

⁷⁸Se(n,γ) E=thermal **1979BrZE,1970Ba54,1981En07**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 135, 193 (2016)	31-May-2016

E(n)=thermal. Measured γ (1979BrZE,1970Ba54,1981En07).

Other: E(n)=383 eV. Measured primary γ (1981En07).

Additional information 1.

⁷⁹Se Levels

E(level) [†]	J ^π [‡]	T _{1/2} [‡]	E(level) [†]	J ^π [‡]
0	7/2 ⁺		1797.2 2	(3/2)
95.78 [#] 3	1/2 ⁻	3.92 min 1	2663.1 2	(5/2 ⁺)
136.9 1	9/2 ⁺		2689.0 2	(5/2 ⁺)
364.7 1	5/2 ⁻		2834.1 2	5/2 ⁺
499? [@] 3			2904.1 2	(1/2 ⁻ ,3/2)
527.9 1	3/2 ⁻		2962.8 ^{&} 6	
572.0 1	5/2 ⁻		3031.3 3	1/2 ⁻
629.8 1	5/2 ⁺		3061.6 2	(3/2 ⁻)
722.3 ^{&} 6			3170.9 3	1/2 ⁻ ,3/2,5/2 ⁺
1080.4 2	(3/2)		3175.9 3	(3/2,5/2 ⁺)
1088.6 [#] 1	(3/2 ⁻)		3505.6 3	(1/2,3/2)
1145? [@] 3			3564.3 2	(5/2 ⁺)
1526.3 ^{&} 2			3676.6 5	1/2 ⁺
1596.6 ^{&} 2	3/2 ⁺		(6962.93 10)	1/2 ⁺ ^a
1738.8 ^{&} 2	3/2 ⁺			

[†] From least-squares fit to E_γ data.

[‡] From Adopted Levels.

[#] Level also seen in ⁷⁹Se(n,γ) E=383 eV (1981En07).

[@] Level proposed by 1970Ba54 only. This level is considered uncertain since primary γ to this level is assigned to ⁷⁷Se(n,γ) by 1979BrZE.

[&] No secondary gammas known.

^a S-wave capture in ⁷⁸Se g.s. (J^π=0⁺).

γ(⁷⁹Se)

I_γ normalization: from 1979BrZE (10% uncertainty suggested by 1979BrZE).

E _γ [†]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. ^e
(95.73 [‡] 3)	95.78	1/2 ⁻	0	7/2 ⁺	E3
(137.1 [‡] 1)	136.9	9/2 ⁺	0	7/2 ⁺	
(365.0 [‡] 1)	364.7	5/2 ⁻	0	7/2 ⁺	
(432.1 [‡] 1)	527.9	3/2 ⁻	95.78	1/2 ⁻	
(476.2 [‡] 1)	572.0	5/2 ⁻	95.78	1/2 ⁻	
(492.9 [‡] 2)	629.8	5/2 ⁺	136.9	9/2 ⁺	
(552.0 [‡] 7)	1080.4	(3/2)	527.9	3/2 ⁻	
(630.0 [‡] 2)	629.8	5/2 ⁺	0	7/2 ⁺	

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$^{78}\text{Se}(n,\gamma)$ E=thermal **1979BrZE,1970Ba54,1981En07 (continued)** $\gamma(^{79}\text{Se})$ (continued)

E_γ †	I_γ †f	E_i (level)	J_i^π	E_f	J_f^π
(715.2 [‡] 3)		1080.4	(3/2)	364.7	5/2 ⁻
(724.0 [‡] 3)		1088.6	(3/2 ⁻)	364.7	5/2 ⁻
(993.4 [‡] 9)		1088.6	(3/2 ⁻)	95.78	1/2 ⁻
(1225.5 [‡] 4)		1797.2	(3/2)	572.0	5/2 ⁻
^x 1772.6 4	5.2 25				
^x 2311.90 16	2.0 9				
^x 2380.77 15	2.3 9				
2526.36 13	2.3 7	2663.1	(5/2 ⁺)	136.9	9/2 ⁺
2539.6 3	3.0 16	2904.1	(1/2 ⁻ ,3/2)	364.7	5/2 ⁻
2547.02 ^h 20	2.2 11	3175.9	(3/2,5/2 ⁺)	629.8	5/2 ⁺
2552.18 20	1.8 10	2689.0	(5/2 ⁺)	136.9	9/2 ⁺
2697.24 ^g 14	1.4 ^g 5	2834.1	5/2 ⁺	136.9	9/2 ⁺
2697.24 ^g 14	1.4 ^g 5	3061.6	(3/2 ⁻)	364.7	5/2 ⁻
2738.7 ^h 3	1.2 10	2834.1	5/2 ⁺	95.78	1/2 ⁻
^x 2742.4 3	1.3 10				
2806.36 ^g 23	0.9 ^g 7	2904.1	(1/2 ⁻ ,3/2)	95.78	1/2 ⁻
2806.36 ^g 23	0.9 ^g 7	3170.9	1/2 ⁻ ,3/2,5/2 ⁺	364.7	5/2 ⁻
2811.25 23	1.2 7	3175.9	(3/2,5/2 ⁺)	364.7	5/2 ⁻
^x 2830.04 16	0.8 4				
^x 2848.47 16	1.7 5				
^x 2874.92 17	2.2 5				
^x 2930.11 26	1.2 6				
2935.2 ^g 4	0.9 ^g 4	3031.3	1/2 ⁻	95.78	1/2 ⁻
2935.2 ^g 4	0.9 ^g 4	3564.3	(5/2 ⁺)	629.8	5/2 ⁺
^x 2946.42 18	1.3 4				
2954.31 18	1.0 4	3676.6	1/2 ⁺	722.3	
^x 2976.52 18	2.3 5				
^x 3096.6 4	0.6 3				
^x 3219.3 3	1.0 5				
^x 3236.93 22	1.2 3				
^x 3255.52 23	0.8 3				
3286.3 5	1.0 3	(6962.93)	1/2 ⁺	3676.6	1/2 ⁺
3398.79 24	1.1 3	(6962.93)	1/2 ⁺	3564.3	(5/2 ⁺)
3410.7 5	0.7 5	3505.6	(1/2,3/2)	95.78	1/2 ⁻
3427.13 25	1.2 3	3564.3	(5/2 ⁺)	136.9	9/2 ⁺
3457.52 25	0.75 24	(6962.93)	1/2 ⁺	3505.6	(1/2,3/2)
^x 3463.39 25	0.45 22				
^x 3472.2 4	1.1 4				
^x 3477.1 4	0.50 33				
^x 3513.4 3	0.38 20				
^x 3614.5 3	0.68 20				
^x 3633.4 4	0.4 3				
^x 3682.7 3	1.28 23				
^x 3732.9 3	1.06 21				
3787.6 7	1.2 5	(6962.93)	1/2 ⁺	3175.9	(3/2,5/2 ⁺)
3793.8 [@] 6	0.9 4	(6962.93)	1/2 ⁺	3170.9	1/2 ⁻ ,3/2,5/2 ⁺
^x 3835.3 3	0.53 16				
^x 3878.0 3	0.66 16				
^x 3891.4 6	0.57 16				
3903.1 [@] 3	0.83 17	(6962.93)	1/2 ⁺	3061.6	(3/2 ⁻)
^x 3919.7 3	0.40 14				
3931.4 3	0.88 17	(6962.93)	1/2 ⁺	3031.3	1/2 ⁻
^x 3961.4 3	0.57 15				
^x 3983.0 6	1.05 18				

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$^{78}\text{Se}(n,\gamma)$ E=thermal **1979BrZE,1970Ba54,1981En07** (continued) $\gamma(^{79}\text{Se})$ (continued)

E_γ [†]	I_γ ^{†f}	$E_i(\text{level})$	J_i^π	E_f	J_f^π
^x 3988.9 3	0.46 14				
4000.1 6	1.49 20	(6962.93)	1/2 ⁺	2962.8	
4059.1 3	2.20 24	(6962.93)	1/2 ⁺	2904.1	(1/2 ⁻ , 3/2)
^x 4081.3 3	1.12 17				
4129.3 3	0.71 14	(6962.93)	1/2 ⁺	2834.1	5/2 ⁺
^x 4217.0 3	0.52 12				
^x 4241.2 7	0.5 3				
4274.2 3	1.07 15	(6962.93)	1/2 ⁺	2689.0	(5/2 ⁺)
4300.8 3	2.24 22	(6962.93)	1/2 ⁺	2663.1	(5/2 ⁺)
^x 4438.4 6	0.61 23				
^x 4517.2 3	2.18 20				
^x 4693.2 5	0.85 12				
^x 4891.06 23	1.96 17				
^x 4955.89 22	1.51 14				
5165.75 19	5.3 3	(6962.93)	1/2 ⁺	1797.2	(3/2)
^x 5182.27 18	0.89 11				
5224.11 & 18	4.4 & 3	(6962.93)	1/2 ⁺	1738.8	3/2 ⁺
5366.38 ^a 16	0.50 9	(6962.93)	1/2 ⁺	1596.6	3/2 ⁺
5436.64 15	2.16 16	(6962.93)	1/2 ⁺	1526.3	
^x 5816 [#] 3	2.0 [#]				
5873.79 ^b 12	9.6 ^b 4	(6962.93)	1/2 ⁺	1088.6	(3/2 ⁻)
5882.41 12	0.46 8	(6962.93)	1/2 ⁺	1080.4	(3/2)
6434.71 ^c 22	5.4 ^c 3	(6962.93)	1/2 ⁺	527.9	3/2 ⁻
6462 ^{#h} 3	0.8 [#]	(6962.93)	1/2 ⁺	499?	
6866.8 ^d 3	27.5 ^d 14	(6962.93)	1/2 ⁺	95.78	1/2 ⁻

[†] From **1979BrZE**, unless otherwise stated. Intensities are per 100 neutron captures. **1970Ba54** and **1981En07** report data for only 7 primary transitions and none of the secondary transitions. The energies given by **1979BrZE** are probably transition energies.

[‡] From Adopted Gammas. Value not available from (n, γ) results.

[#] From **1970Ba54** but **1979BrZE** assign this to $^{77}\text{Se}(n,\gamma)$.

[@] Poor fit in level scheme, deviation is ≈ 1.5 keV.

& **1981En07** report $E_\gamma=5223.1$ 8, $I_\gamma=3.1$ 7.

^a Probably corresponds to 5372 γ reported by **1970Ba54**.

^b **1981En07** report $E_\gamma=5875.1$ 15, $I_\gamma=5.5$ 17.

^c **1981En07** report $E_\gamma=6435.0$ 13, $I_\gamma=1.9$ 6.

^d **1981En07** report $E_\gamma=6866.2$ 1, $I_\gamma=19.0$ 10.

^e From Adopted Gammas.

^f For intensity per 100 neutron captures, multiply by 1.0 1.

^g Multiply placed with undivided intensity.

^h Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

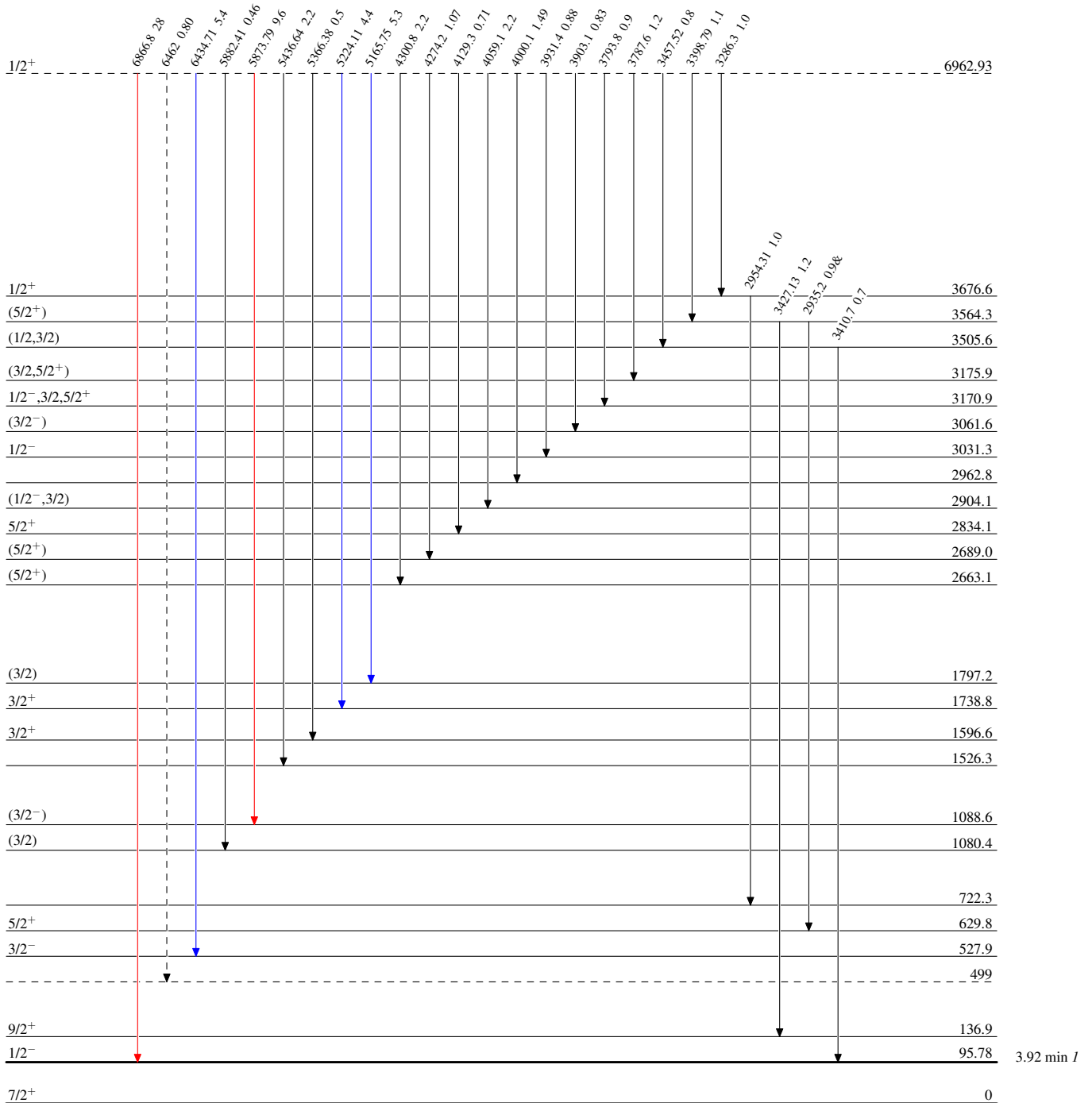
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Level Scheme

Intensities: Intensities per 100 N-captures
& Multiply placed: undivided intensity given

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - - → γ Decay (Uncertain)



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Level Scheme (continued)

Intensities: Intensities per 100 N-captures
& Multiply placed: undivided intensity given

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - -→ γ Decay (Uncertain)

