^{40}Ca(^{24}Mg,α2pγ) 1999Vi12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh	NDS 111,897 (2010)	12-Jan-2010

1999Vi12 (also 1999Mo14) E=65 MeV. Measured Eγ, $\gamma\gamma$, Iγ(singles and $\gamma\gamma$), $\gamma\gamma(\theta)$(DCO) using the AYEBALL array with TESSA type detectors, eight EUROGAM detectors and one GAMMASPHERE detector.

Others:

2004Iz01 and 2002Ru06 are from the same group as 2009Jo03 and data from these two papers are covered in ^{28}Si(^{36}Ar,α2pγ) dataset. 2001Ru04 is now superseded by 2009Jo03.

2004Iz01: measured $\gamma\gamma(\theta)$(DCO) and lin POL for three γ rays.

2001Ru04: detailed but preliminary level scheme. See 2009Jo03 from the same group for a complete level scheme from ^{28}Si(^{36}Ar,α2pγ) reaction which completely supersedes 2001Ru04.

^{58}Ni Levels

E(level)[†]	J$^\pi$[‡]	Comments
0	0^+	
1454.4 *4*	2^+	
2459.5 *6*	4^+	
3620.7 *6*	4^+	
4108.0 *7*	4^+	
4361.2 *14*	(5)	J$^\pi$: (2^+,3,4^+) In Adopted Levels.
4383.6 *6*	5^+	
4963.8 *14*	$(5)^+$[#]	
5128.2 *7*	6^+	
5386.0 *7*	6^+[#]	
6068.3 *7*	(7^+)	
6084.9 *8*	7^-[#]	
6220.6 *8*	7^+[#]	
6605.0 *8*	8^+	
7231.8? *9*		E(level): this level is questionable and omitted In Adopted Levels due to the reassignment of 627γ from 9346, 10^- level In high-spin study of 2009Jo03.
7446.3 *9*	9^+[#]	
8121.6 *10*	(9^+)[#]	

[†] From least-squares fit to Eγ's.

[‡] As proposed by 1999Vi12, based on $\gamma\gamma(\theta)$(DCO) data, except when stated otherwise.

[#] From 2002Ru06, 2004Iz01 and 2009Jo03.

γ(^{58}Ni)

E$_\gamma$	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	Comments
275.6 *4*	3 *1*	4383.6	5^+	4108.0	4^+		DCO=0.95 *9*.
536.7 *3*	14 *1*	6605.0	8^+	6068.3	(7^+)		
626.8[#] *5*	3 *1*	7231.8?		6605.0	8^+		E$_\gamma$: this γ is assigned to a 9346,10^- level In high-spin study of 2009Jo03.
682.4 *5*	1 *1*	6068.3	(7^+)	5386.0	6^+		DCO=0.32 *8*.
698.8 *5*	2 *1*	6084.9	7^-	5386.0	6^+	D	DCO=0.46 *8* (1999Vi12)
[x]708.0 *5*	1 *1*						
744.6 *3*	30 *3*	5128.2	6^+	4383.6	5^+		DCO=1.00 *6*.
762.9 *3*	35 *2*	4383.6	5^+	3620.7	4^+		DCO=0.94 *5*.
[x]834.6 *4*	7 *1*						
841.3 *4*	11 *1*	7446.3	9^+	6605.0	8^+		DCO=0.99 *9*.

Continued on next page (footnotes at end of table)

^{40}Ca(^{24}Mg,α2pγ) 1999Vi12 (continued)

γ(^{58}Ni) (continued)

E_γ	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult. †	Comments
940.1 *4*	19 *2*	6068.3	(7^+)	5128.2	6^+		
956.9 *7*	5 *1*	6084.9	7^-	5128.2	6^+	D	DCO=0.86 *16* (1999Vi12)
1002.0 *10*		5386.0	6^+	4383.6	5^+		DCO=0.94 *6*.
1004.9 *5*	100 *4*	2459.5	4^+	1454.4	2^+	Q	DCO=1.02 *2*.
1092.4 *5*	6 *1*	6220.6	7^+	5128.2	6^+		DCO=0.67 *23*.
1161.1 *3*	39 *5*	3620.7	4^+	2459.5	4^+	D	Mult.: ΔJ=0, dipole from DCO. DCO=1.10 *10*.
[x]1256.2 *5*	2 *1*					D	DCO=0.30 *12*
1454.4 *4*	122 *7*	1454.4	2^+	0	0^+	Q	DCO=1.06 *8*.
1476.8 *11*	14 *2*	6605.0	8^+	5128.2	6^+	Q	DCO=0.98 *2*.
1516.5 *7*	5 *2*	8121.6	(9^+)	6605.0	8^+	(D)	DCO=0.61 *12*.
1684.7 *10*	8 *2*	6068.3	(7^+)	4383.6	5^+		DCO=0.86 *18*.
1764.8 *11*	5 *2*	5386.0	6^+	3620.7	4^+		DCO=0.50 *16*.
1901.7 *12*	3 *1*	4361.2	(5)	2459.5	4^+		
1924.0 *7*	13 *2*	4383.6	5^+	2459.5	4^+	D	DCO=0.49 *5*.
2166.4 *5*	11 *1*	3620.7	4^+	1454.4	2^+		DCO=1.2 *5*.
2504.2 *13*	5 *2*	4963.8	$(5)^+$	2459.5	4^+		DCO=1.2 *5*.
2653.7 *12*	3 *1*	4108.0	4^+	1454.4	2^+		DCO=0.8 *3*.
2668.6 *10*	16 *3*	5128.2	6^+	2459.5	4^+	Q	DCO=1.06 *9*.
2926.5 *15*	3 *1*	5386.0	6^+	2459.5	4^+		DCO=0.90 *27*.
3626.2 *16*		6084.9	7^-	2459.5	4^+	[E3]	DCO=0.86 *27*.

† From DCO values.
‡ Intensities listed are singles. 1999Vi12 also quote $\gamma\gamma$ intensities.
# Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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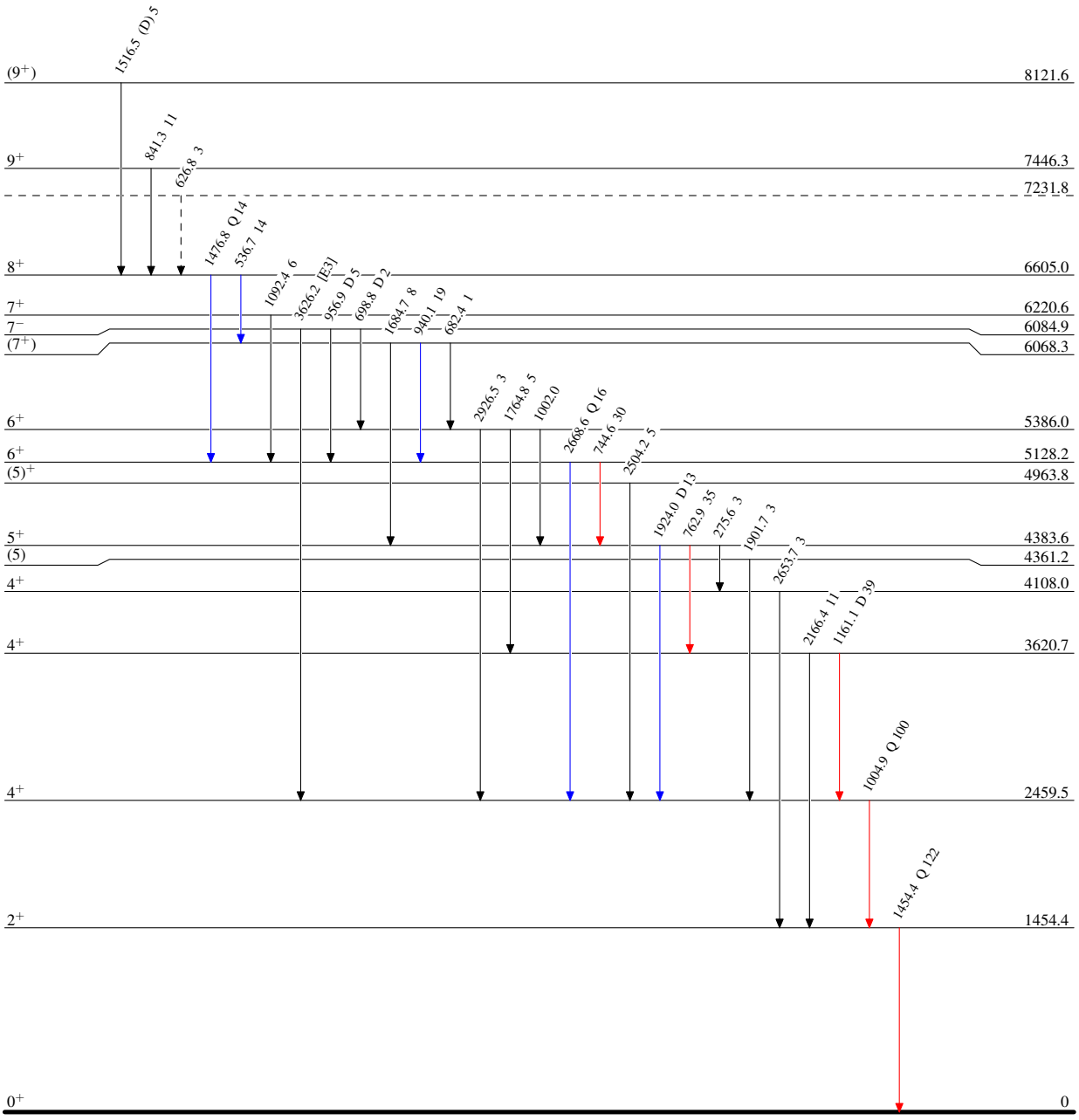
Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{58}_{28}Ni_{30}$