

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen		NDS 116, 1 (2014)	31-Dec-2013

Q(β^-)=6162 4; S(n)=4537 3; S(p)=13849 4; Q(α)=-8547 3 2012Wa38

S(2n)=13216 4, S(2p)=26015 4 (2012Wa38).

1960Sa05: identification of ⁸⁵Se isotope in fission. Others (studies of ⁸⁵Se decay, its half-life and formation): 1970OsZZ, 1973Ta19, 1975Hu02, 1975Al11, 1977Pf01, 1977Ki14, 1978Ze08, 1978Be51, 1980Ze04, 1982Re10, 1982Re08, 1982Li09, 1983Sk05.

Mass measurement: 2008Ha23 (Penning trap method).

Additional information 1.

A 19-s activity reported in 1975Al11 (also 1970OsZZ) has not been confirmed in any of the later studies.

⁸⁵Se Levels

Cross Reference (XREF) Flags

A	⁸⁵ As β^- decay (2.021 s)	D	² H(⁸⁴ Se,P)
B	⁸⁶ As β^- n decay (0.945 s)	E	(HI,xn γ)
C	²⁴⁸ Cm, ²⁵² Cf SF decay	F	²⁰⁸ Pb(¹⁸ O,X γ)

E(level) [†]	J π	T _{1/2}	XREF	Comments
0 [#]	(5/2) ⁺	32.9 s 3	ABCDEF	% β^- =100 J π : L=2 In ² H(⁸⁴ Se,P) reaction; systematics of N=51 nuclei. T _{1/2} : from γ timing. Weighted average of 33.0 s 2 (1978Ze08) and 31.4 s 10 (1975Hu02). Others: 19 s (1975Al11,1970OsZZ), 33 s 2 (1974KrZG, from the same group as 1978Ze08), 39 s 4 (1960Sa05).
461.9 3	1/2 ⁺		A DE	J π : L=0 In ² H(⁸⁴ Se,P) reaction.
1115.01 [#] 10	(7/2) ⁺ [‡]		A CDEF	XREF: F(?). J π : $\sigma(\theta)$ distribution in ² H(⁸⁴ Se,p) gives L=2+4, with slight preference for the latter. J π =3/2 ⁺ is not completely ruled out.
1436.69 [#] 17	(9/2 ⁺) [‡]		A CDEF	
1444.42 20	(3/2 ⁺ ,5/2 ⁺)		A d	J π : gammas to 1/2 ⁺ and (7/2) ⁺ .
1610.1 4	(1/2,3/2,5/2 ⁺)		A	J π : γ to 1/2 ⁺ .
1635.2 3			A	
1804.8 3			A	
1975.9 [#] 5	(11/2 ⁺) [‡]		C EF	
1990.1 3			A	
2003.4 4	(1/2,3/2,5/2 ⁺)		A	J π : γ to 1/2 ⁺ .
2137.8 8			A	
2145.9 5			A	
2320.1 6	(11/2 ⁺) [‡]		F	
2373.3 [#] 6	(13/2 ⁺) [‡]		C F	
2451.0 5			A	
2781.0 4			A	
3058.4 4			A	
3810.4 [#] 7	(15/2 ⁺) [‡]		F	
3954.0 5			A	
4126.0 5			A	
4219.1 4			A	
4254.2 [#] 11	(17/2 ⁺) [‡]		F	
4283.0 5			A	
4291.3 4			A	
4369.0 3			A	

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Adopted Levels, Gammas (continued)

^{85}Se Levels (continued)

<u>E(level)[†]</u>	<u>XREF</u>	<u>E(level)[†]</u>	<u>XREF</u>	<u>E(level)[†]</u>	<u>XREF</u>
4498.0 5	A	4636.1 3	A	4709.23 25	A
4557.5 4	A	4654.0 6	A	4792.2 4	A
4560.4 4	A	4666.9 5	A	5164.81 21	A

[†] From least-squares fit to E_γ data, assuming 0.5 keV uncertainty when not given. Possible six additional levels from 6055 to 8090 are deduced from neutron transitions to ^{84}Se levels in ^{85}As β⁻n decay (1979Kr03).

[‡] Yrast pattern of population in ($^{18}\text{O}, X\gamma$) and/or shell-model predictions (2009Po04).

Band(A): Yrast sequence based on (5/2)⁺.

<u>E_i(level)</u>	<u>J_i^π</u>	<u>γ(^{85}Se)</u>				<u>Comments</u>
		<u>E_γ</u>	<u>I_γ</u>	<u>E_f</u>	<u>J_f^π</u>	
461.9	1/2 ⁺	461.9 4	100	0	(5/2) ⁺	
1115.01	(7/2) ⁺	1115.0 1	100	0	(5/2) ⁺	
1436.69	(9/2) ⁺	321.60 14	16 3	1115.01	(7/2) ⁺	
		1437.6 10	100 10	0	(5/2) ⁺	E _γ : from β ⁻ decay. Other: 1436.1 5 in ($^{18}\text{O}, X\gamma$), not used since there is also 1437.5γ in this reaction.
1444.42	(3/2 ⁺ , 5/2 ⁺)	329.4 3	14.0 14	1115.01	(7/2) ⁺	
		982.5 5	9.3 12	461.9	1/2 ⁺	
		1444.0 10	100 9	0	(5/2) ⁺	
1610.1	(1/2, 3/2, 5/2 ⁺)	1148.2 3	100	461.9	1/2 ⁺	
1635.2		1635.2 3	100	0	(5/2) ⁺	
1804.8		1804.8 3	100	0	(5/2) ⁺	
1975.9	(11/2 ⁺)	539.3 4	100	1436.69	(9/2 ⁺)	
1990.1		545.8 5	60 10	1444.42	(3/2 ⁺ , 5/2 ⁺)	
		875.1 3	100 10	1115.01	(7/2) ⁺	
2003.4	(1/2, 3/2, 5/2 ⁺)	1541.5 4	33 17	461.9	1/2 ⁺	
		2003.4 5	100 17	0	(5/2) ⁺	
2137.8		147.6 10	100 50	1990.1		
		527.8 10	100 [†] 50	1610.1	(1/2, 3/2, 5/2 ⁺)	
2145.9		156.5 10	33 [†] 17	1990.1		
		2145.7 5	100 17	0	(5/2) ⁺	
2320.1	(11/2 ⁺)	883.3 6	100	1436.69	(9/2 ⁺)	
2373.3	(13/2 ⁺)	397.5 5	100	1975.9	(11/2 ⁺)	
2451.0		1336.0 5	100	1115.01	(7/2) ⁺	
2781.0		789 [‡]		1990.1		
		1335.7		1444.42	(3/2 ⁺ , 5/2 ⁺)	
		1666.9		1115.01	(7/2) ⁺	
3058.4		1615.1 7	15 4	1444.42	(3/2 ⁺ , 5/2 ⁺)	
		1621.5 3	100 10	1436.69	(9/2 ⁺)	
3810.4	(15/2 ⁺)	1437.5 8	100 36	2373.3	(13/2 ⁺)	
		1490 1	100 36	2320.1	(11/2 ⁺)	
		1834 1		1975.9	(11/2 ⁺)	I _γ : weak γ.
3954.0		2510 [‡]		1444.42	(3/2 ⁺ , 5/2 ⁺)	
		2838.9 5	100	1115.01	(7/2) ⁺	
4126.0		4125.9 5	100	0	(5/2) ⁺	
4219.1		2774.6 3	100	1444.42	(3/2 ⁺ , 5/2 ⁺)	
4254.2	(17/2 ⁺)	443.8 8	100	3810.4	(15/2 ⁺)	
4283.0		4282.9 5	100	0	(5/2) ⁺	
4291.3		4291.2 4	100	0	(5/2) ⁺	

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Adopted Levels, Gammas (continued) $\gamma(^{85}\text{Se})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π
4369.0		4368.9 3	100	0	(5/2) ⁺	4654.0		4653.9 6	100	0	(5/2) ⁺
4498.0		3060.5 10	100 10	1436.69	(9/2) ⁺	4666.9		4666.8 5	100	0	(5/2) ⁺
		4498.1 5	40 10	0	(5/2) ⁺	4709.23		3264.9 3	100 10	1444.42	(3/2 ⁺ ,5/2 ⁺)
4557.5		4557.4 4	100	0	(5/2) ⁺			3594.0 5	40 10	1115.01	(7/2) ⁺
4560.4		4560.3 4	100	0	(5/2) ⁺			4708.9 4	40 10	0	(5/2) ⁺
4636.1		2646.8 10	29 [†] 7	1990.1		4792.2		4792.1 4	100	0	(5/2) ⁺
		3191.0 6	57 7	1444.42	(3/2 ⁺ ,5/2 ⁺)	5164.81		4049.7 2	100 10	1115.01	(7/2) ⁺
		4636.0 3	100 10	0	(5/2) ⁺			5164.6 5	31 3	0	(5/2) ⁺

[†] Upper limit of intensity.

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

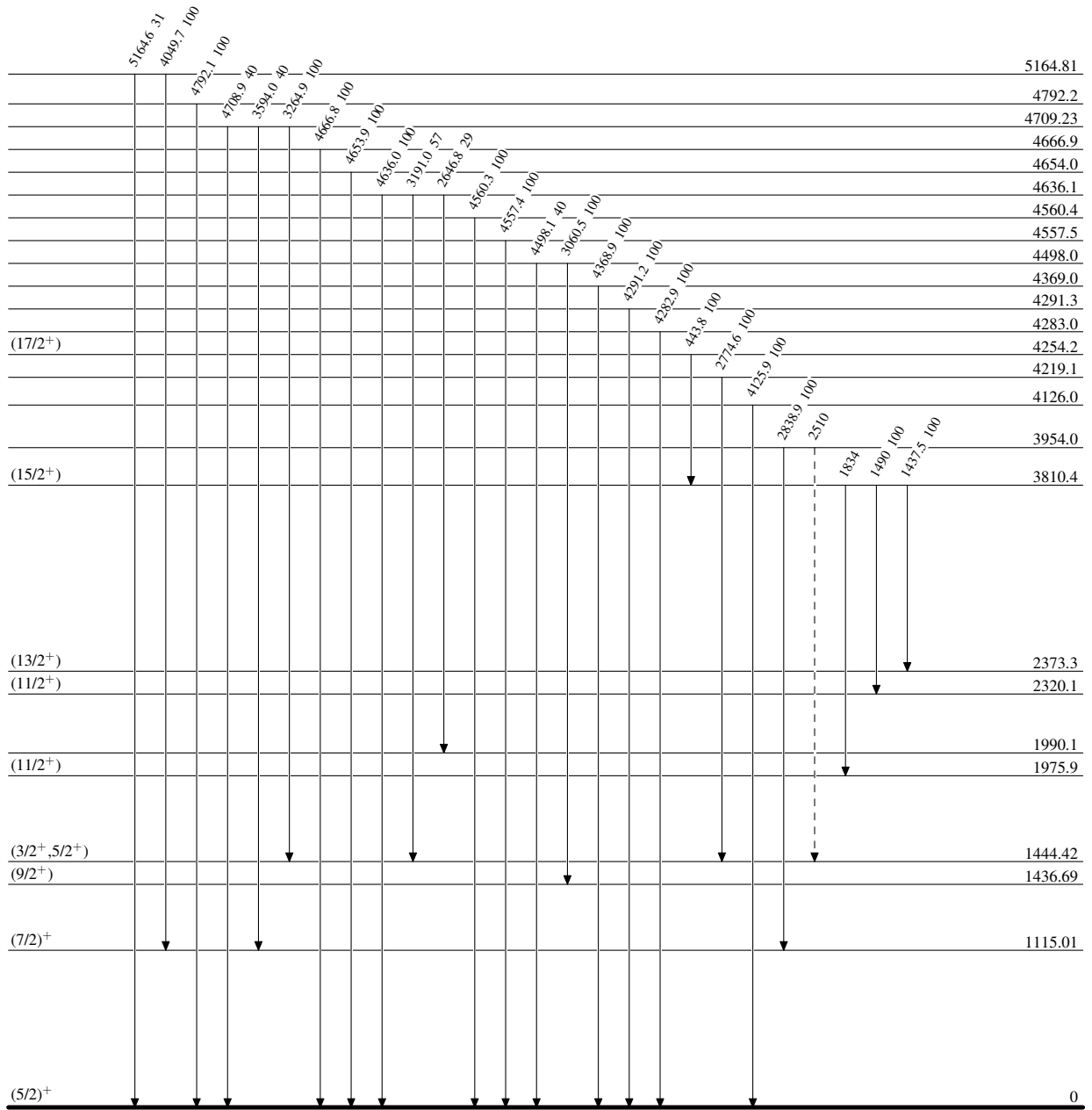
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----> γ Decay (Uncertain)



$^{85}_{34}\text{Se}_{51}$

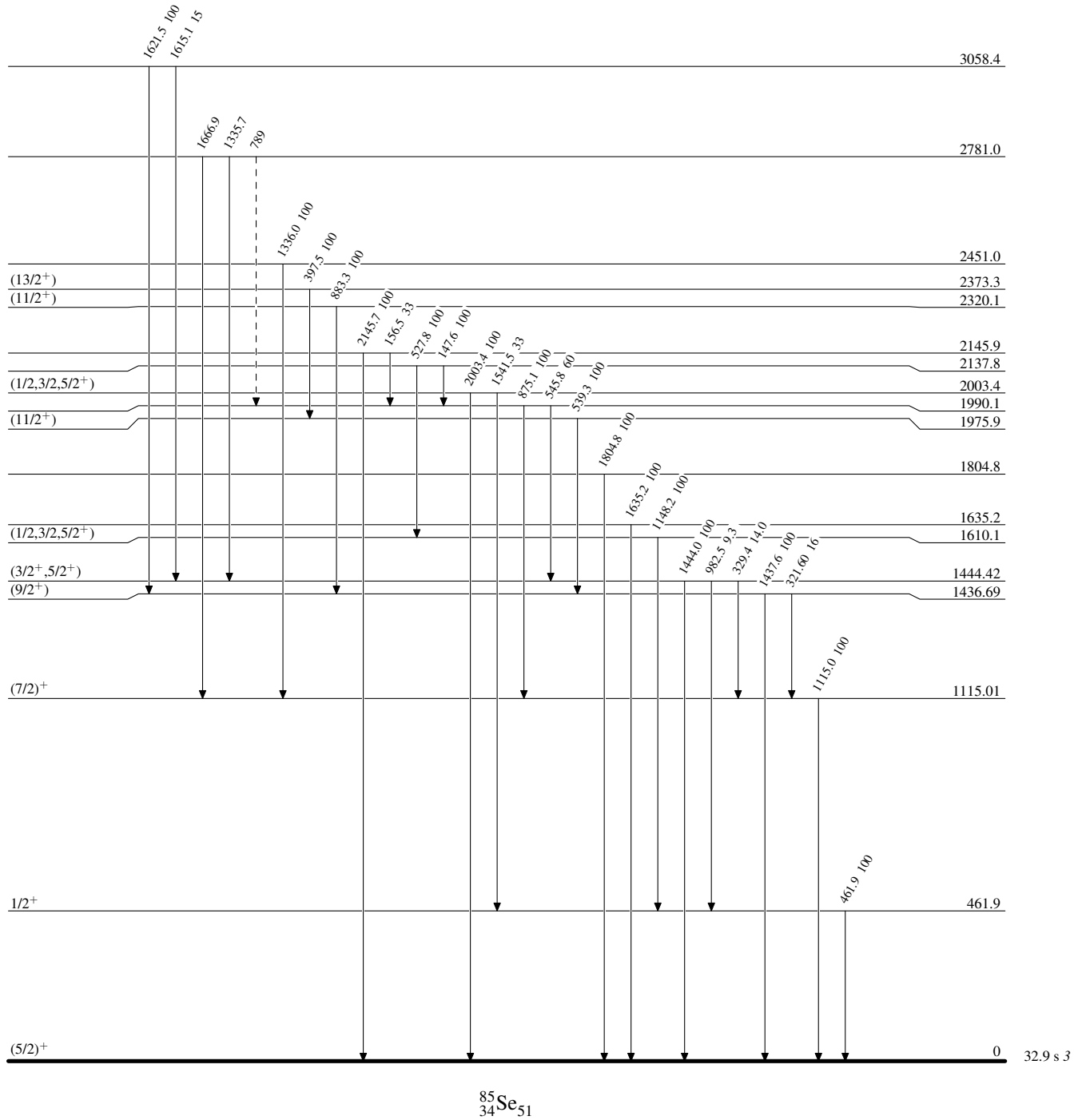
Adopted Levels, Gammas

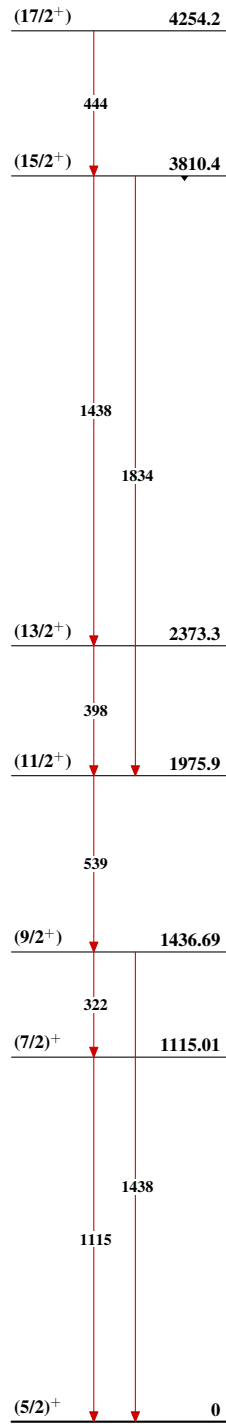
Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----▶ γ Decay (Uncertain)



Adopted Levels, Gammas**Band(A): Yrast sequence
based on $(5/2)^+$**  $^{85}_{34}\text{Se}_{51}$