

$^{24}\text{Mg}(^{40}\text{Ca},\text{p}2\text{n}\gamma)$ 2005An03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Kazimierz Zuber, Balraj Singh		NDS 125, 1 (2015)	25-Jan-2015

2005An03 (also 2005Ru06,2005Ek01): E=104 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, (recoil) $\gamma\gamma$ coin with the CLARION detector array, composed of ten Clover detectors and recoil spectrometer. The relative cross sections of the three A=61 isotopes ^{61}Cu , ^{61}Zn , and ^{61}Ga were estimated from the known or presumed ground state transitions to be 420:110:1, respectively. Comparison with structure of mirror nuclide ^{61}Zn and shell-model calculations.

Level scheme is proposed by 2005An03 based on mirror symmetry arguments with the ^{61}Zn nuclide, in particular 1532-1141-124 cascade in ^{61}Zn .

 ^{61}Ga Levels

E(level) [†]	J ^π [‡]	Comments
0.0	3/2 ⁻	J ^π : from Adopted Levels.
220? <i>1</i>	(1/2 ⁻)	
271 [#] <i>1</i>	5/2 ⁻	
1397 [#] <i>1</i>	(9/2 ⁻)	
2903? [#] <i>2</i>	(13/2 ⁻)	

[†] From $E\gamma$ data.

[‡] As assigned by 2005An03 based on mirror symmetry arguments with ^{61}Zn nuclide.

[#] Band(A): γ -cascade based on 5/2⁻.

 $\gamma(^{61}\text{Ga})$

$R_{154-90}=Y(154^\circ)/Y(90^\circ)$, where $Y(\theta)$ represents the γ -ray yield at one of the detector rings of CLARION. Ratios for known stretched $\Delta J=2$ reference transitions is expected as 1.6-1.7, while stretched $\Delta J=1$ transitions have $R_{154-90}\approx 0.7-0.8$.

E_γ [†]	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
220 [‡] <i>1</i>	15 7	220?	(1/2 ⁻)	0.0	3/2 ⁻		E_γ : possible counterpart of 89-keV 1/2 ⁻ to 3/2 ⁻ transition in ^{61}Zn .
271 <i>1</i>	100 10	271	5/2 ⁻	0.0	3/2 ⁻	D+Q	Mult.: $\Delta J=1$, D+Q from $R_{154-90}=1.15$ 16.
1126 <i>1</i>	64 16	1397	(9/2 ⁻)	271	5/2 ⁻		
^x 1231 <i>1</i>	22 12						
1506 [‡] <i>1</i>	39 14	2903?	(13/2 ⁻)	1397	(9/2 ⁻)		

[†] The placement and order of the 1506-1126-271 cascade has been inferred from mirror symmetry arguments with ^{61}Zn nuclide.

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

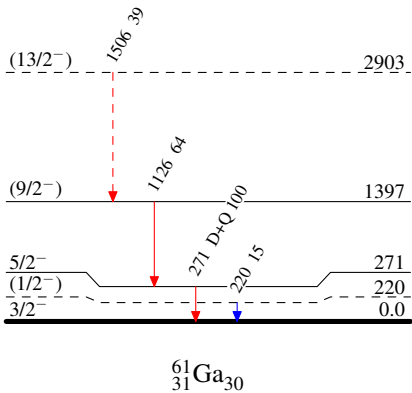
^x γ ray not placed in level scheme.

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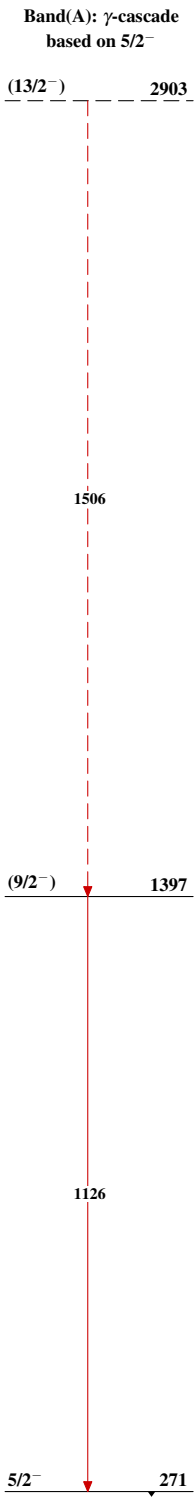
Level Scheme
Intensities: Relative I_γ

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)



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$^{61}_{31}\text{Ga}_{30}$