^{34}S(α,γ):resonances   1979Si10,1972Ch25,1996Fu07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 152, 1 (2018)	30-Sep-2017

Includes (α,α):resonances.

S(α)=7208.05 20 (2017Wa10).

1979Si10: E=2.0-3.5 MeV alpha beams were produced from the Queen's University 4-MV Van de Graaff. Targets were enriched silver sulphide. γ rays were detected with a NaI(Tl) and three Ge(Li) detectors. Measured $\sigma(E_\alpha)$, Eγ, Iγ, $\gamma(\theta)$. Deduced levels, J, π, γ-ray branching and mixing ratios, multipolarities, transition strengths, resonance strengths.

1972Ch25: E=3.6-4.8 MeV alpha beams were produced from the 6-MV Van de Graaff at Strasbourg. Targets were enriched CdS. γ rays were detected with a NaI and a Ge(Li) detectors. Measured Eγ, Iγ, $\gamma(\theta)$, $\gamma\gamma(\theta)$, γ yields. Deduced levels, J, π, γ-ray branching and mixing ratios, multipolarities, transition strengths, resonance strengths..

1996Fu07: E=3.4-4.4 MeV alpha beams were produced from the 5-MV Van de Graff of ATOMKI. Targets were enriched ^{34}S implanted into Ta backing. γ rays were detected with a Ge(Li) and a NaI(Tl) detectors. Measured γ yields, Eγ, Iγ. Deduced levels, J, π, transition strengths, resonance strengths. Comparisons with available data.

1971Cl09 (also thesis by 1971ClZN): E=3.2-4.3 MeV alpha beams were provided by the 4-MV Van de Graaff at the University of Florida. Targets were natural ZnS or enriched sulfuron a silver backing. γ rays were detected with two NaI(Tl) crystals. Measured Eγ, Iγ, $\gamma(\theta)$, γ-ray yields. Deduced levels, J, π, γ-ray transition strengths, resonance strengths.

1964Er04: E=2.2-3.2 MeV alpha beams were produced from the 3-MV Van de Graaff at Utrecht. Target was enriched CdS. γ rays were detected with a NaI(Tl) crystal. Measured Eγ, Iγ, $\gamma(\theta)$, γ yields. Deduced levels, J, π, γ-ray transition strengths, resonance strengths.

1964Ph02: E=3.0-3.6 MeV alpha beams were produced from an electrostatic generator at University of Manchester. Targets were enriched CdS. γ rays were detected with NaI crystals. Measured Eγ, Iγ, $\gamma(\theta)$, $\gamma\gamma$-coin, γ yields. Deduced levels, J.

Others:

1994An39: ^{34}S(α,α) E=12.56-15.0 MeV. Measured $\sigma(\theta)$ from 98° to 173° at 14 different energies. Narrow structures measured at E(lab)=14.04 and 14.20 MeV.

1994Br19: ^{34}S(α,α) E=12.80, 14.56, 16.34, 18.13, 20.0 MeV. Measured $\sigma(\theta)$, deduced optical-model parameters.

1993Sc05: E=2.79-5.87 MeV; measured Eγ.

1981BuZY (thesis): E=3-4 MeV. Resonances at 3032, 3335, 3566, 3602 and 3776 keV, all with 5 keV uncertainty. Measured Eγ, lifetimes by Doppler-shift attenuation method (DSAM).

1971Ja22: E=3.5-3.7 MeV; measured Eγ, Iγ, $\gamma(\theta)$, pulsed beam, tof.

1969ChZX (thesis): E=4-6 MeV. Measured Eγ, Iγ.

^{38}Ar Levels

E(level)[†]	J$^\pi$[‡]	Comments
0	0^+	
2167	2^+	$T_{1/2}$<0.38 ps +17−9 (DSAM,1981BuZY).
3377	0^+	
3810	3^-	E(level): reported in 1972Ch25, 1979Si10, and 1996Fu07.
3937	2^+	$T_{1/2}$=54 fs 15 (DSAM,1981BuZY).
4480	4^-	
4566	2^+	$T_{1/2}$<62 fs (DSAM,1981BuZY).
4709		E(level): reported in 1996Fu07 only.
4877		E(level): reported in 1972Ch25, 1996Fu07.
5084		E(level): reported in 1979Si10, 1981BuZY.
5157		E(level): reported in 1972Ch25, 1996Fu07.
5513		E(level): reported in 1972Ch25, 1996Fu07.
5552		E(level): reported in 1979Si10, 1996Fu07.
5595		E(level): reported in 1996Fu07 only.
5734	1^-	E(level): reported in 1979Si10, 1996Fu07.
5825		E(level): reported in 1972Ch25 only.
6214	(2^+)	E(level): reported in 1979Si10 only. J$^\pi$: 2 from $\gamma(\theta)$ in 1979Si10.

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^{34}S(α,γ):resonances　　**1979Si10,1972Ch25,1996Fu07 (continued)**

^{38}Ar Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	(2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$[†]	E(α) (lab)[†h]	Comments
6485				E(level): reported in 1972Ch25 only.
6602				E(level): reported in 1972Ch25 only.
7497?[#]				
7628?[#]				
7648?[#]				
7992[#]				T$_{1/2}$≤4 fs (DSAM,1981BuZY).
9597 5	1$^-$	1.9[&] eV 6	2670 5	J$^{\pi}$: 1 from $\gamma(\theta)$ in 1964Er04. E(α) (lab): weighted average of 2669 5 (1979Si10) and 2670 5 (1964Er04). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 1.71 eV 34 (1979Si10), 4.0 eV 12 (1964Er04).
9689 5	1$^-$	1.4[&] eV 3	2773 5	J$^{\pi}$: 1 from $\gamma(\theta)$ in 1979Si10 and 1964Er04. E(α) (lab): weighted average of 2774 5 (1979Si10), and 2772 5 (1964Er04). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 1.3 eV 3 (1979Si10), 1.5 eV 5 (1964Er04).
9797 5	3$^-$	0.30[a] eV 15	2894 5	J$^{\pi}$: 3 from $\gamma(\theta)$ in 1979Si10. Additional information 1.
9811 5	1$^-$	0.3[&] eV 1	2910 5	J$^{\pi}$: 1 from $\gamma(\theta)$ in 1979Si10 and 1964Er04. E(α) (lab): weighted average of 2909 5 (1979Si10), and 2911 5 (1964Er04). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 0.30 eV 15 (1979Si10), 0.3 eV 1 (1964Er04).
9894 5	2$^+$	0.6[a] eV 3	3002 5	J$^{\pi}$: 2 from $\gamma(\theta)$ in 1979Si10. Additional information 2.
9913 5	1$^-$	2.9[&] eV 6	3024 5	E(level): level energy listed at 9926 by 1981BuZY from Eγ's is too high by >10 keV from that derived from averaged Eα(lab)=3024. J$^{\pi}$: 1 from $\gamma(\theta)$ in 1979Si10 and 1964Er04. E(α) (lab): weighted average of 3022 5 (1979Si10), 3025 5 (1964Er04), and 3030 10 (1964Ph02). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 2.62 eV 56 (1979Si10), 4.5 eV 15 (1964Er04). T$_{1/2}$=12 fs 10 (DSAM for 9926γ,1981BuZY) from 9926γ.
9951 5	2$^+$	0.2[a] eV 1	3066 5	J$^{\pi}$: 2 from $\gamma(\theta)$ in 1979Si10. Additional information 3.
9996 5	1$^-$	1.9[&] eV 5	3116 5	J$^{\pi}$: 1 from $\gamma(\theta)$ in 1979Si10 and 1964Er04. E(α) (lab): weighted average of 3109 10 (1979Si10), 3116 5 (1964Er04), and 3120 10 (1964Ph02). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 1.7 eV 4 (1979Si10), 3.0 eV 10 (1964Er04).
10034 5	1$^-$	2.3[&] eV 8	3159 5	J$^{\pi}$: 1 from $\gamma(\theta)$ in 1964Er04. E(α) (lab): weighted average of 3155 5 (1979Si10), 3161 5 (1964Er04), and 3170 10 (1964Ph02). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 2.0 eV 5 (1979Si10), 4.5 eV 15 (1964Er04).
10047 5		0.04[a] eV 2	3173 5	Additional information 4.
10067 5	3$^-$	0.6[a] eV 3	3196 5	J$^{\pi}$: 3 from $\gamma(\theta)$ in 1979Si10. Additional information 5.
10146 10	2$^+$	0.30[a] eV 15	3284 10	J$^{\pi}$: 2 from $\gamma(\theta)$ in 1979Si10. Other: −1 for a resonance at E(α)=3290 10 (1964Ph02). Additional information 6.
10170 5	3$^-$	2.4[a] eV 6	3311 5	J$^{\pi}$: 2 or 3 from $\gamma(\theta)$ in 1979Si10, 2 ruled out by RUL. Additional information 7.
10184 5	1$^-$	5.2[b] eV 12	3327 5	E(level): level energy listed at 10210 by 1981BuZY from Eγ's is too high by >20 keV from that derived from averaged Eα(lab)=3327. J$^{\pi}$: 1 from $\gamma(\theta)$ (1979Si10,1971Cl09). E(α) (lab): weighted average of 3323 10 (1979Si10), 3324 5 (1971Cl09), and 3340 10 (1964Ph02). (2J+1)$\Gamma_\alpha\Gamma_\gamma/\Gamma$: 4.9 eV 12 (1979Si10), 8 eV 4 (1971Cl09).

^{34}S(α,γ):resonances　　　**1979Si10,1972Ch25,1996Fu07 (continued)**

^{38}Ar Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$[†]	E(α) (lab)[†h]	Comments
				T$_{1/2}$=19 ps *10* (DSAM for 8027γ and 10210γ,1981BuZY).
				Eγ=5625 *3*, 5720 *3*, 6273 *8* (1981BuZY) shown in the level scheme by 1981BuZY do not fit, thus omitted here, values are too high by about 20 keV. A 10031γ is also reported by 1981BuZY for this resonance.
10217 *5*		0.04^a eV *2*	3364 *5*	Additional information 8.
10245 *10*		<0.04^a eV	3395 *10*	Additional information 9.
10255 *5*	1$^-$	2.6^b eV *6*	3406 *5*	J$^{\pi}$: 1 from $\gamma(\theta)$ (1979Si10,1971Cl09).
				E(α) (lab): weighted average of 3401 *10* (1979Si10), 3408 *5* (1971Cl09), and 3400 *10* (1964Ph02).
				(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$: 2.6 eV *6* (1979Si10), 2.7 eV *14* (1971Cl09).
10335 *5*	1$^-$	1.7^b eV *4*	3496 *5*	J$^{\pi}$: 1 from $\gamma(\theta)$ (1971Cl09).
				E(α) (lab): weighted average of 3491 *10* (1979Si10), 3498 *5* (1971Cl09), and 3490 *10* (1964Ph02).
				(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$: 1.6 eV *4* (1979Si10), 2.1 eV *11* (1971Cl09).
10382 *5*		0.004^d eV *2*	3548 *5*	Additional information 10.
				E(α) (lab): other: 3550 *10* (1964Ph02).
10393 *5*	1$^-$	3.0^c eV *10*	3563 *5*	J$^{\pi}$: 1 from $\gamma(\theta)$ (1971Cl09).
				E(α) (lab): weighted average of 3563 *5* (1971Cl09) and 3563 *5* (1996Fu07). Other: 3550 *10* (1964Ph02).
				(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$: 6 eV *3* (1971Cl09), 2.8 eV *9* (1996Fu07).
				T$_{1/2}$=12 fs *11* (DSAM for 7017γ and 10400γ,1981BuZY).
10431 *5*	1$^-$	10^c eV *4*	3603 *5*	E(level): level energy listed at 10446 by 1981BuZY from Eγ's which is too high by $\approx$15 keV from that derived from Eα(lab). All Eγ's from 1981BuZY are correspondingly higher by $\approx$15 keV, thus not adopted here.
				J$^{\pi}$: 1 from $\gamma(\theta)$ (1971Cl09).
				E(α) (lab): weighted average of 3603 *5* (1971Cl09), 3603 *5* (1996Fu07), and 3600 *10* (1964Ph02),
				(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$: 14 eV *7* (1971Cl09), 8 eV *4* (1996Fu07).
				T$_{1/2}$=26 ps *12* (DSAM for 10446γ,1981BuZY).
10494 *5*	1$^-$	0.05^d eV *3*	3673 *5*	J$^{\pi}$: 1 from $\gamma(\theta)$ (1996Fu07).
				Additional information 11.
10507 *5*	(1,2$^+$)	0.02^d eV *1*	3688 *5*	Additional information 12.
10516 *5*		0.06^d eV *3*	3698 *5*	Additional information 13.
10547 *5*		0.25^d eV *8*	3732 *5*	Additional information 14.
10587 *5*	1$^-$	3.3^f eV *9*	3777 *5*	J$^{\pi}$: 1 from $\gamma(\theta)$ (1971Cl09,1972Ch25).
				E(α) (lab): weighted average of 3778 *5* (1971Cl09), 3773 *10* (1972Ch25), 3777 *5* (1996Fu07) and 3776 *5* (1981BuZY).
				(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$: 6 eV *3* (1971Cl09), 4.5 eV *15* (1972Ch25), 2.6 eV *9* (1996Fu07).
				T$_{1/2}$=18 fs *11* (DSAM for 8415γ and 10590γ,1981BuZY).
10611 *5*		1.3^d eV *5*	3804 *5*	Additional information 15.
				E(level): triplet (1996Fu07).
10666 *5*	(1$^-$,2$^+$,3$^-$,4$^+$)	1.5^d eV *5*	3866 *5*	J$^{\pi}$: from 1996Fu07.
				Additional information 16.
10684 *5*	1$^-$	0.7^f eV *2*	3886 *5*	J$^{\pi}$: 1 from $\gamma(\theta)$ (1971Cl09).
				E(α) (lab): weighted average of 3889 *5* (1971Cl09), 3876 *10* (1972Ch25), and 3886 *5* (1996Fu07).
				(2J+1)$\Gamma_{\alpha}\Gamma_{\gamma}/\Gamma$: 0.9 eV *5* (1971Cl09), 0.8 eV *5* (1972Ch25), 0.7 eV *2* (1996Fu07).
10726 *5*		1.3^d eV *4*	3932 *5*	Additional information 17.
10768 *5*	2$^+$	2.1^d eV *7*	3980 *5*	Additional information 18.
				J$^{\pi}$: from $\gamma(\theta)$ (1996Fu07).

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$^{34}\text{S}(\alpha,\gamma)$:resonances   1979Si10,1972Ch25,1996Fu07 (continued)

^{38}Ar Levels (continued)

E(level)[†]	J^{π}[‡]	$(2J+1)\Gamma_\alpha\Gamma_\gamma/\Gamma$[†]	E(α) (lab)[†][h]	Comments
10803 5	2^+	1.7[d] eV 6	4019 5	J^{π}: from Adopted Levels. $(1,2)^+$ from 1996Fu07. Additional information 19.
10857 5	1^-	1.9[g] eV 6	4079 5	J^{π}: 1 from $\gamma(\theta)$ (1971Cl09). E(α) (lab): weighted average of 4082 5 (1971Cl09), and 4068 10 (1972Ch25). $(2J+1)\Gamma_\alpha\Gamma_\gamma/\Gamma$: 2.0 eV 10 (1971Cl09), 1.8 6 (1972Ch25).
10933 10	1^-	6.8[e] eV 23	4164 10	Additional information 20.
11013 7	1^-	4.3[g] eV 27	4253 7	J^{π}: 1 from $\gamma(\theta)$ (1971Cl09). E(α) (lab): weighted average of 4256 5 (1971Cl09), and 4239 10 (1972Ch25). $(2J+1)\Gamma_\alpha\Gamma_\gamma/\Gamma$: 3.0 eV 15 (1971Cl09), 9.6 eV 30 (1972Ch25).
11032 6	1^-	6.0[g] eV 23	4275 6	J^{π}: 1 from $\gamma(\theta)$ (1971Cl09). E(α) (lab): weighted average of 4278 5 (1971Cl09), and 4264 10 (1972Ch25). $(2J+1)\Gamma_\alpha\Gamma_\gamma/\Gamma$: 4.5 eV 23 (1971Cl09), 8.6 eV 30 (1972Ch25).
11045 10	(3^-)	4.1[e] eV 14	4289 10	Additional information 21.
11067 10	1^-	7.3[e] eV 25	4314 10	Additional information 22.
11121 10	3^-	2.1[e] eV 7	4374 10	Additional information 23.
11175 10	1^-	6.8[e] eV 23	4434 10	J^{π}: 1 from $\gamma(\theta)$ (1972Ch25). Additional information 24.
11250 10	1^-	1.6[e] eV 6	4518 10	Additional information 25.
11269 10	3^-	5.8[e] eV 20	4540 10	J^{π}: 3 from $\gamma(\theta)$ (1972Ch25). Additional information 26.
11315 10	1^-	16[e] eV 5	4591 10	Additional information 27.
11353 10	3^-	2.0[e] eV 12	4633 10	Additional information 28.
11374 10	1^-	1.1[e] eV 5	4657 10	Additional information 29.
11399 10	(3^-)	5.0[e] eV 17	4685 10	Additional information 30.
11431 10	1^-	10[e] eV 3	4721 10	Additional information 31.
11442 10	3^-	10[e] eV 3	4733 10	Additional information 32.
19770[@]	(8^+)[@]		14040	
19913[@]	(8^+)[@]		14200	

[†] From 1979Si10 up to 10334 level, from 1996Fu07 above 10334 up to 10804 level, from 1972Ch25 above 10804 for resonant states and from 1972Ch25, 1979Si10, 1996Fu07 and 1981BuZY for bound levels, unless otherwise noted. Excitation energy for resonances is obtained using E(level)=E(α)(c.m.)+S(α), where E(α)(c.m.) deduced from E(α)(lab) and S(α)=7208.05 20 (2017Wa10). Energy values without uncertainties are rounded values from Adopted Levels.

[‡] From Adopted Levels for levels up to about 7 MeV. Above this the spin assignments are based on $\gamma(\theta)$ and $\gamma\gamma(\theta)$ data in (α,γ). Only natural-parity states are expected to be directly populated in this reaction since $J^{\pi}=0^+$ for target and projectile.

[#] From 1981BuZY.

[@] Resonant state in $^{34}\text{S}(\alpha,\alpha)$ (1994An39). J^{π} is from L=8 assignment from $\sigma(\theta)$ pattern.

[&] Weighted average from 1964Er04 and 1979Si10.

[a] From 1979Si10.

[b] Weighted average from 1971Cl09 and 1979Si10.

[c] Weighted average from 1971Cl09 and 1996Fu07.

[d] From 1996Fu07.

[e] From 1972Ch25.

[f] Weighted average from 1971Cl09, 1972Ch25 and 1996Fu07.

[g] Weighted average from 1971Cl09 and 1972Ch25.

[h] Weighted average from 1996Fu07, 1979Si10, 1972Ch25, 1971Cl09, 1964Ph02 and 1964Er04. Five resonances from 1981BuZY at 3032, 3335, 3566, 3602 and 3776 are also included in averaging.

^{34}S(α,γ):resonances　　　**1979Si10,1972Ch25,1996Fu07 (continued)**

$\gamma(^{38}$Ar$)$

Several γ rays are unplaced in 1981BuZY: 3857γ in 3032-keV resonance, 3502γ, 3856γ, 4540γ, 4942γ and 7391γ in 3566-keV resonance; 3865γ in 3602-keV resonance; 3507γ, 3686γ, 3856γ and 7646γ in 3776-keV resonance;
Values of A_2 and A_4 are from 1972Ch25, unless otherwise stated.

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
2167	2+	2167		0	0+			E_γ: from 1972Ch25 and 1979Si10.
3377	0+	1210[‡] *1*		2167	2+			
3810	3−	1642		2167	2+			E_γ: from 1972Ch25.
3937	2+	1771[‡] *1*		2167	2+			
		3938[‡] *3*		0	0+			
4480	4−	670[‡@] *1*		3810	3−			
4566	2+	2398		2167	2+			E_γ: from 1972Ch25.
4877		1067		3810	3−			E_γ: from 1972Ch25.
		2709		2167	2+			E_γ: from 1972Ch25.
5084		2916[‡] *1*		2167	2+			
5513		1033		4480	4−			E_γ: from 1972Ch25.
		3346		2167	2+			E_γ: from 1972Ch25.
6214	(2+)	6213		0	0+			E_γ: from 1979Si10.
6485		4318	25 *10*	2167	2+			E_γ,I_γ: from 1972Ch25.
		6485	75 *10*	0	0+			E_γ,I_γ: from 1972Ch25.
7497?		3687[‡] *3*		3810	3−			
7628?		7628[‡] *8*		0	0+			
7648?		7648[‡@] *8*		0	0+			
7992		5827[‡] *3*		2167	2+			
9597	1−	9596	100	0	0+	D		Mult.: from $\gamma(\theta)$ in 1964Er04.
9689	1−	x	21					
		5752	10 *2*	3937	2+	D(+Q)	+0.07 *+9−12*	
		6312	24 *4*	3377	0+			
		7521	7 *2*	2167	2+			
		9688	38 *5*	0	0+	D		Mult.: from $\gamma(\theta)$ in 1979Si10 and 1964Er04.
9797	3−	x	35					
		5232	10 *3*	4566	2+			
		5861	39 *4*	3937	2+	D		
		5986	7 *3*	3810	3−			
		7628	9 *3*	2167	2+			
9811	1−	6434	8 *2*	3377	0+			
		7643	4 *2*	2167	2+			
		9810	88 *9*	0	0+	D		Mult.: from $\gamma(\theta)$ in 1979Si10 and 1964Er04.
9894	2+	x	12					
		4160	10 *2*	5734	1−			
		4342	5 *1*	5552				
		5328	12 *2*	4566	2+	D+Q	+0.18 *13*	
		5957	7 *1*	3937	2+	D+Q	+0.84 *+27−21*	
		6083	18 *2*	3810	3−	D+Q	−0.11 *7*	
		7726	25 *2*	2167	2+	D+Q	−0.27 *6*	
		9893	11 *2*	0	0+	Q		
9913	1−	5359[‡] *3*		4566	2+			
		5989[‡] *3*		3937	2+			
		6116[‡] *8*		3810	3−			
		7758[‡] *8*		2167	2+			
		9926[‡] *10*	100	0	0+	D		Mult.: from $\gamma(\theta)$ in 1979Si10 and 1964Er04.

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^{34}S(α,γ):resonances   1979Si10,1972Ch25,1996Fu07 (continued)

$\gamma(^{38}$Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
9951	2^+	x	14					
		6014	21 *3*	3937	2^+	D+Q	+1.43 +*37−32*	
		6140	26 *3*	3810	3^-	D(+Q)	+0.07 +*9−12*	
		7783	37 *3*	2167	2^+	D+Q	+1.19 +*30−8*	
9996	1^-	9995	100	0	0^+	D		Mult.: from $\gamma(\theta)$ in 1979Si10 and 1964Er04.
10034	1^-	10033	100	0	0^+	D		Mult.: from $\gamma(\theta)$ in 1979Si10 and 1964Er04.
10047		x	47					
		5481	28	4566	2^+			
		6110	15	3937	2^+			
		7879	10	2167	2^+			
10067	3^-	x	45					
		3853	8 *1*	6214	(2^+)	D(+Q)	+0.05 *8*	
		4983	<3	5084				
		5501	14 *1*	4566	2^+	D+Q	−0.09 *4*	
		5587	8 *1*	4480	4^-	D+Q		δ: −0.27 +*10−20* or −2.9+10-8 (1979Si10).
		6130	3 *1*	3937	2^+	D+Q		δ: −0.02 *4* or −2.9+6-11 (1979Si10).
		7899	19 *2*	2167	2^+			
10146	2^+	x	27					
		7978	68 *4*	2167	2^+	D(+Q)	−0.05 *4*	
		10145	5 *2*	0	0^+	Q		
10170	3^-	x	27					
		5604	7 *1*	4566	2^+	D(+Q)	−0.04 +*8−5*	
		5690	18 *2*	4480	4^-	D+Q		δ: −0.14 *5* or −4.3+6-8 (1979Si10).
		6233	11 *2*	3937	2^+	D		
		8002	37 *3*	2167	2^+	D(+Q)	+0.05 *4*	
10184	1^-	8027[‡] *8*		2167	2^+			
		10183	100	0	0^+	D		Additional information 33. Mult.: from $\gamma(\theta)$ in 1979Si10 and 1971Cl09.
10217		x	34					
		5651	35	4566	2^+			
		8049	31	2167	2^+			
10245		6308		3937	2^+			
		8077		2167	2^+			
10255	1^-	x	10					
		6877	15 *2*	3377	0^+			
		8087	9 *1*	2167	2^+			
		10254	66 *4*	0	0^+	D		Mult.: from $\gamma(\theta)$ in 1979Si10 and 1971Cl09.
10335	1^-	x	23					E_γ: 1964Ph02 report 5740 *30* and 8170 *20* γ rays from this level which are not confirmed in other studies.
		6398	8	3937	2^+			E_γ: other: 6330 *30* (1964Ph02).
		6957	8	3377	0^+			
		10333	61	0	0^+	D		E_γ: other: 10340 *20* (1964Ph02). Mult.: from $\gamma(\theta)$ in 1971Cl09.
10382		6571	20 *4*	3810	3^-			
		8214	80 *16*	2167	2^+			
10393	1^-	2405[‡] *1*		7992				
		5918	5 *3*	4480	4^-			E_γ: γ to 4^- is suspect from RUL (evaluator). I_γ: from 1996Fu07.
		6456[‡] *8*		3937	2^+			
		7017[‡] *8*	8 *2*	3377	0^+			I_γ: from 1996Fu07.
		8233[‡] *8*	8 *2*	2167	2^+			I_γ: from 1996Fu07.
		10400[‡] *8*	79 *16*	0	0^+	D		I_γ: from 1996Fu07.
10431	1^-	2803[@]		7628?				Additional information 34.

^{34}S(α,γ):resonances   **1979Si10,1972Ch25,1996Fu07 (continued)**

$\gamma(^{38}$Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
10431	1^-	5273	1.0 5	5157			
		5865	2 1	4566	2^+		Additional information 35.
		8263	5 3	2167	2^+		Additional information 36.
		10429	92 18	0	0^+	D	Mult.: from $\gamma(\theta)$ (1971Cl09,1971Ja22).
							Additional information 37.
10494	1^-	6557	14 3	3937	2^+		
		8326	30 6	2167	2^+		
		10492	56 11	0	0^+		
10507	$(1,2^+)$	8339	69 14	2167	2^+		
		10505	31 6	0	0^+		
10516		5950	9 2	4566	2^+		
		6579	7 2	3937	2^+		
		6705	53 11	3810	3^-		
		8348	31 6	2167	2^+		
10547		6610	49 10	3937	2^+		
		6736	42 9	3810	3^-		
		8379	9 2	2167	2^+		
10587	1^-	4992	1.0 5	5595			
		5503[‡] 3		5084			
		5877	<1	4709			
		6664[‡] 8	2 1	3937	2^+		
		6783[‡] 8		3810	3^-		
		8415[‡] 10	9 2	2167	2^+		I_γ: other: 23 (1972Ch25).
		10590[‡] 10	88 18	0	0^+	D	I_γ: other: 77 (1972Ch25).
							Mult.: from $\gamma(\theta)$ in 1972Ch25.
							$A_2=-0.91$ 7 (1972Ch25).
10611		5097	5 3	5513			
		5453	3 2	5157			
		6674	17 4	3937	2^+		
		8443	75 15	2167	2^+		
10666	$(1^-,2^+,3^-,4^+)$	6100	8 2	4566	2^+		
		6729	18 4	3937	2^+		
		6855	23 5	3810	3^-		
		8498	51 10	2167	2^+		
10684	1^-	4950	9	5734	1^-		
		10682	91	0	0^+	D	I_γ: other: 100 from 1972Ch25.
							Mult.: from $\gamma(\theta)$ in 1972Ch25.
							$A_2=-0.88$ 11 (1972Ch25).
10726		5173	10 2	5552			
		5212	10 2	5513			
		6915	27 6	3810	3^-		
		8557	53 11	2167	2^+		
10768	2^+	5610	7	5157			
		5684	10 2	5084			
		5891	4 2	4877			
		8599	53 11	2167	2^+		
		10766	26 5	0	0^+		
10803	2^+	5645	11 2	5157			
		6237	28 6	4566	2^+		
		6992	17 4	3810	3^-		
		8634	30 6	2167	2^+		
		10801	14 3	0	0^+	Q	
10857	1^-	10855	100	0	0^+	D	$A_2=-0.89$ 7 (1972Ch25).
10933	1^-	8764	32	2167	2^+		
		10931	68	0	0^+	D	$A_2=-0.93$ 10 (1972Ch25).

Continued on next page (footnotes at end of table)

^{34}S(α,γ):resonances   **1979Si10,1972Ch25,1996Fu07 (continued)**
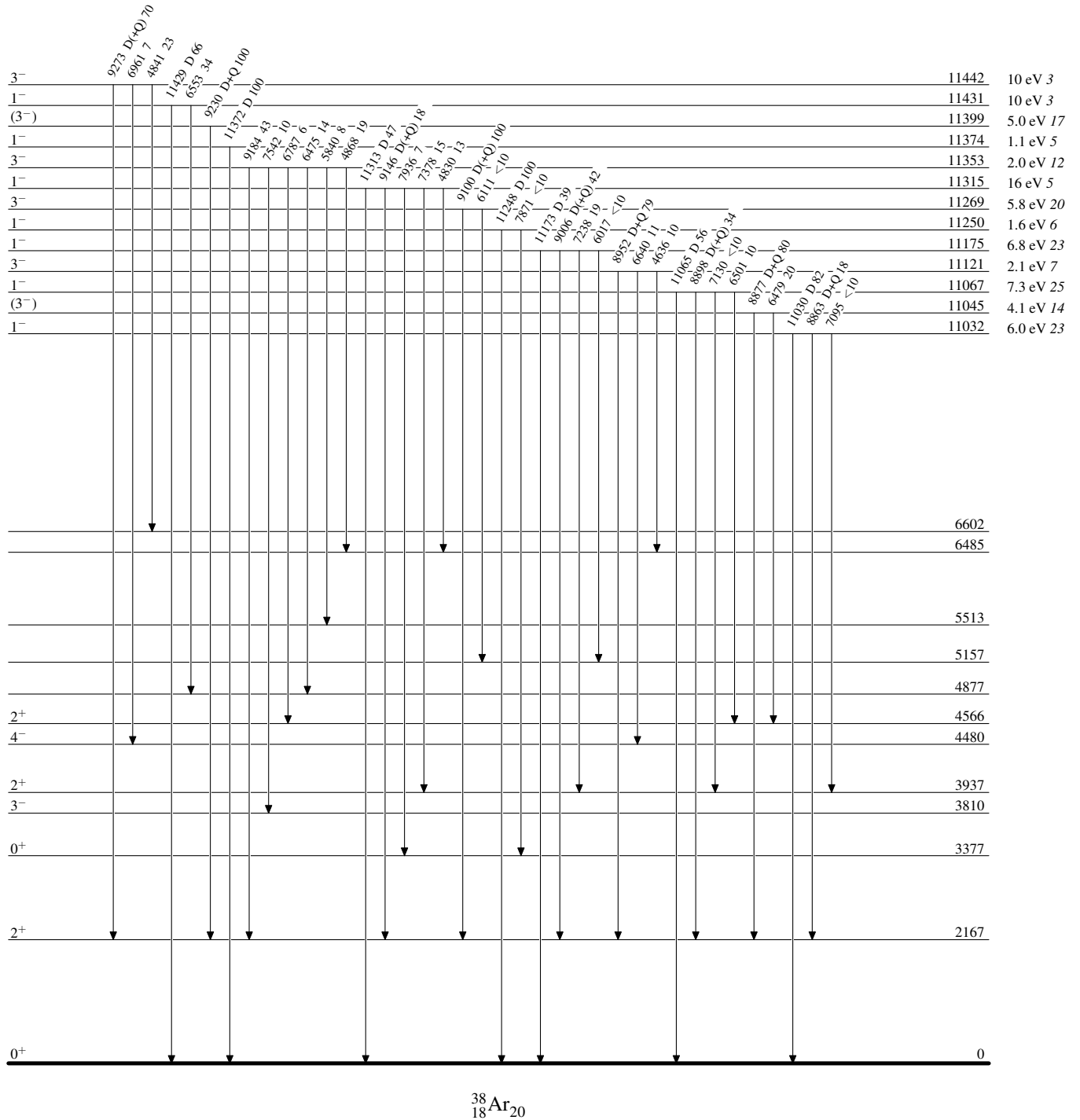
$\gamma(^{38}$Ar) (continued)

E_i(level)	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult.#	δ#	Comments
11013	1^-	5188	<10	5825				
		7635	15	3377	0^+			
		8844	19	2167	2^+			
		11011	66	0	0^+	D		$A_2=-0.90$ 5 (1972Ch25).
11032	1^-	7095	<10	3937	2^+			
		8863	18	2167	2^+	D+Q	-0.3 2	$A_2=+0.2$ 2 (1972Ch25).
		11030	82	0	0^+	D		$A_2=-0.90$ 5 (1972Ch25).
11045	(3^-)	6479	20	4566	2^+			
		8877	80	2167	2^+	D+Q	$+0.07$ 3	$A_2=-0.30$ 6, $A_4=+0.15$ 7 (1972Ch25); R-2167-0: $A_2=+0.15$ 15, $A_4=-0.22$ 16 (1972Ch25).
11067	1^-	6501	10	4566	2^+			
		7130	<10	3937	2^+			
		8898	34	2167	2^+	D(+Q)	0.0 2	$A_2=-0.4$ 5, $A_4=+0.15$ 7 (1972Ch25).
		11065	56	0	0^+	D		$A_2=-1.01$ 10 (1972Ch25).
11121	3^-	4636	10	6485				
		6640	11	4480	4^-			
		8952	79	2167	2^+	D+Q	$+0.11$ 4	$A_2=-0.25$ 8, $A_4=+0.22$ 8; R-2167-0 $A_2=+0.23$ 18, $A_4=-0.33$ 18 (1972Ch25).
11175	1^-	6017	<10	5157				
		7238	19	3937	2^+			
		9006	42	2167	2^+	D(+Q)	0.00 3	$A_2=-0.1$ 2 (1972Ch25).
		11173	39	0	0^+	D		$A_2=-0.78$ 9 (1972Ch25).
11250	1^-	7871	<10	3377	0^+			
		11248	100	0	0^+	D		$A_2=-0.9$ 2 (1972Ch25).
11269	3^-	6111	<10	5157				
		9100	100	2167	2^+	D(+Q)	-0.02 3	$A_2=-0.48$ 7, $A_4=+0.17$ 7; R-2167-0: $A_2=+0.08$ 17, $A_4=-0.30$ 18 (1972Ch25).
11315	1^-	4830	13	6485				
		7378	15	3937	2^+			
		7936	7	3377	0^+			
		9146	18	2167	2^+	D(+Q)	-0.2 2	$A_2=+0.1$ 5 (1972Ch25).
		11313	47	0	0^+	D		$A_2=-0.91$ 6 (1972Ch25).
11353	3^-	4868	19 10	6485				
		5840	8 4	5513				
		6475	14 7	4877				
		6787	6 3	4566	2^+			
		7542	10 5	3810	3^-			
		9184	43 15	2167	2^+			
11374	1^-	11372	100	0	0^+	D		$A_2=-0.96$ 15 (1972Ch25).
11399	(3^-)	9230	100	2167	2^+	D+Q	$+0.23$ 15	$A_2=-0.4$ 3, $A_4=+0.4$ 2; R-2167-0: $A_2=+0.10$ 16, $A_4=-0.16$ 22 (1972Ch25).
11431	1^-	6553	34	4877				
		11429	66	0	0^+	D		$A_2=-0.80$ 10 (1972Ch25).
11442	3^-	4841	23	6602				
		6961	7	4480	4^-			
		9273	70	2167	2^+	D(+Q)	$+0.02$ 3	$A_2=-0.42$ 8, $A_4=+0.15$ 10; R-2167-0: $A_2=0.00$ 15, $A_4=-0.21$ 16 (1972Ch25).

† From 1979Si10 up to 10334 level, from 1996Fu07 above 10334 up to 10804 level, from above 10804 for primary gammas from resonant states and from 1972Ch25, 1979Si10 or 1981BuZY as specified for secondary gammas, unless otherwise noted. Energy values without uncertainties are from level-energy differences.

‡ From 1981BuZY.

From $\gamma(\theta)$ in 1979Si10 up to 10170 level and 1972Ch25 above that, unless otherwise noted.

^{34}S(α,γ)**:resonances   1979Si10,1972Ch25,1996Fu07 (continued)**

$\gamma(^{38}$Ar) (continued)

[@] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

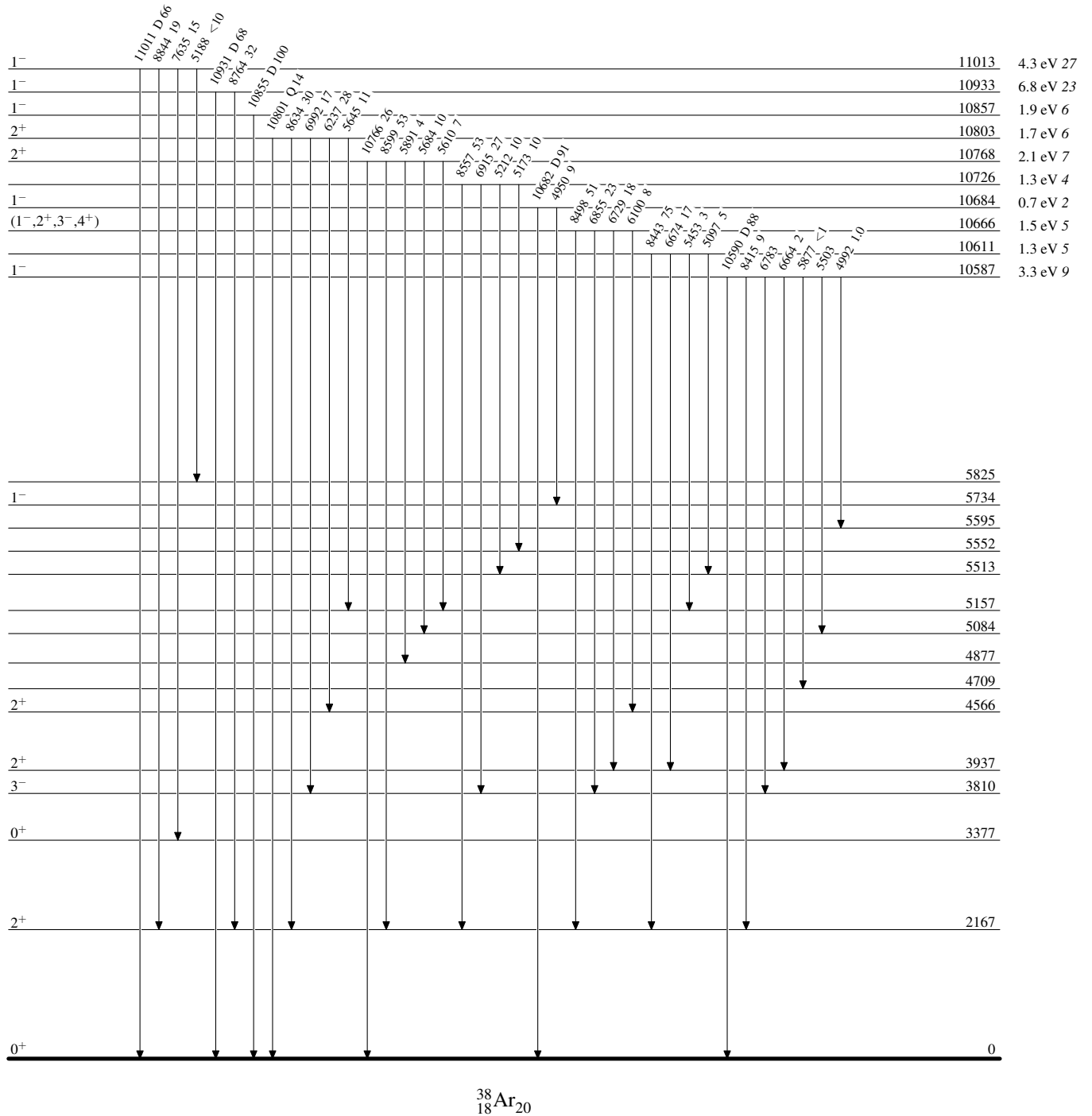^{34}S(α,γ):resonances　　　1979Si10,1972Ch25,1996Fu07

Level Scheme

Intensities: % photon branching from each level

$^{38}_{18}$Ar$_{20}$

$^{34}S(\alpha,\gamma)$:resonances　　　1979Si10,1972Ch25,1996Fu07

Level Scheme (continued)

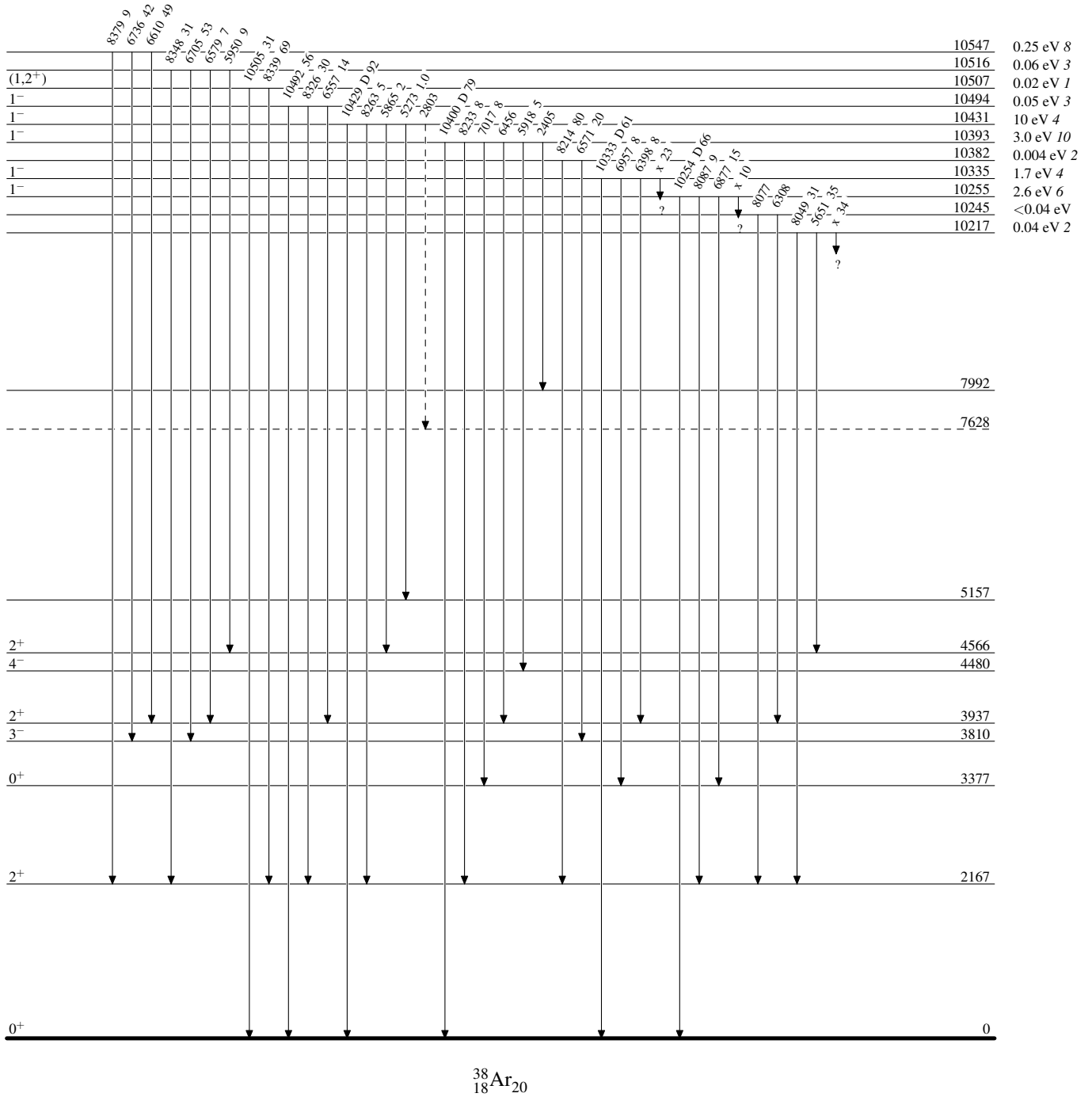Intensities: % photon branching from each level

$^{38}_{18}Ar_{20}$

^{34}S(α,γ):resonances   1979Si10,1972Ch25,1996Fu07   Legend

Level Scheme (continued)
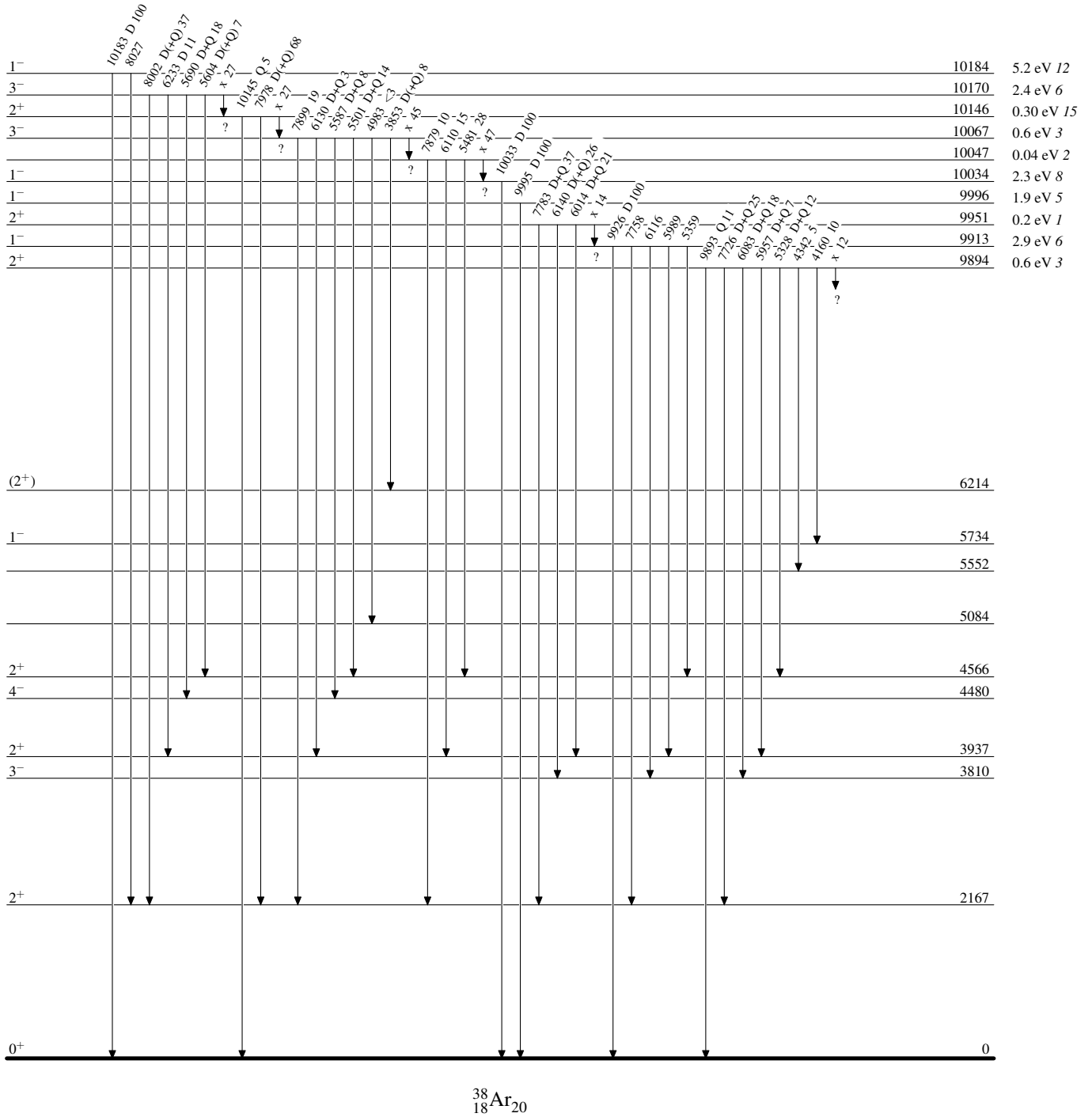
Intensities: % photon branching from each level

- - - - - ▶ γ Decay (Uncertain)

$^{38}_{18}$Ar$_{20}$

^{34}S(α,γ):resonances   1979Si10,1972Ch25,1996Fu07

Level Scheme (continued)

Intensities: % photon branching from each level

${}^{34}\text{S}(\alpha,\gamma)$**:resonances   1979Si10,1972Ch25,1996Fu07**   Legend

Level Scheme (continued)

Intensities: % photon branching from each level

- - - - - - ▶ γ Decay (Uncertain)

${}^{38}_{18}\text{Ar}_{20}$