

$^{27}\text{Al}(\mu^-, \nu 2n\gamma)$ 2007Me18

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 205,1 (2025)	31-May-2025

Adapted/Edited the XUNDL dataset compiled by S. Geraedts and B. Singh (McMaster): Oct 10, 2007.

The μ^- beam obtained from decay of π^- beam at 90 MeV/c. Measured γ -ray yields using two HPGe detectors at TRIUMF facility.

Muonic Lyman (or K) series for Aluminum

μ x-ray	Energy	Intensity (in% per capture)
2p-1s	346.828 a)	79.8 8
3p-1s	412.87 5	7.62 15
4p-1s	435.96 10	4.87 10
5p-1s	446.61 10	3.86 10
6p-1s	452.38 10	2.20 10
(7 to ∞)p-1s		1.63 15
a) 346.828 x-ray energy was used for calibration		

 ^{25}Mg Levels

E(level) [†]	J^π [†]	Percent direct yield/muon capture	Comments
0.0	5/2 ⁺	3 1	Percent direct yield/muon capture: estimated from (d, α) reaction.
585.042	1/2 ⁺	1.37 35	
974.746	3/2 ⁺	2.09 22	
1611.767	7/2 ⁺	2.2 6	
1964.615	5/2 ⁺	1.33 11	
2563.40	1/2 ⁺	<0.25	
2737.95	7/2 ⁺	0.28 11	

[†] From Adopted Levels.

 $\gamma(^{25}\text{Mg})$

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
389.710	1.34 13	974.746	3/2 ⁺	585.042	1/2 ⁺
585.028	3.34 34	585.042	1/2 ⁺	0.0	5/2 ⁺
974.742	1.39 14	974.746	3/2 ⁺	0.0	5/2 ⁺
989.865	0.32 17	1964.615	5/2 ⁺	974.746	3/2 ⁺
1379.543	0.59 6	1964.615	5/2 ⁺	585.042	1/2 ⁺
1611.712	2.2 6	1611.767	7/2 ⁺	0.0	5/2 ⁺
1763.13	0.24 10	2737.95	7/2 ⁺	974.746	3/2 ⁺
1964.501	0.41 7	1964.615	5/2 ⁺	0.0	5/2 ⁺
1978.25	<0.2	2563.40	1/2 ⁺	585.042	1/2 ⁺

[†] From Adopted Gammas.

[‡] Percent yield per muon capture.

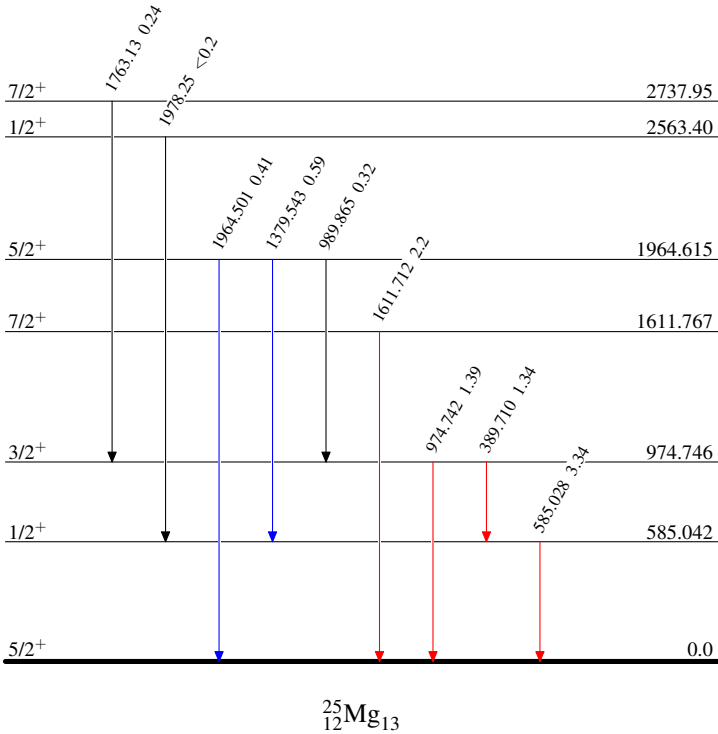
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Level Scheme

Intensities: Percent γ -ray yield/muon capture

Legend

- $\rightarrow$ $I_\gamma < 2\% \times I_\gamma^{max}$
- $\rightarrow$ $I_\gamma < 10\% \times I_\gamma^{max}$
- $\rightarrow$ $I_\gamma > 10\% \times I_\gamma^{max}$



$^{25}_{12}\text{Mg}_{13}$