Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	John Cameron, Jun Chen and Balraj Singh, Ninel Nica	NDS 113,365 (2012)	15-Jan-2012

Q(β^-)=−6147.45 *23*; S(n)=8787.43 *21*; S(p)=8714.60 *21*; Q(α)=−6786.71 *21* 2012Wa38
Note: Current evaluation has used the following Q record −6147.48 23 *8787*.4521 *8714*.6521-6786.74 *21* 2011AuZZ.
S(2n)=24042.92 *77*, S(2p)=16679.43 *21* (2011AuZZ).
Values in 2003Au03 are only slightly different: Q(β^-)=−6147.46 *23*, S(n)=8787.44 *21*, S(p)=8714.77 *22*, Q(α)=−6786.58 *25*, S(2n)=24042.9 *8*, S(2p)=16679.24 *23*.

^{37}Ar Levels

Cross Reference (XREF) Flags

A	^{37}K ε decay (1.225 s)	H	^{36}Ar(n,γ) E=thermal	O	^{38}Ar(d,t)
B	^{24}Mg(^{24}Mg,2α2pnγ)	I	^{36}Ar(d,pγ)	P	^{39}K(p,^{3}He)
C	^{26}Mg(^{14}N,p2nγ),^{24}Mg(^{18}O,αnγ)	J	^{36}Ar(d,p)	Q	^{39}K(d,α)
D	^{34}S(α,nγ)	K	^{37}Cl(p,nγ)	R	^{40}Ca(μ^-,νp2nγ)
E	^{35}Cl(^{3}He,pγ)	L	^{37}Cl(p,n)	S	^{40}Ca(n,$\alpha\gamma$)
F	^{35}Cl(^{3}He,p)	M	^{37}Cl(^{6}Li,^{6}He)	T	^{40}Ca(n,α)
G	^{35}Cl(α,d)	N	^{38}Ar(p,d)		

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	3/2$^+$	35.011 d *19*	ABCDEF HIJKLMNOPQRST	%ε=100 μ=+1.145 *5* (1988PiZY,1989Ra17,2011StZZ) Q=+0.076 *9* (1996Kl04,2011StZZ) Nuclear rms charge radius: 3.3901 fm 28 (2004An14 evaluation); 3.3903 fm *22* from 2008 update of 2004An14. μ: measured by: nuclear magnetic resonance and optical pumping with radiative detection (1988PiZY); optical spectroscopy (1965Ro13). Q: measured by collinear fast beam LASER spectroscopy: NMR with β detection (1996Kl04). J$^\pi$: log *ft*=3.657 *3* (1997Ha32, ^{37}K ε decay); L=2 and VAP (^{36}Ar(d,p)). T$_{1/2}$: weighted average of following values (with uncertainties at 68% confidence level): 34.95 d *4* (2001Re07), 35.02 d *2* (1975Ki10), 35.06 d *9* (1973Co26), 35.1 d *1* (1965St09).
1409.84 *7*	1/2$^+$	0.59 ps *10*	A DEF HIJKLmN PQRST	XREF: m(1500). J$^\pi$: L=0 and VAP (^{36}Ar(d,p)). T$_{1/2}$: weighted average of: 0.45 ps *24* (^{35}Cl(^{3}He,pγ)), 0.75 ps *+12−9* (^{34}S(α,nγ)), and 476 fs *106* (^{37}Cl(p,nγ)).
1611.28 *5*	7/2$^-$	4.38 ns *10*	ABCDEF HIJK mN QRST	μ=−1.33 *5* (1971Ra22,1989Ra17,2011StZZ) XREF: m(1500). μ: measured by time dependent perturbed angular distribution (1971Ra22). J$^\pi$: ΔJ=2, M2+E3 γ to 3/2$^+$, g.s. (^{26}Mg(^{14}N,p2nγ)..., ^{34}S(α,nγ), ^{37}Cl(p,nγ)); L=3 and VAP (^{36}Ar(d,p)); T$_{1/2}$: weighted average of: 4.5 ns *2* (^{37}Cl(p,nγ)), 4.34 ns *11* (^{34}S(α,nγ)).
2217.00 *23*	7/2$^+$	283 fs *22*	CDEF IJK N PQRST	XREF: T(2250). J$^\pi$: ΔJ=2, E2 γ to 3/2$^+$, g.s. (^{34}S(α,nγ)); L=4 and VAP (^{36}Ar(d,p)). T$_{1/2}$: weighted average of: 387 fs *60* (^{37}Cl(p,nγ)), 274 fs *15* (^{34}S(α,nγ)), 0.42 ps *12* (^{35}Cl(^{3}He,pγ)).

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Adopted Levels, Gammas (continued)

^{37}Ar Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				XREF: T(2250). Jπ: ΔJ=2, E2 γ to 3/2+, g.s. (^{34}S(α,nγ)); L=4 and VAP (^{36}Ar(d,p)). $T_{1/2}$: weighted average of: 387 fs *60* (^{37}Cl(p,nγ)), 274 fs *15* (^{34}S(α,nγ)), 0.42 ps *12* (^{35}Cl(^{3}He,pγ)).
2490.17 *13*	3/2−	462 fs *111*	A DEF HIJK N QRST	XREF: T(2540). Jπ: ΔJ=0, E1 γ to 3/2+, g.s.; L=1 and VAP (^{36}Ar(d,p)). $T_{1/2}$: weighted average of: 568 fs *76* (^{37}Cl(p,nγ)), 0.82 ps *29* (^{34}S(α,nγ)), 0.28 ps *9* (^{35}Cl(^{3}He,pγ)).
2796.15 *8*	5/2+	14 fs *4*	A DEF IJKl N PQRS	XREF: l(3100). Jπ: L=2 and VAP (^{36}Ar(d,p)); ΔJ=1, M1+E2 γ to 3/2+, g.s. (^{34}S(α,nγ), with 1/2+ rejected by χ^2). $T_{1/2}$: weighted average of: 16 fs *5* (^{37}Cl(p,nγ)), 10 fs *8* (^{34}S(α,nγ)).
3170.0 *5*	5/2+	56 fs *5*	A DEF IJKl PQ S	XREF: l(3100). Jπ: ΔJ=1, M1+E2 γ to 3/2+, g.s. (^{34}S(α,nγ), with 1/2+ rejected by χ^2). $T_{1/2}$: weighted average of: 61 fs *8* (^{37}Cl(p,nγ)), 52 fs *7* (^{34}S(α,nγ); other: 21 fs *10* (^{35}Cl(^{3}He,pγ)).
3184.74 *19*	9/2−	195 fs *7*	BCDE I K S	Jπ: ΔJ=1, M1+E2 γ to 7/2−, 1611, and ΔJ=1, E1 γ from 11/2+, 5214 (^{34}S(α,nγ)). $T_{1/2}$: weighted average of: 206 fs *26* (^{37}Cl(p,nγ)), 194 fs *7* (^{34}S(α,nγ)), 0.66 ps *31* (^{35}Cl(^{3}He,pγ)).
3273.58 *14*	5/2−	25 fs *2*	DEF IJK Q S	Jπ: E1 γ to 3/2+, g.s. and M1+E2 γ to 7/2−, 1611. $T_{1/2}$: weighted average of: 31 fs *21* (^{35}Cl(^{3}He,pγ)), 33 fs *7* (^{37}Cl(p,nγ)), 24 fs *2* (^{34}S(α,nγ)).
3518.1 *7*	3/2−	41 fs *24*	DEF HIJK N q S	XREF: q(3525)S(3512). Jπ: L=1 and VAP (^{36}Ar(d,p)). $T_{1/2}$: mean value of 64 fs *24* (^{37}Cl(p,nγ)) and 17 fs *3* (^{34}S(α,nγ)) with unc. Covering both values.
3526.76 *14*	7/2−	409 fs *53*	D IJK q S	XREF: q(3525)S(3520). Jπ: ΔJ=1, E1 γ to 5/2+, 2796 and ΔJ=0, M1+E2 γ to 7/2−, 1611. $T_{1/2}$: weighted average of: 416 fs *208* (^{37}Cl(p,nγ)), 409 fs *55* (^{34}S(α,nγ)).
3601.8 *4*	3/2+	23 fs *5*	A DEF IJK PQ	Jπ: 1/2+,3/2+,5/2+ from log *ft*=4.958 *24* (^{37}K ε decay − this also rejects π=− from L=1 in ^{36}Ar(d,p)); 3/2+,5/2− based on γ(θ) and polarization measurements (^{34}S(α,nγ)). $T_{1/2}$: weighted average of: 21 fs *3* (^{34}S(α,nγ)), 55 fs *17* (^{37}Cl(p,nγ)), 35 fs *10* (^{35}Cl(^{3}He,pγ)).
3706.19 *23*	11/2−	256 fs *14*	BCD F J Q	Jπ: ΔJ=2, E2 γ to 7/2−, 1611 and ΔJ=1, M1 γ to 9/2−, 3185. $T_{1/2}$: from ^{34}S(α,nγ).
3751? *16*			E	
3900? *16*			E	
3937.1 *4*	3/2+	17 fs *10*	A D F H PQ	Jπ: ΔJ=1, M1+E2 γ to 1/2+, 1410. $T_{1/2}$: from ^{34}S(α,nγ).
3981.2 *7*	1/2,3/2,5/2	28 fs *28*	D f H J Q	XREF: f(4003). Jπ: D+Q γ to 3/2+, g.s. $T_{1/2}$: from ^{34}S(α,nγ).
4021.6 *3*	9/2−	28 fs *10*	CD f J N Q	XREF: f(4003).

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Adopted Levels, Gammas (continued)

^{37}Ar Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				Jπ: ΔJ=0 γ to 9/2⁻, 3185, and M1+E1 γ to 7/2⁻, 1611.
				$T_{1/2}$: from ^{34}S(α,nγ).
4193 *9*			F J Q	E(level): weighted average of: 4188 *5* (^{35}Cl(^{3}He,p)), 4209 *9* (^{36}Ar(d,p)); other: 4215 *16* (^{39}K(d,α), tentative level).
4283.87 *25*	7/2⁺	28 fs *14*	D F J Q	$T_{1/2}$: from ^{34}S(α,nγ).
				Jπ: ΔJ=0 γ to 7/2⁻, 1611 and M1+E2 γ to 5/2⁺, 2796.
4320 *16*			Q	
4396.7 *9*	(5/2)⁻	<6.9 fs	D F J Q	XREF: J(4415).
				Jπ: ΔJ=1 or 0 E1(+M2) γ to 3/2⁺, g.s. (^{34}S(α,nγ); 1/2 excluded by γ(θ)); 5/2 and π=− also from L=3 in ^{36}Ar(d,p).
				$T_{1/2}$: from ^{34}S(α,nγ).
4444.5 *9*	1/2⁻	<14 fs	D F H J Q	XREF: J(4461).
				Jπ: L=1 and VAP (^{36}Ar(d,p)).
				$T_{1/2}$: from ^{34}S(α,nγ).
4573.4 *10*	5/2	<14 fs	D F H J Q	Jπ: ΔJ=1 d+Q γ to 3/2⁺, g.s. (^{34}S(α,nγ); 1/2 rejected based on γ(θ)).
				$T_{1/2}$: from ^{34}S(α,nγ).
4624.4 *5*	7/2⁺	<6.9 fs	D F n	XREF: n(4630).
				Jπ: ΔJ=2, E2 γ to 3/2⁺ g.s.
				$T_{1/2}$: from ^{34}S(α,nγ).
4634.8 *6*	3/2⁻	21 fs *14*	D H J n Q	XREF: J(4650)n(4630).
				Jπ: L=1 and VAP (^{36}Ar(d,p)).
				$T_{1/2}$: from ^{34}S(α,nγ).
4729? *5*			F P	
4743.4 *10*	7/2⁺	<6.9 fs	D	Jπ: ΔJ=2, E2 γ to 3/2⁺, g.s.
				$T_{1/2}$: from ^{34}S(α,nγ).
4755 *10*	3/2⁻		J Q	E(level): weighted average of: 4750 *16* (^{39}K(d,α)), 4758 *12* (^{36}Ar(d,p)).
				Jπ: L=1 and VAP (^{36}Ar(d,p)).
4798.8 *10*	5/2	<6.9 fs	D	Jπ: ΔJ=1, D+Q γ to 3/2⁺, g.s. (^{36}Ar(d,p); 1/2 excluded from γ(θ)).
				$T_{1/2}$: from ^{34}S(α,nγ).
4830? *10*			F	
4886.5 *3*			BCD F J Q	
4981.0 *6*	7/2⁻,11/2⁻	35 fs *10*	D F	Jπ: ΔJ=0,2 E2 γ to 7/2⁻, 1611 (^{34}S(α,nγ); 3/2⁻ excluded from γ(θ)).
				$T_{1/2}$: from ^{34}S(α,nγ).
4995 *5*	3/2⁺,5/2⁺		J L N PQ	XREF: N(4980).
				E(level): weighted average of: 4980 *20* (^{38}Ar(p,d)), 4991 *16* (^{39}K(d,α)), 4993 *6* (^{39}K(p,^{3}He)), 5005 *10* (^{36}Ar(d,p)).
				Jπ: L=0 in ^{37}Cl(p,n); L(p,d)=2 with some preference for 3/2.
5048.4 *6*	5/2	<21 fs	D F j Q	XREF: j(5070).
				Jπ: ΔJ=1 γ's to 3/2⁺ g.s. and 7/2⁻, 1611 respectively (^{34}S(α,nγ)) is not adopted here.
				$T_{1/2}$: from ^{34}S(α,nγ).
5089.53 *25*	3/2	<10 fs	D H j	XREF: j(5070).
				Jπ: ΔJ=1 γ to 1/2⁺, 1410.
				$T_{1/2}$: from ^{34}S(α,nγ).
5102.1 *12*	1/2⁻	<6.9 fs	D F J Q	Jπ: from L=1 and VAP (^{36}Ar(d,p)).
				$T_{1/2}$: from ^{34}S(α,nγ).
5130.2 *12*	5/2	17 fs *7*	D J Q	Jπ: ΔJ=1 γ to 3/2⁺, g.s. (^{34}S(α,nγ) − 5/2 preferred based on

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Adopted Levels, Gammas (continued)

^{37}Ar Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				$\gamma(\theta)$).
				$T_{1/2}$: from ^{34}S(α,nγ).
5213.15 *20*	11/2$^+$	2.54 ps *25*	BCD FG q	XREF: q(5221).
				Jπ: ΔJ=1, E1 γ to 9/2$^-$, 3185 and ΔJ=2, Q γ to 7/2$^+$, 2218.
				$T_{1/2}$: weighted average of: 4.2 ps *14* (^{26}Mg(^{14}N,p2nγ)...), 2.50 ps *21* (^{34}S(α,nγ)).
5229 *10*	(3/2)$^-$		J q	XREF: q(5221).
				E(level): weighted average of: 5221 *16* (^{39}K(d,α)), 5235 *13* (^{36}Ar(d,p)).
				Jπ: L=1 and shell model calculations (^{36}Ar(d,p)).
5267? *20*			J	
5349 *8*	3/2$^-$		F J N Q	E(level): weighted average of: 5341 *6* (^{35}Cl(^{3}He,p)), 5354 *16* (^{39}K(d,α)), 5369 *15* (^{36}Ar(d,p)), 5390 *20* (^{38}Ar(p,d)).
				Jπ: from L=1 and VAP (^{36}Ar(d,p)).
5408.3 *12*		3.5 fs *35*	D F Q	$T_{1/2}$: from ^{34}S(α,nγ).
5435.8 *7*	5/2$^+$,9/2$^+$	87 fs *17*	D F	$T_{1/2}$: from ^{34}S(α,nγ).
				Jπ: ΔJ=1, E1 γ to 7/2$^-$, 1611.
5437 *9*	3/2$^-$		J	Jπ: from L=1 and VAP (^{36}Ar(d,p)).
5461 *8*			J Q	E(level): weighted average of: 5460 *16* (^{39}K(d,α)), 5462 *10* (^{36}Ar(d,p)).
5533 *16*			F	
5573 *5*	3/2$^-$		F J	E(level): weighted average of: 5572 *13* (^{36}Ar(d,p)), 5573 *6* (^{35}Cl(^{3}He,p)).
				Jπ: from L=1 and VAP (^{36}Ar(d,p)).
5669 *9*	3/2$^+$,5/2$^+$		F J N	E(level): weighted average of: 5662 *6* (^{35}Cl(^{3}He,p)), 5670 *20* (^{38}Ar(p,d)), 5692 *10* (^{36}Ar(d,p)).
				Jπ: from L=2 in ^{38}Ar(p,d).
5761 *6*			F	
5793.3 *3*	13/2$^-$	35 fs *10*	BCD J	Jπ: ΔJ=1, E1 γ from 15/2$^+$, 6473 (^{34}S(α,nγ), 17/2$^-$ rejected based on the χ^2 fit).
				$T_{1/2}$: from ^{34}S(α,nγ).
5845 *6*			F	
5873 *8*	(1/2$^-$)		J N	E(level): weighted average of: 5872 *9* (^{36}Ar(d,p)), 5880 *20* (^{38}Ar(p,d)).
				Jπ: L=(1) and VAP (^{36}Ar(d,p)).
5961 *9*	(7/2$^-$)		J N	E(level): weighted average of: 5955 *6* (^{35}Cl(^{3}He,p)), 5975 *9* (^{36}Ar(d,p)).
				Jπ: L=(3) and VAP (^{36}Ar(d,p)).
6066 *6*			F	
6102 *9*	3/2$^+$,5/2$^+$		J L N	E(level): weighted average of: 6100 *10* (^{36}Ar(d,p)), 6112 *20* (^{38}Ar(p,d)).
				Jπ: L(p,d)=2; L=0 in ^{37}Cl(p,n).
6150.45 *24*	13/2$^+$	3.1 ps *3*	BCD G	Jπ: ΔJ=1, M1+E2 γ to 11/2$^+$, 5213 (^{34}S(α,nγ); 9/2$^+$ rejected based on the χ^2 fit).
				$T_{1/2}$: weighted average of: 3.2 ps *4* (^{34}S(α,nγ)), 2.8 ps *7* (^{26}Mg(^{14}N,p2nγ)...).
6158 *12*	1/2$^-$		J	E(level): from ^{36}Ar(d,p).
				Jπ: from L=1 and VAP (^{36}Ar(d,p)).
6227 *12*	1/2$^-$		J	E(level): from ^{36}Ar(d,p).
				Jπ: from L=1 and VAP (^{36}Ar(d,p)).
6290 *20*	3/2$^+$,5/2$^+$		N	E(level): from ^{38}Ar(p,d).

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Adopted Levels, Gammas (continued)

^{37}Ar Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				Jπ: from L=2 (^{38}Ar(p,d)).
6315 *7*	5/2$^-$		G J	E(level): weighted average of: 6309 *10* (^{36}Ar(d,p)), 6320 *10* (^{35}Cl(α,d)). Jπ: from L=3 and VAP (^{36}Ar(d,p)).
6416 *10*	7/2 to 17/2$^+$		G J	E(level): weighted average of: 6416 *10* (^{36}Ar(d,p)), 6430 *10* (^{35}Cl(α,d)). Jπ: L=6 in ^{35}Cl(α,d).
6461 *9*	7/2 to 13/2$^+$		G J	E(level): weighted average of: 6452 *10* (^{36}Ar(d,p)), 6470 *10* (^{35}Cl(α,d)). Jπ: L=4+6 in ^{35}Cl(α,d).
6473.28 *24*	15/2$^+$	4.9 ps *7*	BCD J	Jπ: ΔJ=1, M1(+E2) γ to 13/2$^+$, 6150 (^{34}S(α,nγ)), 11/2$^+$ rejected based on the χ^2 fit. $T_{1/2}$: weighted average of: 4.4 ps *4* (^{34}S(α,nγ)), 5.8 ps *5* (^{26}Mg(^{14}N,p2nγ)...).
6540 *10*			J	
6579.9 *22*			H J	
6604 *10*			J	
6673 *8*	1/2$^+$,3/2$^+$		J N P	E(level): weighted average of: 6650 *20* (^{38}Ar(p,d)), 6670 *20* (^{39}K(p,^{3}He)), 6680 *10* (^{36}Ar(d,p)).
6752 *10*			J	
6790 *10*	7/2 to 13/2$^+$		G	Jπ: L=4+6 in ^{35}Cl(α,d).
6821.4 *18*			GH J	
6852 *10*			J	
6875 *10*			J	
6946 *12*	(1/2,3/2)$^-$		J	Jπ: L=1 and shell model calculations (^{36}Ar(d,p)).
7018 *12*			J	
7071.1 *4*	13/2$^+$,17/2$^+$	375 fs *80*	BCD G J N	Jπ: ΔJ=1, M1 γ to 15/2$^+$, 6473 (^{34}S(α,nγ)), both 13/2$^+$ and 17/2$^+$ are acceptable by the χ^2 fit). $T_{1/2}$: weighted average of: 381 fs *83* (^{34}S(α,nγ)), 0.3 ps *3* (^{26}Mg(^{14}N,p2nγ)).
7107 *15*			J	
7151 *15*	(7/2$^-$)		J	Jπ: from L=(3) and VAP (^{36}Ar(d,p)).
7252 *12*	(1/2$^-$)		J	Jπ: from L=(1) and VAP (^{36}Ar(d,p)).
7263 *15*			J	
7285 *12*	(7/2$^-$)		J	Jπ: from L=(3) and VAP (^{36}Ar(d,p)).
7290 *10*	7/2 to 13/2$^+$		G	Jπ: from L=4+6 in ^{35}Cl(α,d).
7329 *17*			J	
7440 *15*			J	
7478 *15*			J	
7571 *12*	1/2$^-$		J	Jπ: from L=1 and VAP (^{36}Ar(d,p)).
7612 *15*			J	
7650	1/2$^+$,3/2$^+$,5/2$^+$		L	Jπ: from L=0 in ^{37}Cl(p,n).
7710 *10*	3/2 to 13/2$^+$		L	Jπ: from L=4 in ^{35}Cl(α,d).
7770 *10*	3/2 to 13/2$^+$		L	Jπ: from L=4 in ^{35}Cl(α,d).
7804 *12*			J	
7888 *9*	3/2 to 13/2$^+$		G N	E(level): weighted average of: 7880 *20* (^{38}Ar(p,d)), 7890 *10* (^{35}Cl(α,d)). Jπ: from L=4 in ^{35}Cl(α,d).
7902 *12*	1/2$^-$		J	Jπ: from L=1 and VAP (^{36}Ar(d,p)).
7976 *20*			J	
8045 *10*			J	
8101 *17*	(7/2$^-$)		J N	XREF: N(8080).

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Adopted Levels, Gammas (continued)

^{37}Ar Levels (continued)

E(level)[†]	J^π	XREF	Comments
			E(level): weighted average of: 8080 *20* (^{38}Ar(p,d)), 8114 *16* (^{36}Ar(d,p)). J^π: from L=(3) and VAP (^{36}Ar(d,p)).
8130 *10*	7/2 to 13/2$^+$	G	J^π: from L=4+6 in (^{35}Cl(α,d)).
8247 *15*		J	
8300 *10*	7/2 to 13/2$^+$	G	J^π: from L=4+6 in (^{35}Cl(α,d)).
8310 *12*	7/2$^-$	J	J^π: from L=3 and VAP (^{36}Ar(d,p)).
8421 *16*	(7/2$^-$)	J	J^π: from L=(3) and VAP (^{36}Ar(d,p)).
8598 *15*		J	
8721 *15*		J	
8776 *12*	(1/2)$^-$	J	J^π: L=1 and shell model calculations (^{36}Ar(d,p)).
(8791.2 *4*)	1/2$^+$	H	J^π: s-wave capture in ^{36}Ar g.s. E(level): not in agreement with S(n)=8787.45 *21* (2011AuZZ,2003Au03).
8865 *15*		J	
8897 *12*	(1/2$^-$)	J	J^π: L=(1) and shell model calculations (^{36}Ar(d,p)).
9024 *12*	(1/2$^-$)	J	J^π: L=(1) and shell model calculations (^{36}Ar(d,p)).
9650	1/2$^+$,3/2$^+$,5/2$^+$	L	J^π: L=0 in ^{37}Cl(p,n).
11500	1/2$^+$,3/2$^+$,5/2$^+$	L	J^π: L=0 in ^{37}Cl(p,n).

[†] From least-squares fit to Eγ's (only those whose Eγ and Δ(E$_\gamma$ were reported as such were used, while γ's without Δ(E$_\gamma$) were ignored by the fit).

Adopted Levels, Gammas (continued)

γ(^{37}Ar)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
1409.84	1/2$^+$	1409.79 *7*	100	0.0	3/2$^+$	D(+Q)			E_γ: weighted average of: 1409.77 *18* (^{34}S(α,nγ)), 1409.78 *11* (^{37}K ε decay), 1409.79 *10* (^{37}Cl(p,nγ)), 1410.3 *6* (^{36}Ar(n,γ)). Mult.,δ: ΔJ=1, D(+Q) γ (^{37}Cl(p,nγ)).
1611.28	7/2$^-$	1611.24 *5*	100	0.0	3/2$^+$	M2+E3	−0.13 *2*	7.80×10^{-5} *11*	α(K)=3.33×10^{-5} *5*; α(L)=2.73×10^{-6} *4*; α(M)=2.66×10^{-7} *4*; α(N+..)=4.17×10^{-5} *6* α(IPF)=4.17×10^{-5} *6* B(M2)(W.u.)=0.0578 *14*; B(E3)(W.u.)=2.0 *7* E_γ: weighted average of: 1611.21 *10* (^{37}Cl(p,nγ)), 1611.24 *10* (^{37}K ε decay), 1611.24 *9* (^{26}Mg(^{14}N,p2nγ)...), 1611.26 *18* (^{34}S(α,nγ)), 1611.7 *7* (^{36}Ar(n,γ)). Mult.: ΔJ=2, M2+E3 γ (^{37}Cl(p,nγ), ^{26}Mg(^{14}N,p2nγ)..., ^{34}S(α,nγ)). δ: weighted average of: −0.15 *4* (^{36}Ar(d,pγ)), −0.22 *11* and −0.16 *5* (^{37}Cl(p,nγ)), −0.14 *5* (^{26}Mg(^{14}N,p2nγ)...), δ=−0.11 *2* (^{34}S(α,nγ)).
2217.00	7/2$^+$	605.7	<10	1611.28	7/2$^-$				I_γ: from ^{35}Cl(^{3}He,pγ).
		807.2	<10	1409.84	1/2$^+$				I_γ: from ^{35}Cl(^{3}He,pγ).
		2217.1 *3*	100	0.0	3/2$^+$	E2		0.000434 *6*	α(K)=1.189×10^{-5} *17*; α(L)=9.71×10^{-7} *14*; α(M)=9.47×10^{-8} *14*; α(N+..)=0.000421 *6* α(IPF)=0.000421 *6* B(E2)(W.u.)=4.6 *5* E_γ: weighted average of: 2216.80 *20* (^{26}Mg(^{14}N,p2nγ)...), 2217.0 *4* (^{37}Cl(p,nγ)), 2217.7 *3* (^{34}S(α,nγ)). Mult.,δ: ΔJ=2, E2 γ (^{34}S(α,nγ)).
2490.17	3/2$^-$	879.6 *3*	7.5 *5*	1611.28	7/2$^-$				E_γ: weighted average of: 879.5 *2*, 880.0 *2* (1974Ga12). I_γ: from ^{34}S(α,nγ).
		2490.20 *17*	100	0.0	3/2$^+$	E1		0.000965 *14*	α(K)=6.28×10^{-6} *9*; α(L)=5.12×10^{-7} *8*; α(M)=5.00×10^{-8} *7*; α(N+..)=0.000958 *14* α(IPF)=0.000958 *14* B(E1)(W.u.)=7.9×10^{-5} *19* E_γ: weighted average of: 2490.1 *5*, 2490.4 *5* (1974Ga12); 2489.0 *15* (1972Al50); 2491.4 *8* (1972Ta10). Mult.: ΔJ=0, E1 γ (^{34}S(α,nγ)).
2796.15	5/2$^+$	579.1[#]		2217.00	7/2$^+$				From ^{35}Cl(^{3}He,pγ).
		1184.84 *10*	1.29 *6*	1611.28	7/2$^-$				E_γ,I_γ: from ^{37}K ε decay.
		1386.25 *13*	0.21 *1*	1409.84	1/2$^+$				E_γ,I_γ: from ^{37}K ε decay.
		2796.04 *22*	100	0.0	3/2$^+$	M1+E2	+0.16 *1*	0.000593 *9*	α(K)=7.63×10^{-6} *11*; α(L)=6.23×10^{-7} *9*; α(M)=6.08×10^{-8}

From ENSDF

$^{37}_{18}Ar_{19}$-7

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
									9; α(N+..)=0.000585 *9* α(IPF)=0.000585 *9* B(M1)(W.u.)=0.069 *20*; B(E2)(W.u.)=0.79 *25* E_γ: weighted average of: 2795.97 *15* (^{37}K ε decay), 2796.6 *3* (^{34}S(α,nγ)), 2795.3 *5* (^{37}Cl(p,nγ)). Mult.: ΔJ=1, M1+E2 γ (^{34}S(α,nγ)). δ: weighted average of: +0.16 *1* (^{34}S(α,nγ)), +0.21 *13* (^{37}Cl(p,nγ)).
3170.0	5/2$^+$	373.9[#]	<5	2796.15	5/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		679.9[#]	<5	2490.17	3/2$^-$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		953.0[#]	<10	2217.00	7/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		1558.7[#]	<20	1611.28	7/2$^-$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		1760.2[#]	<10	1409.84	1/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		3169.9 *5*	100	0.0	3/2$^+$	M1+E2	−0.52 *9*	0.000765 *13*	α(K)=6.37×10^{-6} *9*; α(L)=5.19×10^{-7} *8*; α(M)=5.07×10^{-8} *8*; α(N+..)=0.000758 *13* α(IPF)=0.000758 *13* B(M1)(W.u.)=0.0078 *12*; B(E2)(W.u.)=0.73 *23* E_γ: weighted average of: 3169.65 *30* (^{37}K ε decay), 3169.7 *8* (^{37}Cl(p,nγ)), 3172.3 *9* (^{34}S(α,nγ)). Mult.: ΔJ=1, M1+E2 γ (^{34}S(α,nγ)). δ: from ^{34}S(α,nγ); others: −0.7 *+6−15* (^{37}Cl(p,nγ)), −0.3 *3* (^{36}Ar(d,pγ)).
3184.74	9/2$^-$	14.7[#]	<10	3170.0	5/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		694.6[#]	<15	2490.17	3/2$^-$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		967.7[#]	<25	2217.00	7/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		1573.8 *14*	100	1611.28	7/2$^-$	M1+E2	+0.59 *4*	0.0001170 *20*	α(K)=2.03×10^{-5} *3*; α(L)=1.659×10^{-6} *25*; α(M)=1.619×10^{-7} *24*; α(N+..)=9.49×10^{-5} α(IPF)=9.49×10^{-5} *17* B(M1)(W.u.)=0.0141 *24*; B(E2)(W.u.)=6.9 *14* E_γ: weighted average of: 1573 *3* (^{37}Cl(p,nγ)), 1573.68 *20* (^{26}Mg(^{14}N,p2nγ)...), 1573.90 *19* (^{34}S(α,nγ)). Mult.: ΔJ=1, M1+E2 γ (^{34}S(α,nγ), ^{26}Mg(^{14}N,p2nγ)...). δ: weighted average of: +0.58 *9* (^{37}Cl(p,nγ)), +0.49 *8* (^{26}Mg(^{14}N,p2nγ)...), +0.64 *5* (^{34}S(α,nγ)).
		1774.9[#]	<25	1409.84	1/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
		3184.6[#]	<30	0.0	3/2$^+$				E_γ,I_γ: from ^{35}Cl(^{3}He,pγ).
3273.58	5/2$^-$	477.4	11 *6*	2796.15	5/2$^+$				I_γ: from ^{35}Cl(^{3}He,pγ) and ^{37}Cl(p,nγ).

From ENSDF

$^{37}_{18}Ar_{19}$-8

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
3273.58	5/2$^-$	783.73 *19*	17 *2*	2490.17	3/2$^-$	M1		7.83×10^{-5} *11*	α(K)=7.19×10^{-5} *10*; α(L)=5.89×10^{-6} *9*; α(M)=5.74×10^{-7} *8* B(M1)(W.u.)=0.128 *21* E_γ,I_γ: from ^{34}S(α,nγ). Mult.: ΔJ=1, M1 γ (^{34}S(α,nγ)).
		1056.6[#]	<10	2217.00	7/2$^+$				From ^{34}S(α,nγ).
		1661.81 *20*	100 *4*	1611.28	7/2$^-$	M1+E2	−0.32 *7*	0.000140 *3*	α(K)=1.80×10^{-5} *3*; α(L)=1.469×10^{-6} *23*; α(M)=1.434×10^{-7} *22*; α(N+..)=0.0001203 α(IPF)=0.0001203 *23* B(M1)(W.u.)=0.072 *9*; B(E2)(W.u.)=9 *4* E_γ: weighted average of: 1661.81 *20* (^{34}S(α,nγ)) and 1661 *3* (^{37}Cl(p,nγ)). I_γ: from ^{34}S(α,nγ); this and ^{35}Cl(^{3}He,pγ) found this γ the most intense, while ^{37}Cl(p,nγ) and ^{36}Ar(d,pγ) found it at about 67%. Mult.,δ: ΔJ=1, M1+E2 γ (^{34}S(α,nγ)).
		1863.7[#]	<27	1409.84	1/2$^+$				From ^{35}Cl(^{3}He,pγ).
		3273.3 *9*	95.7 *4*	0.0	3/2$^+$	E1		0.001379 *20*	α(K)=4.39×10^{-6} *7*; α(L)=3.58×10^{-7} *5*; α(M)=3.49×10^{-8} *5*; α(N+..)=0.001374 *20* α(IPF)=0.001374 *20* B(E1)(W.u.)=0.00027 *3* E_γ: weighted average of: 3271.6 *9* (^{37}Cl(p,nγ)), 3273.8 *5* (^{34}S(α,nγ)). I_γ: from ^{34}S(α,nγ). Mult.: ΔJ=1, E1 γ (^{34}S(α,nγ)).
3518.1	3/2$^-$	333.4[#]	<10	3184.74	9/2$^-$				From ^{35}Cl(^{3}He,pγ).
		348.1	10 *6*	3170.0	5/2$^+$				From ^{37}Cl(p,nγ).
		721.9[#]	<10	2796.15	5/2$^+$				From ^{35}Cl(^{3}He,pγ).
		1027.9	35 *4*	2490.17	3/2$^-$	(D(+Q))			From ^{37}Cl(p,nγ). Mult.: compatible with ΔJ=0 transition (^{36}Ar(d,pγ)).
		1301.1[#]	<20	2217.00	7/2$^+$				From ^{35}Cl(^{3}He,pγ).
		1906.8	<20	1611.28	7/2$^-$				From ^{40}Ca(n,αγ) and ^{37}Cl(p,nγ). I_γ: limit from ^{37}Cl(p,nγ).
		2108.2 *7*	100 *6*	1409.84	1/2$^+$	(D(+Q))			E_γ: weighted average of: 2107.5 *4* (^{36}Ar(n,γ)), 2108.9 *4* (^{34}S(α,nγ)); other: 2110 *6* (^{37}Cl(p,nγ)). From ^{35}Cl(^{3}He,pγ). Mult.: ΔJ=1 transition (^{36}Ar(d,pγ)).
		3517.9[#]	<10	0.0	3/2$^+$				From ^{35}Cl(^{3}He,pγ).

From ENSDF

$^{37}_{18}Ar_{19}$-9

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult.	δ	α [‡]	Comments
3526.76	7/2$^-$	253.1 *2*	6.0 *6*	3273.58	5/2$^-$	D			E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, D γ, (^{34}S(α,nγ)).
		342.28 *20*	31 *3*	3184.74	9/2$^-$	D+Q	+0.10 *14*		E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, D+Q γ (^{34}S(α,nγ)).
		730.41 *17*	11.9 *15*	2796.15	5/2$^+$	E1		5.68×10^{-5} *8*	α(K)=5.21×10^{-5} *8*; α(L)=4.26×10^{-6} *6*; α(M)=4.15×10^{-7} *6* B(E1)(W.u.)=0.00031 *6* E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, E1 γ (^{34}S(α,nγ)).
		1916.1 *5*	100.0 *15*	1611.28	7/2$^-$	M1+E2	−3.9 *10*	0.000286 *5*	α(K)=1.537×10^{-5} *23*; α(L)=1.256×10^{-6} *19*; α(M)=1.225×10^{-7} *18*; α(N+..)=0.000270 α(IPF)=0.000270 *5* B(M1)(W.u.)=0.00032 *16*; B(E2)(W.u.)=4.6 *7* E_γ,I_γ: from ^{34}S(α,nγ); other Eγ: 1924 *6* (^{37}Cl(p,nγ)). Mult.: ΔJ=0, M1+E2 γ (^{34}S(α,nγ)). δ: weighted average of: −3.5 *13* (^{34}S(α,nγ)) and −4.5 *15* (^{36}Ar(d,pγ)).
3601.8	3/2$^+$	417.1[#]	<5	3184.74	9/2$^-$				From ^{35}Cl(^{3}He,pγ).
		431.7[#]	<5	3170.0	5/2$^+$				From ^{35}Cl(^{3}He,pγ).
		805.6[#]	<10	2796.15	5/2$^+$				From ^{35}Cl(^{3}He,pγ).
		1111.6[#]	<15	2490.17	3/2$^-$				From ^{35}Cl(^{3}He,pγ).
		1384.8[#]	<15	2217.00	7/2$^+$				From ^{35}Cl(^{3}He,pγ).
		1990.5[#]	<15	1611.28	7/2$^-$				From ^{35}Cl(^{3}He,pγ).
		2191.5 *8*	4.2 *14*	1409.84	1/2$^+$				E_γ,I_γ: from ^{37}K ε decay.
		3601.7 *4*	100 *5*	0.0	3/2$^+$	M1+E2	−0.25 *5*	0.000907 *14*	α(K)=5.24×10^{-6} *8*; α(L)=4.27×10^{-7} *6*; α(M)=4.17×10^{-8} *6*; α(N+..)=0.000902 *13* α(IPF)=0.000902 *13* B(M1)(W.u.)=0.014 *4*; B(E2)(W.u.)=0.24 *11* E_γ: weighted average of: 3601.6 *4* (^{37}K ε decay), 3602.2 *10* (^{34}S(α,nγ)), 3602.7 *20* (^{37}Cl(p,nγ)). I_γ: from ^{37}K ε decay. Mult.: ΔJ=0, M1+E2 γ (^{34}S(α,nγ)). δ: weighted average of values from ^{34}S(α,nγ): −0.24 *8* (1974Ga12), −0.25 *6* (1975Va15).
3706.19	11/2$^-$	521.5 *3*	17.7 *12*	3184.74	9/2$^-$	M1		0.000182 *3*	α(K)=0.0001670 *24*; α(L)=1.370×10^{-5} *20*; α(M)=1.337×10^{-6} *19* B(M1)(W.u.)=0.091 *8* E_γ: weighted average of: 521.12 *25* (^{26}Mg(^{14}N,p2nγ)...), 521.74 *20* (^{34}S(α,nγ)).

From ENSDF

$^{37}_{18}Ar_{19}$-10

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
3706.19	11/2$^-$	2095.3 *6*	100.0 *12*	1611.28	7/2$^-$	E2		0.000375 *6*	I_γ: from ^{34}S(α,nγ). Mult.: ΔJ=1, M1 γ (^{34}S(α,nγ)). α(K)=1.314×10^{-5} *19*; α(L)=1.073×10^{-6} *15*; α(M)=1.047×10^{-7} *15*; α(N+..)=0.000361 α(IPF)=0.000361 *5* B(E2)(W.u.)=6.4 *4* E_γ: weighted average of: 2094.9 *3* (^{26}Mg(^{14}N,p2nγ)...), 2096.1 *4* (^{34}S(α,nγ)).
3937.1	3/2$^+$	2527.2 *4*	19.1 *12*	1409.84	1/2$^+$	M1+E2	−3.0 *15*	0.000570 *23*	I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=2, E2 γ (^{34}S(α,nγ)). α(K)=9.44×10^{-6} *18*; α(L)=7.71×10^{-7} *15*; α(M)=7.52×10^{-8} *15*; α(N+..)=0.000560 *2* α(IPF)=0.000560 *23* B(M1)(W.u.)=0.0013 *+14−13*; B(E2)(W.u.)=6 *4*
		3936.8 *6*	100.0 *12*	0.0	3/2$^+$	M1+E2	+0.6 *+2−7*	0.00105 *4*	E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1 M1+E2 γ and δ from ^{34}S(α,nγ). α(K)=4.64×10^{-6} *8*; α(L)=3.78×10^{-7} *7*; α(M)=3.69×10^{-8} *6*; α(N+..)=0.00105 *4* α(IPF)=0.00105 *4* B(M1)(W.u.)=0.013 *8*; B(E2)(W.u.)=1.1 *9* E_γ: weighted average of: 3936.2 *4* (^{34}S(α,nγ)), 3937.7 *5* (^{37}K ε decay), 3938.0 *10* (^{36}Ar(n,γ)). I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=0, M1+E2 γ with tentative δ=+0.6 *+2−7* from ^{36}Ar(n,γ).
3981.2	1/2,3/2,5/2	3981.0 *7*	100	0.0	3/2$^+$	D+Q	−0.16 *16*		E_γ: weighted average of: 3979.8 *8* (^{34}S(α,nγ)), 3981.4 *5* (^{36}Ar(n,γ)). Mult.: D+Q γ ^{34}S(α,nγ). δ: for J=3/2; +0.25 *11* for J=5/2 (^{34}S(α,nγ)).
4021.6	9/2$^-$	837.0 *3*	38 *3*	3184.74	9/2$^-$				E_γ: weighted average of: 837.4 *7* (^{34}S(α,nγ)), 836.9 *4* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=0 γ (^{34}S(α,nγ)).
		1804.4 *7*	100.0 *15*	2217.00	7/2$^+$	E1		0.000511 *8*	α(K)=9.93×10^{-6} *14*; α(L)=8.11×10^{-7} *12*; α(M)=7.91×10^{-8} *11*; α(N+..)=0.000500 *7* α(IPF)=0.000500 *7* B(E1)(W.u.)=0.0025 *9* E_γ: weighted average of: 1803.9 *3* (^{34}S(α,nγ)), 1805.4 *4* (^{26}Mg(^{14}N,p2nγ)...).

From ENSDF

$^{37}_{18}Ar_{19}$-11

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
									α(K)=9.93×10^{-6} *14*; α(L)=8.11×10^{-7} *12*; α(M)=7.91×10^{-8} *11*; α(N+..)=0.000500 *7* α(IPF)=0.000500 *7* B(E1)(W.u.)=0.0025 *9* E_γ: weighted average of: 1803.9 *3* (^{34}S(α,nγ)), 1805.4 *4* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, E1 γ (^{34}S(α,nγ)).
4021.6	9/2$^-$	2409.9 *9*	8.8 *3*	1611.28	7/2$^-$	M1+E2	+1.9 *4*	0.000505 *12*	α(K)=1.015×10^{-5} *16*; α(L)=8.28×10^{-7} *13*; α(M)=8.08×10^{-8} *13*; α(N+..)=0.000494 α(IPF)=0.000494 *11* B(M1)(W.u.)=0.0007 *4*; B(E2)(W.u.)=1.6 *6* E_γ: weighted average of: 2409.3 *4* (^{34}S(α,nγ)), 2411.2 *6* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, M1+E2 γ with tentative δ from ^{34}S(α,nγ).
4283.87	7/2$^+$	1488.1 *3*	15 *3*	2796.15	5/2$^+$	M1+E2	+0.17 *10*	8.50×10^{-5} *17*	α(K)=2.16×10^{-5} *4*; α(L)=1.77×10^{-6} *3*; α(M)=1.72×10^{-7} *3*; α(N+..)=6.14×10^{-5} *13* α(IPF)=6.14×10^{-5} *13* B(M1)(W.u.)=0.023 *13*; B(E2)(W.u.)=1.0 *+14−10* E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, M1+E2 γ (^{34}S(α,nγ)).
		2066.3 *6*	38 *5*	2217.00	7/2$^+$				E_γ,I_γ: from ^{34}S(α,nγ).
		2671.7 *5*	100 *5*	1611.28	7/2$^-$	D+Q	+0.45 *15*		E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=0, D+Q γ (^{34}S(α,nγ)).
4396.7	(5/2)$^-$	4396.4 *9*	100	0.0	3/2$^+$	E1(+M2)		0.0014 *5*	α(K)=4.1×10^{-6} *11*; α(L)=3.4×10^{-7} *9*; α(M)=3.3×10^{-8} *9*; α(N+..)=0.0014 *5* α(IPF)=0.0014 *5* E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=0 for E1+M2 γ, δ=−2.0 *5*; or ΔJ=1, E1(+M2) γ, δ=−0.02 *2* (^{34}S(α,nγ)).
4444.5	1/2$^-$	1957.3 *20*		2490.17	3/2$^-$				E_γ: from ^{36}Ar(n,γ).
		4443.5 *10*		0.0	3/2$^+$	D+Q			E_γ: from ^{34}S(α,nγ). Mult.: D+Q γ, δ=−0.27 *15* for J=3/2 γ in (^{34}S(α,nγ)).
4573.4	5/2	4573.1 *10*	100	0.0	3/2$^+$	D+Q	+0.65 *3*		E_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1 d+Q, tentative δ=+0.65 *3* seems best supported by γ(θ) (^{34}S(α,nγ)).
4624.4	7/2$^+$	3013.0 *5*	100.0 *15*	1611.28	7/2$^-$				E_γ,I_γ: from ^{34}S(α,nγ).

From ENSDF

$^{37}_{18}Ar_{19}$-12

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
4624.4	7/2$^+$	4624.0 *10*	53.9 *15*	0.0	3/2$^+$	E2		0.001381 *20*	α(K)=3.77×10^{-6} *6*; α(L)=3.08×10^{-7} *5*; α(M)=3.00×10^{-8} *5*; α(N+..)=0.001377 *20* α(IPF)=0.001377 *20* B(E2)(W.u.)>1.9 E_γ,I_γ: from ^{34}S(α,nγ). Mult.: ΔJ=2, E2 γ (^{34}S(α,nγ)).
4634.8	3/2$^-$	2145.2 *20*	21 *4*	2490.17	3/2$^-$				E_γ: from ^{36}Ar(n,γ). I_γ: from ^{34}S(α,nγ).
		3224.8 *6*	100 *4*	1409.84	1/2$^+$				E_γ: weighted average of: 3224.6 *6* (^{34}S(α,nγ)), 3226.9 *20* (^{36}Ar(n,γ)). I_γ: from ^{34}S(α,nγ).
4743.4	7/2$^+$	4743.1 *10*	100	0.0	3/2$^+$	E2		0.001416 *20*	α(K)=3.64×10^{-6} *5*; α(L)=2.97×10^{-7} *5*; α(M)=2.90×10^{-8} *4*; α(N+..)=0.001412 *20* α(IPF)=0.001412 *20* B(E2)(W.u.)>4.7 From ^{34}S(α,nγ). Mult.,δ: ΔJ=2, E2 γ (^{34}S(α,nγ)).
4798.8	5/2	4798.5 *10*	100	0.0	3/2$^+$	D+Q	−0.7 *+7−26*		From ^{34}S(α,nγ). Mult.,δ: ΔJ=1, D+Q γ (^{34}S(α,nγ)).
4886.5		1180.3 *9*	100	3706.19	11/2$^-$				E_γ: weighted average of: 1179.0 *10* (^{34}S(α,nγ)), 1180.9 *7* (^{26}Mg(^{14}N,p2nγ)...).
4981.0	7/2$^-$,11/2$^-$	3369.6 *6*	100	1611.28	7/2$^-$	E2		0.000944 *14*	α(K)=6.00×10^{-6} *9*; α(L)=4.89×10^{-7} *7*; α(M)=4.78×10^{-8} *7*; α(N+..)=0.000938 *14* α(IPF)=0.000938 *14* B(E2)(W.u.)=5.1 *15* E_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=2, E2 γ or ΔJ=0, E2 γ with δ=−0.21 *5* (^{34}S(α,nγ)).
5048.4	5/2	3436.7 *6*	100.0 *3*	1611.28	7/2$^-$	D+Q	−0.16 *4*		E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, D+Q γ with δ=−0.16 *4* or −3.4 *5* (^{34}S(α,nγ)).
		5049.0 *11*	49.0 *3*	0.0	3/2$^+$	D(+Q)	+0.04 *4*		E_γ,I_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, D(+Q) γ (^{34}S(α,nγ)).
5089.53	3/2	2599.6 *4*	39 *3*	2490.17	3/2$^-$				E_γ: from ^{36}Ar(n,γ). I_γ: from ^{34}S(α,nγ). Mult.,δ: likely D+Q γ with δ=+0.18 *8* (^{34}S(α,nγ)).
		3679.3 *3*	100 *3*	1409.84	1/2$^+$	D+Q	+0.18 *8*		E_γ: weighted average of: 3679.2 *7* (^{34}S(α,nγ)), 3679.3 *4* (^{36}Ar(n,γ)).

From ENSDF

$^{37}_{18}Ar_{19}$-13

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	δ	α[‡]	Comments
									E_γ: weighted average of: 3679.2 *7* (^{34}S(α,nγ)), 3679.3 *4* (^{36}Ar(n,γ)).
									I_γ: from ^{34}S(α,nγ).
									Mult.,δ: ΔJ=1, D+Q γ (^{34}S(α,nγ)).
5102.1	1/2$^-$	5101.7 *12*	100	0.0	3/2$^+$				Mult.,δ: not adopted because it contradicts the J^π assignment – see also discussion in ^{34}S(α,nγ) dataset.
5130.2	5/2	5129.8 *12*	100	0.0	3/2$^+$	D+Q	+1.3 *+8–37*		From ^{34}S(α,nγ).
									Mult.,δ: ΔJ=1, D+Q γ with tentative δ (^{34}S(α,nγ)).
5213.15	11/2$^+$	1191.5 *3*	27 *5*	4021.6	9/2$^-$				E_γ: weighted average of: 1191.5 *3* (^{26}Mg(^{14}N,p2nγ)...), 1191.4 *5* (^{34}S(α,nγ)).
									I_γ: from ^{34}S(α,nγ).
		1506.89 *17*	100 *5*	3706.19	11/2$^-$				E_γ: weighted average of: 1506.98 *20* (^{26}Mg(^{14}N,p2nγ)...), 1506.7 *3* (^{34}S(α,nγ)).
									I_γ: from ^{34}S(α,nγ).
		2028.11 *24*	46 *3*	3184.74	9/2$^-$	E1		0.000671 *10*	α(K)=8.36×10^{-6} *12*; α(L)=6.82×10^{-7} *10*; α(M)=6.66×10^{-8} *10*; α(N+..)=0.000662
									α(IPF)=0.000662 *10*
									B(E1)(W.u.)=5.4×10^{-6} *7*
									E_γ: weighted average of: 2028.3 *4* (^{26}Mg(^{14}N,p2nγ)...), 2028.0 *3* (^{34}S(α,nγ)).
									I_γ: from ^{34}S(α,nγ).
									Mult.: ΔJ=1, E1 γ (^{34}S(α,nγ)).
		2996.6 *4*	49 *5*	2217.00	7/2$^+$	Q			E_γ: weighted average of: 2996.5 *5* (^{26}Mg(^{14}N,p2nγ)...), 2996.6 *5* (^{34}S(α,nγ)).
									I_γ: from ^{34}S(α,nγ).
									Mult.,δ: ΔJ=2, Q γ with tentative δ=+0.02 *2* (1975No01).
		3602.0 *4*	22 *10*	1611.28	7/2$^-$	M2+E3	+0.16 *9*	0.000667 *10*	α(K)=7.26×10^{-6} *11*; α(L)=5.92×10^{-7} *9*; α(M)=5.78×10^{-8} *9*; α(N+..)=0.000659 *10*
									α(IPF)=0.000659 *10*
									B(M2)(W.u.)=0.16 *8*; B(E3)(W.u.)=1.7 *+20–17*
									E_γ: weighted average of: 3602.0 *5* (^{26}Mg(^{14}N,p2nγ)...), 3601.9 *7* (^{34}S(α,nγ)).
									I_γ: from ^{34}S(α,nγ).
									Mult.,δ: ΔJ=2, M2+E3 with tentative δ=+0.16 *9* (^{34}S(α,nγ)).
5408.3		5407.9 *12*	100	0.0	3/2$^+$				E_γ: from ^{34}S(α,nγ).
5435.8	5/2$^+$,9/2$^+$	3824.3 *7*	100	1611.28	7/2$^-$	E1		0.001614 *23*	α(K)=3.62×10^{-6} *5*; α(L)=2.95×10^{-7} *5*; α(M)=2.88×10^{-8} *4*; α(N+..)=0.001610 *23*
									α(IPF)=0.001610 *23*

From ENSDF

$^{37}_{18}Ar_{19}$-14

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.	δ	α‡	Comments
									B(E1)(W.u.)=0.000125 *25* E_γ: from ^{34}S(α,nγ). Mult.,δ: ΔJ=1, E1 γ (^{34}S(α,nγ)).
5793.3	13/2$^-$	2087.8 *5* 2608.1 *3*	100 *17* 67 *17*	3706.19 3184.74	11/2$^-$ 9/2$^-$				E_γ,I_γ: from ^{26}Mg(^{14}N,p2nγ)... E_γ: weighted average of: 2607.7 *8* (^{34}S(α,nγ)), 2608.15 *35* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{26}Mg(^{14}N,p2nγ)...
6150.45	13/2$^+$	937.19 *18*	100 *7*	5213.15	11/2$^+$	M1+E2	+0.104 *12*	5.54×10^{-5} *8*	α(K)=5.08×10^{-5} *8*; α(L)=4.16×10^{-6} *6*; α(M)=4.06×10^{-7} *6* B(M1)(W.u.)=0.0064 *9*; B(E2)(W.u.)=0.28 *8* E_γ: weighted average of: 937.1 *1* (^{34}S(α,nγ)), 937.55 *20* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{26}Mg(^{14}N,p2nγ)... Mult.: ΔJ=1, M1+E2 γ (^{34}S(α,nγ), ^{26}Mg(^{14}N,p2nγ)...). δ: weighted average of: +0.10 *1* (^{34}S(α,nγ)), +0.14 *3* (^{26}Mg(^{14}N,p2nγ)...).
		1263.94 *16*	33 *7*	4886.5					E_γ: weighted average of: 1264.0 *2* (^{34}S(α,nγ)), 1263.8 *3* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{26}Mg(^{14}N,p2nγ)...
6473.28	15/2$^+$	322.80 *8*	100 *5*	6150.45	13/2$^+$	M1+E2	−0.065 *23*	0.000533 *10*	α(K)=0.000489 *9*; α(L)=4.03×10^{-5} *8*; α(M)=3.93×10^{-6} *8* B(M1)(W.u.)=0.061 *10*; B(E2)(W.u.)=9 *7* E_γ: weighted average of: 322.8 *1* (^{34}S(α,nγ)), 322.80 *12* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{34}S(α,nγ). Mult.: ΔJ=1, M1+E2 γ (^{34}S(α,nγ)), (^{26}Mg(^{14}N,p2nγ)...). δ: weighted average of: −0.05 *2* (^{34}S(α,nγ)), −0.10 *3* (^{26}Mg(^{14}N,p2nγ)...).
		679.99 *18*	52 *5*	5793.3	13/2$^-$	E1		6.67×10^{-5} *10*	α(K)=6.12×10^{-5} *9*; α(L)=5.01×10^{-6} *7*; α(M)=4.88×10^{-7} *7* B(E1)(W.u.)=9.4×10^{-5} *17* E_γ: weighted average of: 679.9 *1* (^{34}S(α,nγ)), 680.34 *20* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{34}S(α,nγ). Mult.: ΔJ=1, E1 γ (^{34}S(α,nγ)).
		1260.45 *30*	67 *5*	5213.15	11/2$^+$				E_γ: weighted average of: 1261.4 *20* (^{34}S(α,nγ)), 1260.45 *30* (^{26}Mg(^{14}N,p2nγ)...). I_γ: from ^{34}S(α,nγ).

From ENSDF

$^{37}_{18}Ar_{19}$-15

Adopted Levels, Gammas (continued)

γ(^{37}Ar) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	α[‡]	Comments
6579.9		2135.3 *20*	100	4444.5	1/2$^-$			From ^{36}Ar(n,γ).
6821.4		2247.9 *15*	100	4573.4	5/2			From (^{36}Ar(n,γ)).
7071.1	13/2$^+$,17/2$^+$	597.80 *20*	100	6473.28	15/2$^+$	M1	0.0001363 *20*	α(K)=0.0001251 *18*; α(L)=1.026×10^{-5} *15*; α(M)=1.001×10^{-6} *14* B(M1)(W.u.)=0.27 *6* E_γ: weighted average of: 597.8 *2* (1975No01); 597.9 *15* (1972Al50). Mult.,δ: ΔJ=1, M1 γ (^{34}S(α,nγ), ^{26}Mg(^{14}N,p2nγ)).
(8791.2)	1/2$^+$	1966.7 *30*	6.4	6821.4				
		2207.6 *20*	7.2	6579.9				
		3700.2 *4*	35.7 *24*	5089.53	3/2			
		4153.0 *10*	4.8 *5*	4634.8	3/2$^-$			
		4211.6 *10*	2.1 *3*	4573.4	5/2			
		4342.3 *5*	8.5 *5*	4444.5	1/2$^-$			
		4810.3 *5*	4.3 *5*	3981.2	1/2,3/2,5/2			
		4851.8 *15*	2.1 *3*	3937.1	3/2$^+$			
		5272.6 *9*	67 *4*	3518.1	3/2$^-$			
		6299.7 *6*	100.0 *8*	2490.17	3/2$^-$			
		7380.3 *20*		1409.84	1/2$^+$			
		8790.4 *8*	29.1 *21*	0.0	3/2$^+$			

[†] As shown in comments for the measured γ's (whose Eγ and Δ(E_γ were reported as such). Gammas without Δ(E_γ are calculated by evaluators from ΔE(levels)).

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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

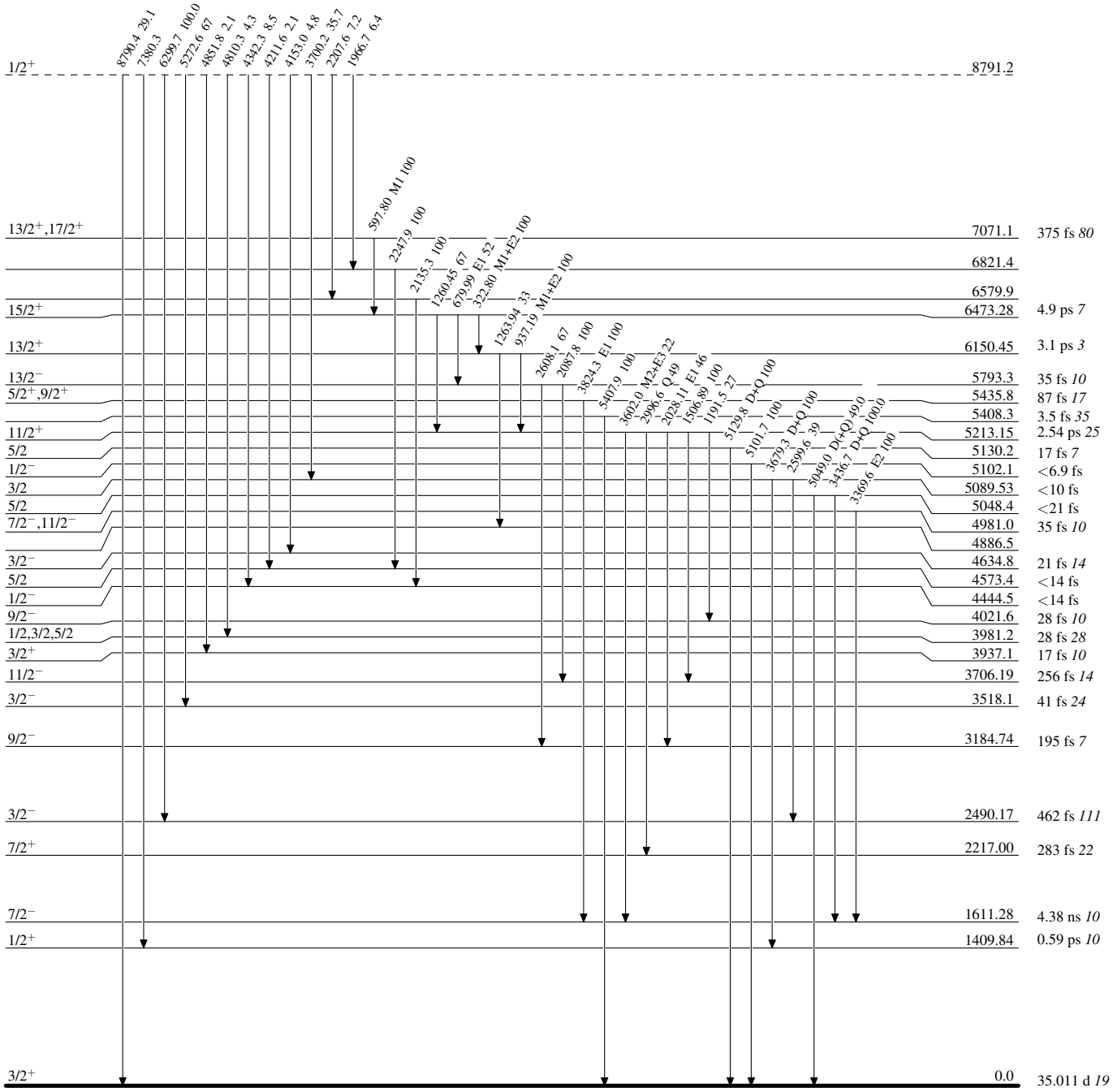
From ENSDF

$^{37}_{18}Ar_{19}$-16

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{37}_{18}Ar_{19}$

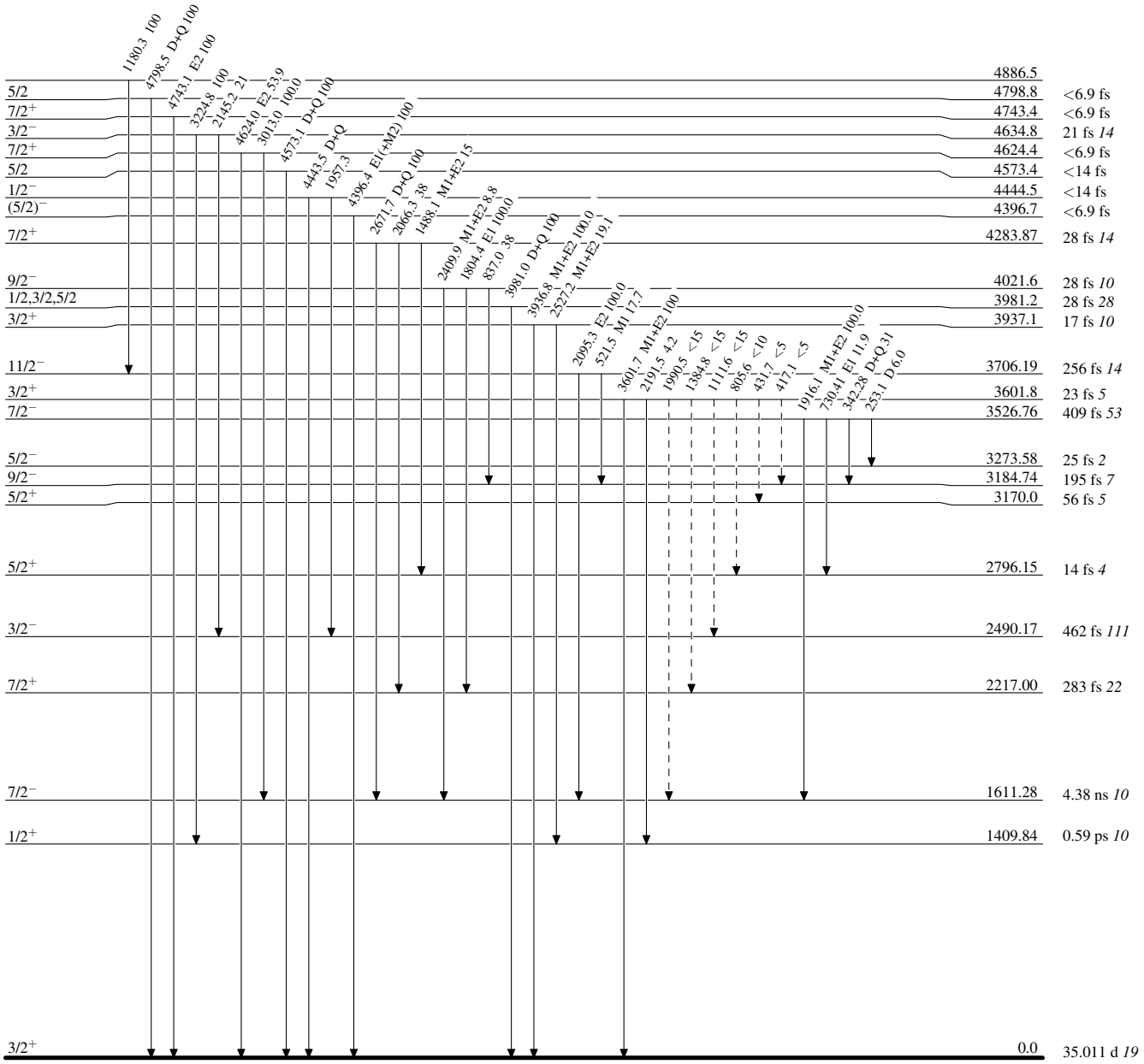
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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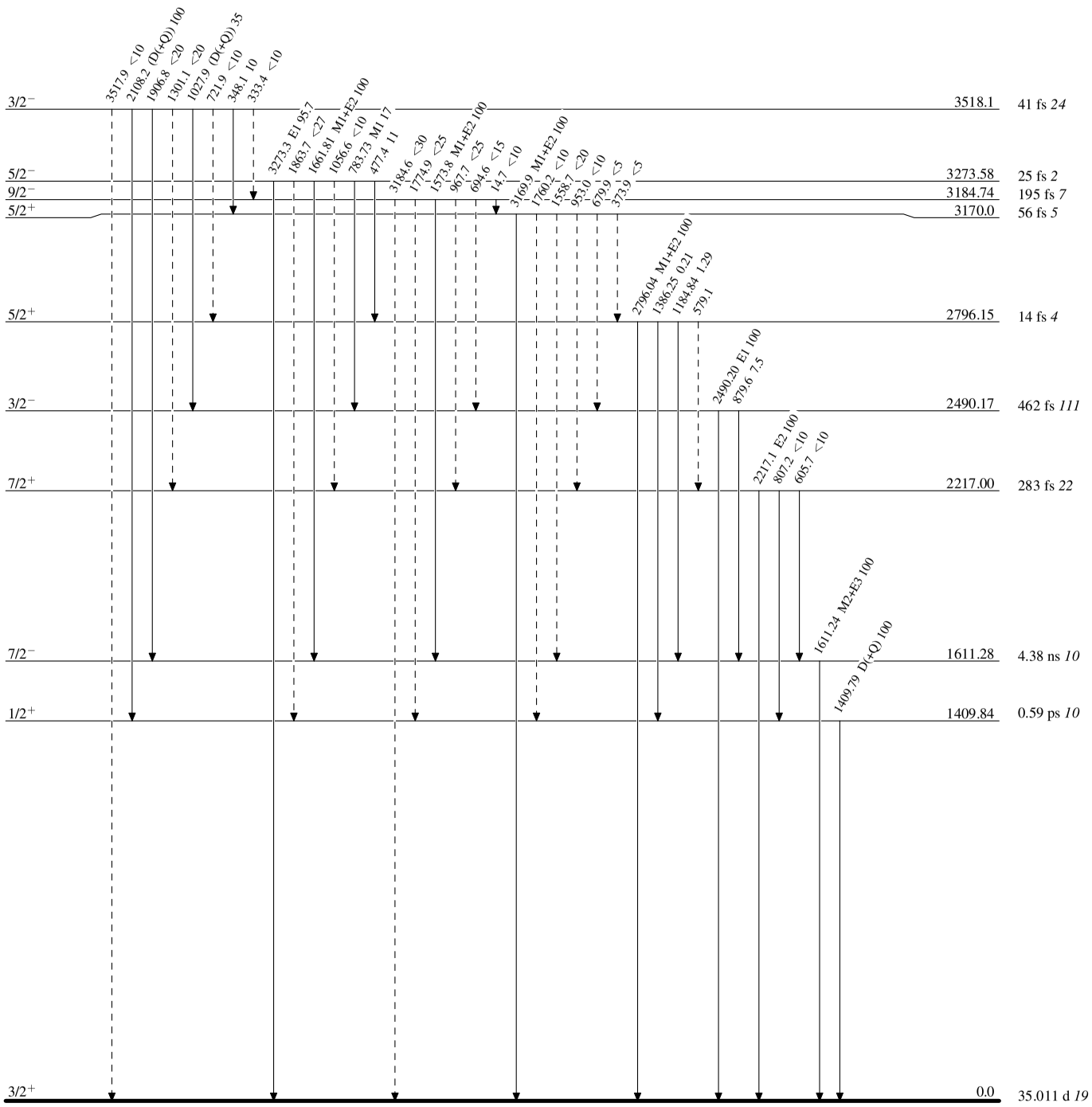
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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