^{75}Se(n,γ) E=thermal 1983To20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Jun Chen and Ameenah R. Farhan	NDS 194,3 (2024)	8-Jan-2024

Other references from the same laboratory: 1982ToZT, 1982ToZS.
Successive neutron capture in enriched ^{74}Se target.
1983To20 (also 1982ToZT,1982ToZS): bent-crystal spectrometer for γ rays below 2 MeV and pair spectrometer for γ rays above 2 MeV. Singles γ-ray data.
2014Sn01: measured reaction products, Eγ, Iγ; deduced k_0 factor and Q_0.
Decay scheme based on energy sums. No $\gamma\gamma$-coin data reported.

^{76}Se Levels

E(level)†	J^{π}‡
0.0	0^+
559.102 *5*	2^+
1122.281 *7*	0^+
1216.147 *7*	2^+
1330.860 *8*	4^+
1688.959 *7*	3^+
1787.646 *7*	2^+
2025.992 *9*	4^+
2127.213 *8*	$(2)^+$
2170.55 *2*	(0^+)
2362.95 *2*	
2429.09 *2*	3^-
2514.66 *2*	2^+
2655.1? *10*	1
2669.75 *5*	2^-
2812.38 *3*	
2817.1 *6*	
2824.76 *2*	5^-
2859.75 *3*	4^-
2869.6 *6*	
2910.98 *2*	
2920.0 *5*	$(4)^+$
2949.9 *4*	1^+
2968.4? *8*	
3008.4? *12*	$(2)^+$
3069.4 *4*	2^+
3105.3 *4*	(3^-)
3161.5 *4*	(2^+)
3191.6 *4*	
3219.2 *4*	
3268.8 *4*	
3294.7 *5*	(4^+)
3350.6 *4*	$(2)^+$
3557.9 *5*	(2^-)
3604.1 *4*	1^+
3651.0 *4*	
3730.7 *11*	(3^-)
3861.0 *4*	
3906.3 *4*	
3915.8 *7*	(2^-)
3926.9? *16*	
3932.6 *4*	
3966.2? *6*	

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^{75}Se(n,γ) E=thermal 1983To20 (continued)

^{76}Se Levels (continued)

E(level)[†]	J$^\pi$[‡]	Comments
4001.7 *3*	(3$^-$)	
4044.5 *3*		
4206.4 *5*		
4240.4 *3*		
4257.4 *3*		
4282.7 *5*		
4351.2 *8*		
4369.3 *3*	(4$^+$)	
4383.9 *3*		
4473.8 *3*		
4488.9 *4*		
4523 *3*	(3$^-$)	
4751.5 *5*		
5032.0 *3*		
5139.8 *6*		
5195.3 *3*		
5938.9 *6*		
(11154.0 *3*)	2$^+$,3$^+$	J$^\pi$: s-wave capture in ^{75}Se (g.s. J^π=5/2$^+$). E(level): S(n)=11153.79 *7* (2021Wa16).

† From a least-squares fit to Eγ values.
‡ From Adopted Levels.

γ(^{76}Se)

Iγ normalization: From 1983To20.

E$_\gamma$[†]	I$_\gamma$[‡@]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
339.569 *5*	0.50 *5*	2127.213	(2)$^+$	1787.646	2$^+$
358.098 *5*	0.46 *5*	1688.959	3$^+$	1330.860	4$^+$
[x]358.644[a] *6*	0.14 *2*				
382.904 *9*	0.22 *3*	2170.55	(0$^+$)	1787.646	2$^+$
395.665 *5*	0.40 *5*	2824.76	5$^-$	2429.09	3$^-$
403.094 *7*	0.17 *3*	2429.09	3$^-$	2025.992	4$^+$
430.638 *27*	0.70 *8*	2859.75	4$^-$	2429.09	3$^-$
438.252 *5*	0.83 *9*	2127.213	(2)$^+$	1688.959	3$^+$
456.76 *5*	≤0.2	1787.646	2$^+$	1330.860	4$^+$
[x]464.647 *21*	0.24 *3*				
472.811 *5*	3.5 *4*	1688.959	3$^+$	1216.147	2$^+$
[x]540.365 *16*	0.37 *4*				
548.028[a] *12*	0.38 *6*	2910.98		2362.95	
559.102 *5*	100 *10*	559.102	2$^+$	0.0	0$^+$
563.177 *5*	3.6 *4*	1122.281	0$^+$	559.102	2$^+$
571.498 *9*	0.57 *7*	1787.646	2$^+$	1216.147	2$^+$
575.305 *11*	1.0 *1*	2362.95		1787.646	2$^+$
[x]598.787 *7*	0.83 *9*				
657.041 *5*	30 *4*	1216.147	2$^+$	559.102	2$^+$
665.362 *6*	2.2 *3*	1787.646	2$^+$	1122.281	0$^+$
695.136 *9*	2.2 *3*	2025.992	4$^+$	1330.860	4$^+$
[x]697.41 *10*	0.42 *5*				
727.010 *10*	2.0 *3*	2514.66	2$^+$	1787.646	2$^+$
740.181 *25*	1.13 *13*	2429.09	3$^-$	1688.959	3$^+$

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^{75}Se(n,γ) E=thermal 1983To20 (continued)

γ(^{76}Se) (continued)

E_γ[†]	I_γ[‡@]	E_i(level)	J^π_i	E_f	J^π_f
771.756 9	25 3	1330.860	4+	559.102	2+
796.08[a] 6	0.58 10	2127.213	(2)+	1330.860	4+
798.82 6	1.08 12	2824.76	5−	2025.992	4+
[x]800.51 6	1.09 13				
809.827 8	5.3 7	2025.992	4+	1216.147	2+
[x]830.39[a] 14	0.58 8				
[x]868.13 12	1.1 2				
882.23 7	0.8 2	2669.75	2−	1787.646	2+
[x]885.856[a] 30	0.7 2				
954.51[a] 5	3.0 8	2170.55	(0+)	1216.147	2+
980.48 10	0.84 10	2669.75	2−	1688.959	3+
[x]1029.85 8	0.25 4				
1032[a] 1	≤0.2	2362.95		1330.860	4+
[x]1058.08[a] 8	0.31 6				
1129.851 16	12.6 14	1688.959	3+	559.102	2+
[x]1135.84 11	0.39 9				
[x]1147.53[a] 14	5.0 18				
[x]1159.73 5	6.5 15				
1212.91 4	12.5 14	2429.09	3−	1216.147	2+
1216.108 20	22 3	1216.147	2+	0.0	0+
1228.62 4	8.1 10	1787.646	2+	559.102	2+
[x]1283.91[a] 23	0.87 15				
[x]1285.56[a] 30	1.1 4				
[x]1286.79[a] 19	1.5 4				
[x]1332.51[a] 9	1.4 2				
1453.62[a] 11	1.4 5	2669.75	2−	1216.147	2+
[x]1470.63[a] 17	0.87 15				
[x]1474.37 6	1.9 2				
1494.00[a] 10	1.1 3	2824.76	5−	1330.860	4+
1528.97 8	1.5 3	2859.75	4−	1330.860	4+
1568.02 7	3.1 4	2127.213	(2)+	559.102	2+
1596.34[a] 23	2.3 7	2812.38		1216.147	2+
1611.9[a] 4	0.9 2	2170.55	(0+)	559.102	2+
[x]1624.3[a] 6	1.3 5				
1787.83 26	2.1 4	1787.646	2+	0.0	0+
1853	≈3.0	3069.4	2+	1216.147	2+
2096[#a] 1	≈2.0	2655.1?	1	559.102	2+
2110[#] 1	≈3.0	2669.75	2−	559.102	2+
2257[&#a]	<1.0[&]	4044.5		1787.646	2+
2257[&a]	<1.0[&]	4383.9		2127.213	(2)+
[x]2310[#]	≈1.5				
2391[#]	≈1.5	2949.9	1+	559.102	2+
[x]2448[#]	≈1.5				
[x]2522[#]	≈0.5				
2545[#a]	≈1.5	3105.3	(3−)	559.102	2+
2792[#a]	≈1.0	3350.6	(2)+	559.102	2+
[x]2905[#]	≈1.0				
2949[#]	≈3.0	2949.9	1+	0.0	0+
2999[#a]	≈1.0	3557.9	(2−)	559.102	2+
3604[#a]	≈1.0	3604.1	1+	0.0	0+
5215.0[a] 5	7.4 12	(11154.0)	2+,3+	5938.9	

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^{75}Se(n,γ) E=thermal 1983To20 (continued)

γ(^{76}Se) (continued)

E_γ[†]	I_γ[‡@]	E_i(level)	J^π_i	E_f	J^π_f
[x]5880.7[a] 10	0.9 2				
[x]5893.0[a] 9	1.4 3				
[x]5949.33[a] 41	3.1 4				
5958.52[a] 20	7.3 5	(11154.0)	$2^+,3^+$	5195.3	
[x]5977.6[a] 6	4.1 6				
[x]5984.5[a] 15	2.8 8				
6014.0[a] 5	16 5	(11154.0)	$2^+,3^+$	5139.8	
6121.81[a] 18	18.8 12	(11154.0)	$2^+,3^+$	5032.0	
[x]6141[a] 4	0.9 7				
[x]6156.5[a] 6	3.6 5				
[x]6249.16[a] 42	4.2 5				
[x]6265.54[a] 22	8.8 6				
[x]6274.6[a] 11	2.1 5				
[x]6281.19[a] 40	5.2 5				
[x]6292.44[a] 24	5.9 5				
[x]6332.95[a] 17	8.3 5				
[x]6385.1[a] 10	1.6 4				
6402.34[a] 43	9.7 6	(11154.0)	$2^+,3^+$	4751.5	
[x]6480.09[a] 32	3.9 4				
[x]6511.7[a] 11	1.7 4				
[x]6535.41[a] 39	3.4 4				
[x]6551.03[a] 33	4.3 4				
[x]6565.11[a] 48	2.8 4				
[x]6577.03 35	3.9 4				
6631.0[a] 30	6.5 12	(11154.0)	$2^+,3^+$	4523	(3^-)
6664.88[a] 27	11.5 11	(11154.0)	$2^+,3^+$	4488.9	
[x]6669.7[a] 11	2.6 9				
6680.00[a] 24	5.9 4	(11154.0)	$2^+,3^+$	4473.8	
[x]6695.37[a] 47	2.4 3				
[x]6715.5[a] 8	4.8 14				
[x]6729.3[a] 6	2.7 4				
[x]6737.17 41	4.0 4				
[x]6752.16[a] 47	2.8 4				
6769.90[a] 13	24.5 13	(11154.0)	$2^+,3^+$	4383.9	
6784.43[a] 21	7.8 5	(11154.0)	$2^+,3^+$	4369.3	(4^+)
6802.6[a] 7	7.4 14	(11154.0)	$2^+,3^+$	4351.2	
[x]6807.8[a] 7	6.9 14				
[x]6818.8[a] 11	2.3 6				
[x]6853.22[a] 41	6.3 6				
6871.03[a] 40	3.4 4	(11154.0)	$2^+,3^+$	4282.7	
6896.38[a] 20	8.6 6	(11154.0)	$2^+,3^+$	4257.4	
6913.31[a] 20	8.8 6	(11154.0)	$2^+,3^+$	4240.4	
[x]6935.23[a] 30	4.7 4				
6947.32[a] 41	5.3 6	(11154.0)	$2^+,3^+$	4206.4	
[x]6953.6[a] 7	3.0 5				
[x]6967.7[a] 13	1.2 5				
[x]6974.31[a] 46	5.2 6				
[x]7039.09[a] 39	3.4 4				
[x]7090.27[a] 49	2.3 3				
7109.20[a] 18	14.2 18	(11154.0)	$2^+,3^+$	4044.5	
[x]7138.63[a] 46	9.3 10				

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^{75}Se(n,γ) E=thermal 1983To20 (continued)

γ(^{76}Se) (continued)

Eγ[†]	Iγ[‡@]	E_i(level)	J^π_i	E_f	J^π_f
7152.02[a] 22	19.5 12	(11154.0)	2+,3+	4001.7	(3−)
7187.5[a] 5	6.0 7	(11154.0)	2+,3+	3966.2?	
7221.08[a] 37	8.5 8	(11154.0)	2+,3+	3932.6	
7226.8[a] 16	1.7 7	(11154.0)	2+,3+	3926.9?	
7237.9[a] 6	3.2 4	(11154.0)	2+,3+	3915.8	(2−)
7247.43[a] 29	6.9 5	(11154.0)	2+,3+	3906.3	
[x]7280.8[a] 7	2.7 4				
7292.70[a] 31	7.4 6	(11154.0)	2+,3+	3861.0	
[x]7384.1[a] 12	2.3 6				
[x]7407.6[a] 14	3.1 8				
7423.0[a] 10	10.4 16	(11154.0)	2+,3+	3730.7	(3−)
[x]7430.3[a] 22	2.4 10				
7502.64[a] 29	8.1 6	(11154.0)	2+,3+	3651.0	
7549.53[a] 28	14.3 9	(11154.0)	2+,3+	3604.1	1+
[x]7590.3[a] 7	4.0 10				
7595.81[a] 45	6.4 11	(11154.0)	2+,3+	3557.9	(2−)
[x]7644.94[a] 40	3.5 5				
[x]7676.1[a] 16	2.1 6				
7803.11[a] 32	10.5 6	(11154.0)	2+,3+	3350.6	(2)+
7858.92[a] 40	3.5 3	(11154.0)	2+,3+	3294.7	(4+)
7884.87[a] 31	11.8 6	(11154.0)	2+,3+	3268.8	
7934.42[a] 33	8.5 5	(11154.0)	2+,3+	3219.2	
7962.08[a] 35	6.5 4	(11154.0)	2+,3+	3191.6	
7992.11[a] 32	23.7 12	(11154.0)	2+,3+	3161.5	(2+)
8048.21[a] 37	6.0 4	(11154.0)	2+,3+	3105.3	(3−)
8084.14 34	15.7 9	(11154.0)	2+,3+	3069.4	2+
8145.2[a] 11	0.63 14	(11154.0)	2+,3+	3008.4?	(2)+
[x]8176.4[a] 8	2.3 3				
8185.2[a] 7	1.8 3	(11154.0)	2+,3+	2968.4?	
8203.58 35	25.7 13	(11154.0)	2+,3+	2949.9	1+
8233.7[a] 10	0.90 16	(11154.0)	2+,3+	2920.0	(4)+
8243.2[a] 18	0.47 14	(11154.0)	2+,3+	2910.98	
[x]8265.2[a] 17	0.34 11				
8284.0 5	4.1 3	(11154.0)	2+,3+	2869.6	
8293.2 5	3.8 3	(11154.0)	2+,3+	2859.75	4−
8336.5 5	8.0 9	(11154.0)	2+,3+	2817.1	
8341.8 5	8.1 9	(11154.0)	2+,3+	2812.38	
8483.7 4	11.2 6	(11154.0)	2+,3+	2669.75	2−
8639.6 10	0.61 11	(11154.0)	2+,3+	2514.66	2+
8724.4 5	100 5	(11154.0)	2+,3+	2429.09	3−
9027.4 13	0.40 10	(11154.0)	2+,3+	2127.213	(2)+
9127.3 7	2.45 16	(11154.0)	2+,3+	2025.992	4+
9365.9 9	2.07 14	(11154.0)	2+,3+	1787.646	2+
9464.9 9	2.06 14	(11154.0)	2+,3+	1688.959	3+
9937.5 14	4.7 4	(11154.0)	2+,3+	1216.147	2+
10031.5 16	1.22 10	(11154.0)	2+,3+	1122.281	0+
10594.5 25	16.0 9	(11154.0)	2+,3+	559.102	2+
11153.0 40	1.01 11	(11154.0)	2+,3+	0.0	0+

[†] Below 2 MeV, 1983To20 give transition energies. The evaluators have corrected these to obtain Eγ values. A small systematic error of 5×10$_6$(Eγ) quoted by 1983To20 has been added in quadrature in cases where uncertainty given by 1983To20 is less than

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^{75}Se(n,γ) E=thermal 1983To20 (continued)

γ(^{76}Se) (continued)

0.010 keV.

‡ Relative to 559γ for γ rays below 2 MeV and relative to 8724.4γ for primary γ rays.

\# From pair spectrum (1982ToZT).

@ For intensity per 100 neutron captures, multiply by 0.022 *8*.

& Multiply placed with undivided intensity.

[a] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

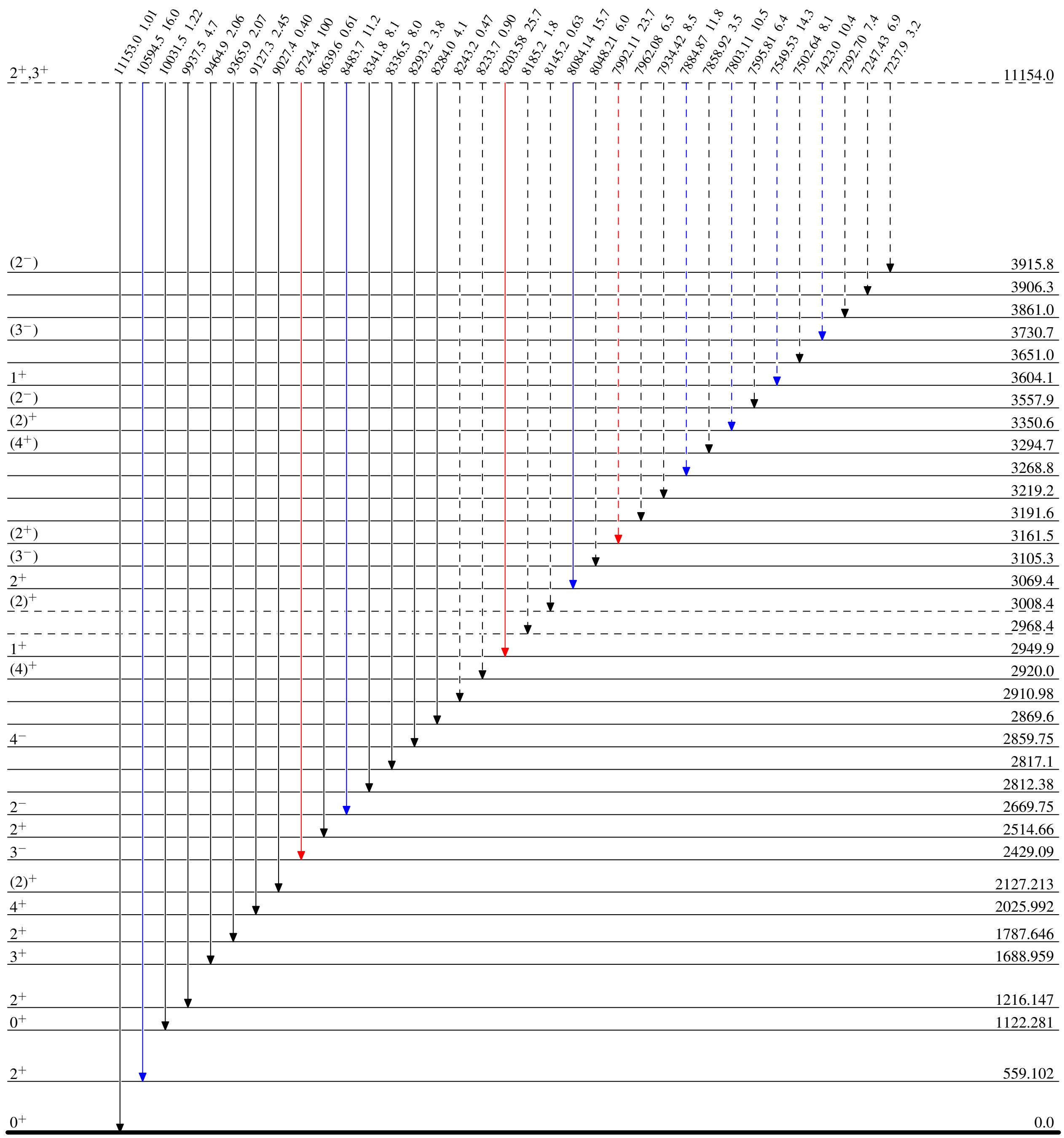
^{75}Se(n,γ) E=thermal 1983To20

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)

Level Scheme

Intensities: Relative I_γ



$^{76}_{34}Se_{42}$

^{75}Se(n,γ) E=thermal 1983To20

Level Scheme (continued)

Intensities: Relative I_γ

& Multiply placed: undivided intensity given

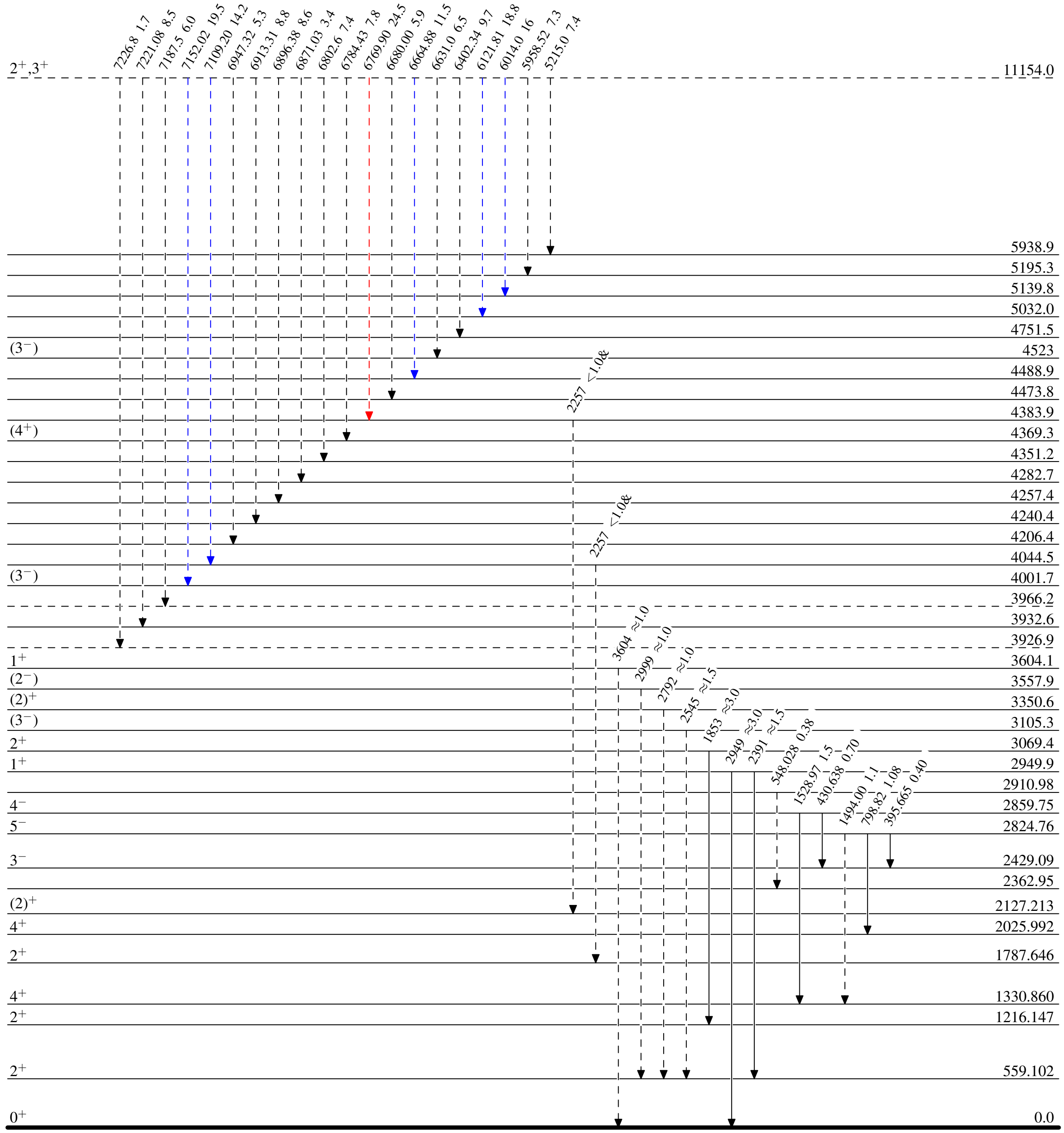
Legend

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

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

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

γ Decay (Uncertain)



$^{76}_{34}Se_{42}$

^{75}Se(n,γ) E=thermal 1983To20

Level Scheme (continued)

Intensities: Relative I_γ

& Multiply placed: undivided intensity given

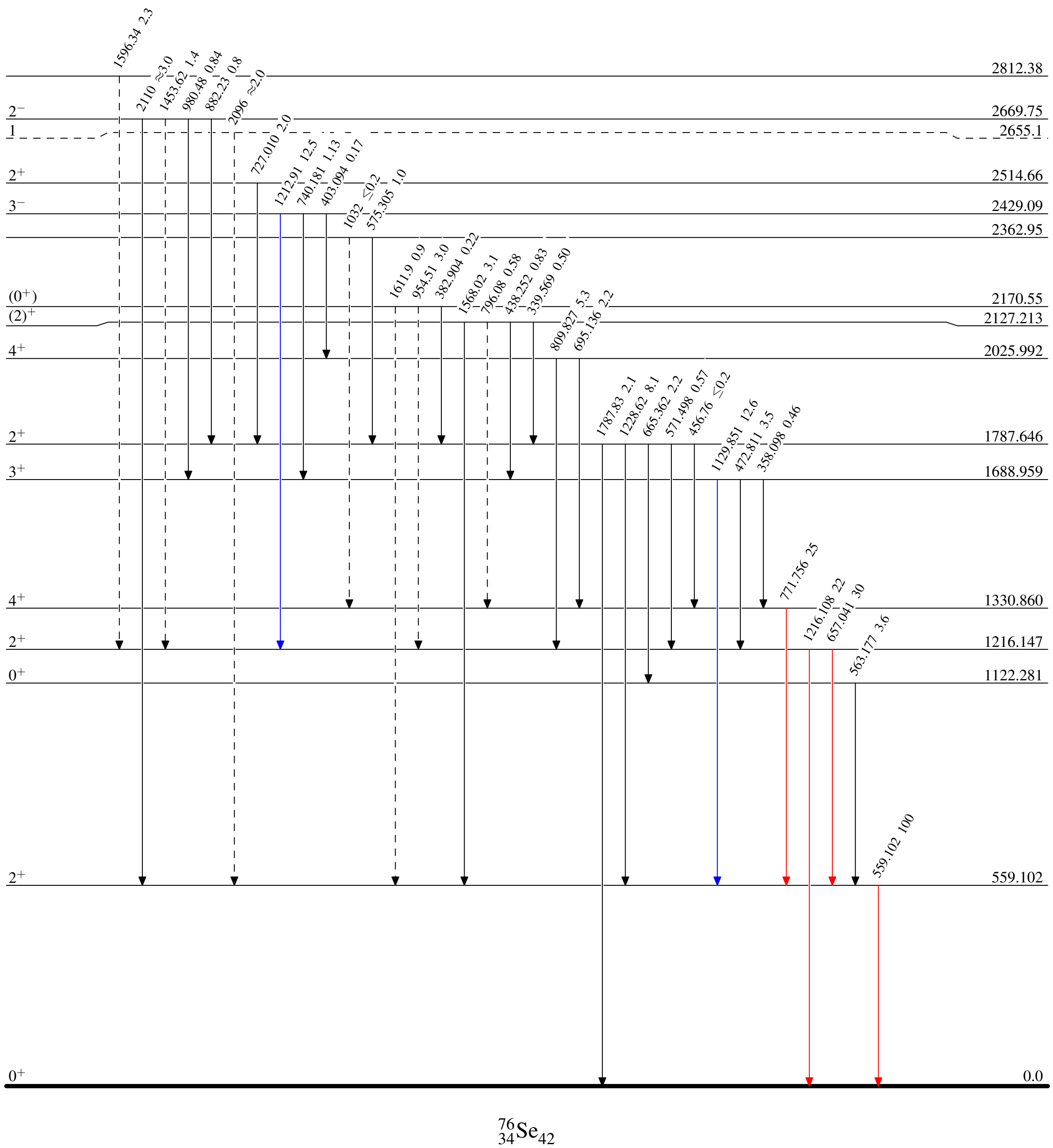
Legend

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

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

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

γ Decay (Uncertain)



$^{76}_{34}Se_{42}$