

$^{14}\text{C}(^{18}\text{O},2\text{p}\gamma)$  2010De26

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

90% enriched  $^{14}\text{C}$  target bombarded with a 37 MeV  $^{18}\text{O}$  beam at ANL Tandem Linear Accelerator System; Fragment Mass Analyzer, 3 parallel-plate gridded avalanche counter (PGAC), particles identified by energy loss in the 3 PGAC; Detector: Gammasphere array, consists of 101 Compton-suppressed HPGe detectors, Measured:  $E\gamma$ ,  $I\gamma$ ,  $\gamma(\theta)$ , DCO,  $\gamma$ - $\gamma$  coin, time-of-flight parameter, deduced level scheme.

 $^{30}\text{Mg}$  Levels

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	Comments
0	$0^+$	E(level), $J^\pi$ : from Adopted Levels.
1480.6 5	$2^+$	
2465.5 14	$(2^+)$	$J^\pi$ : from Adopted Levels.
2540.6 8	$(2^-,3^-)$	$J^\pi$ : 1059.8 $\gamma$ , $\Delta J=0$ or 1, to $2^+$ , negative parity from the absence of $^{30}\text{Na}$ $\beta^-$ decay feeding, and shell model calculations.
3379.0 8	$4^+$	
3455.5 14	$4^+$	$J^\pi$ : (2) in the Adopted Levels.
4181.3 10	5	
4258.0 12		
4356.6 25		
5311 3		

<sup>†</sup> From a least squares fit to the  $\gamma$ -ray energies.

<sup>‡</sup> Assignments are based on the  $\gamma$ -transition characteristics (2010De26), except where otherwise noted.

 $\gamma(^{30}\text{Mg})$ 

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>‡</sup>	$R_{\text{ang}}$ <sup>†</sup>	Comments
802.3 6	17 2	4181.3	5	3379.0	$4^+$	D	1.9 6	$A_2=-0.53$ 26
838.4 3	12 4	3379.0	$4^+$	2540.6	$(2^-,3^-)$			
879.0 9	8 3	4258.0		3379.0	$4^+$			
954.0 15	12 2	5311		4356.6				
984.8 17	16 4	2465.5	$(2^+)$	1480.6	$2^+$		2.4 19	
990.0 5	11 3	3455.5	$4^+$	2465.5	$(2^+)$			
1059.8 9	25 9	2540.6	$(2^-,3^-)$	1480.6	$2^+$	(D+Q)	0.34 24	Mult.: speculated in 2010De26 based on the $\gamma$ -ray feeding intensity.
1480.6 5	100 6	1480.6	$2^+$	0	$0^+$	Q	0.55 7	$A_2=+0.44$ 10; $A_4=-0.33$ 14
1816.0 23	44 26	4356.6		2540.6	$(2^-,3^-)$			
1898.4 8	59 5	3379.0	$4^+$	1480.6	$2^+$	Q	0.55 13	$A_2=+0.68$ 23; $A_4=-0.37$ 29
1974.8 19	15 5	3455.5	$4^+$	1480.6	$2^+$	Q	0.6 3	

<sup>†</sup>  $R_{\text{ang}}$ =intensity ratio of the summed spectra at 32°, 37°, 143°, 148°, and 162° to the summed spectra at 79°, 81°, 90°, 99°, and 101°.

<sup>‡</sup> Assigned by the evaluators based on  $R_{\text{ang}}$ . A ratio less than 1 suggests stretched quadrupole character and greater than 1 signifies stretched dipole nature (2010De26).

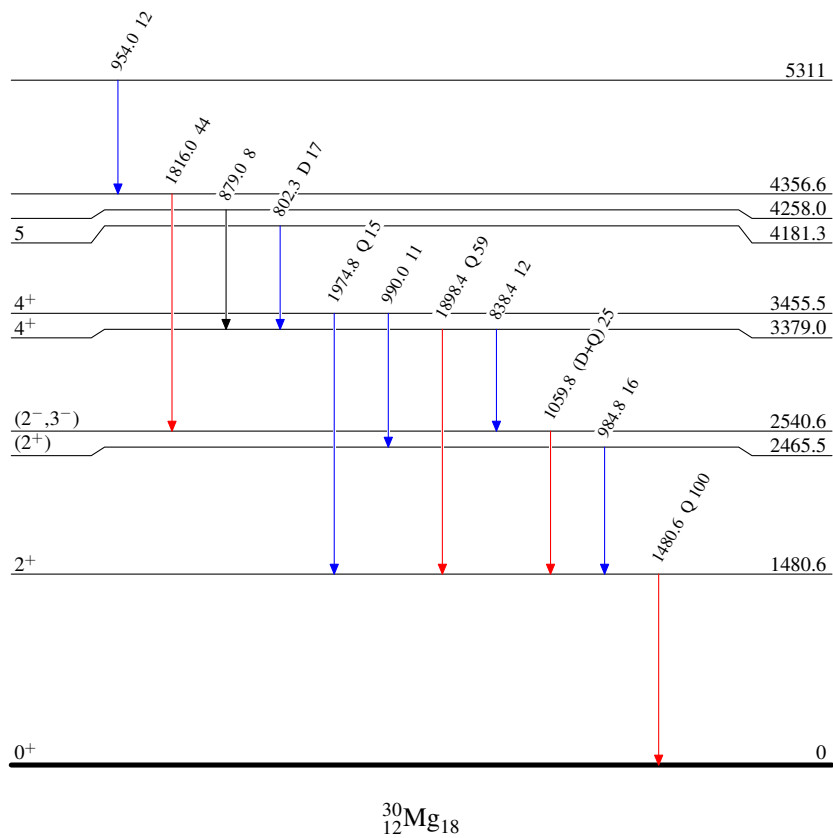
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## Level Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

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

 $^{30}_{12}\text{Mg}_{18}$