.6[#] 3	1.73 19							
1198.6[&] 3	1.23 11	2507.24	3^-	1308.643	2^+			I_γ: from adopted branching based on consistent. Iγ/Iγ(1005+1893γ′s)=1.18 8 As measured In (β^-), (n,n′γ), and (α,2nγ). The measured value of 2.96 16 suggests that the 1198γ must Be a multiplet. The remainder of the intensity is unplaced. (1199γ)[694γ](614γ)(θ): B_2=+0.8 39, B_4=+3.6 19.
1228.25 17	0.56 4	2536.93	2^+	1308.643	2^+			
1240.13[&] 3	3.23 17	1853.930	3^+	613.727	2^+	D+Q	−0.41 +18−31	(1240γ)(614γ)(θ): B_2=+0.61 20, B_4=−0.01 5.
1256.7[q] 4	0.068 14	2753.85	2^+	1498.597	0^+			
[x]1261.5[b] 5	0.23[b] 5							
[x]1263.7[b] 5	0.18[b] 4							
1292.3[b] 3	0.24[b] 5	3288.23	1^-	1995.896	2^+			
1308.59[&] 4	10.1 6	1308.643	2^+	0.0	0^+	E2		α(K)exp=0.00019 1 Additional information 6.
1338.78 5	1.06 7	2647.463	$(1,2)^+$	1308.643	2^+			(1339γ)[694γ](614γ)(θ): B_2=−5.1 33, B_4=−2.4 21.
[x]1369.7[b] 3	0.22[b] 4							
1373.48 6	0.51 4	2682.110	4^+	1308.643	2^+			
[x]1377.8[@] 8	0.31 9							
1382.16 3	2.22 12	1995.896	2^+	613.727	2^+	E0+M1+E2	+0.44 10	α(K)exp=0.00038 2 X(E0/E2)=11 4 (1987Su05). (1382γ)(614γ)(θ): B_2=+0.12 10, B_4=−0.15 12. Additional information 10. Mult.,δ: α(K)(theory)=0.00019 (E2), 0.00018 (M1). δ(E2/M1)=+0.44 10.
1387.56[t] 20	0.177 21	3242.65	2^+	1853.930	3^+			
1445.88[r] 19	0.18 3	2753.85	2^+	1308.643	2^+			
1484.12 17	0.46 3	3242.65	2^+	1758.690	0^+			
1498[z]		1498.597	0^+	0.0	0^+	[E0]		X(E0/E2)≤0.07 in (n,γ).
1499.1 3	0.12 3	3494.33	$1,2^{(+)}$	1995.896	2^+			
1529.60 17	1.18 7	2838.40	(2^+)	1308.643	2^+			
[x]1552.7[@] 8	0.14 5							
1653.28 15	0.252 21	2266.93		613.727	2^+			
1672.8[#] 4	0.53 21	3999.15	1^-	2327.329	2^+			
1713.55 3	6.1 4	2327.329	2^+	613.727	2^+	E0+M1+E2	−1.8 5	α(K)exp=0.00017 3 (1714γ)(614γ)(θ): B_2=−0.53 12, B_4=−0.24 14. Additional information 11. X(E0/E2)=1.21 23 (1987Su05).
1721.50 5	2.45 14	2335.22	0^+	613.727	2^+	E2		α(K)exp=0.00014 5

γ(^{78}Se) (continued)

E_γ[†]	I_γ[‡x]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[e]	δ[f]	Comments
								(1722γ)(614γ)(θ): B_2=−0.20 *23*, B_4=−0.94 *19*. Additional information 12.
1731.11 *7*	0.286 *21*	3039.81		1308.643	2^+			
1744.24 *23*	0.136 *21*	3242.65	2^+	1498.597	0^+			
1748.21 *15*	0.20 *3*	2361.85	(0^+)	613.727	2^+			
1758.6[z]		1758.690	0^+	0.0	0^+	[E0]		X(E0/E2)≤0.27 (1987Su05).
[x]1791.1[#] *4*	0.85 *21*							
[x]1834.58 *23*	0.156 *21*							E_γ: placed by the authors from a 3143 level, possibly on the basis of a known 3144 level seen In β^- decay and In (n,n′γ); however, the transition is reported As 1835.7 *2* and 1836.1 *5* In these two data sets, respectively. None of the other transitions reported In those experiments are seen In (n,γ).
[x]1852.0[c] *3*	0.7 *2*							Additional information 2.
1893.46 *6*	0.48 *4*	2507.24	3^-	613.727	2^+	D+Q	−1.5 *15*	(1893γ)(614γ)(θ): B_2=−0.9 *8*, B_4=−0.1 *5*. δ: 0.05 to 3.0, sign=negative.
1923.15 *4*	1.97 *11*	2536.93	2^+	613.727	2^+	D+Q	−1.1 *11*	(1924γ)(614γ)(θ): B_2=−0.65 *23*, B_4=−0.07 *18*. δ: <2.2, sign=negative.
1979.57 *8*	0.09 *3*	3288.23	1^-	1308.643	2^+			
1995.87 *8*	3.62 *20*	1995.896	2^+	0.0	0^+			
2003.1[#] *6*	0.53 *21*	3999.15	1^-	1995.896	2^+			
[x]2031.3[b] *6*	1.0[b] *2*							
[x]2034.3[#] *5*	1.1 *3*							Additional information 3.
[x]2047.3[b] *6*	1.6[b] *3*							
2068.4 *4*	0.061 *14*	2682.110	4^+	613.727	2^+			
[x]2162.8[@] *6*	0.73 *11*							
2186.0[#] *10*	0.53 *21*	4182.02	0^+	1995.896	2^+			E_γ: placement by 1979BrZE. Placed from 3687 by 1971Ra07.
[x]2199.9[@] *8*	0.55 *11*							
2240.1[#] *8*	0.42 *21*	3999.15	1^-	1758.690	0^+			
2257.53 *20*	0.5 *1*	4253.29	(2^+)	1995.896	2^+			
2284.37 *6*	1.20 *14*	2898.14	2	613.727	2^+	D+Q	−0.9 *8*	δ: 0.11 to 1.69, sign=negative. (2284γ)(614γ)(θ): B_2=−0.9 *4*, B_4=−0.24 *26*.
2319.4 *5*	0.8 *3*	3628.1		1308.643	2^+			
2327.26 *6*	0.6 *4*	2327.329	2^+	0.0	0^+			
2391.93[y] *17*	1.2[y] *2*	3005.66	$1,2^+$	613.727	2^+			
2391.93[y] *17*	1.2[y] *2*	3894.58	2^+	1502.826	4^+			
2452.27 *16*	0.26 *4*	4448.46	$1,2^{(+)}$	1995.896	2^+			
2475.96 *15*	0.44 *4*	3089.73	(0^+)	613.727	2^+			
[x]2509.3[@] *10*	0.36 *9*							
[x]2520.32 *15*	0.80 *8*							
2572.60 *14*	0.80 *8*	3186.47	2^+	613.727	2^+			
2627.87[yu] *14*	0.40[y] *5*	3242.65	2^+	613.727	2^+			

γ(^{78}Se) (continued)

E_γ†	$I_\gamma$$^{\ddagger x}$	E_i(level)	J^π_i	E_f	J^π_f
2627.87^{y} 14	0.40^{y} 5	4386.92	(1,2^{+})	1758.690	0^{+}
^{x}2636.17 20	0.36 7				
2641.05 20	0.32 6	3254.39	(0,1,2)$^{+}$	613.727	2^{+}
2674.36^{l} 13	1.3^{l} 2	3288.23	1^{-}	613.727	2^{+}
^{x}2682.75 13	0.34 4				
2769.91 13	1.1 1	3383.64		613.727	2^{+}
^{x}2796.77 13	0.22 3				
2837.16 14	0.26 3	3450.84	0^{+}	613.727	2^{+}
2843.02^{y} 14	0.32^{y} 4	4341.53	1,2$^{(+)}$	1498.597	0^{+}
2843.02^{y} 14	0.32^{y} 4	4697.00	2^{+}	1853.930	3^{+}
^{x}2854.06 14	0.21 3				
2873.15 14	0.9 1	4182.02	0^{+}	1308.643	2^{+}
^{x}2909.04 14	0.28 4				
^{x}2917.57 14	0.35 4				
2944.20 14	0.27 3	4253.29	(2^{+})	1308.643	2^{+}
2977.85 15	0.40 4	3591.67	(1^{-})	613.727	2^{+}
2988.67 15	0.24 3	4297.49	2^{+}	1308.643	2^{+}
^{x}3009.2 3	0.33 6				
^{x}3013.3 3	0.21 5				
^{x}3017.0 3	0.21 3				
3057.90 16	0.18 3	4366.56	(1)$^{-}$	1308.643	2^{+}
3072.71 16	0.79 5	3686.52	3^{-}	613.727	2^{+}
3121.24 17	0.37 3	3735.16		613.727	2^{+}
3131.8 4	0.11 2	5126.64	(2,3,4)	1995.896	2^{+}
^{x}3153.0 4	0.13 2				
3168.14^{y} 17	0.19^{y} 3	5022.29		1853.930	3^{+}
3168.14^{y} 17	0.19^{y} 3	5164.20		1995.896	2^{+}
^{x}3184.44 18	0.73 5				
^{x}3190.38 18	0.26 3				
^{x}3200.6 4	0.13 2				
3220.1^{y} 4	0.19^{y} 5	4528.77		1308.643	2^{+}
3220.1^{y} 4	0.19^{y} 5	4723.03	2^{+}	1502.826	4^{+}
3224.4 5	0.10 5	4723.03	2^{+}	1498.597	0^{+}
3241.8 4	0.49 7	3242.65	2^{+}	0.0	0^{+}
3245.6^{y} 4	0.17^{y} 5	5004.72	1,2$^{(+)}$	1758.690	0^{+}
3245.6^{y} 4	0.17^{y} 5	5513.22	1,2$^{(+)}$	2266.93	
^{x}3249.4 4	0.12 4				
3272.13 19	0.22 3	5126.64	(2,3,4)	1853.930	3^{+}
^{x}3317.4 3	0.24 3				
^{x}3322.2 3	0.11 3				
3326.4 3	0.21 2	5180.59	1$^{(+)}$,2$^{(+)}$	1853.930	3^{+}
3345.8 4	0.12 2	3959.85	1,2$^{(+)}$	613.727	2^{+}

E_γ†	$I_\gamma$$^{\ddagger x}$	E_i(level)	J^π_i	E_f	J^π_f
3360.50 20	0.15 2	5356.55	(2^{+})	1995.896	2^{+}
3375.73 20	0.22 2	4684.30		1308.643	2^{+}
3385.88 21	0.72 4	3999.15	1^{-}	613.727	2^{+}
3414.57 21	0.17 2	4723.03	2^{+}	1308.643	2^{+}
3423.20 21	0.43 3	4037.03		613.727	2^{+}
3439.5 4	0.90 11	3439.46	(1)	0.0	0^{+}
3479.36 22	0.13 2	4787.94	(1)$^{-}$	1308.643	2^{+}
3499.6 5	0.08 3	4998.3		1498.597	0^{+}
3503.6 5	0.12 4	4811.97	2^{+}	1308.643	2^{+}
3523.4 5	0.08 2	3523.82	1,2$^{(+)}$	0.0	0^{+}
^{x}3530.53 23	0.28 3				
^{x}3584.03 23	0.20 2				
3624.1^{y} 4	0.20^{y} 3	3624.10	1,2$^{(+)}$	0.0	0^{+}
3624.1^{y} 4	0.20^{y} 3	5126.64	(2,3,4)	1502.826	4^{+}
^{x}3629.9 4	0.50 5				
3639.7 5	0.11 2	4253.29	(2^{+})	613.727	2^{+}
3682.4 3	0.16 2	5180.59	1$^{(+)}$,2$^{(+)}$	1498.597	0^{+}
^{x}3688.5 3	0.11 2				
^{x}3710.0 3	0.08 2				
3720.8 4	0.11 3	5029.91	2^{+}	1308.643	2^{+}
^{x}3726.4 4	0.11 3				
^{x}3761.1 3	0.09 2				
3773.2 3	0.18 2	4386.92	(1,2^{+})	613.727	2^{+}
^{x}3779.7 3	0.09 2				
3791.7 3	0.11 2	5290.17	1,2$^{(+)}$	1498.597	0^{+}
^{x}3799.9 3	0.10 2				
^{x}3818.6 6	0.06 3				
3840.9 3	0.19 3	5339.74	1,2$^{(+)}$	1498.597	0^{+}
^{x}3849.9 4	0.06 2				
3855.0^{y} 4	0.41^{y} 4	4469.01	1,2$^{(+)}$	613.727	2^{+}
3855.0^{y} 4	0.41^{y} 4	5164.20		1308.643	2^{+}
3893.7 3	0.07 2	3894.58	2^{+}	0.0	0^{+}
3952.5 4	0.08 2	5451.38	1,2$^{(+)}$	1498.597	0^{+}
3960.0 3	0.14 2	3959.85	1,2$^{(+)}$	0.0	0^{+}
^{x}3966.1 3	0.10 2				
3998.2 3	0.14 2	3999.15	1^{-}	0.0	0^{+}
4015.0 3	0.14 2	5513.22	1,2$^{(+)}$	1498.597	0^{+}
4031.3 6	0.09 1	5339.74	1,2$^{(+)}$	1308.643	2^{+}
^{x}4034.9 6	0.14 3				
4059.0 3	0.22 2	4672.51		613.727	2^{+}
4070.1 3	0.46 3	4684.30		613.727	2^{+}
4079.6 3	0.26 3	4079.87	1,2$^{(+)}$	0.0	0^{+}

γ(^{78}Se) (continued)

E$_γ$[†]	I$_γ$[‡x]	E$_i$(level)	J^π_i	E$_f$	J^π_f
[x]4096.3[d] 15	0.28 6				
[x]4106.3 3	0.05 1				
[x]4113.5 6	0.12 3				
[x]4117.6 6	0.05 3				
[x]4136.4 3	0.10 1				
[x]4144.9 3	0.13 2				
4173.3 5	0.18 3	4787.94	(1)$^-$	613.727	2$^+$
4177.7 5	0.07 2	4791.2	0$^+$	613.727	2$^+$
[x]4190.2 3	0.06 1				
[x]4211.5 3	0.10 1				
[x]4225.3 3	0.13 1				
[x]4231.8 3	0.11 1				
[x]4247.8 6	0.16 2				
[x]4262.2 3	0.08 1				
[x]4272.8 3	0.08 1				
[x]4284.9 5	0.15 3				
[x]4290.3 5	0.07 2				
[x]4301.5 3	0.08 1				
[x]4311.6 6	0.13 1				
[x]4334.1 3	0.20 2				
4341.2 3	0.28 2	4341.53	1,2$^{(+)}$	0.0	0$^+$
4366.5 3	0.06 2	4366.56	(1)$^-$	0.0	0$^+$
[x]4376.8[d] 15	0.10 3				
4391.2 3	0.21 2	5004.72	1,2$^{(+)}$	613.727	2$^+$
[x]4406.7 5	0.11 2				
[x]4411.6 5	0.07 2				
[x]4418.9 3	0.11 2				
4448.2 3	0.39[am] 8	4448.46	1,2$^{(+)}$	0.0	0$^+$
[x]4454.9 3	0.57 3				
[x]4462.4 5	0.18 3				
4468.0 5	0.08 2	4469.01	1,2$^{(+)}$	0.0	0$^+$
4476.9 3	0.06 3	5090.86		613.727	2$^+$
4488.0 5	0.06 2	5101.3		613.727	2$^+$
[x]4492.7 5	0.08 2				
[x]4502.7 3	0.27 2				
[x]4517.8 3	0.12 2				
[x]4582.7 3	0.09 2				
[x]4597.6 6	0.18 2				
[x]4617.4 3	0.16 2				
[x]4625.1 5	0.07 2				
[x]4629.4 5	0.14 2				
[x]4660.4 3	0.20 2				
4676.2 3	0.14 2	5290.17	1,2$^{(+)}$	613.727	2$^+$
4681.3 3	0.19 2	5295.3	3$^-$	613.727	2$^+$
4689.6 3	0.44 3	4690.32	1,2$^{(+)}$	0.0	0$^+$
4697.2 3	0.06 2	4697.00	2$^+$	0.0	0$^+$
[x]4719.3 6	0.19 3				
[x]4727.0 3	0.09 2				
[x]4734.6 3	0.11 2				
4742.7 3	0.10 2	5356.55	(2$^+$)	613.727	2$^+$
[x]4749.5 3	0.06 2				
[x]4769.6 3	0.07 2				
4777.1 3	0.10 2	5390.8		613.727	2$^+$
4811.1 3	0.23 3	4811.97	2$^+$	0.0	0$^+$
4826.4 3	0.16 2	5440.2		613.727	2$^+$
[x]4856.3 3	0.27 2				
[x]4889.0 3	0.06 2				
[x]4898.5 6	0.11 3				
[x]4902.5 6	0.10 2				
[x]4933.5 3	0.07 2				
[x]4942.4 3	0.27 2				
4957.1 3	0.05 1	4957.22	1,2$^{(+)}$	0.0	0$^+$
4972.1 3	0.08 2	4972.36	1$^-$	0.0	0$^+$
4984.4 3	0.20 2	(10497.76)	0$^-$,1$^-$	5513.22	1,2$^{(+)}$
5003.5 6	0.04 1	5004.72	1,2$^{(+)}$	0.0	0$^+$
[x]5017.0 3	0.11[g] 2				
5029.5 3	0.11 2	5029.91	2$^+$	0.0	0$^+$
5046.1 3	0.12 2	(10497.76)	0$^-$,1$^-$	5451.38	1,2$^{(+)}$
5057.5 5	0.26 3	(10497.76)	0$^-$,1$^-$	5440.2	
[x]5069.0 3	0.11 2				
[x]5086.9 3	0.27 2				
[x]5102.4 5	0.09 2				
5107.1 5	0.23 2	(10497.76)	0$^-$,1$^-$	5390.8	
[x]5132.6 3	0.08 2				
5140.9 3	0.15 2	(10497.76)	0$^-$,1$^-$	5356.55	(2$^+$)
5157.6[n] 6	0.26 3	(10497.76)	0$^-$,1$^-$	5339.74	1,2$^{(+)}$
[x]5167.6 3	0.26 2				
5202.0 5	0.22 2	(10497.76)	0$^-$,1$^-$	5295.3	3$^-$
5207.8 5	0.12 2	(10497.76)	0$^-$,1$^-$	5290.17	1,2$^{(+)}$
[x]5230.3 3	0.05 1				
[x]5241.5 3	0.38 2				
[x]5252.4[d] 15	0.19 5				
[x]5280.0 3	0.10 2				
5290.0 3	0.12 2	5290.17	1,2$^{(+)}$	0.0	0$^+$
[x]5296.9 3	0.08 2				
5317.3 3	0.21 1	(10497.76)	0$^-$,1$^-$	5180.59	1$^{(+)}$,2$^{(+)}$

^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE (continued)

γ(^{78}Se) (continued)

E_γ[†]	I_γ[‡x]	E_i(level)	J^π_i	E_f	J^π_f
5332.8 *3*	0.30 *2*	(10497.76)	$0^-,1^-$	5164.20	
^{x}5345.1 *6*	0.06[h] *1*				
5370.2 *4*	0.57 *3*	(10497.76)	$0^-,1^-$	5126.64	(2,3,4)
5396.5 *3*	0.06 *1*	(10497.76)	$0^-,1^-$	5101.3	
5406.6 *3*	0.09 *1*	(10497.76)	$0^-,1^-$	5090.86	
^{x}5414.1[i] *3*	0.08 *1*				
^{x}5436.5 *6*	0.09 *1*				
5467.2 *3*	0.26 *2*	(10497.76)	$0^-,1^-$	5029.91	2^+
5474.8 *3*	0.10 *2*	(10497.76)	$0^-,1^-$	5022.29	
5492.7 *3*	0.30 *2*	(10497.76)	$0^-,1^-$	5004.72	$1,2^{(+)}$
5499.3 *3*	0.40 *2*	(10497.76)	$0^-,1^-$	4998.3	
^{x}5505.5 *3*	0.16 *2*				
5512.9 *3*	0.05 *1*	5513.22	$1,2^{(+)}$	0.0	0^+
5525.1 *3*	0.04 *1*	(10497.76)	$0^-,1^-$	4972.36	1^-
^{x}5535.9 *4*	0.07 *2*				
5540.4 *4*	0.07 *2*	(10497.76)	$0^-,1^-$	4957.22	$1,2^{(+)}$
^{x}5555.2 *3*	0.06 *1*				
^{x}5574.3 *3*	0.32 *2*				
^{x}5609.4 *3*	0.07 *1*				
^{x}5615.4 *3*	0.15 *2*				
^{x}5637.7[j] *3*	0.08 *1*				
^{x}5646.8 *3*	0.07 *1*				
^{x}5666.9 *3*	0.05 *1*				
^{x}5679.4 *3*	0.18 *2*				
5685.19 *24*	0.24 *2*	(10497.76)	$0^-,1^-$	4811.97	2^+
5706.5 *4*	0.37 *2*	(10497.76)	$0^-,1^-$	4791.2	0^+
5709.58 *24*	0.52 *2*	(10497.76)	$0^-,1^-$	4787.94	$(1)^-$
^{x}5743.00 *23*	0.05 *1*				
^{x}5760.61 *23*	0.17 *2*				
5774.82 *23*	0.64 *3*	(10497.76)	$0^-,1^-$	4723.03	2^+
5800.76 *23*	0.23 *2*	(10497.76)	$0^-,1^-$	4697.00	2^+
5806.87 *23*	0.37 *2*	(10497.76)	$0^-,1^-$	4690.32	$1,2^{(+)}$
5813.22 *22*	0.85 *3*	(10497.76)	$0^-,1^-$	4684.30	
5825.19 *22*	0.14 *2*	(10497.76)	$0^-,1^-$	4672.51	
^{x}5852.19 *22*	0.25 *2*				
^{x}5865.01 *22*	0.07 *1*				
^{x}5874.28 *21*	0.23 *2*				
^{x}5898.60 *21*	0.02 *1*				
^{x}5932.03 *21*	0.07 *1*				
^{x}5944.00 *20*	0.51 *2*				
5968.75 *20*	0.30 *2*	(10497.76)	$0^-,1^-$	4528.77	
^{x}5987.10 *20*	0.10 *1*				
6028.33 *19*	0.53 *2*	(10497.76)	$0^-,1^-$	4469.01	$1,2^{(+)}$
6048.63 *19*	0.92 *3*	(10497.76)	$0^-,1^-$	4448.46	$1,2^{(+)}$
^{x}6056.56 *19*	0.08 *1*				
^{x}6077.24 *18*	0.04 *1*				
^{x}6091.81 *18*	0.18 *2*				
6110.09 *18*	0.31 *3*	(10497.76)	$0^-,1^-$	4386.92	$(1,2^+)$
6131.01 *17*	0.29 *2*	(10497.76)	$0^-,1^-$	4366.56	$(1)^-$
^{x}6139.73 *17*	0.09 *1*				
6156.11 *17*	0.33 *2*	(10497.76)	$0^-,1^-$	4341.53	$1,2^{(+)}$
^{x}6177.39[k] *17*	0.06 *1*				
^{x}6183.51 *17*	0.10 *1*				
6199.86 *17*	0.20 *2*	(10497.76)	$0^-,1^-$	4297.49	2^+
^{x}6208.54 *17*	0.10 *1*				
^{x}6214.68 *16*	0.16 *2*				
6243.84 *16*	1.4 *1*	(10497.76)	$0^-,1^-$	4253.29	(2^+)
^{x}6274.70 *16*	0.05 *1*				
^{x}6287.70 *23*	0.06 *2*				
^{x}6292.31 *23*	0.10 *2*				
6315.26 *15*	1.4 *1*	(10497.76)	$0^-,1^-$	4182.02	0^+
6344.37 *15*	0.40 *2*	(10497.76)	$0^-,1^-$	4153.11	(1)
^{x}6381.40 *14*	0.04 *1*				
^{x}6394.19 *14*	0.22 *2*				
^{x}6409.18 *14*	0.08 *1*				
6417.57 *14*	0.10 *1*	(10497.76)	$0^-,1^-$	4079.87	$1,2^{(+)}$
^{x}6438.88 *21*	0.06 *2*				
^{x}6443.23 *21*	0.07 *1*				
6460.43 *14*	0.47 *2*	(10497.76)	$0^-,1^-$	4037.03	
6498.64 *20*	1.5 *1*	(10497.76)	$0^-,1^-$	3999.15	1^-
^{x}6524.12 *20*	0.15 *1*				
6537.67 *20*	0.05 *1*	(10497.76)	$0^-,1^-$	3959.85	$1,2^{(+)}$
^{x}6558.25 *19*	0.10 *2*				
6602.84 *18*	0.52 *3*	(10497.76)	$0^-,1^-$	3894.58	2^+
^{x}6658.59 *17*	0.14 *1*				
^{x}6701.74 *16*	0.07 *1*				
^{x}6731.01 *16*	0.07 *1*				
^{x}6736.40 *16*	0.03 *1*				
6762.18 *15*	0.47 *2*	(10497.76)	$0^-,1^-$	3735.16	
6810.4 *8*	0.75 *8*	(10497.76)	$0^-,1^-$	3686.52	3^-
6873.34 *14*	0.50 *3*	(10497.76)	$0^-,1^-$	3624.10	$1,2^{(+)}$
^{x}6895.43 *14*	0.07 *1*				
6905.73 *14*	0.74 *3*	(10497.76)	$0^-,1^-$	3591.67	(1^-)
6973.57 *14*	0.30 *2*	(10497.76)	$0^-,1^-$	3523.82	$1,2^{(+)}$
7046.68 *14*	0.32 *2*	(10497.76)	$0^-,1^-$	3450.84	0^+
7057.97 *14*	0.34 *2*	(10497.76)	$0^-,1^-$	3439.46	(1)

γ(^{78}Se) (continued)

E_γ[†]	I_γ[‡x]	E_i(level)	J_i^π	E_f	J_f^π	E_γ[†]	I_γ[‡x]	E_i(level)	J_i^π	E_f	J_f^π
7113.82 *14*	1.2 *1*	(10497.76)	0⁻,1⁻	3383.64		7815.77 *19*	0.10 *1*	(10497.76)	0⁻,1⁻	2682.110	4⁺
7209.08 *14*	1.8 *1*	(10497.76)	0⁻,1⁻	3288.23	1⁻	7959.97 *20*	0.51 *3*	(10497.76)	0⁻,1⁻	2536.93	2⁺
7243.22 *14*	0.32 *2*	(10497.76)	0⁻,1⁻	3254.39	(0,1,2)⁺	8162.74[w] *22*	1.8 *1*	(10497.76)	0⁻,1⁻	2335.22	0⁺
7255.02 *22*	0.38 *3*	(10497.76)	0⁻,1⁻	3242.65	2⁺	8170.33 *22*	1.6 *1*	(10497.76)	0⁻,1⁻	2327.329	2⁺
7310.80 *15*	0.31 *2*	(10497.76)	0⁻,1⁻	3186.47	2⁺	8501.3 *3*	1.5 *1*	(10497.76)	0⁻,1⁻	1995.896	2⁺
7407.65 *16*	0.04 *1*	(10497.76)	0⁻,1⁻	3089.73	(0⁺)	8738.5 *3*	0.06 *1*	(10497.76)	0⁻,1⁻	1758.690	0⁺
7491.74 *16*	0.94 *4*	(10497.76)	0⁻,1⁻	3005.66	1,2⁺	8998.9 *3*	0.22 *2*	(10497.76)	0⁻,1⁻	1498.597	0⁺
7599.17 *17*	0.43 *3*	(10497.76)	0⁻,1⁻	2898.14	2	9188.7 *4*	4.8[ao] *2*	(10497.76)	0⁻,1⁻	1308.643	2⁺
7658.83 *18*	0.60 *3*	(10497.76)	0⁻,1⁻	2838.40	(2⁺)	9883.5 *7*	7.3[ao] *4*	(10497.76)	0⁻,1⁻	613.727	2⁺
7744.30[v] *17*	0.51 *3*	(10497.76)	0⁻,1⁻	2753.85	2⁺	10496.9 *3*	0.70[ao] *4*	(10497.76)	0⁻,1⁻	0.0	0⁺

[†] Data for Eγ > 2350 are from 1979BrZE and for Eγ < 2350 are from 1987Su05 except where noted otherwise. 1979BrZE quote transition energies. These have been converted to photon energies. Many low-energy transitions have been reported only by 1974McZR and are not included here except where confirmed In other reactions. See 1981Si13 for a listing of these transitions. In the Budapest data (2007ChZX) the measured γ-ray energies and absolute cross sections have been reported for 49 secondary and 25 primary γ rays.

[‡] Data for Eγ > 2350 are from 1979BrZE except where noted otherwise. The authors′ values are renormalized to the absolute values of 1981En07 by averaging the ratio for all transitions for which Iγ(1979BrZE) is > 1. The resulting normalization factor is 0.568. The relative Iγ values of the two works agree well over this energy region. For Eγ < 2350, the Iγ for placed γ rays are from 1987Su05. The authors′ relative values are normalized to Iγ(614γ)=68 *6*, weighted average of absolute values of 1971Ra07 and 1973Ak03. For Eγ In the range 2350 to 4390 keV, the Iγ values are from 1979BrZE (As renormalized to values of 1981En07), but with a further normalization factor of the form N=A+B(Eγ), where A=−0.089 and B=0.000245. This additional factor reproduces the Iγ values of 1981En07 in the region of 4390 keV, and matches the Iγ values of 1971Ra07, 1973Ak03, and 1987Su05 In the region around 2300 keV, As well As matching values from 1971Ra07 and 1973Ak03 In the energy region 2300 to 4390 keV.

[#] From 1971Ra07 only. Iγ normalized to Iγ(614γ)=68 *6*.

[@] From 1973Ak03 only. Iγ normalized to Iγ(614γ)=68 *6*.

[&] From 1982ToZS.

[a] From 1981En07.

[b] From 1974McZR.

[c] From 1971Ra07 only.

[d] From 1973Ak03 only.

[e] From α(K)exp and γ(θ) of 1987Su05. The α(K)exp are from relative Iγ and I(ce(K)) values normalized so that α(K)exp(613.7γ)=0.001333 (E2 theory).

[f] From γ(θ).

[g] 1981En07 report 0.31 *6*.

[h] 1981En07 report 0.20 *3*.

[i] 1981En07 report 5411.8.

[j] 1981En07 report 5627.8 *11*.

[k] 1981En07 report 6173.1 *6*.

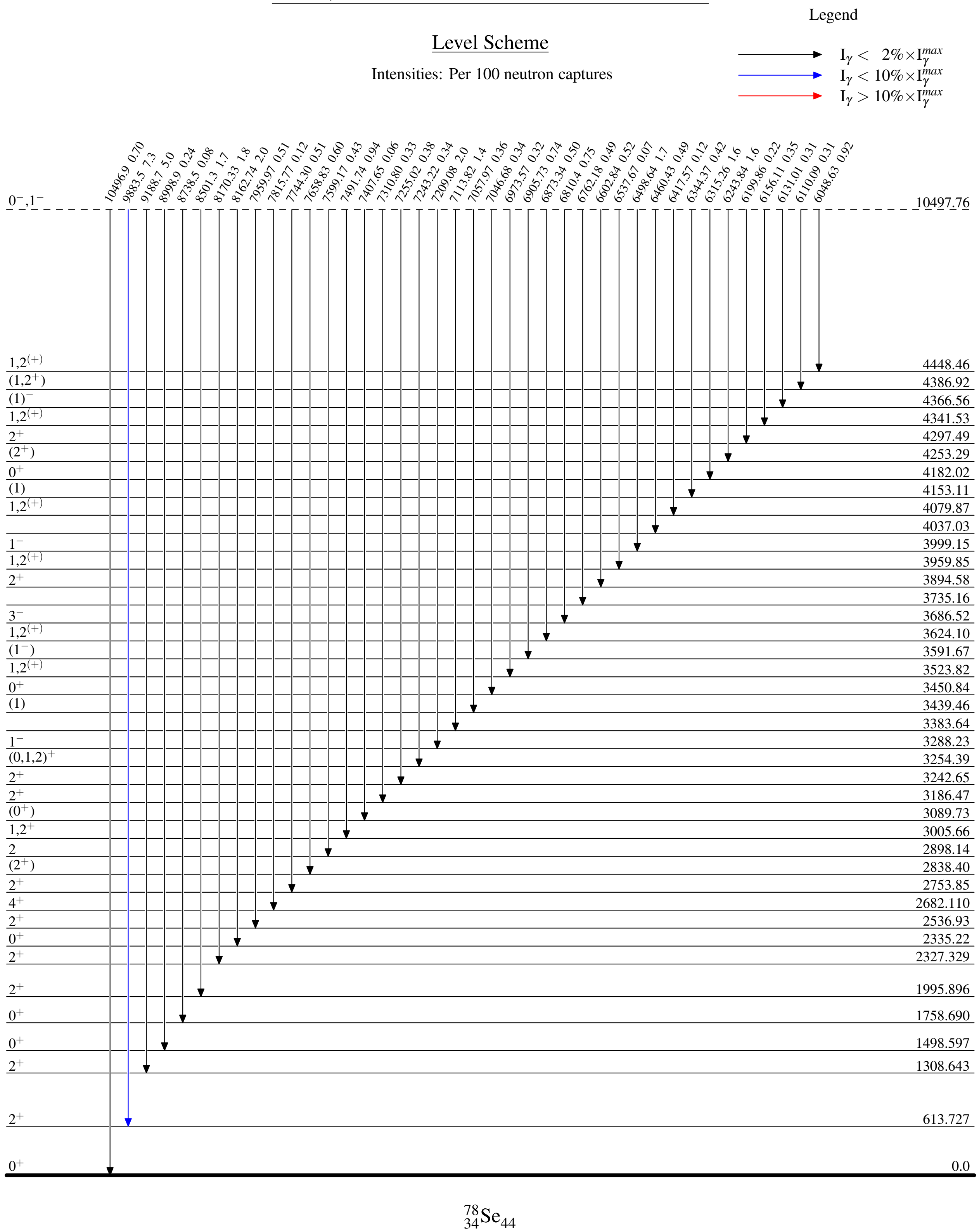
[l] Eγ from 1979BrZE. Iγ from weighted average of 1971Ra07, 1973Ak03, and 1979BrZE.

γ(^{78}Se) (continued)

[m] 1979BrZE report 0.15 *2*. 1973Ak03 report 0.50 *10*.
[n] 1981En07 report 5156.1 *6*.
[o] 1979BrZE report 4.4 *2* for 9188.7γ, 6.7 *3* for 9883.5γ and 0.65 *3* for 10496.9γ.
[p] Poor fit, level-energy difference=1038.3.
[q] Poor fit, level-energy difference=1255.3.
[r] Poor fit, level-energy difference=1445.20.
[s] Poor fit, level-energy difference=595.19.
[t] Poor fit, level-energy difference=1388.71.
[u] Poor fit, level-energy difference=2628.88.
[v] Poor fit, level-energy difference=7743.49.
[w] Poor fit, level-energy difference=8162.08.
[x] Intensity per 100 neutron captures.
[y] Multiply placed with undivided intensity.
[z] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{78}_{34}$Se$_{44}$-13

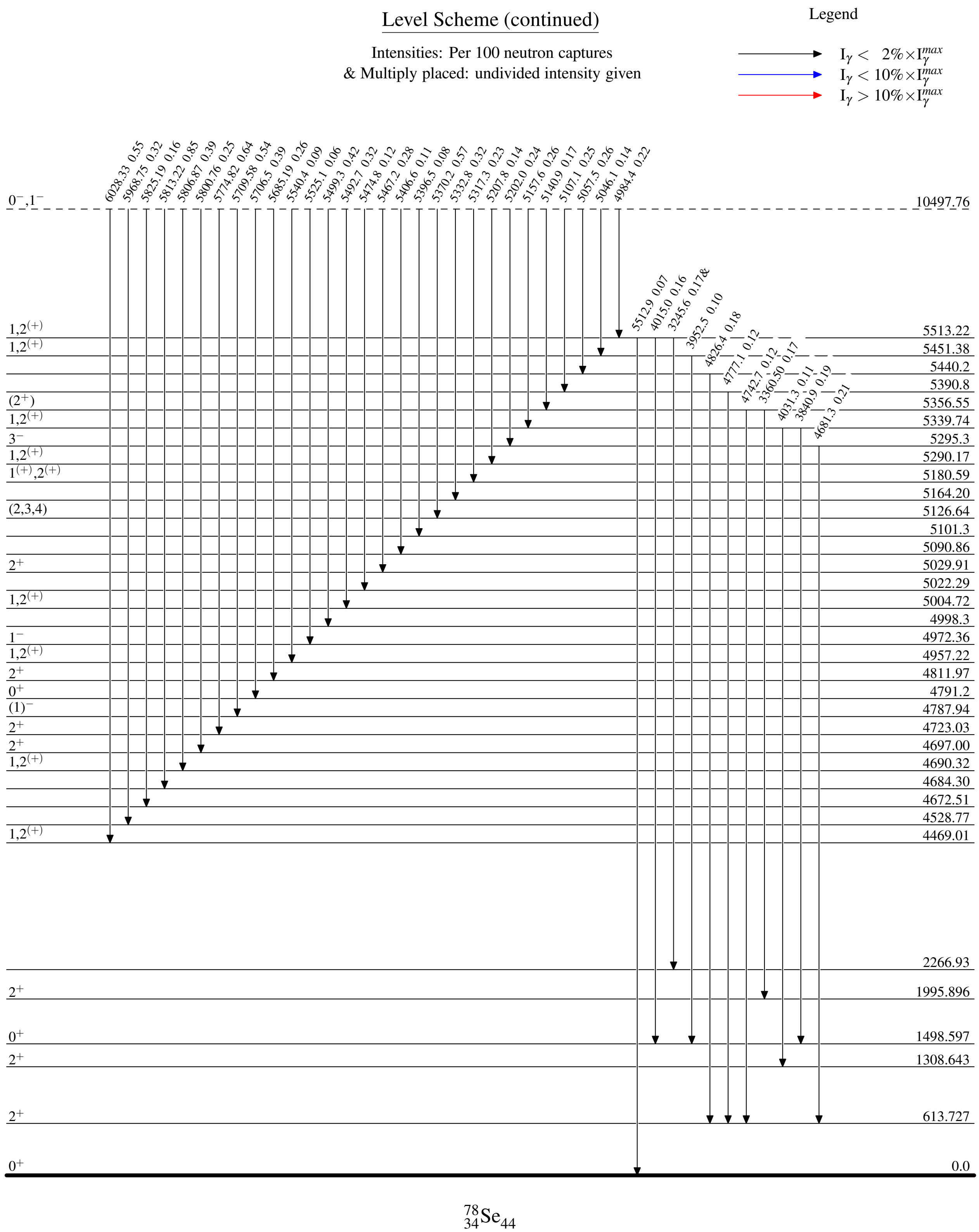
^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE



^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE

Level Scheme (continued)

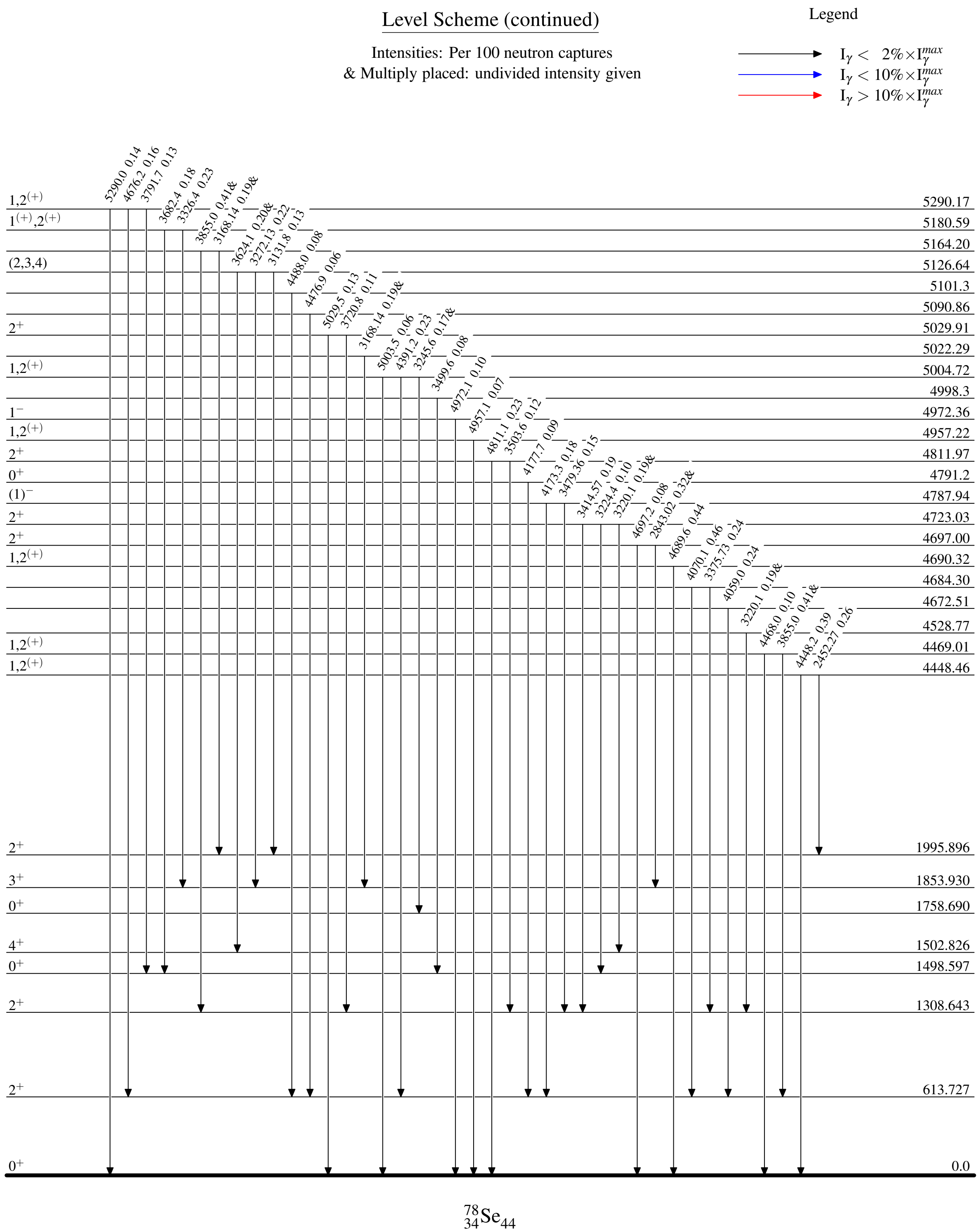
Intensities: Per 100 neutron captures
& Multiply placed: undivided intensity given



^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE

Level Scheme (continued)

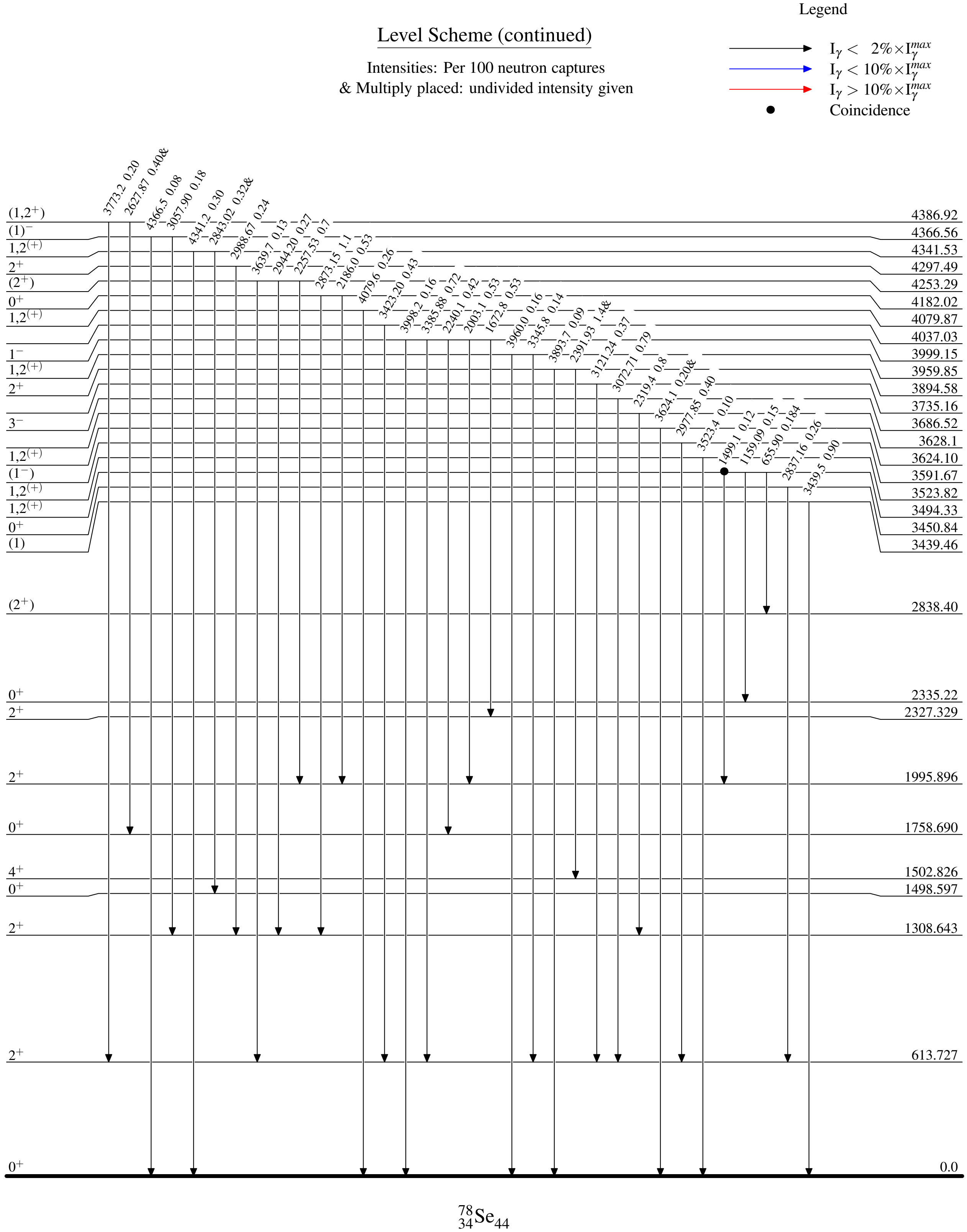
Intensities: Per 100 neutron captures
& Multiply placed: undivided intensity given



^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE

Level Scheme (continued)

Intensities: Per 100 neutron captures
& Multiply placed: undivided intensity given



^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE

Level Scheme (continued)

Intensities: Per 100 neutron captures

& Multiply placed: undivided intensity given

Legend

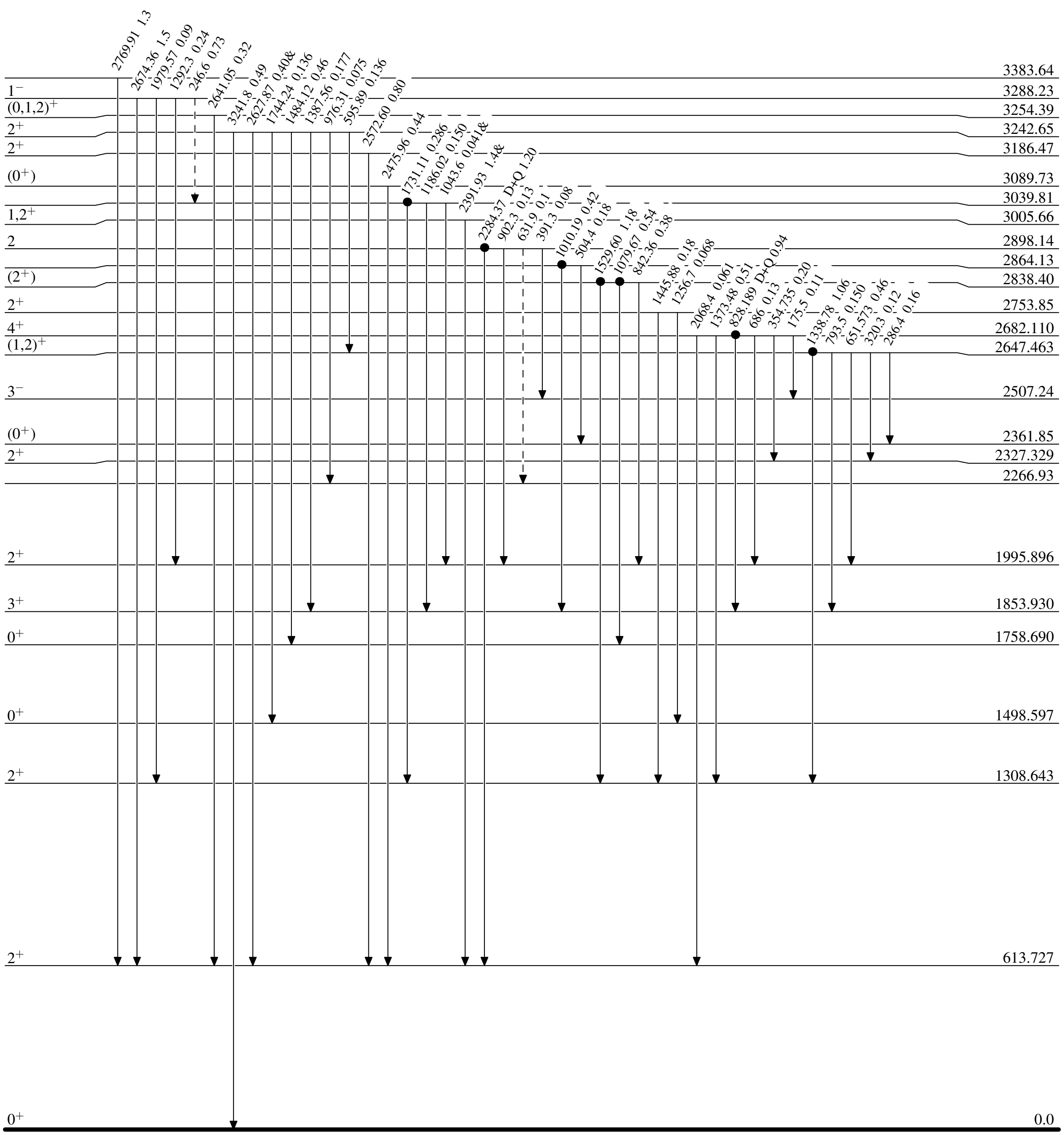
$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)

Coincidence



$^{78}_{34}Se_{44}$

^{77}Se(n,γ) E=thermal 1987Su05,1981En07,1979BrZE

Level Scheme (continued)

Intensities: Per 100 neutron captures
& Multiply placed: undivided intensity given

Legend