Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst	NDS 134, 1 (2016)	1-Feb-2016

Q(β^-)=9354 *4*; S(n)=5574 *4*; S(p)=1.209×10^4 *5*; Q(α)=−12079 *13* 2012Wa38

^{26}Na Levels

Cross Reference (XREF) Flags

A	^{26}Ne β^- decay	F	^{26}Mg(n,p)
B	^{14}C(^{14}C,dγ)	G	^{26}Mg(t,^{3}He)
C	^{25}Na(d,pγ)	H	^{26}Mg(^{7}Li,^{7}Be)
D	^{26}Ne(d,2nγ)	I	^{26}Mg(^{11}B,^{11}C)
E	Coulomb excitation		

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
0	3$^+$	1.07128 s *25*	ABCDE GHI	%β^-=100 μ=+2.851 *2*; Q=−0.0053 *2* Matter radius <r^2>$^{1/2}$=2.92 fm *3* and 2.93 fm *4* (1998Su07). μ: From 2014StZZ, 1978Hu12. Q: From 2014StZZ, 2000Ke09. Earlier value −0.08 b *5* 1982To05. Jπ: J(g.s.)=3 from Laser spectroscopy measurements (1978Hu12,2013Ma15); π=+ from log *ft*=4.71 to first 2$^+$ in ^{26}Mg from β^- decay of ^{26}Na. $T_{1/2}$: From high-precision measurement 2005Gr07; a statistical uncertainty of 0.00013 s combined with a systematic uncertainty of 0.00021 s contribute to the overall uncertainty. Other values: 1.04 s *3* (1958Nu41); 1.03 s *6* (1961Ro08); 1.070 s *30* (1972Kl04); 1.087 s *12* (1973Al13); 1.05 s *2* (1973Kl09); 1.074 s *6* (1992Te03).
82.2 *6*	1$^+$‡	9 μs *2*	A CDE G	%IT=100 Jπ: 82.5γ E2 to 3$^+$. $T_{1/2}$: From 1987DuZU.
232.7 *6*	2$^+$	0.9 ns *+6−5*	ABCDE GHI	XREF: H(210). Jπ: M1+E2 γ to 3$^+$ and 1$^+$. $T_{1/2}$: From Coulomb excitation.
406.7 *5*	2$^+$	0.18 ns *+17−13*	ABCDE GH	XREF: G(420). Jπ: M1+E2 γ to 3$^+$ and 1$^+$.
840 *40*			H	E(level): From ^{26}Mg(^{7}Li,^{7}Be) 1972Ba35.
1408.0 *10*			B g	
1509.0 *11*	(1$^+$)‡		ABCD g	XREF: B(1514).
1660.2 *12*			B	
1808.0 *6*	(3$^+$)@		C G	XREF: G(1860).
1996.5 *7*	(4$^+$)@		BCD G	
2045.2 *7*			B G i	
2118.2 *8*	(5$^+$)@		C i	
2126.1 *10*			B	
2182.3 *8*			B	
2192.9 *8*	(2$^+$)@		C G	
2225.5 *9*	(4$^+$)@		A CD H	XREF: D(2230). Jπ: 2225γ to 3$^+$ g.s. rules out earlier (0$^+$,1$^+$) assignment.
2230.4 *8*			B	
2284.1 *10*	(5$^+$)		B G	Jπ: Assignment is compatible with 2284γ decay to 3$^+$ g.s. from ^{14}C(^{14}C,dγ) 2006Le17. Other assignment (3$^+$,4$^+$); best fit as 4$^+$ in DWBA analysis although the 3$^+$ prediction gives a good account of all

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Adopted Levels, Gammas (continued)

^{26}Na Levels (continued)

E(level)[†]	Jπ	XREF	Comments
			data other than the most forward-angle measurement in (t,^{3}He) charge-exchange reaction (1987Pe06).
2422.5 *8*	(2$^+$)[@]	C	
2452.7 *8*		B G	
2712.3 *12*		B G	XREF: G(2697).
2720 *3*	(1$^+$)[‡]	AB	XREF: A(2721).
2803.9 *8*		B G	XREF: G(2815).
2853.1 *7*	(2$^-$)[@]	C F	XREF: F(2860).
2937.8 *8*	(1$^+$,2$^+$)[#]	B G	XREF: G(2933).
3134.0 *8*	(3)$^-$[@]	C G	XREF: G(3123). Jπ: L=1 in ^{25}Na(d,pγ) 2015Ca03.
3222.8 *10*	(2$^+$)	B G	XREF: G(3232). Jπ: Based on differential cross section measurements compared to DWBA calculations from charge-exchange (t,^{3}He) reaction and shell-model analysis (1987Pe06). Hypothesis supported by angular distributions measured in ^{14}C(^{14}C,D) (2006Le17).
3304.6 *12*		B G	XREF: G(3310).
3417.4 *12*		B G	XREF: G(3400).
3509.3 *8*	(4)$^-$[@]	C	Jπ: L=1 in ^{25}Na(d,pγ) 2015Ca03.
3603.4 *12*		B G	XREF: G(3618).
3814 *15*		G	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01.
3966 *15*		G	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01.
4090.1 *12*	(2)$^-$	C G	Jπ: Based on 2282γ to 3$^+$ state at 1807.8 keV; assumed E1 transition according to systematics in this mass region (2015Ca03). L=1 in ^{25}Na(d,pγ) 2015Ca03.
4188.1 *15*		B G	XREF: G(4190). E(level): Probable doublet in 1974Fl01.
4303.4 *8*	(5$^-$)[@]	C	
4440 *15*		G	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01.
4702 *15*		G I	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01. E(level): Probable doublet in 1974Fl01.
4915.4 *9*	(6$^-$)[@]	C H	XREF: H(4910).
4970 *40*	(4$^+$)[#]	G	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01.
5013.2 *12*	(3$^-$,4$^-$)[@]	C	
5080 *60*	(2$^+$)	G	
5480	[#]	F	
7200		G	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01.
9000		G	E(level): From ^{26}Mg(t,^{3}He) 1974Fl01.

[†] From least-squares fit to Eγ data (by evaluators) yielding a reduced χ^2=1.8 assuming Δ(Eγ)=1 keV for γ rays without uncertainty, except where noted.

[‡] Based on observation of allowed β^- decay from 0$^+$ g.s. in ^{26}Ne.

[#] Based on differential cross section measurements compared to DWBA calculations from charge-exchange (t,^{3}He) reaction and shell-model analysis (1987Pe06).

[@] Deduced by excitation energy, angular momentum transfer, spectroscopic factor, comparison with shell-model calculations, and measured γ-ray branching ratios from ^{25}Na(d,pγ) in 2015Ca03 and 2012WiZW.

Adopted Levels, Gammas (continued)

$\gamma(^{26}Na)$

E_i(level)	J_i^π	E_γ[†]	I_γ[@]	E_f	J_f^π	Mult.[&]	δ[&]	Comments
82.2	1^+	84[‡] *3*	100	0	3^+	E2[a]		B(E2)(W.u.)=3.6 *9*
232.7	2^+	153[‡] *3*	75.1 *25*	82.2	1^+	M1+E2	+0.16 *7*	B(M1)(W.u.)=0.0030 *+17−20*; B(E2)(W.u.)=19 *+20−18*
								I_γ: Other: 81 *3* (Coulomb Excitation).
		232[‡] *2*	100 *4*	0	3^+	M1+E2	−0.32 *14*	B(M1)(W.u.)=0.0010 *+6−7*; B(E2)(W.u.)=11 *10*
								Mult.: M1 in ^{25}Na(d,pγ) 2015Ca03.
406.7	2^+	174	2.8 *4*	232.7	2^+			
		323	14.6 *6*	82.2	1^+	M1+E2	+0.14 *9*	B(M1)(W.u.)=0.0004 *+2−3*; B(E2)(W.u.)=0.5 *+7−4*
		404[‡] *3*	100.0 *19*	0	3^+	M1+E2	−0.25 *12*	B(M1)(W.u.)=0.0015 *+11−14*; B(E2)(W.u.)=3 *+4−2*
								Mult.: M1 in ^{25}Na(d,pγ) 2015Ca03.
1408.0		1408	100.0	0	3^+			
1509.0	(1^+)	1102	<10.00	406.7	2^+			
		1279[‡] *3*	≈100.0	232.7	2^+	D		E_γ: Other: 1274 in (d,pγ) 2015Ca03.
1660.2		1578[#]	100.0	82.2	1^+			
1808.0	(3^+)	1402	8.8 *19*	406.7	2^+			
		1577	24 *4*	232.7	2^+			
		1806	100 *6*	0	3^+			
1996.5	(4^+)	1590[#]	≈54.8	406.7	2^+			
		1764[#]	≈100.0	232.7	2^+			
		1996[#]	≈100.0	0	3^+			
2045.2		1639[#]	100.0	406.7	2^+			
		2044[b#]	100.0[b]	0	3^+			
2118.2	(5^+)	2118	100.0	0	3^+			
2126.1		2126[#]	100.0	0	3^+			
2182.3		1775[#]	100.0	406.7	2^+			
		2101[#]	18.6	82.2	1^+			
2192.9	(2^+)	1786	<20.00	406.7	2^+			
		2193	≈100.0	0	3^+			
2225.5	(4^+)	418	6.2 *6*	1808.0	(3^+)			
		2219[‡] *4*	100 *5*	0	3^+			E_γ: Other: 2225 ^{25}Na(d,pγ) 2015Ca03.
2230.4		1996[b#]	70.5[b]	232.7	2^+			
		2232[#]	100.0	0	3^+			
2284.1	(5^+)	2284	100.0	0	3^+			
2422.5	(2^+)	2015	1.0×10^2 *4*	406.7	2^+			
		2423	$9.\times10^1$ *3*	0	3^+			
2452.7		2044[b#]	37.9[b]	406.7	2^+			E_γ: 2045 in Figure 4 of 2006Le17.
		2371[#]	100.0	82.2	1^+			
2712.3		2630[#]	100.0	82.2	1^+			
2720	(1^+)	1212[‡] *3*	100.0	1509.0	(1^+)			
		2486[‡] *4*	92.0	232.7	2^+			E_γ: Other: 2493 (^{14}C,dγ).
2803.9		350[#]	24.1	2452.7				E_γ: 351 in Figure 4 of 2006Le17.
		2805[#]	100.0	0	3^+			
2853.1	(2^-)	2620	81 *8*	232.7	2^+			
		2771	100 *8*	82.2	1^+			
		2853	60 *6*	0	3^+			
2937.8	$(1^+,2^+)$	2855	76.2	82.2	1^+			

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Adopted Levels, Gammas (continued)

γ(^{26}Na) (continued)

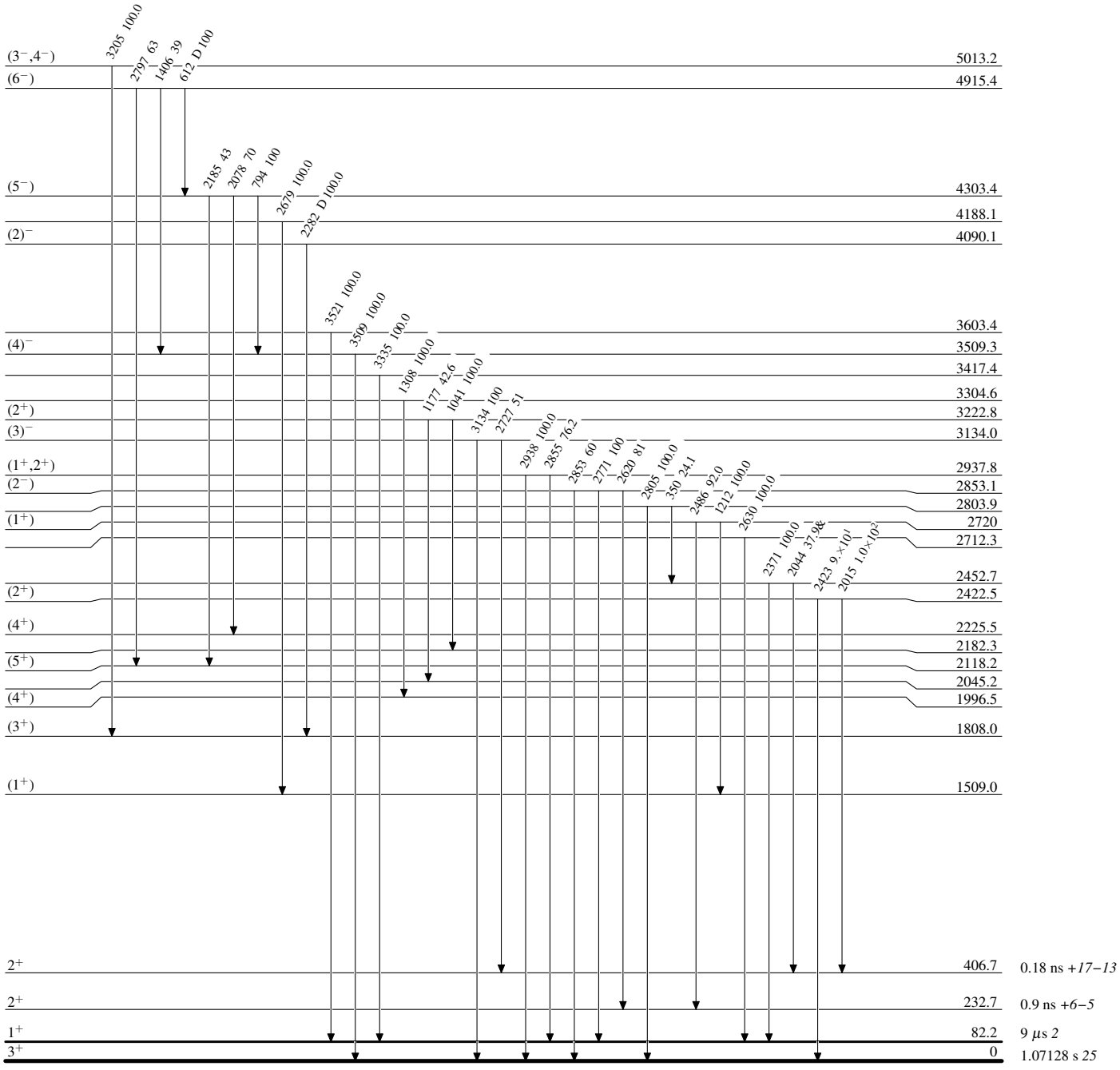
E_i(level)	J_i^π	E_γ[†]	I_γ[@]	E_f	J_f^π	Mult.[&]	Comments
2937.8	$(1^+,2^+)$	2938	100.0	0	3^+		
3134.0	$(3)^-$	2727	51 *6*	406.7	2^+		
		3134	100 *7*	0	3^+		
3222.8	(2^+)	1041[#]	100.0	2182.3			
		1177[#]	42.6	2045.2			
3304.6		1308[#]	100.0	1996.5	(4^+)		
3417.4		3335[#]	100.0	82.2	1^+		
3509.3	$(4)^-$	3509	100.0	0	3^+		
3603.4		3521[#]	100.0	82.2	1^+		
4090.1	$(2)^-$	2282	100.0	1808.0	(3^+)	D[a]	Mult.: based on systematics in mass region 2015Ca03.
4188.1		2679[#]	100.0	1509.0	(1^+)		
4303.4	(5^-)	794	100 *7*	3509.3	$(4)^-$		
		2078	70 *6*	2225.5	(4^+)		
		2185	43 *4*	2118.2	(5^+)		
4915.4	(6^-)	612	100 *6*	4303.4	(5^-)	D[a]	
		1406	39 *4*	3509.3	$(4)^-$		
		2797	63 *5*	2118.2	(5^+)		
5013.2	$(3^-,4^-)$	3205	100.0	1808.0	(3^+)		

[†] From ^{25}Na(d,pγ), except otherwise noted.
[‡] From ^{26}Ne β^- decay.
[#] From ^{14}C(^{14}C,dγ).
[@] Relative photon branching from each level.
[&] Deduced from angular distributions in ^{14}C(^{14}C,dγ) 2006Le17. Measured D+Q assumed as M1+E2.
[a] Deduced from differential cross sections and angular distributions in ^{25}Na(d,pγ) 2015Ca03.
[b] Multiply placed with undivided intensity.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

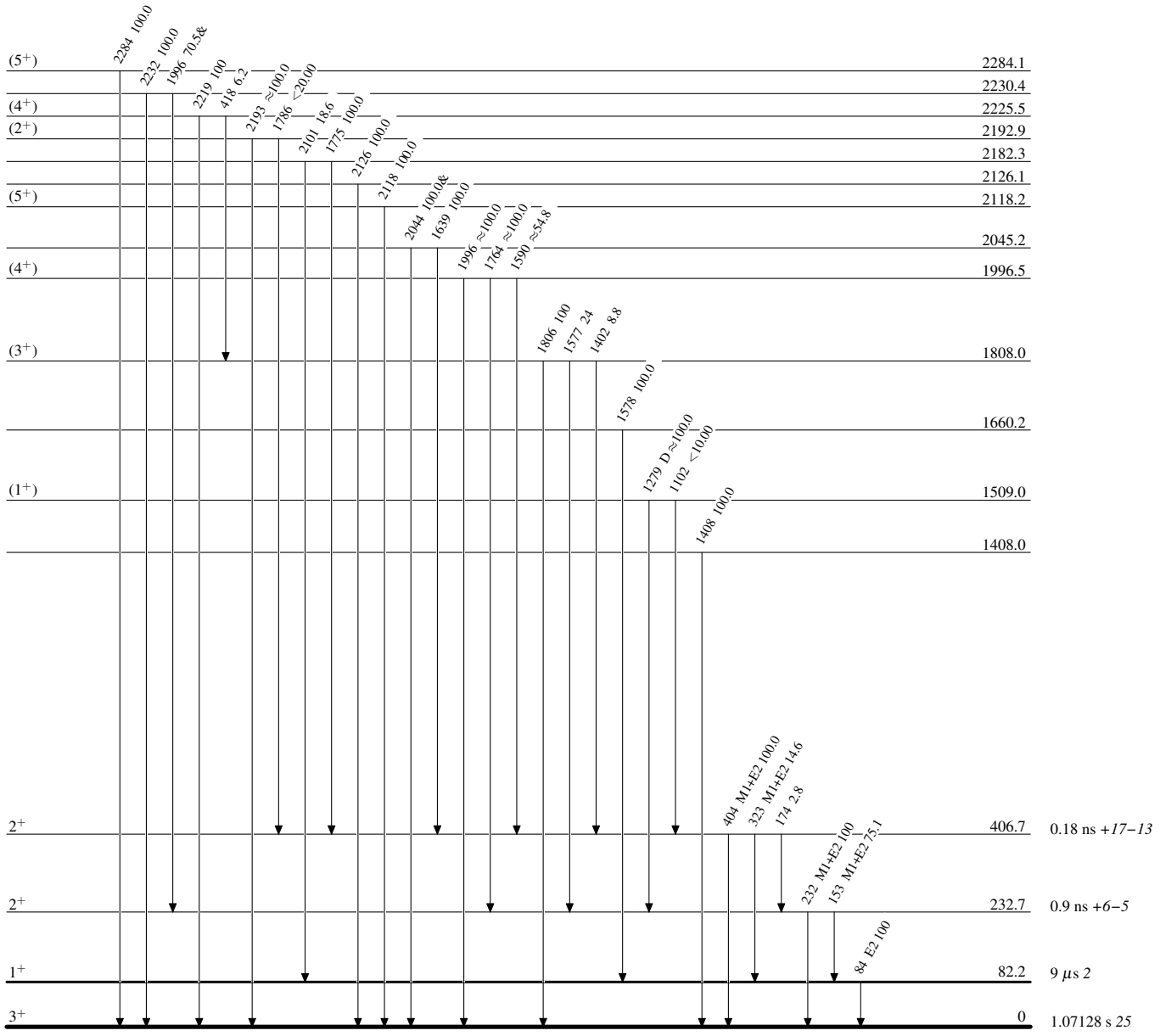


$^{26}_{11}Na_{15}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{26}_{11}Na_{15}$