^{78}Se(p,nγ) 1977DaZS

History

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

E=4.35-5.0 MeV.
Measured γ, γγ, branching; threshold behavior of γ-rays studied; E(p) accurate to 3 keV. γγ data recorded at E(p)=4.75 and 5.10 MeV.
Other:
See also "^{76}Se(α,npγ),^{78}Se(p,nγ),^{78}Se(d,2nγ)" dataset.
1971In04; observed γ's do not belong to ^{78}Br but to ^{79}Br.

^{78}Br Levels

E(level)†	Jπ‡	$T_{1/2}$‡	E(level)†	Jπ‡
0.0	1^+		292.2? *5*	
32.3 *1*	(2^-)		311.3 *3*	
55.1 *1*	$(1,2)^+$		329.6 *5*	$(1,2)^+$
125.0 *1*	$(1,2)^+$		367.2 *3*	(1 to 4)$^-$
180.9 *5*	(4^+)	119.4 μs *10*	390.6 *4*	$(2,3)^+$
193.1 *4*	(0 to 3)$^{(+)}$		414.9? *5*	
197.0 *2*	$(1,2,3)^{(+)}$		432.9 *4*	$(1,2)^+$
204.4 *2*	(0 to 3)$^{(+)}$		447.3 *3*	
244.7 *3*	$(2,3)^+$		479.0 *5*	$(3^-,4^-)$
264.4 *3*	$(3,4)^-$		499.7 *4*	$(1,2)^+$
284.3? *5*			526 *1*	

† The level scheme is based on the threshold behavior of γ-rays and γγ measurements.
‡ From 'Adopted Levels'.

γ(^{78}Br)

E_γ	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Comments
32.3 *1*	66×10^4	32.3	(2^-)	0.0	1^+	E(p)=4409-4474 keV. I_γ: accurate efficiency factor at this energy is not known.
55.1 *1*	105	55.1	$(1,2)^+$	0.0	1^+	E(p)=4409-4474 keV.
x59.7@ *5*						
61.0@ *5*		390.6	$(2,3)^+$	329.6	$(1,2)^+$	
72.0 *1*		197.0	$(1,2,3)^{(+)}$	125.0	$(1,2)^+$	
75.0@ *5*		367.2	(1 to 4)$^-$	292.2?		
79.4 *1*	11	204.4	(0 to 3)$^{(+)}$	125.0	$(1,2)^+$	E(p)=4619-4629 keV.
80.0@ *5*		447.3		367.2	(1 to 4)$^-$	
98.0@ *5*		390.6	$(2,3)^+$	292.2?		
102.8 *5*	19	367.2	(1 to 4)$^-$	264.4	$(3,4)^-$	E(p)=4759-4789 keV.
103.2@ *5*		432.9	$(1,2)^+$	329.6	$(1,2)^+$	
114.3 *5*	6	311.3		197.0	$(1,2,3)^{(+)}$	E(p)=4739-4814 keV.
118.6 *5*	15	311.3		193.1	(0 to 3)$^{(+)}$	E(p)=4734-4744 keV.
125.0 *1*	100	125.0	$(1,2)^+$	0.0	1^+	E(p)=4534-4544 keV.
139.4@ *5*		264.4	$(3,4)^-$	125.0	$(1,2)^+$	
141.8 *5*	17	197.0	$(1,2,3)^{(+)}$	55.1	$(1,2)^+$	E(p)=4599-4614 keV.
148.6 *5*	111	180.9	(4^+)	32.3	(2^-)	E(p)=4584-4599.
159.3@ *5*		526		367.2	(1 to 4)$^-$	E(p)=5009-5039 keV.

Continued on next page (footnotes at end of table)

^{78}Se(p,nγ) 1977DaZS (continued)

γ(^{78}Br) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
162.8[@] 5		367.2	(1 to 4)$^-$	204.4	(0 to 3)$^{(+)}$	
164.6 5	3	197.0	(1,2,3)$^{(+)}$	32.3	(2$^-$)	E(p)=4609-4624 keV.
186.2[#] 5	29[#]	311.3		125.0	(1,2)$^+$	
186.2[#@] 5	29[#]	390.6	(2,3)$^+$	204.4	(0 to 3)$^{(+)}$	
193.5 5	59	193.1	(0 to 3)$^{(+)}$	0.0	1$^+$	E(p)=4599-4614 keV.
195.0 5		479.0	(3$^-$,4$^-$)	284.3?		
197.0[@] 5	79	197.0	(1,2,3)$^{(+)}$	0.0	1$^+$	E_γ,I_γ: placement is treated As questionable by the evaluators. Possibly a multiplet. Major fraction of this γ ray May deexcite a level At 423 keV as In (^{11}B,3nγ) (1996La13) and/or May Be contributed by 197.1γ from ^{19}F also. E(p)=4609-4619 keV.
197.0[@]		390.6	(2,3)$^+$	193.1	(0 to 3)$^{(+)}$	E_γ: may be a doublet (from γγ results).
202.5 5		447.3		244.7	(2,3)$^+$	
204.5[@] 5		329.6	(1,2)$^+$	125.0	(1,2)$^+$	
212.4 5	77	244.7	(2,3)$^+$	32.3	(2$^-$)	E(p)=4644-4664 keV.
215.0[@] 5		499.7	(1,2)$^+$	284.3?		
231.9 5	17	264.4	(3,4)$^-$	32.3	(2$^-$)	E(p)=4669-4684 keV.
239.2[@] 5	20	432.9	(1,2)$^+$	193.1	(0 to 3)$^{(+)}$	
244.7 5	71	244.7	(2,3)$^+$	0.0	1$^+$	E(p)=4644-4664 keV.
264.4 5	51	264.4	(3,4)$^-$	0.0	1$^+$	E(p)=4679-4689 keV.
274.4[@] 5		479.0	(3$^-$,4$^-$)	204.4	(0 to 3)$^{(+)}$	
278.9 5	23	311.3		32.3	(2$^-$)	E(p)=4734-4764.
284.3[@] 5	33	284.3?		0.0	1$^+$	E(p)=4734-4764 keV.
292.2[@] 5	50	292.2?		0.0	1$^+$	E(p)=4734-4764 keV.
302.6 5	24	499.7	(1,2)$^+$	197.0	(1,2,3)$^{(+)}$	E(p)=4909-4964 keV.
307.6 5	30	432.9	(1,2)$^+$	125.0	(1,2)$^+$	E(p)=4784-4864 keV.
311.2 5	43	311.3		0.0	1$^+$	E(p)=4719-4734 keV.
329.5 5	51	329.6	(1,2)$^+$	0.0	1$^+$	E(p)=4739-4749 keV.
334.9 5	50	367.2	(1 to 4)$^-$	32.3	(2$^-$)	E(p)=4759-4789 keV.
358.2 5	4	390.6	(2,3)$^+$	32.3	(2$^-$)	E(p)=4809-4864 keV.
367.2 5	20	367.2	(1 to 4)$^-$	0.0	1$^+$	
390.5 5	12	390.6	(2,3)$^+$	0.0	1$^+$	E(p)=4784-4864 keV.
414.8[‡] 5		414.9?		0.0	1$^+$	E(p)=4834-4914 keV.
414.8[‡] 5		447.3		32.3	(2$^-$)	
433.1 5	26	432.9	(1,2)$^+$	0.0	1$^+$	E(p)=4834-4864 keV.
[x]439.5[@] 5						E(p)=4884-4989 keV.
447.2 5	7	447.3		0.0	1$^+$	E(p)=4884-4914 keV.
478.9 5	9	479.0	(3$^-$,4$^-$)	0.0	1$^+$	E(p)=4909-4939 keV.
499.6 5	9	499.7	(1,2)$^+$	0.0	1$^+$	E(p)=4934-4964 keV.

[†] Given for E(p)=5.1 MeV. They also give Iγ for E(p)=4.75 MeV. Uncertainties not given by the authors.
[‡] Multiply placed.
[#] Multiply placed with undivided intensity.
[@] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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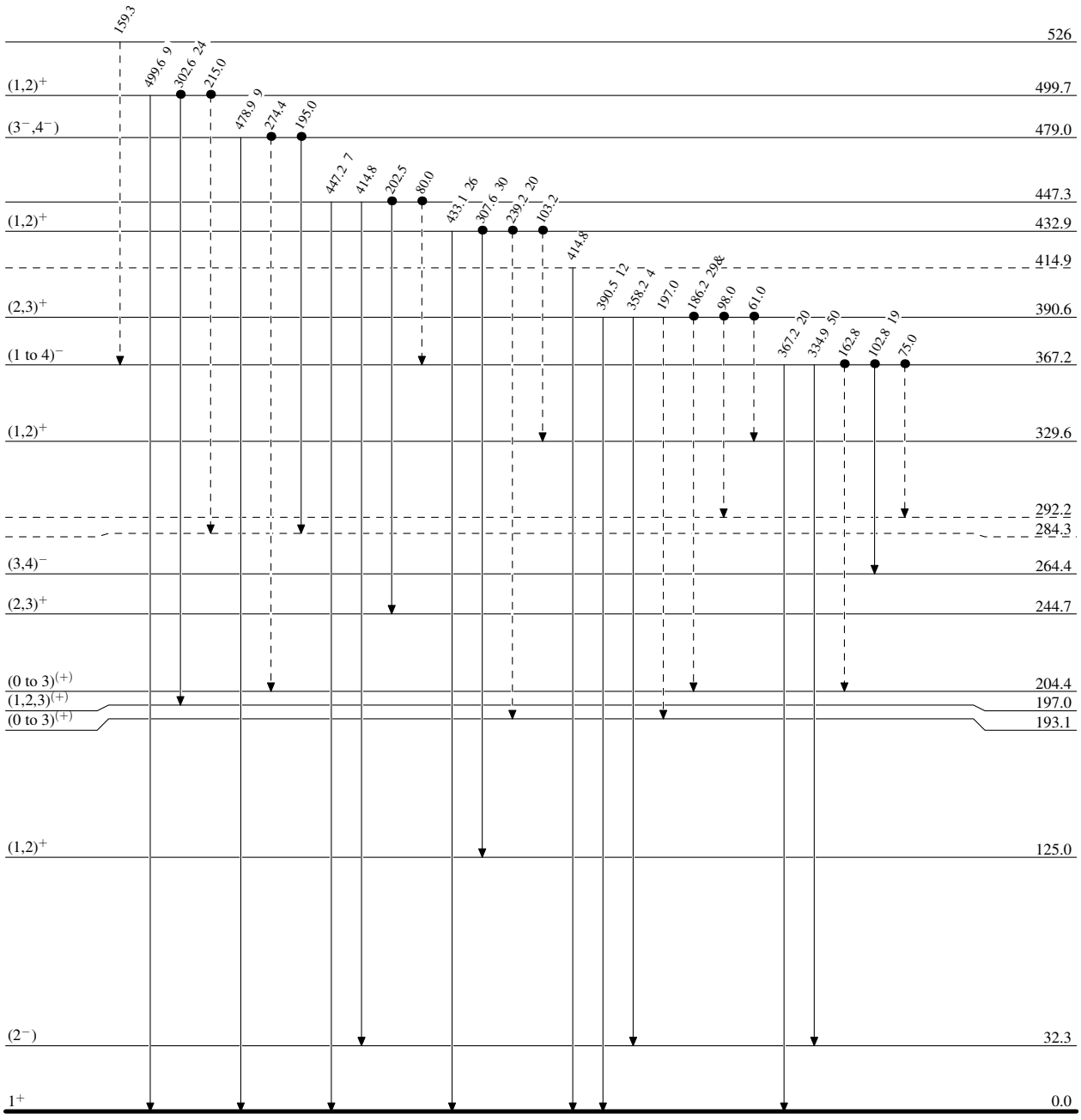
Level Scheme

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)
- Coincidence



$^{78}_{35}Br_{43}$

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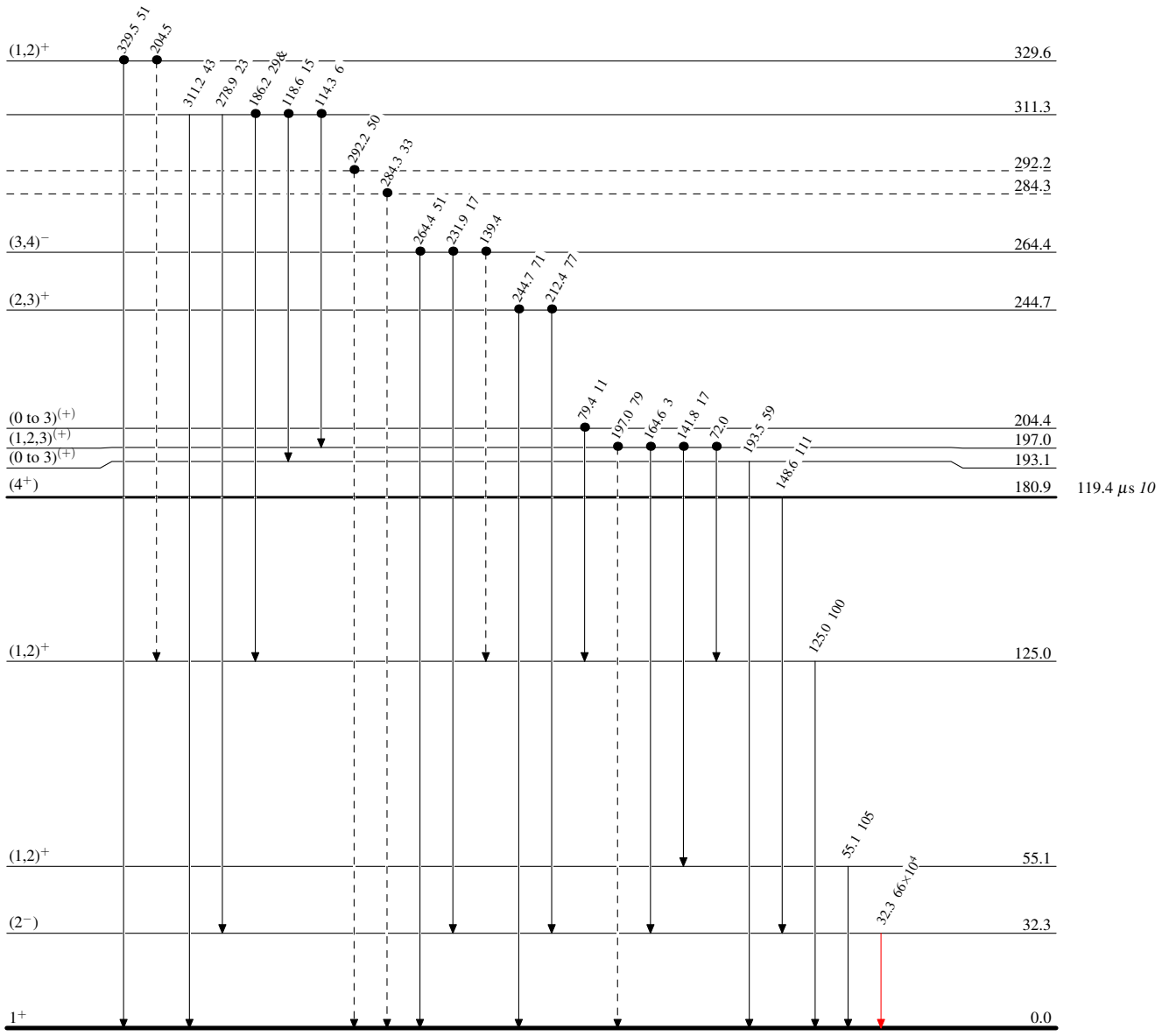
Level Scheme (continued)

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)
- Coincidence



$^{78}_{35}Br_{43}$