

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	31-Jan-2016

Q(β^-)=5129 4; S(n)=6161 4; S(p)=14603 4; Q(α)=-7513 3 2012Wa38
 S(2n)=10698 3, S(2p)=26933 4 (2012Wa38).

⁸⁶Se nuclide first produced by 1960Sa05 who assigned a 16-s activity incorrectly to ⁸⁷Se. Confirmed identification is from the work of 1973Ta19, and later studies 1974KrZG, 1975Hu02 and 1978Ze02.

Additional information 1.

Precise mass measurements: 2008Ha23, 2008Su19.

A few additional preliminary (or tentative) levels and gamma rays are given in 2015Ma25 from ⁸⁶As β^- decay; these are listed in the decay dataset, but not adopted here.

⁸⁶Se Levels

Cross Reference (XREF) Flags

A	⁸⁶ As β^- decay (0.945 s)	D	²³⁸ U(p,F):prompt γ
B	⁸⁷ As β^- -n decay (484 ms)	E	²³⁸ U(⁸² Se, ⁸⁶ Se) γ
C	²⁴⁸ Cm, ²⁵² Cf SF decay		

E(level) [†]	J π [‡]	T _{1/2}	XREF	Comments
0.0 ^a	0 ⁺	14.3 s 3	ABCDE	% β^- =100 T _{1/2} : weighted average of 14.1 s 2 (1978Ze02, from decay curve for 154 γ), 14.4 s 10 (1975Hu02), 16.1 s 6 (1974KrZG), 14.3 s 5 (1973Ta19 for 154 γ , other values reported are 14.4 s 20 for 49 γ and 15.9 s 12 for 207 γ), and 16 s 3 (1960Sa05, authors assigned) activity to ⁸⁷ Se, but the measured half-life is much closer to that of ⁸⁶ Se than the recommended 5.5 s half-life for ⁸⁷ Se).
704.30 ^a 5	2 ⁺ #	7.5 [@] ps +48-26	ABCDE	J π : E2 γ to 0 ⁺ .
1398.94 7	(2 ⁺)		AB E	J π : γ to 0 ⁺ ; J=1 not likely from $\gamma\gamma(\theta)$ for 694.6 γ -704.3 γ cascade.
1567.71 ^a 12	4 ⁺ #	≤9.2 [@] ps	ABCDE	J π : E2 γ to 2 ⁺ ; yrast band member. T _{1/2} : effective half-life=6.9 ps +23-15, upper limit is given by 2015Li42 since no information is available about feeding of this state from higher levels.
2072.81 23	(4 ⁺)		A CD	J π : γ rays to (2 ⁺) and 4 ⁺ ; J=4 supported by shell-model calculations (2015Ma51).
2180.64 11	(2,3,4 ⁺)		A	J π : γ to 2 ⁺ .
2208.31 11	(2 ⁺)		A	J π : γ rays to 0 ⁺ and 2 ⁺ ; no 1 ⁺ is produced in shell-model calculations in 2015Ma51.
2372.27 9	(2,3,4 ⁺)		A	J π : γ to 2 ⁺ .
2846.1 ^a 4	(6 ⁺)		CD	J π : γ to 4 ⁺ ; yrast band member.
3033 1	(4,5,6 ⁺)&		CD	J π : γ to 4 ⁺ ;
3062.3 6	(4,5,6 ⁺)&		CD	J π : γ to 4 ⁺ .
3302.0 6	(6,7,8 ⁺)&		CD	J π : γ to (6 ⁺).
4089.5 10			D	
4097.7 10	(6,7,8 ⁺)&		D	J π : γ to (6 ⁺).
4236.95 14	(2,3,4 ⁺)		A	J π : γ to 2 ⁺ .
4783.21 21	(2,3,4 ⁺)		A	J π : γ to (2 ⁺).
5103.5 14			D	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{86}Se Levels (continued)

† From least-squares fit to E_γ values.

‡ Systematics of neighboring isotones and the population and decay branches (2013Cz02), and shell-model calculations (2015Ma51).

Assigned J^π supported by shell-model calculations (2015Ma51).

@ From RDDS, plunger method (2015Li42) in (^{82}Se , $^{86}\text{Se}\gamma$).

& $J^\pi=2^+, 3$ not likely from yrast pattern of population in high-spin study.

^a Band(A): Yrast band.

$E_i(\text{level})$	J_i^π	$\gamma(^{86}\text{Se})$					Mult.†	Comments
		E_γ	I_γ	E_f	J_f^π			
704.30	2 ⁺	704.29 5	100	0.0	0 ⁺	E2	B(E2)(W.u.)=19 +12-8	
1398.94	(2 ⁺)	694.65 5	100 8	704.30	2 ⁺			
		1399.1 2	46 8	0.0	0 ⁺			
1567.71	4 ⁺	863.4 1	100	704.30	2 ⁺	E2	B(E2)(W.u.)≥5.7	
2072.81	(4 ⁺)	505.1 2	100 33	1567.71	4 ⁺			
		674.2‡ 3	17 10	1398.94	(2 ⁺)		E _γ : γ seen only in β^- decay.	
2180.64	(2,3,4 ⁺)	782.2 2	23 8	1398.94	(2 ⁺)			
		1476.2 1	100 25	704.30	2 ⁺			
2208.31	(2 ⁺)	1504.0 1	100 13	704.30	2 ⁺			
		2208 1	3.8 25	0.0	0 ⁺			
2372.27	(2,3,4 ⁺)	973.3 1	19 6	1398.94	(2 ⁺)			
		1668.0 1	100 9	704.30	2 ⁺			
2846.1	(6 ⁺)	1278.4 3	100	1567.71	4 ⁺			
3033	(4,5,6 ⁺)	1465		1567.71	4 ⁺			
3062.3	(4,5,6 ⁺)	989.5 5	100 50	2072.81	(4 ⁺)			
		1495.1 5	50 25	1567.71	4 ⁺			
3302.0	(6,7,8 ⁺)	456.0 4	100	2846.1	(6 ⁺)			
4089.5		1027.2		3062.3	(4,5,6 ⁺)			
4097.7	(6,7,8 ⁺)	1251.6		2846.1	(6 ⁺)			
4236.95	(2,3,4 ⁺)	1864.8 2	25 8	2372.27	(2,3,4 ⁺)			
		2028.7 3	17 8	2208.31	(2 ⁺)			
		3532.4 2	100 17	704.30	2 ⁺			
4783.21	(2,3,4 ⁺)	3384.2 2	100	1398.94	(2 ⁺)			
5103.5		1014.0		4089.5				

† From $\gamma\gamma(\theta)$ (2013Cz02) and in-band transitions and RUL.

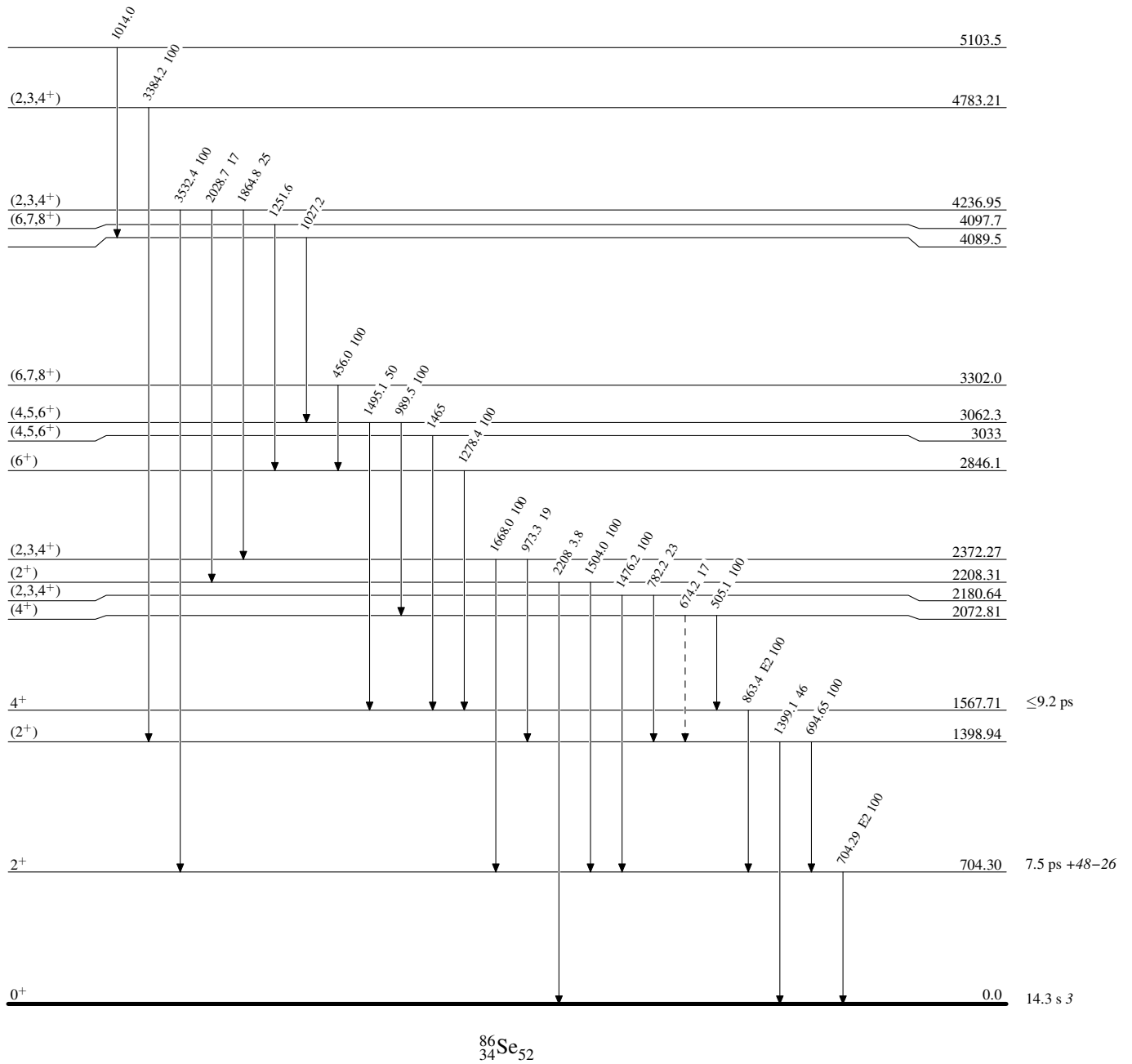
‡ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Band(A): Yrast band

(6⁺) 2846.1

1278

4⁺ 1567.71

863

2⁺ 704.30

704

0⁺ 0.0 $^{86}_{34}\text{Se}_{52}$