

$^{16}\text{O}(^{24}\text{Mg},\alpha\text{p}\gamma)$ 2004Ek01,2005Ek01

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Lijie Sun and Jun Chen		NDS 211,1 (2026)	30-Sep-2025

2004Ek01,2005Ek01: E=60 MeV ^{24}Mg beam was produced at the Legnaro National Laboratory. Target was a 0.5 mg/cm² enriched ^{40}Ca target with a 7 mg/cm² tantalum backing and with oxygen inside. γ rays were detected with the GASP array of Ge detectors and charged particles were detected with the ISIS array of 40 $\Delta\text{E-E}$ Si telescopes. Measured E_γ , I_γ , $\gamma\gamma$ -coin, $\gamma(\theta)$, $\gamma(\text{particle})$ -coin. Deduced levels, J, π from measured asymmetry ratios $R(\gamma(\theta))$.

 ^{35}Cl Levels

E(level) ^{†‡}	J π [#]
0.0	3/2 ⁺
1762.95 17	5/2 ⁺
2645.81 18	7/2 ⁺
3163.43 19	7/2 ⁻
4348.29 24	9/2 ⁻
5407.64 27	11/2 ⁻
6088.05 29	13/2 ⁻

[†] Additional information 1.

[‡] From a least-squares fit to γ -ray energies.

[#] As given in 2004Ek01 based on measured $\gamma(\theta)$ asymmetry and known assignments of low-lying levels. When considered in Adopted Levels, firm assignments here will be placed in parentheses if there are no strong supporting arguments.

 $\gamma(^{35}\text{Cl})$

$R(\gamma(\theta))$ =Asymmetry ratio measured at 35° and 81° with respect to the beam axis. Value of ≈ 1.2 for stretched quadrupole and ≈ 0.7 for stretched dipole ($\Delta J=1$).

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
517.7 1	14.3 8	3163.43	7/2 ⁻	2645.81	7/2 ⁺		
680.4 1	39.1 12	6088.05	13/2 ⁻	5407.64	11/2 ⁻	D	$R(\gamma(\theta))=0.65$ 3.
882.9 1	4.9 4	2645.81	7/2 ⁺	1762.95	5/2 ⁺		
1059.3 2	9.1 9	5407.64	11/2 ⁻	4348.29	9/2 ⁻		
1185.0 2	32.9 10	4348.29	9/2 ⁻	3163.43	7/2 ⁻		
1702.0 3	13.0 8	4348.29	9/2 ⁻	2645.81	7/2 ⁺		
1763.1 2	22.9 7	1762.95	5/2 ⁺	0.0	3/2 ⁺		$R(\gamma(\theta))=1.43$ 7 indicating Q seems inconsistent with $\Delta J=1$ from level scheme.
2244.2 3	53.9 17	5407.64	11/2 ⁻	3163.43	7/2 ⁻	Q	$R(\gamma(\theta))=1.24$ 6.
2645.5 4	32.3 10	2645.81	7/2 ⁺	0.0	3/2 ⁺	Q	$R(\gamma(\theta))=1.21$ 6.
3162.7 4	100 3	3163.43	7/2 ⁻	0.0	3/2 ⁺	Q	$R(\gamma(\theta))=1.43$ 7.

[†] From 2004Ek01.

[‡] Deduced from $\gamma(\theta)$ asymmetry in 2004Ek01 by the evaluators.

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Level Scheme

Intensities: Relative I_γ

Legend

- \blackrightarrow $I_\gamma < 2\% \times I_\gamma^{\max}$
- $\color{blue}\blackrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
- $\color{red}\blackrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$

