^{26}Mg(pol γ,γ'),(γ,γ') 2009Lo06,2009Sc06,1984Be26

History

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

Other references: 2010De29.

2009Lo06,2010De29: (pol γ,γ'): 99.41% enriched MgO target; E=10.8, 11.0, 11.2, 11.4 MeV γ-ray beam energies for nuclear resonance fluorescence at the TUNL HIγS facility. Four HPGe detectors for measurements of Eγ, Iγ and angular correlation with linear polarized beam. In 2010De29, total and partial widths are determined for five states which are relevant to predictions of neutron production for the s-process nucleosynthesis.

2009Sc07: (G,G′): 98.4% enriched MgO target; unpolarized photon from bremsstrahlung of E=13.0 MeV electrons, produced by ELBE accelerator at Dresden-Rossendorf research center, bombarded the target; scattered photons detected with four high-purity germanium detectors. Measured Eγ, Iγ, $\gamma(\theta)$, widths.

1984Be26: (pol γ,γ'): polarized photon from off-axis bremsstrahlung of E=18.0 MeV electrons on a 25 μm Al foil; Ge(Li) detectors placed at 0°, 90°, 180°, and 270° relative to polarization plane; Measured Eγ, Iγ, widths.

All data from 2009Lo06 unless otherwise stated.

^{26}Mg Levels

E(level)[†]	J$^\pi$[†]	Γ[&]	Comments
0.0[‡]	0$^+$[‡]		
1808.73[‡] *3*	2$^+$[‡]		
2938.34[‡] *4*	2$^+$[‡]		
3588.56[‡] *9*	0$^+$[‡]		
4332.57[‡] *5*	2$^+$[‡]		
4972.29[‡] *12*	0$^+$[‡]		
5291.74[‡] *5*	2$^+$[‡]		
7099.66[‡] *10*	2$^+$[‡]		
7697.3[@] *8*	1$^-$		
8228.1[@] *8*	1$^{(+)}$	1.0[a] fs *2*	$\Gamma_{\gamma 0}$=0.23 eV *5* (1984Be26) Γ_0/Γ=51% 4 (1984Be26).
8504.2[@] *4*	1$^-$		
8959.9[@] *7*	1$^-$		
9139.5[@] *13*	1		
9239.0[@] *4*	1$^{+\#}$	314[a] as *40*	$\Gamma_{\gamma 0}$=1.18 eV *15* (1984Be26) Γ_0/Γ=88% 2 (1984Be26).
9563.5[@] *8*	1$^{+\#}$	563[a] as *99*	$\Gamma_{\gamma 0}$=0.51 eV *9* (1984Be26) Γ_0/Γ=71% 5 (1984Be26).
9770.8[@] *9*	1$^{(-)}$		
10103.1[@] *7*	1$^-$		
10147.1[@] *6*	1$^{+\#}$	112[a] as *15*	$\Gamma_{\gamma 0}$=2.9 eV *4* (1984Be26) Γ_0/Γ=70% 2 (1984Be26)v.
10319.5[@] *7*	1$^{+\#}$	345[a] as *83*	$\Gamma_{\gamma 0}$=0.79 eV *19* (1984Be26) Γ_0/Γ=100% (1984Be26).
10573.3 *8*	1$^-$	0.20 eV *5*	Partial γ widths: 0.094 eV *26* for transition to g.s., 0.106 eV *29* for transition to 4972, 0$^+$ level.
10647.3 *8*	1$^{+\#}$	97 as *5*	$\Gamma_{\gamma 0}$=6.3 eV *7* and Γ_0/Γ=100% (1984Be26). Γ: Deduced by evaluators using Γ_0=4.12 eV *20*.

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^{26}Mg(pol γ,γ′),(γ,γ′) 2009Lo06,2009Sc06,1984Be26 (continued)

^{26}Mg Levels (continued)

E(level)†	Jπ†	Γ&	Comments
			Partial γ widths: 4.12 eV *20* for transition to g.s.; 0.07 eV *1* for transition to 1809, 2^+; 0.30 eV *2* for transition to 2938, 2^+; 0.08 eV *1* each for transitions to 4972, 0^+ and 5292, 2^+ levels; 0.06 eV *1* for transition to 7100, 2^+ level.
10805.7 *7*	1^-	0.72 eV *18*	Partial γ widths: 0.16 eV *4* for transition to g.s., 0.56 eV *5* for transition to 1809, 2^+ level.
10949.1 *8*	1^-	1.87 eV *30*	Partial γ widths: 0.26 eV *4* for transition to g.s.; 1.07 eV *5* for transition to 1809, 2^+; 0.25 eV *2* for transition to 2938, 2^+; 0.09 eV *1* for transition to 3589, 0^+; and 0.20 eV *2* for transition to 4333, 2^+ level.
11153.5 *10*	1^+	11.2 eV *7*	Γ_γ=2.78 eV *28* Jπ: Unnatural parity determined in 2009Lo06. Spin 1 in 2009Sc07. Γ_γ/Γ=0.249 adopted by 2010De29 from 2002Ko57. Partial γ widths: 1.91 eV *10* for transition to g.s.; 0.08 eV *4* for transition to 1809, 2^+; 0.31 eV *3* for transition to 3589, 0^+; 0.21 eV *2* for transition to 4333, 2^+; and 0.27 *5* for transition to 4972, 0^+ level.

† From 2009Lo06, except otherwise noted. The assignments are from angular correlation and polarization measurements.
‡ From Adopted Levels.
# From 1984Be26, based on polarization measurements.
@ From 2009Sc07. Recoil and Doppler-shift-corrected energy.
& From 2010De29.
a Deduced by evaluators from Γ_0 (1984Be26) and γ_0 branching.

γ(^{26}Mg)

2010De29 note that multipolarity mixings were not determined, when transitions can be of a mixed nature. R=Iγ(90°)/Iγ(127°) (2009Sc07) listed as comments.
Γ_f=partial γ width to the final state (2009Sc07).

E_i(level)	J_i^π	E_γ†	I_γ#	E_f	J_f^π	Comments
7697.3	1^-	4757.6‡	24‡ *8*	2938.34	2^+	B(E1)=15×10^{-6} *4* (2009Sc07). Γ_f=0.16 keV *4* (2009Sc07).
		5887.9‡	11‡ *3*	1808.73	2^+	B(E1)=3.6×10^{-6} *13* (2009Sc07). Γ_f=0.076 keV *26* (2009Sc07).
		7696.1‡	65‡ *20*	0.0	0^+	R=0.66 *10* (2009Sc07). B(E1)=9×10^{-6} *3* (2009Sc07). Γ_f=0.45 keV *15* (2009Sc07).
8228.1	$1^{(+)}$	6417.5‡	49‡ *7*	1808.73	2^+	B(M1)=8.9×10^{-2} *25* (2009Sc07). Γ_f=0.28 keV *8* (2009Sc07).
		8226.7‡	51‡ *12*	0.0	0^+	R=0.64 *18* (2009Sc07). B(M1)=4.4×10^{-2} *14* (2009Sc07). Γ_f=0.29 keV *9* (2009Sc07).
8504.2	1^-	6693.5‡	29‡ *2*	1808.73	2^+	B(E1)=28×10^{-6} *3* (2009Sc07). Γ_f=0.88 keV *10* (2009Sc07).
		8502.7‡	71‡ *6*	0.0	0^+	R=0.66 *4* (2009Sc07). B(E1)=33×10^{-6} *4* (2009Sc07). Γ_f=2.14 keV *27* (2009Sc07).
8959.9	1^-	7149.4‡	39‡ *4*	1808.73	2^+	B(E1)=16×10^{-6} *4* (2009Sc07). Γ_f=0.60 keV *14* (2009Sc07).
		8958.3‡	61‡ *7*	0.0	0^+	R=0.49 *7* (2009Sc07).

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^{26}Mg(pol γ,γ′),(γ,γ′) 2009Lo06,2009Sc06,1984Be26 (continued)

γ(^{26}Mg) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[#]	E_f	J_f^π	Comments
						B(E1)=12.5×10^{-6} *22* (2009Sc07). Γ_f=0.94 keV *16* (2009Sc07).
9139.5	1	9137.8[‡]	100[‡]	0.0	0$^+$	R=0.8 *3* (2009Sc07). B(E1)=1.7×10^{-6} *4* (2009Sc07). B(M1)=1.4×10^{-2} *3* (2009Sc07). Γ_f=0.13 keV *3* (2009Sc07).
9239.0	1$^+$	5649.5[‡]	19[‡] *4*	3588.56	0$^+$	B(M1)=17×10^{-2} *5* (2009Sc07). Γ_f=0.35 keV *10* (2009Sc07).
		9237.3[‡]	81[‡] *16*	0.0	0$^+$	R=0.64 *6* (2009Sc07). B(M1)=16×10^{-2} *4* (2009Sc07). Γ_f=1.47 keV *33* (2009Sc07).
9563.5	1$^+$	7753.1[‡]	33[‡] *7*	1808.73	2$^+$	B(M1)=5.4×10^{-2} *14* (2009Sc07). Γ_f=0.30 keV *8* (2009Sc07).
		9561.6[‡]	67[‡] *14*	0.0	0$^+$	R=0.63 *11* (2009Sc07). B(M1)=5.8×10^{-2} *14* (2009Sc07). Γ_f=0.59 keV *15* (2009Sc07).
9770.8	1$^{(-)}$	7961.1[‡]	41[‡] *8*	1808.73	2$^+$	B(E1)=7.2×10^{-6} *28* (2009Sc07). Γ_f=0.38 keV *15* (2009Sc07).
		9768.8[‡]	59[‡] *11*	0.0	0$^+$	R=0.53 *11* (2009Sc07). B(E1)=5.8×10^{-6} *14* (2009Sc07). Γ_f=0.56 keV *14* (2009Sc07).
10103.1	1$^-$	7162.9[‡]	21[‡] *3*	2938.34	2$^+$	B(E1)=14.3×10^{-6} *25* (2009Sc07). Γ_f=0.55 keV *10* (2009Sc07).
		10101.0[‡]	79[‡] *11*	0.0	0$^+$	R=0.74 *7* (2009Sc07). B(E1)=19×10^{-6} *3* (2009Sc07). Γ_f=2.04 keV *36* (2009Sc07).
10147.1	1$^+$	8337.9[‡]	30[‡] *2*	1808.73	2$^+$	B(M1)=21.1×10^{-2} *21* (2009Sc07). Γ_f=1.44 keV *14* (2009Sc07).
		10145.0[‡]	70[‡] *6*	0.0	0$^+$	R=0.61 *8* (2009Sc07). B(M1)=28×10^{-2} *4* (2009Sc07). Γ_f=3.4 keV *5* (2009Sc07).
10319.5	1$^+$	7378.4[‡]	40[‡] *11*	2938.34	2$^+$	B(M1)=10×10^{-2} *3* (2009Sc07). Γ_f=0.48 keV *15* (2009Sc07).
		10317.3[‡]	60[‡] *13*	0.0	0$^+$	R=0.70 *14* (2009Sc07). B(M1)=5.6×10^{-2} *15*, 3.3×10^{-2} *5* if 100% branch for 10317γ (2009Sc07). Γ_f=0.72 keV *19* (2009Sc07).
10573.3	1$^-$	5600.4	53 *9*	4972.29	0$^+$	
		10571.0	47 *10*	0.0	0$^+$	B(E1)(W.u.)=1.3×10^{-4} *4* (2010De29)
10647.3	1$^+$	3547.4	1.24 *12*	7099.66	2$^+$	
		5355.0	1.62 *13*	5291.74	2$^+$	
		5674.4	1.62 *13*	4972.29	0$^+$	
		7707.7	6.4 *3*	2938.34	2$^+$	
		8837.0	1.55 *18*	1808.73	2$^+$	
		10645.0	88 *3*	0.0	0$^+$	B(M1)(W.u.)=0.16 *8* (2010De29) E_γ,I_γ: Other: 10646.5 and 100 in 2009Sc07. R=0.75 *5* (2009Sc07). B(M1)=33×10^{-2} *3* (2009Sc07). Γ_f=4.6 keV *5* (2009Sc07).
10805.7	1$^-$	8995.3	78 *9*	1808.73	2$^+$	
		10803.3	22 *6*	0.0	0$^+$	B(E1)(W.u.)=2.1×10^{-4} *5* (2010De29)

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^{26}Mg(pol γ,γ'),(γ,γ') 2009Lo06,2009Sc06,1984Be26 (continued)

$\gamma(^{26}Mg)$ (continued)

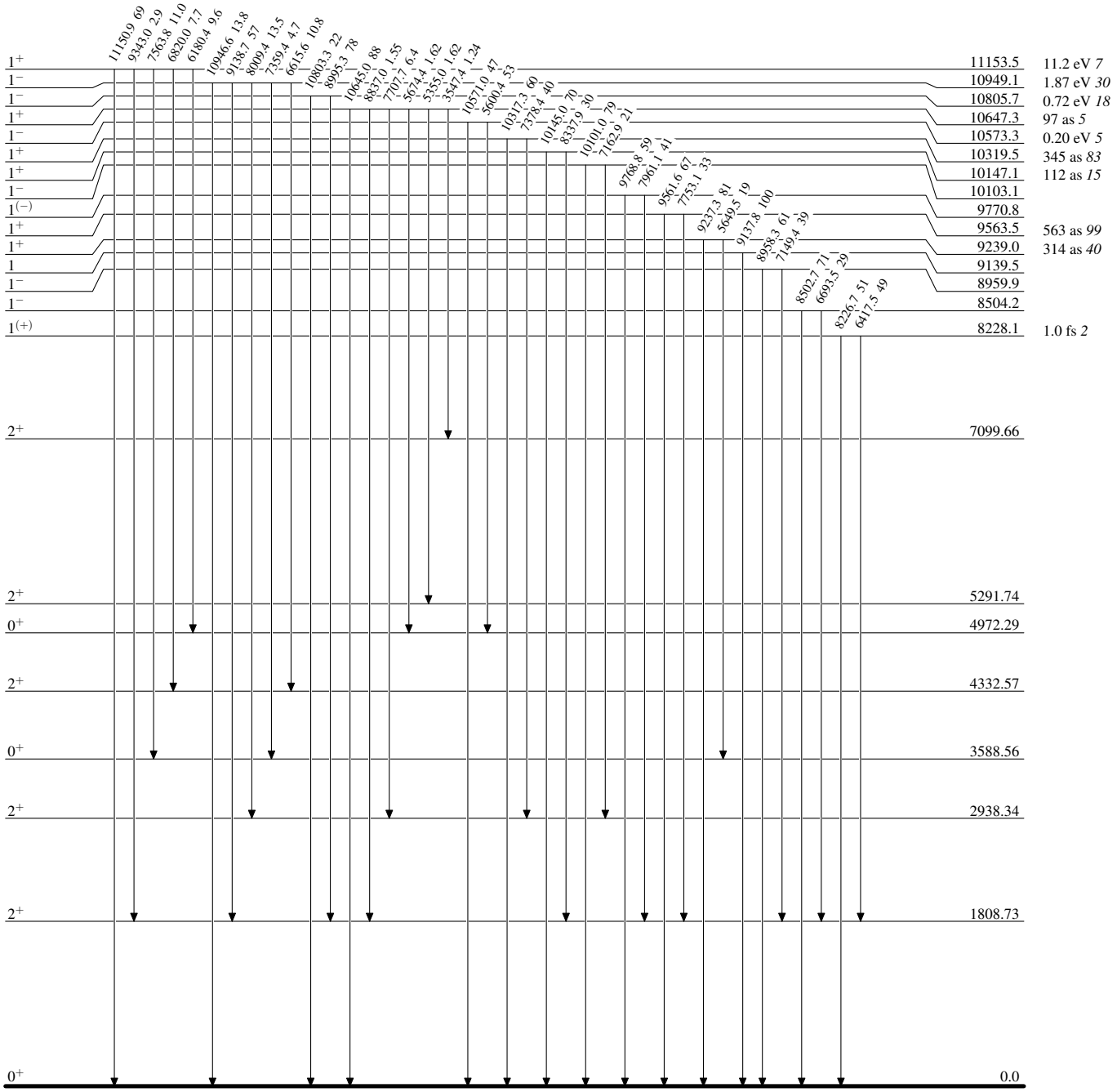
E_i(level)	J_i^π	E_γ †	I_γ #	E_f	J_f^π	Comments
10949.1	1^-	6615.6	10.8 *10*	4332.57	2^+	I_γ: uncertainty of 0.096 in table IV of 2009Lo06 seems to be a misprint; the evaluators have decreased it by a factor of 10.
		7359.4	4.7 *7*	3588.56	0^+	
		8009.4	13.5 *13*	2938.34	2^+	
		9138.7	57 *3*	1808.73	2^+	
		10946.6	13.8 *19*	0.0	0^+	B(E1)(W.u.)=3.3×10^{-4} *5* (2010De29)
11153.5	1^+	6180.4	9.6 *24*	4972.29	0^+	
		6820.0	7.7 *11*	4332.57	2^+	
		7563.8	11.0 *22*	3588.56	0^+	
		9343.0	2.9 *4*	1808.73	2^+	
		11150.9	69 *8*	0.0	0^+	B(M1)(W.u.)=0.0656 *3* (2010De29) E_γ,I_γ: Other: 11151.2 and 100 in 2009Sc07. R=0.61 *15* (2009Sc07). B(E1)=1.7×10^{-6} *3* (2009Sc07). B(M1)=1.6×10^{-2} *3* (2009Sc07). Γ_f=0.25 keV *5* (2009Sc07).

† From level energy differences and recoil energy subtraction, except otherwise noted.
‡ From 2009Sc07. Eγ values are mean of measured value at 90° and Doppler-shift corrected value measured at 127°.
# Branching ratios from 2009Lo06. Listed values in 2009Lo06 are multiplied by 100.

^{26}Mg(pol γ,γ'),(γ,γ') 2009Lo06,2009Sc06,1984Be26

Level Scheme

Intensities: % photon branching from each level

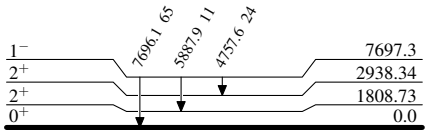


$^{26}_{12}Mg_{14}$

^{26}Mg(pol γ,γ′),(γ,γ′) 2009Lo06,2009Sc06,1984Be26

Level Scheme (continued)

Intensities: % photon branching from each level



$^{26}_{12}Mg_{14}$