Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Update	B. Singh	ENSDF	11-Dec-2013

Q(β^-)=−12743 *10*; S(n)=16939.9 *12*; S(p)=2271.6 *5*; Q(α)=−9156.4 *5* 2012Wa38

^{25}Al Levels

Cross Reference (XREF) Flags

A	^{25}Si β^+ decay	E	^{24}Mg(^{3}He,d),(pol ^{3}He,d)	I	^{24}Mg(d,n)
B	^{26}P εp decay (43.7 ms)	F	^{28}Si(p,α)	J	^{25}Mg(^{3}He,t)
C	^{27}S β^+2p decay	G	^{27}Al(p,t)		
D	^{24}Mg(p,γ),(p,p′γ)	H	^{25}Al(pol p,p)		

E(level)	Jπ	$T_{1/2}$	XREF	Comments
0†	5/2$^+$	7.183 s *12*	ABCDE GHI	%ε+%β^+=100 μ=3.6455 *12* $T_{1/2}$: weighted average of 7.24 s *3* (1958Mu05), 7.23 s *2* (1971Ju03), 7.177 s *23* (1973Ta04), and 7.174 s *7* (1975Az01). Jπ: Superallowed beta decay to mirror nucleus ^{25}Mg with logft=3.6.
451.7‡ *5*	1/2$^+$	2.29 ns *4*	BCDE	$T_{1/2}$: Weighted average of 1.88 ns 10 (1961Ri08), 2.25 ns 10 (1963Ga07), 2.31 ns 7 (1963Mc07), and 2.27 ns 6 (1964Be34). Jπ: L=0 in (^{3}He,d).
944.9‡ *5*	3/2$^+$	4.3 ps *11*	AB DEFG I	Jπ: M1+E2 to 1/2$^+$ and 5/2$^+$. $T_{1/2}$: From 1972Al28.
1612.5† *5*	(7/2)$^+$	12 fs *2*	AB DEFG IJ	Jπ: M1+E2 to 5/2$^+$, Band assignment. M1+E2 from (9/2)$^+$, no feeding to 1/2$^+$. 3/2$^+$,5/2$^+$ is also possible.
1789.5‡ *5*	5/2$^+$	393 fs *36*	B DEFG I	Jπ: M1+E2 to 3/2$^+$,5/2$^+$, E2 to 1/2$^+$, L=2 in (^{3}He,d).
2485.3# *9*	1/2$^+$	4 fs *2*	DE G I	$T_{1/2}$: Γ_γ/Γ=0.91 *4*. Jπ: L=0 in (^{3}He,d).
2673.3# *6*	3/2$^+$	4 fs *3*	A DEFG I	Jπ: M1+E2 to 1/2$^+$, 5/2$^+$. $T_{1/2}$: Γ_γ/Γ=0.125 *9*.
2720.2‡ *5*	7/2$^+$	201 fs *14*	DEFG	Jπ: M1+E2 to 5/2$^+$, E2 to 3/2$^+$, $\gamma\gamma(\theta)$ in (p,γ).
3062.0 *7*	3/2$^-$	1.3 keV *4*	DE	Jπ: E1(+M2) to 1/2$^+$, 5/2$^+$. $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=122 *18* (1975Tr04).
3424.2† *8*	(9/2)$^+$	9.0 fs *14*	DE	$T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=6.5 *13* (1975Tr04). Jπ: $\gamma\gamma(\theta)$ in (p,γ) consistent with 9/2$^+$,5/2$^+$, E2(+M3) to 5/2$^+$ and M1+E2 to (7/2)$^+$ favors 9/2$^+$ assignment. Band assignment. Not populated by ^{25}Si beta decay.
3695.5 *7*	7/2$^-$	17 fs *8*	D FG I	Jπ: E1(+M2) to 5/2$^+$ and 7/2$^+$, $\gamma\gamma(\theta)$ in (p,γ). $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=35 *5* (1975Tr04).
3823.0 *20*	1/2$^-$	36 keV *7*	DE	Jπ: From $\gamma\gamma(\theta)$ in (p,γ). $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=700 *100* (1975Tr04).
3859.1# *8*	5/2$^+$	0.1 keV	A DE G	Jπ: M1+E2 to 3/2$^+$,7/2$^+$. $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=65 *10* (1975Tr04).
4026 *2*	(9/2,5/2)$^+$	18 fs *3*	DE	Jπ: From $\gamma\gamma(\theta)$ in (p,γ). $T_{1/2}$: (2J+1)$\Gamma_p\Gamma_\gamma/\Gamma$ 10 (1975Tr04).
4192 *4*	3/2$^+$	>0.5 keV	A DE	Jπ: M1+E2 to 1/2$^+$, $\gamma\gamma(\theta)$ in (p,γ). $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=260 *10* (1975Tr04).
4516‡ *5*	(9/2)$^+$	>6.5 eV	DE	Jπ: From $\gamma\gamma(\theta)$ in (p,γ), b and assignment. $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$<0.1 (1975Tr04).
4582 *2*	5/2$^+$		A D	Jπ: Logft=5.1 from 5/2$^+$, $\gamma\gamma(\theta)$ in (p,γ).
4906# *4*	(7/2)$^+$	<10 keV	A DE	Jπ: Logft=5.7 from 5/2$^+$, $\gamma\gamma(\theta)$ in (p,γ), band assignment.

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Adopted Levels, Gammas (continued)

^{25}Al Levels (continued)

E(level)	J^π	$T_{1/2}$	XREF	Comments
				$T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$=52 *11* (1975Tr04).
5045		<10 keV	D	
5068 *5*		<4 keV	DE	
5083		≈50 keV	D	
5101 *10*		<4 keV	E	
5116 *7*		47 keV *5*	E	
5232 *4*			E	
5285	$1/2^+$	185 keV	D	J^π: From $\gamma\gamma(\theta)$ in (p,γ).
5526 *7*		≈18 keV	E	
5597 *6*	$(3/2,5/2,7/2)^+$	55 keV *20*	A D H	$T_{1/2}$: From 1992Ha28. J^π: From $\gamma\gamma(\theta)$ in (p,γ).
5686 *7*			E	
5785 *7*	$1/2^+$	≈15 keV	DE	J^π: From $\gamma\gamma(\theta)$ in (p,γ).
5804 *4*	$(3/2,5/2,7/2)^+$		A E H	J^π: Logft=5.0 from $5/2^+$.
6063 *7*			E H	
6122@ *3*	$3/2^+$	51 keV *2*	DE H J	$T_{1/2}$: Γp=30 keV 1. J^π: From (pol p,p′).
6170 *2*	$(3/2,5/2,7/2)^+$		A	J^π: Logft=5.6 from $5/2^+$.
6322 *5*	7/2	>0.4 keV	DE	J^π: From $\gamma\gamma(\theta)$ in (p,γ). $T_{1/2}$: $\Gamma_p\Gamma_\gamma/\Gamma$<3 (1975Tr04).
6385 *3*	$3/2^-$	<15 keV	H	$T_{1/2}$: Γp/Γtot=0.10 keV. J^π: From (pol p,p′).
6409 *10*		58 keV *7*	DE	
6517 *7*	$3/2^+$	64 keV *16*	E H	$T_{1/2}$: Γp=5 keV 1. J^π: From (pol p,p′).
6620 *9*	$3/2^+$,$5/2^+$,$7/2^+$		A	J^π: Logft=5.7 from $5/2^+$.
6650@ *5*	$5/2^+$	58 keV *9*	DE J	J^π: From (pol p,p′).
6734 *22*	$7/2^-$	195 keV *39*	H	$T_{1/2}$: Γp=18 keV 2. J^π: From (pol p,p′).
6740 *5*	$1/2^+$	152 keV *11*	H	$T_{1/2}$: Γp=137 keV 7. J^π: From (pol p,p′).
6770 *7*			DE	
6829 *4*	$5/2^+$	58 keV *9*	H	$T_{1/2}$: Γp=9 keV 1. J^π: From (pol p,p′).
6877 *7*	$(3/2,5/2,7/2)^+$		A E H	J^π: From (pol p,p′).
6895 *3*	$7/2^-$	53 keV *4*	H	$T_{1/2}$: Γp=17 keV 1. J^π: From (pol p,p′).
6909 *10*	$3/2^+$		E H	J^π: From $\gamma\gamma(\theta)$ in (p,γ).
6944 *10*		104 keV *10*	E	
7022			D H	
7055 *9*	$3/2^-$	616 keV *20*	H	$T_{1/2}$: Γp=449 keV 12. J^π: From (pol p,p′).
7118 *5*	$3/2^+$	117 keV *4*	A DE H J	$T_{1/2}$: Γp=88 keV 3. J^π: From (pol p,p′).
7150 *7*	$5/2^-$	20 keV *6*	H	$T_{1/2}$: Γp=1.4 keV 1. J^π: From (pol p,p′).
7183 *7*			E	
7240 *3*	$5/2^+$	19 keV *4*	A DE H J	$T_{1/2}$: Γp=5 keV 1. J^π: From (pol p,p′).
7297 *3*	$3/2^-$	66 keV *6*	D H	$T_{1/2}$: Γp=51 keV 3. J^π: From (pol p,p′).
7409 *3*	$5/2^-$	<12 keV	H	$T_{1/2}$: Γp/Γtot=0.06 keV.
7422@ *5*	$(7/2)^+$		DE J	J^π: From (pol p,p′), band assignment.
7588			D	
7646	$(3/2,5/2,7/2)^+$	50 keV *15*	A D H	J^π: Logft=4.9 from $5/2^+$.

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Adopted Levels, Gammas (continued)

^{25}Al Levels (continued)

E(level)	J^π	$T_{1/2}$	XREF	Comments
7684 *3*	$7/2^-$	21 keV *3*	A H	$T_{1/2}$: Γp=1.5 keV 2. J^π: From (pol p,p′).
7717 *10*	$3/2^+$	230 keV *20*	H	$T_{1/2}$: Γp=103 keV 7. J^π: From (pol p,p′).
7770		340 keV *15*	D	
7819 *20*		209 keV *20*	E H	
7848		20 keV *8*	D	
7892 *2*	$5/2^-$	94 keV *15*	A H	J^π: From (pol p,p′). $T_{1/2}$: Γp=3.6 keV 15.
7901 *2*	$5/2^+$	0.105 keV *18*	D GH	T=3/2 $T_{1/2}$: Γp=18 eV 4. J^π: Logft=3.25 from $5/2^+$ isobaric analog state.
7936 *20*		35 keV *10*	D H	
7970 *2*	$3/2^+$	1.30 keV *14*	D H	T=3/2 $T_{1/2}$: Γp=232 eV 12. J^π: From (pol p,p′).
8026		20 keV *10*	D	
8077	$(7/2,9/2)^+$	15 keV *7*	D	J^π: From γγ(θ) in (p,γ).
8089 *3*	$5/2^-$	40 keV *9*	D G	$T_{1/2}$: Γp=4.9 keV 1. J^π: From (pol p,p′).
8186 *3*	$(3/2,5/2,7/2)^+$	40 keV *10*	A D J	J^π: Logft=4.1 from $5/2^+$.
9073 *7*	$(3/2,5/2,7/2)^+$		A	J^π: Logft=4.3 from $5/2^+$.

† 5/2[202].
‡ 1/2[211].
# 1/2[200].
@ 3/2[202].

γ(^{25}Al)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.	δ	Comments
451.7	$1/2^+$	451.7 *5*	100	0	$5/2^+$	[E2]		B(E2)(W.u.)=3.03 *6*
944.9	$3/2^+$	493.3 *7*	100 *7*	451.7	$1/2^+$	M1+E2	−0.09 *6*	B(M1)(W.u.)=0.026 *7*; B(E2)(W.u.)=5 *+7−5*
		944.9 *5*	64 *7*	0	$5/2^+$	M1+E2	−0.38 *15*	B(M1)(W.u.)=0.0021 *7*; B(E2)(W.u.)=2.0 *15*
1612.5	$(7/2)^+$	1612.4 *5*	100	0	$5/2^+$	M1+E2	+0.17 *4*	B(M1)(W.u.)=0.34 *12*; B(E2)(W.u.)=25 *12*
1789.5	$5/2^+$	844.6 *7*	100 *8*	944.9	$3/2^+$	M1+E2	+0.17 *2*	B(M1)(W.u.)=0.036 *5*; B(E2)(W.u.)=8.7 *23*
		1337.8 *7*	95 *8*	451.7	$1/2^+$	E2(+M3)	−0.1 *3*	B(E2)(W.u.)=(29 *5*); B(M3)(W.u.)=(1.1×10^6 *+68−11*)
		1789.4 *5*	55 *8*	0	$5/2^+$	M1+E2	+1.0 *2*	B(M1)(W.u.)=0.0011 *3*; B(E2)(W.u.)=2.0 *6*
2485.3	$1/2^+$	1540.2 *10*	19.1 *14*	944.9	$3/2^+$			
		2033.4 *10*	100 *4*	451.7	$1/2^+$	M1		B(M1)(W.u.)=0.5 *3*
		2485.1 *9*	3.3 *4*	0	$5/2^+$			
2673.3	$3/2^+$	883.8 *8*	100.0 *19*	1789.5	$5/2^+$			
		1728.3 *8*	1.2 *5*	944.9	$3/2^+$			
		2221.5 *8*	73.4 *16*	451.7	$1/2^+$	M1(+E2)	+0.05 *5*	B(M1)(W.u.)=(0.16 *12*); B(E2)(W.u.)=(0.5 *+10−5*)
		2673.1 *6*	59.1 *12*	0	$5/2^+$	M1+E2	+0.36 *11*	B(M1)(W.u.)=0.048 *18*
2720.2	$7/2^+$	930.7 *7*	46 *22*	1789.5	$5/2^+$	M1+E2	+0.18 *14*	B(M1)(W.u.)=0.038 *20*; B(E2)(W.u.)=8 *+14−8*
		1775.2 *7*	100 *16*	944.9	$3/2^+$	E2(+M3)	−0.08 *15*	B(E2)(W.u.)=(23 *6*); B(M3)(W.u.)=(3.E+5 *+13−3*)
		2720.0 *5*	13 *10*	0	$5/2^+$			
3062.0	$3/2^-$	2117.0 *8*	16 *4*	944.9	$3/2^+$	E1+M2	+0.06 *4*	

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Adopted Levels, Gammas (continued)

$\gamma(^{25}Al)$ (continued)

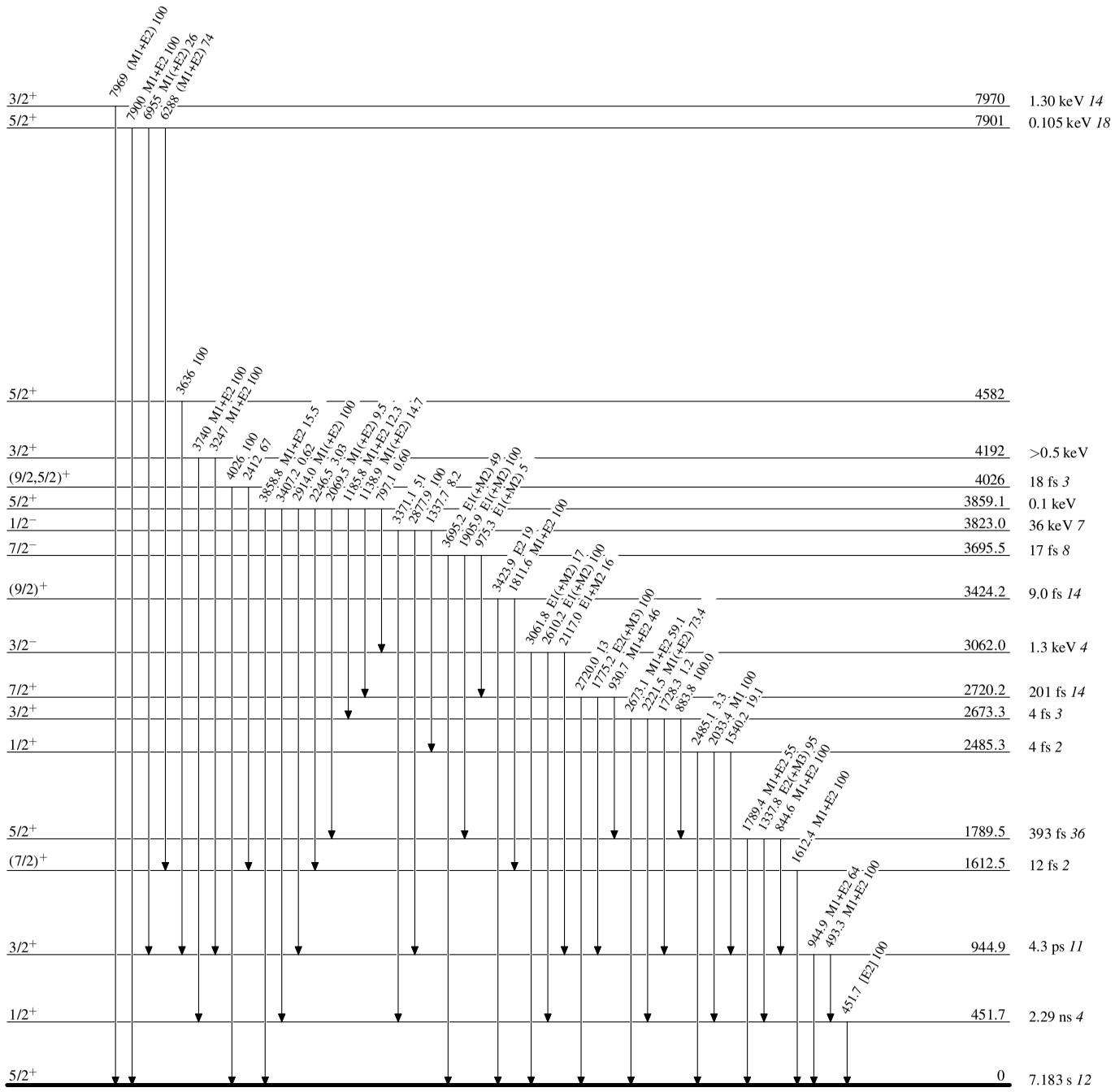
E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult.	δ	Comments
3062.0	$3/2^-$	2610.2 *8*	100 *5*	451.7	$1/2^+$	E1(+M2)	0.00 *2*	
		3061.8 *7*	17 *4*	0	$5/2^+$	E1(+M2)	−0.03 *6*	
3424.2	$(9/2)^+$	1811.6 *9*	100 *5*	1612.5	$(7/2)^+$	M1+E2	+0.14 *3*	B(M1)(W.u.)=0.34 *6*; B(E2)(W.u.)=12 *6*
		3423.9 *8*	19 *5*	0	$5/2^+$	E2		B(E2)(W.u.)=4.8 *16*
3695.5	$7/2^-$	975.3 *8*	5 *3*	2720.2	$7/2^+$	E1(+M2)	−0.20 *25*	B(E1)(W.u.)=(0.0016 *12*); B(M2)(W.u.)=(3.E+2 *+8−3*)
		1905.9 *8*	100 *6*	1789.5	$5/2^+$	E1(+M2)	−0.01 *2*	B(E1)(W.u.)=(0.0044 *21*); B(M2)(W.u.)=(0.6 *+23−6*)
		3695.2 *7*	49 *6*	0	$5/2^+$	E1(+M2)	−0.02 *2*	B(E1)(W.u.)=(0.00029 *15*); B(M2)(W.u.)=(0.04 *+9−4*)
3823.0	$1/2^-$	1337.7 *20*	8.2 *4*	2485.3	$1/2^+$			
		2877.9 *20*	100 *3*	944.9	$3/2^+$			
		3371.1 *20*	51 *8*	451.7	$1/2^+$			
3859.1	$5/2^+$	797.1 *11*	0.60 *7*	3062.0	$3/2^-$			
		1138.9 *9*	14.7 *5*	2720.2	$7/2^+$	M1(+E2)	−0.01 *6*	
		1185.8 *9*	12.3 *3*	2673.3	$3/2^+$	M1+E2	+0.11 *5*	
		2069.5 *9*	9.5 *3*	1789.5	$5/2^+$	M1(+E2)	0.00 *5*	
		2246.5 *9*	3.03 *11*	1612.5	$(7/2)^+$			
		2914.0 *9*	100 *3*	944.9	$3/2^+$	M1(+E2)	+0.03 *3*	
		3407.2 *9*	0.62 *6*	451.7	$1/2^+$			
		3858.8 *8*	15.5 *5*	0	$5/2^+$	M1+E2	+0.07 *5*	
4026	$(9/2,5/2)^+$	2412 *2*	67 *17*	1612.5	$(7/2)^+$			
		4026 *2*	100 *17*	0	$5/2^+$			
4192	$3/2^+$	3247 *4*	100	944.9	$3/2^+$	M1+E2	−0.07 *3*	
		3740 *4*	100	451.7	$1/2^+$	M1+E2	+0.18 *1*	
4582	$5/2^+$	3636 *4*	100	944.9	$3/2^+$			
7901	$5/2^+$	6288 *2*	74 *6*	1612.5	$(7/2)^+$	(M1+E2)	+0.07 *6*	
		6955 *2*	26 *4*	944.9	$3/2^+$	M1(+E2)	+0.02 *3*	
		7900 *2*	100 *6*	0	$5/2^+$	M1+E2	+0.11 *2*	
7970	$3/2^+$	7969 *2*	100	0	$5/2^+$	(M1+E2)	+0.08 *6*	

[†] From level energy differences corrected for recoil energy.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{25}_{13}Al_{12}$