^{78}Br ε decay (6.45 min) 1973Hi01,1972Le30,1970Pa29

History

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

Parent: ^{78}Br: E=0.0; $J^\pi=1^+$; $T_{1/2}$=6.45 min *4*; Q(ε)=3574 *4*; %ε+%$β^+$ decay=100.0

^{78}Br-Q(ε): from 2009AuZZ, 2003Au03.

1973Hi01: measured γ, Iγ, $T_{1/2}$.

1972Le30: measured γ, Iγ.

1970Pa29: measured γ, Iγ, γγ-coin.

Others: 1970Do02, 1962Va27, 1961Ri02, 1960Pi06.

Total decay energy of 3575 keV *11* calculated (by RADLIST code) from level scheme agrees with the expected value of 3574 keV *4*.

^{78}Se Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	0^+	1758.31 *21*	0^+	2537.18 *14*	2^+	3090.2 *3*	(0^+)
613.71 *7*	2^+	1996.08 *17*	2^+	2647.39 *15*	$(1,2)^+$	3255.1 *4*	$(0,1,2)^+$
1308.48 *11*	2^+	2329.4 *9*	2^+	2898.14 *21*	2^+	3383.6 *10*	
1498.41 *12*	0^+	2334.43 *21*	0^+	3005.7 *3*	$1,2^+$		

† From least-squares fitting to Eγ's.

‡ See Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(190 *4*)	3383.6		0.00061 *13*	6.1 *1*	0.00061 *13*	εK=0.8675 *4*; εL=0.1106 *3*; εM+=0.02194 *6*
(319 *4*)	3255.1		0.0027 *3*	5.9 *1*	0.0027 *3*	εK=0.8732 *1*; εL=0.10592 *9*; εM+=0.02089 *2*
(484 *4*)	3090.2		0.0177 *15*	5.5 *1*	0.0177 *15*	εK=0.8759; εL=0.10369 *4*; εM+=0.020385 *8*
(568 *4*)	3005.7		0.0040 *5*	6.3 *1*	0.0040 *5*	εK=0.8767; εL=0.10306 *3*; εM+=0.020243 *6*
(676 *4*)	2898.14		0.0049 *11*	6.3 *1*	0.0049 *11*	εK=0.8774; εL=0.10249 *2*; εM+=0.020116 *4*
(927 *4*)	2647.39		0.0117 *12*	6.2 *1*	0.0117 *12*	εK=0.8784; εL=0.1017; εM+=0.019936 *2*
(1037 *4*)	2537.18		0.063 *3*	5.61 *2*	0.063 *3*	εK=0.8787; εL=0.1015; εM+=0.01988
(1240 *4*)	2334.43	0.00013 *1*	0.046 *3*	5.91 *3*	0.046 *3*	av Eβ=98.8 *18*; εK=0.8766 *2*; εL=0.10087 *3*; εM+=0.019760 *6*
(1245 *4*)	2329.4	4.8×10^{-6} *19*	0.0016 *6*	7.4 *2*	0.0016 *6*	av Eβ=101.0 *18*; εK=0.8764 *2*; εL=0.10084 *3*; εM+=0.019753 *6*
(1578 *4*)	1996.08	0.00071 *12*	0.0071 *12*	6.9 *1*	0.0078 *13*	av Eβ=242.0 *17*; εK=0.7989 *19*; εL=0.09158 *22*; εM+=0.01793 *5*
(1816 *4*)	1758.31	0.0046 *4*	0.0131 *11*	6.8 *1*	0.0177 *15*	av Eβ=344.1 *18*; εK=0.651 *3*; εL=0.0745 *4*; εM+=0.01459 *7*
(2076 *4*)	1498.41	0.032 *2*	0.036 *2*	6.5 *1*	0.068 *4*	av Eβ=457.8 *18*; εK=0.461 *3*; εL=0.0527 *4*; εM+=0.01032 *7*
(2266 *4*)	1308.48	0.047 *5*	0.030 *4*	6.6 *1*	0.077 *9*	av Eβ=542.0 *18*; εK=0.3441 *22*; εL=0.0393 *3*; εM+=0.00768 *5*
(2960 *4*)	613.71	11.5 *3*	1.81 *6*	5.07 *2*	13.3 *4*	av Eβ=857.4 *19*; εK=0.1200 *7*; εL=0.01366 *8*; εM+=0.002673 *15*
(3574 *4*)	0.0	80.9 *4*	5.49 *6*	4.75 *1*	86.4 *4*	av Eβ=1142.7 *19*; εK=0.0560 *3*; εL=0.00637 *3*; εM+=0.001245 *6*

† Absolute intensity per 100 decays.

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γ(^{78}Se)

Iγ normalization: from Iγ(γ±)/Iγ(614γ)=13.6 *3* (1973Hi01).

E_γ	I_γ †[a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
613.68 *7*	100	613.71	2^+	0.0	0^+	
694.8 *1*	0.43 *6*	1308.48	2^+	613.71	2^+	
884.7 *1*	0.50 *2*	1498.41	0^+	613.71	2^+	
1144.6 *2*	0.13 *1*	1758.31	0^+	613.71	2^+	
1228.7@ *1*	0.10 *1*	2537.18	2^+	1308.48	2^+	
1308.4 *2*	0.32 *1*	1308.48	2^+	0.0	0^+	
1338.9# *1*	0.086 *8*	2647.39	$(1,2)^+$	1308.48	2^+	
1381.8# *3*	0.020 *7*	1996.08	2^+	613.71	2^+	E_γ: poor fit In the least-squares fitting procedure.
1713.8#b *9*	0.012 *4*	2329.4	2^+	613.71	2^+	
1720.7‡ *2*	0.34 *2*	2334.43	0^+	613.71	2^+	
1923.3‡ *4*	0.36 *1*	2537.18	2^+	613.71	2^+	
1996.3# *2*	0.037 *6*	1996.08	2^+	0.0	0^+	
2284.4 *2*	0.036 *8*	2898.14	2^+	613.71	2^+	E_γ,I_γ: from 1973Hi01 and 1972Le30. Observed by 1970Do02 also.
2391.9& *3*	0.026 *3*	3005.7	$1,2^+$	613.71	2^+	
2476.5 *3*	0.13 *1*	3090.2	(0^+)	613.71	2^+	Eγ from weighted average of 1973Hi01, 1970Do02 and 1970Pa29; Iγ from weighted average of 1973Hi01, 1972Le30, 1970Pa29 and 1970Do02.
2537.3&b *4*	0.0131 *14*	2537.18	2^+	0.0	0^+	
2641.3& *4*	0.020 *2*	3255.1	$(0,1,2)^+$	613.71	2^+	
2769.8# *10*	0.0045 *9*	3383.6		613.71	2^+	
2899.5#b *10*	0.0025 *7*	2898.14	2^+	0.0	0^+	
3005.9# *10*	0.0033 *6*	3005.7	$1,2^+$	0.0	0^+	

† Weighted averages from 1973Hi01, 1972Le30 and 1970Do02 unless otherwise stated. 1970Pa29 did not quote uncertainties.
‡ Weighted averages from the results of 1973Hi01, 1972Le30, 1970Pa29 and 1970Do02.
# Reported by 1973Hi01 only.
@ Weighted averages from 1973Hi01, 1972Le30 and 1970Do02.
& E and Iγ are from 1973Hi01. Reported by 1972Le30 and 1970Do02 also.
[a] For absolute intensity per 100 decays, multiply by 0.136 *4*.
[b] Placement of transition in the level scheme is uncertain.

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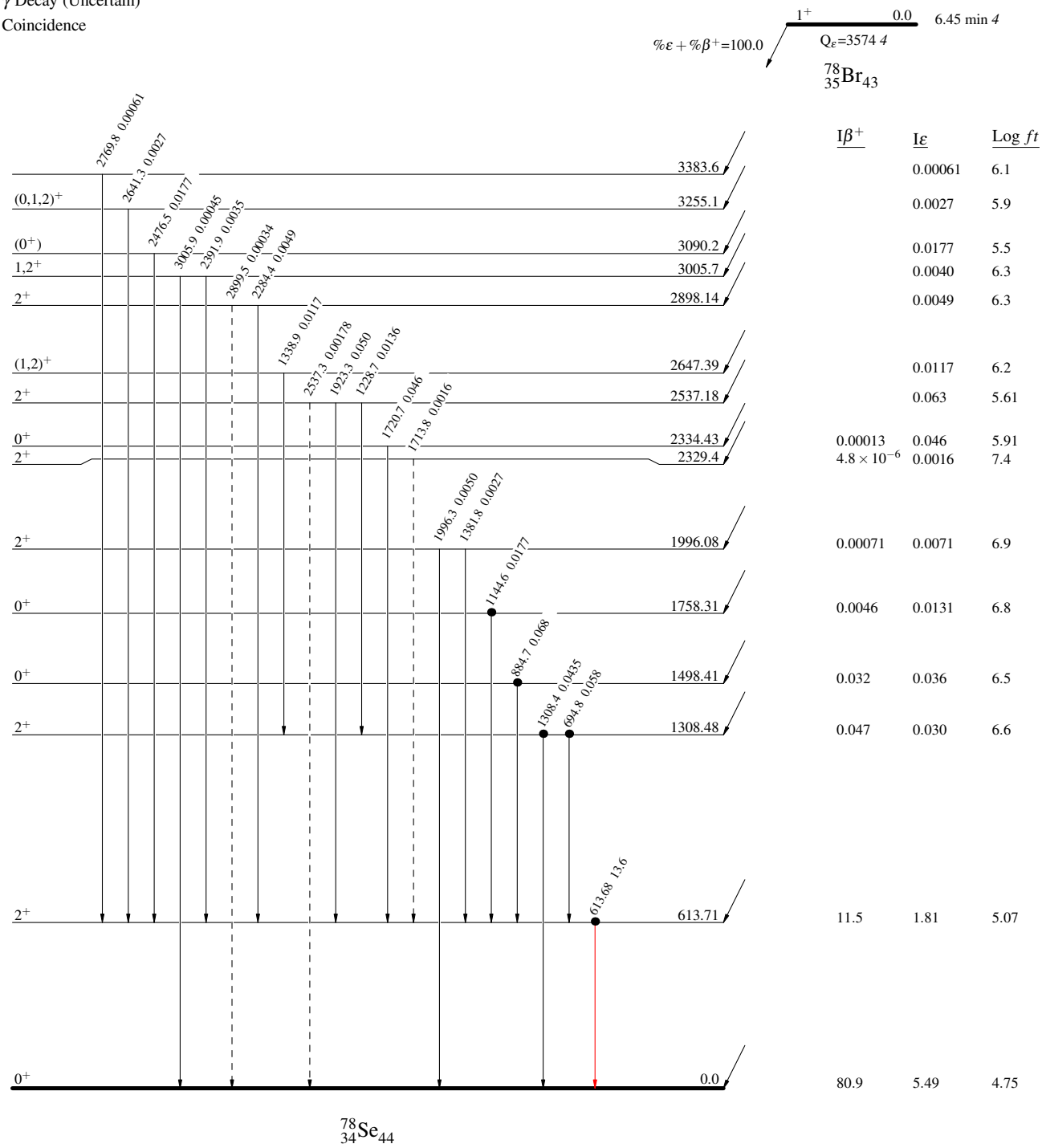
Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence

Decay Scheme

Intensities: I_γ per 100 parent decays



	Iβ+	Iε	Log *ft*
3383.6		0.00061	6.1
(0,1,2)+ 3255.1		0.0027	5.9
(0+) 3090.2		0.0177	5.5
1,2+ 3005.7		0.0040	6.3
2+ 2898.14		0.0049	6.3
(1,2)+ 2647.39		0.0117	6.2
2+ 2537.18		0.063	5.61
0+ 2334.43	0.00013	0.046	5.91
2+ 2329.4	4.8×10^{-6}	0.0016	7.4
2+ 1996.08	0.00071	0.0071	6.9
0+ 1758.31	0.0046	0.0131	6.8
0+ 1498.41	0.032	0.036	6.5
2+ 1308.48	0.047	0.030	6.6
2+ 613.71	11.5	1.81	5.07
0+ 0.0	80.9	5.49	4.75