

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

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst		NDS 134,1 (2016)	1-Feb-2016

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

^{26}Mg Levels

E(level) †	J $^{\pi}$ †	Percent direct yield/muon capture	Comments
0.0	0 ⁺	4	Percent direct yield/muon capture: estimated from (γ ,p) reaction.
1808.73 8	2 ⁺	19 6	Known cascading=53% 5.
2938.34 8	2 ⁺	5.7 2	Known cascading=32% 2.
3588.56 13	0 ⁺	0.65 20	Known cascading=9.8% 6.
3941.55 10	3 ⁺	2.8 3	Known cascading=0.77% 26.
4318.88 11	4 ⁺	8.2 7	Known cascading=0.46% 15.
4332.57 10	2 ⁺	3.50 10	Known cascading=0.04% 2.
4350.08 10	3 ⁺	4.4 7	
4835.13 13	2 ⁺	3.06 20	
4901.30 13	4 ⁺	1.38 30	
4972.29 13	0 ⁺	0.43 10	
5291.74 13	2 ⁺	1.36 28	
5476.11 10	4 ⁺	0.8 3	
5691.11 10	(1 ⁺)	1.0 6	
7824 3	3 ⁻	1.2 6	
8052.9	2 ⁽⁺⁾	<0.45	
8705.73		<1.0	
9044.7	3 ⁽⁺⁾	<0.3	

† From Adopted Levels.

$\gamma(^{26}\text{Mg})$

E_{γ} †	I_{γ} ‡	E_i (level)	J_i^{π}	E_f	J_f^{π}	E_{γ} †	I_{γ} ‡	E_i (level)	J_i^{π}	E_f	J_f^{π}
1003.25 4	2.3 2	3941.55	3 ⁺	2938.34	2 ⁺	1896.72 5	2.6 2	4835.13	2 ⁺	2938.34	2 ⁺
1129.61 4	14.8 15	2938.34	2 ⁺	1808.73	2 ⁺	2033.88 12	0.4 1	4972.29	0 ⁺	2938.34	2 ⁺
1157.23 6	0.40 14	5476.11	4 ⁺	4318.88	4 ⁺	2132.71 4	1.3 2	3941.55	3 ⁺	1808.73	2 ⁺
1394.28 7	0.5 2	4332.57	2 ⁺	2938.34	2 ⁺	2353.27 5	1.2 2	5291.74	2 ⁺	2938.34	2 ⁺
1411.72 4	2.3 4	4350.08	3 ⁺	2938.34	2 ⁺	2510.01 5	8.7 7	4318.88	4 ⁺	1808.73	2 ⁺
1534.49 15	0.3 3	5476.11	4 ⁺	3941.55	3 ⁺	2523.69 6	2.8 8	4332.57	2 ⁺	1808.73	2 ⁺
1779.74 8	0.65 20	3588.56	0 ⁺	1808.73	2 ⁺	2541.18 6	1.7 5	4350.08	3 ⁺	1808.73	2 ⁺
1808.68 4	51 5	1808.73	2 ⁺	0.0	0 ⁺	2752.56 25	0.5 5	5691.11	(1 ⁺)	2938.34	2 ⁺

Continued on next page (footnotes at end of table)

$^{27}\text{Al}(\mu^-, \nu n \gamma)$ **2007Me18 (continued)** $\gamma(^{26}\text{Mg})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π
2938.15 5	1.1 2	2938.34	2 ⁺	0.0	0 ⁺	4355.3 6	<0.6	8705.73		4350.08	3 ⁺
3092.31 11	1.3 3	4901.30	4 ⁺	1808.73	2 ⁺	4763	<0.22	8705.73		3941.55	3 ⁺
3667.4 5	0.2 2	5476.11	4 ⁺	1808.73	2 ⁺	4885	0.45 15	7824	3 ⁻	2938.34	2 ⁺
3882.0 3	0.50 25	5691.11	(1 ⁺)	1808.73	2 ⁺	6104.3 # 9	<0.3	9044.7	3 ⁽⁺⁾	2938.34	2 ⁺
3882	0.50 25	7824	3 ⁻	3941.55	3 ⁺	6242.9 7	<0.45	8052.9	2 ⁽⁺⁾	1808.73	2 ⁺

† From Adopted Gammas.

‡ Percent yield per muon capture.

Placement of transition in the level scheme is uncertain.

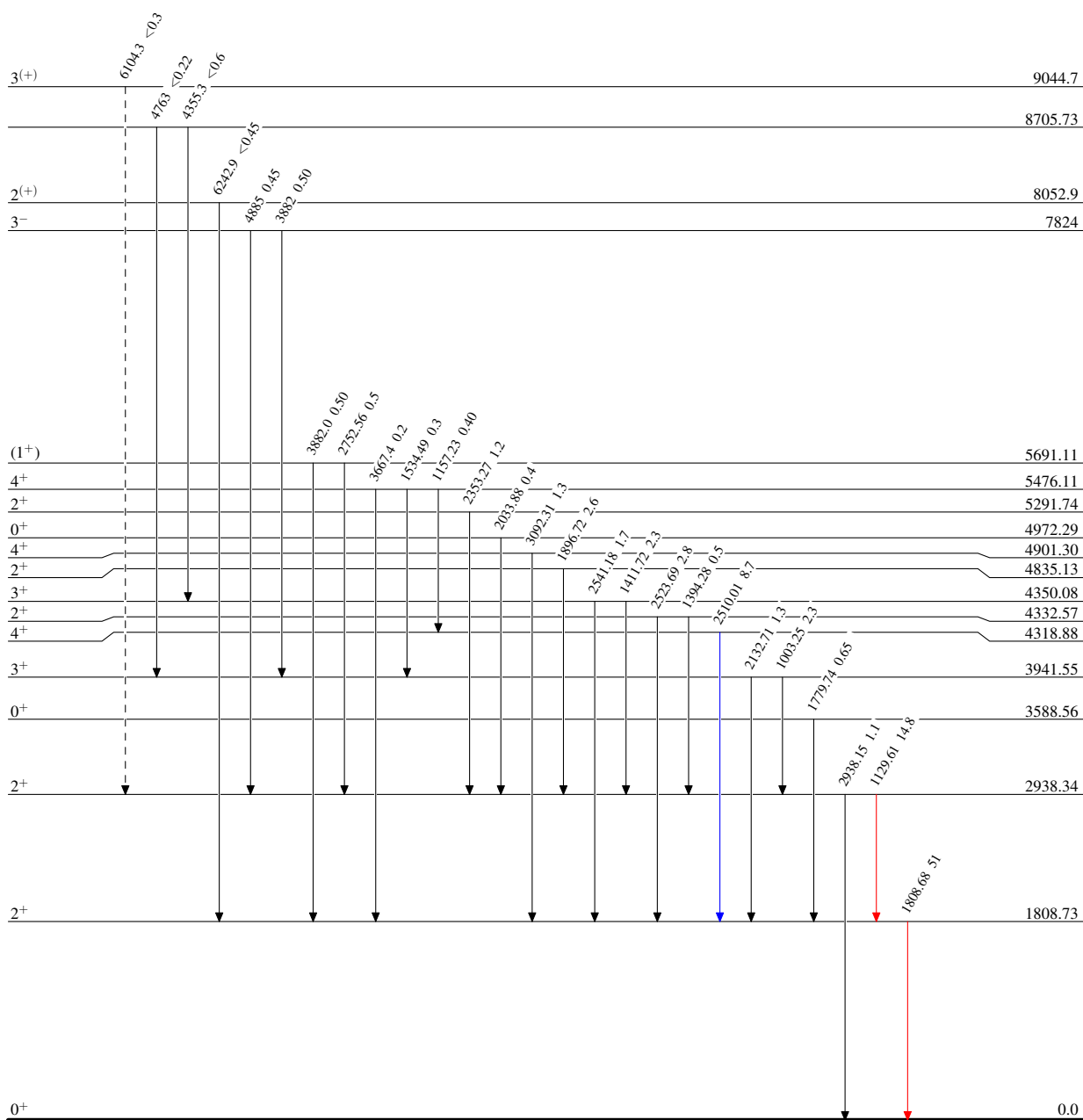
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Legend

Level Scheme

Intensities: Percent γ -ray yield/muon capture

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

 $^{26}_{12}\text{Mg}_{14}$