Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, John Cameron and Balraj Singh	NDS 112,2715 (2011)	20-Oct-2011

Q(β^-)=−11874.5 *9*; S(n)=12740.4 *8*; S(p)=5896.3 *8*; Q(α)=−6429.8 *8* 2012Wa38
Note: Current evaluation has used the following Q record $ −11874.5 *9* 12741.3 *8* 5896.3 *8* −6429.3 *12* 2011AuZZ.
S(2n)=29805.7 *9*, S(2p)=11039.5 *8* (2011AuZZ,2003Au03).
Values in 2003Au03: Q(β^-)=−11879 *20*, Q(α)=−6427.7 *17*. S(n) and S(p) are the same as in 2011AuZZ within 0.3 keV.
First isotope identification by King and Elliott using ^{32}S(α,n) reaction.
Additional information 1.

^{35}Ar Levels

Cross Reference (XREF) Flags

A	^{35}K ε decay (178 ms)	F	^{33}S(^{3}He,nγ)
B	^{36}Ca εp decay (102 ms)	G	^{36}Ar(p,d)
C	^{1}H(^{36}Ar,D)	H	^{36}Ar(d,t)
D	^{16}O(^{24}Mg,αnγ)	I	^{36}Ar(^{3}He,α)
E	^{24}Mg(^{16}O,αnγ)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0	3/2$^+$	1.7756 s *10*	ABCDEFGHI	%ε+%β^+=100 μ=+0.6322 *2* (2002Ma41,2011StZZ) Q=−0.084 *15* (1996Kl04,2011StZZ) μ: β−NMR (2002Ma41). Others: +0.633 *2* (1965Ca04), +0.633 *7* (1996Kl04). Measured using β-NMR method. Also from 2011StZZ, 1989Ra17. Q: from 1996Kl04 using β-NMR method. Also from 2011StZZ. J$^\pi$: L(p,d)=L(^{3}He,α)=2; log *ft*=5.09 to 1/2$^+$ level in ^{35}Cl. T$_{1/2}$: weighted average of 1.83 s *3* (1956Ki29), 1.83 s *2* (1959Al10), 1.79 s *1* (1960Ja12), 1.84 s *10* (1960Wa04), 1.76 s *3* (1963Ne05), 1.770 s *6* (1969Wi18), 1.787 s *12* (1971Ge04), 1.774 s *4* (1977Az01), and 1.7754 s *11* (2006Ia05). Evaluated rms charge radius=3.3632 fm *66* (2004An14 evaluation), 3.3629 fm *42* from 2008 update of 2004An14.
1184.03 *25*	1/2$^+$		ABC FGHI	J$^\pi$: L(p,d)=L(d,t)=L(^{3}He,α)=0.
1750.7 *3*	(5/2)$^+$		A DEFGHI	J$^\pi$: L(^{3}He,α)=2; analogy with 1763, 5/2$^+$ mirror state in ^{35}Cl.
2603.1 *5*	7/2$^+$		DEF	J$^\pi$: from measured asymmetry ratios in (^{24}Mg,αnγ) and (^{16}O,αnγ).
2638.0 *3*	3/2$^+$,5/2$^+$		A GHI	J$^\pi$: L(^{3}He,α)=2/2.
2982.79 *12*	3/2$^+$,5/2$^+$		A C GHI	XREF: C(?). J$^\pi$: L(p,d)=L(d,t)=L(^{3}He,α)=2.
3196.9[@] *4*	7/2$^-$		CDE GHI	XREF: C(?). J$^\pi$: L(p,d)=L(d,t)=L(^{3}He,α)=3; γ from 11/2$^-$.
3884 *10*	1/2$^+$		I	J$^\pi$: L(^{3}He,α)=0.
4012 *10*	1/2$^-$,3/2$^-$		I	J$^\pi$: L(^{3}He,α)=1.
4065.0? *4*	1/2$^+$,3/2$^+$,5/2$^+$		A	J$^\pi$: log *ft*=5.07 *10* from 3/2$^+$ parent.
4110 *10*			I	
4142 *10*	1/2$^-$,3/2$^-$		I	J$^\pi$: L(^{3}He,α)=1.
4358.8 *8*	9/2$^-$		DE I	J$^\pi$: from measured asymmetry ratios in (^{24}Mg,αnγ) and (^{16}O,αnγ).
4528.2 *4*	1/2$^+$,3/2$^+$,5/2$^+$		A I	J$^\pi$: log *ft*=5.39 *25* from 3/2$^+$ parent.
4725.9 *6*	1/2$^+$		A G I	J$^\pi$: L(^{3}He,α)=0.
4785.7 *11*	1/2$^+$		A G I	J$^\pi$: L(^{3}He,α)=0.
5048 *10*			I	

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Adopted Levels, Gammas (continued)

^{35}Ar Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
5113 *10*	3/2$^+$,5/2$^+$	G I	J$^{\pi}$: L(^{3}He,α)=2, but inconsistent with L=3 in (p,d).
5205 *10*		I	
5384.2[@] *6*	11/2$^-$	DE G I	J$^{\pi}$: from measured asymmetry ratios in (^{24}Mg,αnγ) and (^{16}O,αnγ).
5484 *10*	3/2$^+$,5/2$^+$	I	J$^{\pi}$: L(^{3}He,α)=2.
5572.66 *15*	3/2$^+$	A C F	T=3/2 J$^{\pi}$: from log *ft*=3.31 *5* from 3/2$^+$ parent.
5592 *10*	3/2$^+$,5/2$^+$	G I	J$^{\pi}$: L(p,d)=L(^{3}He,α)=2.
5613.2 *11*	(11/2$^-$)	E	J$^{\pi}$: from measured asymmetry ratios in (^{16}O,αnγ).
5765.8 *6*	13/2$^-$	DE	J$^{\pi}$: from measured asymmetry ratios in (^{24}Mg,αnγ) and (^{16}O,αnγ).
5911 *10*		I	
6032 *10*	3/2$^+$,5/2$^+$	G I	J$^{\pi}$: L(p,d)=L(^{3}He,α)=2.
6153 *10*		I	
6258 *10*		I	
6630 *10*	1/2$^+$	G I	J$^{\pi}$: L(p,d)=L(^{3}He,α)=0. E(level): probable doublet.
6700 *20*	5/2$^-$,7/2$^-$	G	J$^{\pi}$: L(p,d)=3.
6826 *10*	3/2$^+$,5/2$^+$	G I	J$^{\pi}$: L(p,d)=2.
6959 *10*		I	
7050 *10*	3/2$^+$,5/2$^+$	G I	J$^{\pi}$: L(p,d)=2.
7117 *10*		I	
7293 *10*		I	
7423 *10*		I	
7504 *10*	1/2$^+$,3/2$^+$,5/2$^+$	A I	J$^{\pi}$: from log *ft*=4.79 *18* from 3/2$^+$ parent.
7840 *20*		I	
8019 *10*		I	
8109.2[@] *14*	15/2$^-$	E	J$^{\pi}$: from measured asymmetry ratios in (^{16}O,αnγ).
8212.1 *10*	15/2$^-$	E	J$^{\pi}$: from measured asymmetry ratios in (^{16}O,αnγ).
8395? *20*	1/2$^+$,3/2$^+$,5/2$^+$	A	J$^{\pi}$: from log *ft*=4.57 *19* from 3/2$^+$ parent.
9905.5[@] *21*	19/2$^-$	E	J$^{\pi}$: from measured asymmetry ratios in (^{16}O,αnγ).
12276.4[@] *33*	23/2$^-$	E	J$^{\pi}$: from measured asymmetry ratios in (^{16}O,αnγ).

[†] From Eγ data when measured γ-ray energies are available. In other cases weighted averages are taken of values available from different reactions.

[‡] From the comparison of the DWBA prediction of cross section with experimental data in particle-transfer reactions or/and from measured asymmetry ratios R($\gamma(\theta)$) in (^{24}Mg,αnγ) or/and from measured ADO ratios in (^{16}O,αnγ) or/and predicted from allowed β-decay. When assigning J^{π} to a level based on γ transitions from this level to a level of known J^{π}, evaluators use the following rules: if Eγ<4 MeV, transitions are only considered to be E1,M1 or E2; if Eγ>4 MeV, M2 and E3 are considered to be possible. In particle-transfer reactions, target J^{π}=3/2$^+$ for ^{33}S in (^{3}He,nγ) reaction, J^{π}=0$^+$ for ^{36}Ar in (p,d), (d,t) and reactions.

[#] From measurements of β^+-decay and β^+p-decay. Weighted averages taken when values from different experiments are available.

[@] Band(A): Band based on f$_{7/2}$ orbital.

γ(^{35}Ar)

E$_i$(level)	J$_i^{\pi}$	E$_{\gamma}$[†]	I$_{\gamma}$[‡]	E$_f$	J$_f^{\pi}$
1184.03	1/2$^+$	1184.1 *3*	100 *5*	0	3/2$^+$
1750.7	(5/2)$^+$	1750.6 *3*	100 *4*	0	3/2$^+$
2603.1	7/2$^+$	851.9 *9*	12 *3*	1750.7	(5/2)$^+$
		2603.0 *5*	100 *10*	0	3/2$^+$
2638.0	3/2$^+$,5/2$^+$	886.8 *5*	16 *6*	1750.7	(5/2)$^+$
		2638.0 *4*	100 *13*	0	3/2$^+$

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Adopted Levels, Gammas (continued)

$\gamma(^{35}Ar)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult. [#]	Comments
2982.79	$3/2^+,5/2^+$	1798.9 *5*	3.5 *6*	1184.03	$1/2^+$		
		2982.68 *13*	100 *4*	0	$3/2^+$		
3196.9	$7/2^-$	593.7 *2*	16 *3*	2603.1	$7/2^+$		
		1446.2 *2*	100 *8*	1750.7	$(5/2)^+$	D	
		3197.0 *7*	21 *5*	0	$3/2^+$	(M2)	Mult.: ΔJ=2, Q from γ-asymmetry, M2 from ΔJ^π.
4065.0?	$1/2^+,3/2^+,5/2^+$	1426.8 *4*	100 *17*	2638.0	$3/2^+,5/2^+$		
4358.8	$9/2^-$	1162.0 *8*	54 *21*	3196.9	$7/2^-$		
		1756.1 [@] *10*	100 *15*	2603.1	$7/2^+$		
4528.2	$1/2^+,3/2^+,5/2^+$	4527.9 *7*	100 *27*	0	$3/2^+$		
4725.9	$1/2^+$	3542.0 *6*	100 *21*	1184.03	$1/2^+$	D	
		4724.5 *11*	41 *17*	0	$3/2^+$		
4785.7	$1/2^+$	4785.4 *11*	100 *37*	0	$3/2^+$		
5384.2	$11/2^-$	1025.2 *4*	14 *4*	4358.8	$9/2^-$		
		2187.1 *4*	100 *6*	3196.9	$7/2^-$		
5572.66	$3/2^+$	1044.4 *4*	2.5 *8*	4528.2	$1/2^+,3/2^+,5/2^+$		
		1507.4 *5*	3.6 *8*	4065.0?	$1/2^+,3/2^+,5/2^+$		
		2589.8 *1*	100 *4*	2982.79	$3/2^+,5/2^+$		
		2934.5 *5*	6.7 *11*	2638.0	$3/2^+,5/2^+$		
		3821.7 *7*	6.7 *14*	1750.7	$(5/2)^+$		
		4387.2 *9*	6.7 *15*	1184.03	$1/2^+$		
		5572.3 *10*	12 *3*	0	$3/2^+$		
5613.2	$(11/2^-)$	1254.6 *8*	100 *33*	4358.8	$9/2^-$		
5765.8	$13/2^-$	381.6 *1*	100 *10*	5384.2	$11/2^-$		
		1406.9 *7*	17 *4*	4358.8	$9/2^-$		
8109.2	$15/2^-$	2342.6 *28*	100 *25*	5765.8	$13/2^-$		
		2725.7 *14*	50 *13*	5384.2	$11/2^-$		
8212.1	$15/2^-$	2446.6 *16*	21 *7*	5765.8	$13/2^-$		
		2828.3 *7*	100 *18*	5384.2	$11/2^-$		
9905.5	$19/2^-$	1693.3 *27*	100 *20*	8212.1	$15/2^-$		
		1796.3 *25*	67 *20*	8109.2	$15/2^-$		
12276.4	$23/2^-$	2370.9 *25*	100 *33*	9905.5	$19/2^-$		

[†] Values with ΔE are from (^{24}Mg,αnγ), (^{16}O,αnγ) or β^+ decay. Weighted average taken when Eγ′s are available from more than one of these. Others are deduced from level-energy differences.

[‡] Primarily from (^{24}Mg,αnγ) and (^{16}O,αnγ). Weighted average taken when Iγ′s are available from both, unless otherwise noted.

[#] From (^{24}Mg,αnγ) and/or (^{16}O,αnγ) by $\gamma(\theta)$ or $\gamma\gamma(\theta)$. If $T_{1/2}$ is unknown or parity is determined not by polarization measurements, evaluators use D and Q, instead of M1 and E2, or, E1 and M2.

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

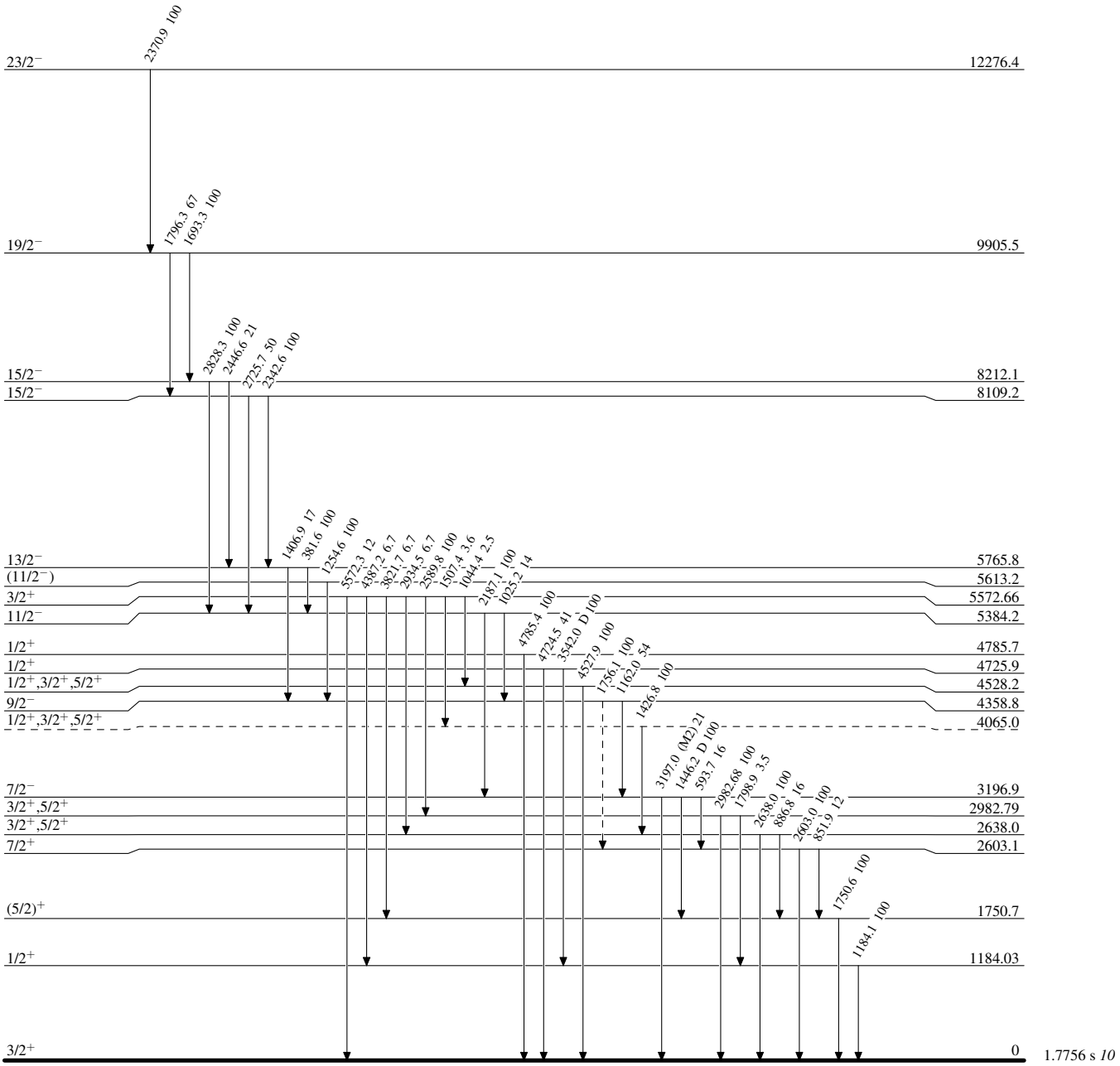
Adopted Levels, Gammas

Legend

Level Scheme

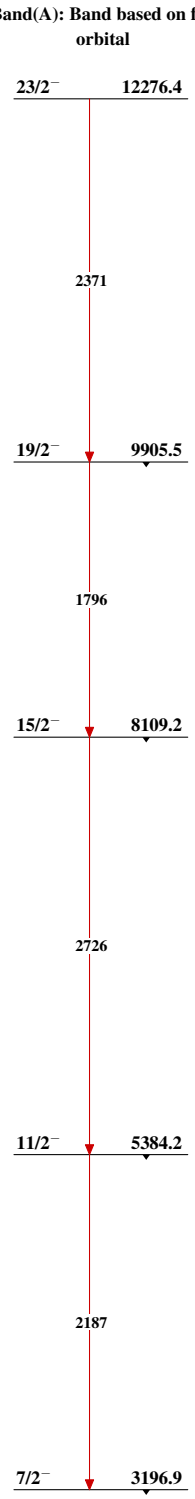
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{35}_{18}Ar_{17}$

Adopted Levels, Gammas



$^{35}_{18}Ar_{17}$